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West Cumbria Managing Radioactive Waste Safely Partnership

The Final Report of the West Cumbria Managing Radioactive Waste Safely Partnership

August 2012

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The West Cumbria MRWS Partnership

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Partnership members

Allerdale Borough Council
Barrow Borough Council
Carlisle City Council
Copeland Borough Council
Cumbria Chamber of Commerce
Churches Together in Cumbria
Cumbria Association of Local Councils
Cumbria County Council
Cumbria Tourism
Eden District Council
GMB Union
Lake District National Park Authority
National Farmers Union
Nuclear Legacy Advisory Forum
Prospect Union
South Lakeland District Council
Unite Union

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Using this document

This report is divided into colour-coded sections to aid readability:

- Sections containing contextual information have a **yellow** bar at the edge of the page.
- Sections containing opinions and advice have a **green** bar.

Words or phrases written in green **like this** are explained nearby with an associated definition box, and also appear in Appendix 1. Websites are highlighted in **bold**.

Definition box: Example of a definition box.

Any figures and boxes are numbered and will be referenced in the relevant paragraph.

Figure X.X: Example of a figure or box

Example content could be tables, graphs, diagrams or photographs.

Key supporting documents are listed throughout the report where relevant. A full list of documents published by the Partnership appears in Appendix 2.

Supporting document box: Example of a supporting document box.

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Executive summary

Introduction

The West Cumbria Managing Radioactive Waste Safely (MRWS) Partnership was set up to consider the issues that would be involved in taking part in a search to see if there is anywhere in the Allerdale and/or Copeland areas suitable for a repository for higher activity radioactive waste.

Over the last three years we have looked at reports and literature, heard from experts in the field, commissioned independent research and invited reviews by independent experts.

We have placed a high priority on public and stakeholder engagement (PSE), carrying out three rounds of engagement in order to inform people, seek their input, and give feedback on how this changed our work.

Our **Final Report** presents our work, together with our opinions and advice to Allerdale Borough Council, Copeland Borough Council and Cumbria County Council – who are the decision-making bodies in this process. This report will help inform the three Councils' decisions about whether to participate in the next stages of the siting process or not.

If they *do* decide to participate, then desk-based studies (Stage 4 of the MRWS process) and site investigations (Stage 5) would precede possible construction and operation of a facility (Stage 6). A right of withdrawal exists up until the end of Stage 5.

This **Executive Summary** provides an overview of the issues we have considered and some of our key opinions and advice, which is abbreviated in some places. It is important to read our full Final Report to see all the opinions and advice we have agreed, and to get a clear picture of the work that lies behind them.

Background

Currently, higher activity radioactive waste is kept in stores above ground at 36 sites across the UK. A large amount of the waste is at Sellafield in West Cumbria.

The Government accepted the recommendation of the independent Committee on Radioactive Waste Management (CoRWM) that the best available long-term solution for this waste is geological disposal.

The Government says geological disposal involves placing the waste deep underground in a purpose-built facility, called a geological disposal facility (GDF) or a repository, leaving the waste there forever once the facility is closed.

The Nuclear Decommissioning Authority (NDA) is responsible for implementing the Government's policy on the long-term management of radioactive waste.

The Government says it is committed to an approach based on voluntarism. This means that communities would express willingness to search for a site for a potential GDF, and perhaps ultimately host a facility, rather than having it forced upon them. Indeed, a right of withdrawal exists up until construction is due to start.

However, the Government has also made it clear that, if a site is not geologically suitable or safe for a GDF, one would not be built.

The Government says that, following any decision to participate in the siting process, it would expect a community siting partnership to be set up. This would be a partnership of local interests to provide advice and recommendations to the decision-making bodies.

We looked at various topics. Each is covered below with a brief summary of our key opinions and advice to the decision-making bodies, which are **emboldened** for ease of reading.

See **Chapters 2 to 4** of the full report for more detailed background information.

Inventory

The types and amounts of radioactive wastes for disposal – the inventory – could affect a GDF in a number of ways including the design, the size of the underground footprint, the period of operation, the developing safety case and, potentially, the number of required repositories.

Overall, we are unable to say at this stage that we are satisfied with the proposed inventory because we do not yet have definite information on what actually would go into a GDF (GDF operation is over 25 years away).

However, we have developed a set of Inventory Principles in order to ask for commitments from the Government about how inventory issues will be handled if a decision to enter the siting process is taken. **Progress has been made towards agreeing the principles that define an acceptable process for how the inventory could be changed, including how the community can influence this.**

If there is a decision to take part in the first stage of the search for a suitable location for a GDF (Stage 4), we advise that **a community siting partnership should enter into negotiations with the Government to develop a mutually acceptable process for how the inventory would be changed, including the circumstances under which the decision-making bodies should have a veto on changes to the inventory even after the right of withdrawal has ceased.**

See **Chapter 7** for more detail.

Geology

Finding a suitable rock formation that can act as an effective barrier is essential for the construction of a safe disposal facility.

As a first step, the Government said that any area expressing an interest in this process should have a test carried out by the British Geological Survey (BGS). This was designed to rule out certain areas as being clearly unsuitable, and thereby enable a judgement about whether the remaining area is enough to continue investigations for a potential site. This test was done in West Cumbria and ruled out about 25% of the land area, leaving 1890km^2 for possible investigation. We commissioned two peer reviews of this study, which both said we could rely on the results.

We believe that the 1,890km² of land not ruled out as clearly unsuitable by the BGS provides a sufficient amount of land, in terms of area, available for investigation.

We also looked at the suitability of the geology of the remaining area. We have received expert geological submissions arguing that West Cumbria's geology is unsuitable and further progress is not worthwhile. However, we have also received contrary expert advice stating that further progress is worthwhile because not enough is yet known to be able to say that all of West Cumbria should be ruled out.

The Partnership agrees that it is inherently uncertain at this stage whether a suitable site can be found, that more geological work is therefore required, and that it should be done as soon as possible. However, there is a difference of view in the Partnership about whether this further geological work should be done *before* or *after* a decision about participation in Stage 4.

The Partnership agrees that, if there is a decision to proceed to Stage 4, a community siting partnership should independently review the NDA's work, in particular the geological assessments.

See **Chapter 8** for more detail.

Design and engineering

Knowing how a GDF might be designed and engineered is important because: it helps people to visualise what it might look like and appreciate the scale of the project; it can affect, or be affected by, what goes into it and where it is located; and the design affects the safety of the facility.

Our opinion is that, overall, we are content that detailed design issues are largely site-specific and, as such, cannot and should not be resolved at this time. Specifically, we understand the generic design concepts being worked on, and they fit with our expectations.

We looked at 'retrievability', which means the possibility of withdrawing the waste after it has been put into a GDF. **We have confirmed that retrievability of waste is an option, to be decided on in the future.**

See **Chapter 9** for more detail.

Safety, security, environment and planning

Making sure that any GDF would be as safe, secure and environmentally sound as possible is of the highest importance.

Regulatory and planning processes

We are as confident as is possible at this stage that the necessary regulatory bodies exist and have, or are developing/modifying, processes by which they will consider proposals for a GDF.

If there is a decision to move to the next stage, we advise that **areas within the National Park are not considered for surface facilities because of the likely impact this would have on the special qualities of the Park, which would not be consistent with current planning policies.**

Safety

We believe that the NDA will have suitable capability and an acceptable process in place to develop site-specific safety cases. Of course, any site-specific safety cases would need further monitoring and independent reviews.

Our opinion is that, overall, the NDA's research & development programme is acceptable. However, we note that there remain some concerns about the lack of progress with the programme, as well as the lack of clarity over the timescales for completing individual research topics.

Our additional advice includes a suggestion that **a community siting partnership should secure an 'Engagement Package' (funding) from the Government that allows it to commission independent reviews of any work conducted by the NDA, including safety-related work, potentially via setting up a panel of independent experts.**

See **Chapter 10** for more detail.

Impacts

If a GDF was to be sited in West Cumbria it could lead to a number of different negative and positive impacts for the community, the economy and the environment. These might include:

- The immediate effects of construction such as noise and dust.
- Whether there would be any impact on health.
- Changes in investment in the area.
- Traffic impacts.
- Possible effects on the visual or physical environment and on tourism.
- Changes in employment.

These impacts, both positive and negative, would ultimately need weighing up against the impacts of the waste remaining in its current form, and of the above-ground storage arrangements at Sellafield or elsewhere in the country.

Our overall opinion is that, at this stage, we are fairly confident that an acceptable process can be put in place to assess and mitigate negative impacts, and maximise positive impacts.

There are potential risks to some parts of the economy if the process moves forward, particularly the visitor, land-based, and food and drink sectors. We advise that a coordinated strategy and action plan is prepared to support those aspects of Cumbria's economic activity if the process enters the search for a site.

Our opinion is that the development of a GDF appears broadly compatible with the economic aspirations of West Cumbria. We advise that a full economic impact assessment is conducted if the process proceeds any further, as potential site areas are identified.

See **Chapter 11** for more detail.

Community benefits package

The Government has said that any area in which a GDF is sited would receive some kind of community benefits package. We would expect it to be a substantial long-term investment provided by the Government in things like infrastructure, services and/or skills that benefit the whole community.

The Government has agreed that this means that benefits would be beyond those that derive directly from the construction and operation of the facility, and would be in addition to those that the community would normally expect.

We have developed a set of Community Benefits Principles that set out how we would expect community benefits to be discussed, agreed and potentially administered. The Government has agreed to our principles as the basis for negotiation in the next stage of the process.

This gives us a certain amount of confidence that an acceptable community benefits package could be negotiated. We advise that a community siting partnership should use these principles as the basis for negotiations with the Government, if Stage 4 starts.

However, we cannot be certain what specific package the Government might agree to this far in advance and, therefore, whether the amount and type of these benefits would match the expectations of local people.

We believe a final decision to accept a GDF should only be made if the community is convinced that the Government – and future governments that follow – will honour commitments on community benefits.

See **Chapter 12** for more detail.

Stages 4 and 5 of the MRWS process

We wanted to be confident that a good process can be put in place if the next steps are taken.

In Chapter 13 we set out our views on the way in which voluntarism should work during a siting process.

We believe the emphasis on a strong commitment to voluntarism and community 'willingness to participate' is one that parties should keep at the forefront of their minds if this process continues. At each stage, any future community siting partnership should seek to maximise consensus amongst the decision-making bodies, potential host communities and wider local interests.

Our opinion is that our work in Chapter 13 provides some confidence that the siting process can be sufficiently robust and flexible, at least during Stage 4. We are reassured by the Councils' ability to withdraw West Cumbria from discussions with the Government. However, we recognise that the very first challenge in a possible Stage 4 will be to agree how a community siting partnership should operate and what partnership agreement should exist between members.

We advise that any community siting partnership should be established and operated in line with all of the guidance set out in Chapter 13.

See **Chapter 13** for more detail.

Overarching issues

There are a number of issues that either run across all of our work, or provide an important context for the decision about whether or not to participate in the first stage of the search for a suitable location for a GDF. A selection of these are summarised below.

Uncertainty

A great many uncertainties remain, primarily because they relate to issues that can only be considered in detail at a later date. **Should a decision to participate be taken, we would advise that a community siting partnership uses the indicative schedule provided in the Stage 4 and 5 chapter (Chapter 13) to build its work programme and, in doing so, help reduce the range of uncertainties that exist.**

Trust

A lack of trust appears to us to be at the root of many of the key concerns raised by the public and stakeholders. We have provided advice on this throughout our Final Report.

In particular, we advise that prior to a decision about participation the decision-making bodies secure a commitment that, by the end of Stage 4, the Government will have decided what mechanisms it will use to make key parts of the Managing Radioactive Waste Safely process (including the right of withdrawal) legally binding. We have received this commitment from the Minister of Energy, and advise that any community siting partnership should tackle this early in its work programme.

We also advise that a community siting partnership should continue the Partnership's approach to transparency and extensive public and stakeholder engagement, operating by consensus where practical, and seeking agreements from others where useful e.g. regarding legislation.

Strategic Environmental Assessments

We considered whether the Government's MRWS policy is consistent with European legislation on Strategic Environmental Assessments (SEAs). This legislation includes looking at 'reasonable alternatives' such as alternative sites, alternative disposal methods and alternatives to the current process of voluntarism.

Some members believe that the aspect of a Strategic Environmental Assessment that assesses reasonable alternatives should take place *before* a decision about participation. Other members believe that the NDA's plans for carrying out a Strategic Environmental Assessment *after* a potential decision to participate are appropriate.

See **Chapter 6** for more detail.

Public and stakeholder views

Engaging the public and stakeholders has been a priority for us (see Chapters 5 and 14 for more detail). We wanted to understand how partner organisations, stakeholders, and interested members of the public, as well as the silent majority of the general public, felt about this issue.

As well as three extensive rounds of engagement, we conducted a statistically significant opinion survey to gauge people's views. The results show that across Cumbria there are

more people in favour of taking part in the search for a suitable site than people who oppose taking part. However, this must be considered alongside other parts of our engagement.

Other aspects of our engagement aimed to understand concerns so they could be addressed, to ensure our opinions and advice are credible. We have done a considerable amount of work to respond directly to consultation submissions. Overall, most Partnership members are satisfied that the opinions and advice given in our Final Report reflect the public and stakeholder views we have received. However, some members feel this is not the case on some topics and this has been noted in the relevant chapters, Chapters 8 and 13. Specific significant changes have been made as a result of public input, for example requiring a firm legal footing to the process, and advising that an outline community benefits package should be developed and agreed with the Government before any site investigations start.

We thank everybody for their time in submitting their views and contributing to our work.

1. This report

Background

1.1 This is the Final Report of the West Cumbria Managing Radioactive Waste Safely (MRWS) Partnership. The Partnership has been discussing the possibility of the development of a **geological disposal facility (GDF)** in West Cumbria. This would include surface facilities and an engineered, underground site that would be the final 'repository' for the UK's **higher activity radioactive waste**.

Geological disposal facility (GDF): An engineered, underground facility where the UK's higher activity radioactive waste will be permanently disposed of. A GDF is often referred to as a **repository**.

Higher activity radioactive waste: This is the most radioactive kind of waste. Some of it remains hazardous for many thousands of years. Put simply, it is a combination of nuclear materials and other materials, such as fuel packaging and equipment, that have been contaminated with significant amounts of radioactivity.

Discussions have been focused on the issues around whether or not to enter the next stage of a search for a potential site for a GDF, rather than whether or not West Cumbria should have a GDF. See **Figure 2.3** in Chapter 2 for a diagram showing the different stages of the process.

This report represents a 'snapshot' in time and should be read as such. Many of the issues covered within it will continue to evolve, both in the immediate future and over longer timescales.

1.2 Allerdale Borough Council, Copeland Borough Council and Cumbria County Council originally expressed an interest in taking part in the process as set out by the

Government in 2008 in its MRWS White Paper. As the **decision-making bodies (DMBs)** in this process, the three Councils now need to decide whether to take the process any further.

Decision-making bodies (DMBs): The local government decision-making authority/ies for any potential host community/ies. In this case Allerdale Borough Council, Copeland Borough Council and Cumbria County Council as the decision-making bodies, have the responsibility of making the formal decision on whether to continue to the next stage of the MRWS process or not.

The West Cumbria MRWS Partnership (the Partnership) was set up by the three Councils, and held its first meeting in March 2009 (see Appendix 3 for membership). The role of the Partnership was to give the three Councils its opinions and advice on the issues that would be involved in moving to the next stage of the Government's MRWS process. Our role was an advisory one of fact finding and research gathering – we (the Partnership) are not taking any decisions.

Purpose and audience

1.3 This report is written by the Partnership for the three Councils, in order to help them with their deliberations. It is also written with other audiences in mind including stakeholders in West Cumbria and beyond, Partnership members and their constituencies, and the wider public. It is the culmination of over three years of work, and presents our work and opinions on key issues concerning the potential development of a GDF. It also highlights how and where **public and stakeholder engagement (PSE)** has played an important part in shaping our work.

Public and stakeholder engagement (PSE): The Partnership's programme for discussing its work with the public, stakeholders and stakeholder organisations i.e. any individual or organisation who has an interest in the MRWS process.

1.4 This report does not present a final recommendation to the Councils about whether or not to proceed to the next stage of the process. We, as the Partnership, feel it is important for the Councils to be able to weigh up our work and opinions across the range of topics and issues contained within this report before making a decision, and,

as such, we have not provided a final single recommendation about participation in the next stage of the MRWS process.

Aiming for consensus, handling disagreements

1.5 Throughout our work and the development of our opinions on key topics, each Partnership member has provided views from their organisation's perspective, knowing its priorities and interests. This is not necessarily a formal or final view of their whole organisation. The range of different interests represented on the Partnership naturally means that we have not always agreed on everything. We have always aimed to build consensus and accommodate the full range of views from all Partnership members where possible. However, where that has not been possible we have laid out the source of disagreement and explained the range of views present within the Partnership.

Structure

1.6 Chapters 1 to 5 of this report cover **background information**, including details of our work and PSE programme.

Chapter 6 looks at **overarching issues** that cut across or provide context to our work and are therefore relevant to the DMBs' decision making.

Chapters 7 to 14 cover the **main topics** contained within our programme of work.

Chapter 15 summarises our **final opinions and advice** on each work stream, as well as providing details of a proposed bridging group to aid the transition from the end of our work through to the decisions by the three Councils.

Contact

1.7 The publication of this report marks the end of the West Cumbria MRWS Partnership's work. For any queries about this report or the work of the Partnership up until the three Councils make their decisions, please email **contact@westcumbriamrws.org.uk** or

call 0800 048 8912 – your enquiry will be directed to the most appropriate person. After the Councils have made their decisions (expected to take place in October 2012) enquiries about the MRWS process in West Cumbria should be directed towards Allerdale Borough Council, Copeland Borough Council or Cumbria County Council.[1]

1. For queries about the overall MRWS policy or process in the UK as a whole, the Department of Energy and Climate Change (DECC) should be contacted directly.

2. The Government's Managing Radioactive Waste Safely (MRWS) policy

The origins of the Managing Radioactive Waste Safely (MRWS) policy

2.1 Currently, higher activity radioactive waste is kept in stores at surface level at 36 sites across the UK. This is an interim arrangement, pending a final decision from the Government on how these wastes should be managed. Because of the long timescales over which these materials can remain hazardous (in some cases for many thousands of years), the Government decided a longer-term approach than interim surface storage is needed.

2.2 In 2003 the Government set up an independent committee – the **Committee on Radioactive Waste Management (CoRWM)**. CoRWM's first programme of work involved reviewing the options for safely managing the UK's higher activity waste and to make recommendations on the long-term solutions. The key recommendations arising from CoRWM's initial work (adapted from CoRWM's website **corwm.decc.gov.uk**) are summarised below:

- The best available solution, for the long term, is geological disposal.
- Safe and secure interim storage is needed prior to geological disposal.
- The interim storage programme should be robust to delays in, or failure of, the geological disposal programme.
- There should be a flexible, staged approach to implementing geological disposal.
- Further research and development is required on both storage and geological disposal.
- Communities should be invited to volunteer to host a geological disposal facility; there should be no imposition.

Committee on Radioactive Waste Management (CoRWM): An independent committee originally set up by government to look at the options for managing the UK's higher activity radioactive waste. Now it scrutinises the plans for implementing geological disposal.

2.3 It is important to note that CoRWM started from a blank sheet of paper. They generated a long list of options, including obvious contenders such as interim storage and geological disposal, as well as more radical options such as disposal in space, in ice sheets, or under the sea bed. Over the course of two and a half years, they eliminated various options based on scientific advice until they reached a unanimous agreement that geological disposal was the best available approach. Importantly, they agreed that continuing with the status quo, otherwise known as interim storage, for an undefined period put an unacceptable burden on future generations, introduced an unacceptable security risk, and was an unacceptable risk to health. More detail on CoRWM's reasoning can be found in their full report to the Government (Managing Our Radioactive Waste Safely: CoRWM's Recommendations to Government July 2006 – available on CoRWM's website at **corwm.decc.gov.uk**).

2.4 The Government accepted most of CoRWM's recommendations.[2] Following a further report from CoRWM on implementing 'a Partnership Approach to Radioactive Waste Management', the Government consulted on how geological disposal should be implemented in the UK. In June 2008 the Government published its Managing Radioactive Waste Safely (MRWS) White Paper.

The Government's MRWS White Paper

Document e: MRWS White Paper, June 2008 (also available on DECC's website at **mrws.decc.gov.uk**)

2.5 The MRWS White Paper outlines the Government's plans for implementing geological disposal as its preferred approach. It also invites local authorities to express an interest

2. See paragraphs 6.41 and 6.42 for further discussion of research into alternatives. CoRWM also noted the ethical distinction between new build and legacy waste in its 2006 report to the Government – this distinction was of concern to some respondents to our formal consultation. We requested clarifications from DECC about the Government's assumptions around new build waste; these are contained within Box 7.2.

in entering discussions with the Government about participation in the process of siting a geological disposal facility (GDF). This applies to England, Wales and Northern Ireland, but not to Scotland; Scottish Government policy is to manage higher activity radioactive waste in near-surface facilities, near to where the wastes are produced.[3] Allerdale Borough, Copeland Borough and Cumbria County Councils expressed an interest in 2008/09 and set up the West Cumbria MRWS Partnership shortly afterwards. The first formal meeting of the Partnership was held on 17th March 2009.

2.6 The Government says that geological disposal involves placing the waste deep underground in a purpose built facility, called a GDF or a repository, leaving the waste there forever once the facility is closed. It is based on the idea that radiation can be contained for extremely long periods by a combination of engineered, underground structures and the surrounding rocks. While the waste is in the facility, the level of radioactivity will reduce over time. More detail about this is provided in Chapter 9.

2.7 The Government also says it is possible that more than one facility might be needed, depending on the type and amount of waste disposed of, and the location or locations finally decided upon. However, a commitment from a community to have one GDF does not automatically mean the same community would have a second one.

2.8 The MRWS process is an important part of the Government's overall energy policy, which also includes potentially building new nuclear power stations. The relationship between nuclear new build waste and the potential for a GDF in West Cumbria is discussed further in Chapter 7 on **inventory**.

Inventory: The type and amount of radioactive waste that would be placed and managed in a repository.

2.9 The Government's MRWS policy is based on **voluntarism**. This means that communities would express willingness to search for a site for a potential GDF, and perhaps ultimately host a facility, rather than having a facility forced upon them. However, the Government has also made it clear that technical issues such as geological suitability will be subject to 'objective and consistent assessment', so that if a site is not geologically suitable or safe for a GDF, it would not be built just because a community volunteers.

3. See **www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/16293/higheractivitywastepolicy**.

Voluntarism: An approach where a community expresses willingness to participate in the search for a site for a potential repository, and perhaps ultimately host a facility.

2.10 If the process proceeds, the search for a site would take a long time – probably more than 15 years. There are various stages that would narrow down the most suitable sites. Participation in the early stages of a search for a site is without any commitment to later stages of the process. Indeed, a **right of withdrawal** exists up until construction is due to start. This is different to a normal planning process for major infrastructure projects, where the approach is not based on voluntarism.

Right of withdrawal: This means that the decision-making bodies are able to pull out of the process at any time before construction is ready to start. This decision would be made on behalf of communities and in close collaboration with wider community representatives.

2.11 The key points of Government policy in response to CoRWM's recommendations are shown in **Box 2.1** below (taken from the MRWS White Paper).

Box 2.1: Key points of Government policy in its response to CoRWM (taken from the MRWS White Paper)

- Geological disposal is the way higher activity radioactive waste will be managed in the long term.
- This will be preceded by safe and secure interim storage until a geological disposal facility can receive waste. This period will include contingency planning to cover any uncertainties associated with implementation. Storage is a proven, safe and secure technology for the interim management of higher activity radioactive waste.
- There will be ongoing research and development to support optimised delivery of the geological disposal programme, and the safe and secure storage of the radioactive waste in the interim.
- The Government will pursue an approach to geological disposal site selection based on voluntarism and partnership.
- The Nuclear Decommissioning Authority (NDA) is the body responsible for planning and implementing geological disposal. The NDA has statutory

responsibility under the Energy Act 2004, for the disposal and safe and secure interim storage of its waste in designated circumstances, and this is being provided for in its Strategy and Business Plan.

- The arrangements will be subject to strong independent regulation by the statutory regulators.
- Scrutiny and advice to the Government on the implementation programme will be provided by the independent CoRWM.
- An open and transparent approach which enables the public and stakeholders to be involved throughout the implementation process.
- Implementation will be undertaken on a staged basis, with clear decision points allowing progress to be reviewed and costs, affordability, and value for money, safety, and environmental and sustainability impacts to be assessed before decisions are taken on how to move to the next stage.

2.12 The role and definition of 'community' is important in the context of the MRWS policy, given the voluntarist approach being taken. The Government's MRWS White Paper sets out three levels of community that must be involved in discussions and decisions. These definitions are outlined in **Box 2.2** below.

Box 2.2: Community definitions from the Government's MRWS White Paper

- **'Host Community:** The community in which any facility will be built can be termed the 'Host Community'. The 'Host Community' will be a small geographically defined area, and include the population of that area and the owners of the land. For example, it could be a town or village.'
- '**Decision-Making Body:** Local government will have decision-making authority for their host community. There are different local authority structures in different parts of the UK. For example, in England local authorities include district councils, county councils, metropolitan district councils and London Boroughs whereas in Wales, local authorities are unitary. Such a body will be termed 'Decision-Making Body'.'
- '**Wider Local Interests:** Outside the Host Community, there are likely to be other communities that have an interest in the development of a facility in the Host Community, and there needs to be a mechanism that allows them to become involved in the process. Such a community might be the next village, a neighbouring district or a community on the local transport routes to the Host Community. Such communities will be termed 'Wider Local Interests'.'

The White Paper says that 'all three levels of community will need to liaise closely with one another as the process is taken forward' and that 'both Government and the Nuclear Decommissioning Authority (NDA) will need to engage with all three 'communities''.

2.13 The three local Councils, as the decision-making bodies (DMBs), have the responsibility of making the formal decision on whether to continue to the next stage or not, as set out in **Box 2.2** below. The Government also says that, following any decision to participate, it would expect a **community siting partnership (CSP)** to be set up – a partnership of local interests to provide advice and recommendations to the DMBs. The Government anticipates that the Nuclear Decommissioning Authority (NDA) would be a member of any CSP, but would not be directly involved in decisions about community-related issues. See Chapter 13 for more detail on possible arrangements for the process in Stages 4 and 5.

Community siting partnership (CSP): A partnership of local community interests that would work with the NDA and with other relevant interested parties in future stages of the MRWS process, to ensure that questions and concerns of potential host communities and wider local interests are addressed and resolved as far as reasonably practicable, and to advise the decision-making bodies at each stage of the process.

Government involvement in the MRWS process

2.14 The UK Government has overall responsibility for the MRWS programme. The **Department of Energy and Climate Change (DECC)** is the UK Government department responsible for national policy on radioactive waste, and is therefore leading the Government's MRWS programme.

Department of Energy and Climate Change (DECC): The UK Government department responsible for national policy on radioactive waste.

2.15 The Government has set up a **Geological Disposal Implementation Board (GDIB)**, chaired by the Minister of Energy, to provide oversight of the MRWS programme. The Board's role is intended to bring challenge and hold DECC to account for delivery of the programme.

Geological Disposal Implementation Board (GDIB): A board chaired by the Minister of Energy, to provide oversight of the MRWS programme.

2.16 The Government has also published its first two annual reports to Parliament on the MRWS programme. The reports include progress on projects that contribute towards achieving the milestones in the timeline for GDF development, and progress against major commitments given by the Government as a result of CoRWM's recommendations.[4]

Other organisations with involvement in the MRWS process

2.17 The **Nuclear Decommissioning Authority (NDA)** was set up with the responsibility of cleaning up the UK's civil nuclear facilities and implementing the Government's policy on the long-term management of radioactive waste. To take forward work on geological disposal, the NDA has set up the **Radioactive Waste Management Directorate (RWMD)**. This is the directorate of the NDA responsible for developing and implementing geological disposal. With regards to the operation of a GDF, the NDA says:

'The Radioactive Waste Management Directorate (RWMD) of the NDA is responsible for the programme that delivers the geological disposal facility. In due course its ownership may be opened up to competition in line with other NDA sites. Further dialogue with Government, the regulators and the supply chain will be required before the step is taken to determine whether this is the appropriate implementation approach.'

4. More information can be found at **mrws.decc.gov.uk**.

Nuclear Decommissioning Authority (NDA): The UK Government body responsible for ensuring the clean-up of civil nuclear sites and for implementing the Government's policy on the long-term management of radioactive waste.

Radioactive Waste Management Directorate (RWMD): The directorate of the NDA responsible for developing and implementing geological disposal.

Note that we tend to refer to the NDA throughout this report for clarity, except where specific RWMD processes or documents are discussed, in which case we use 'NDA RWMD' or 'RWMD'.

2.18 There are also statutory regulators involved in regulating any future GDF. More detail on their roles and responsibilities is provided in paragraph 3.15 of this report.

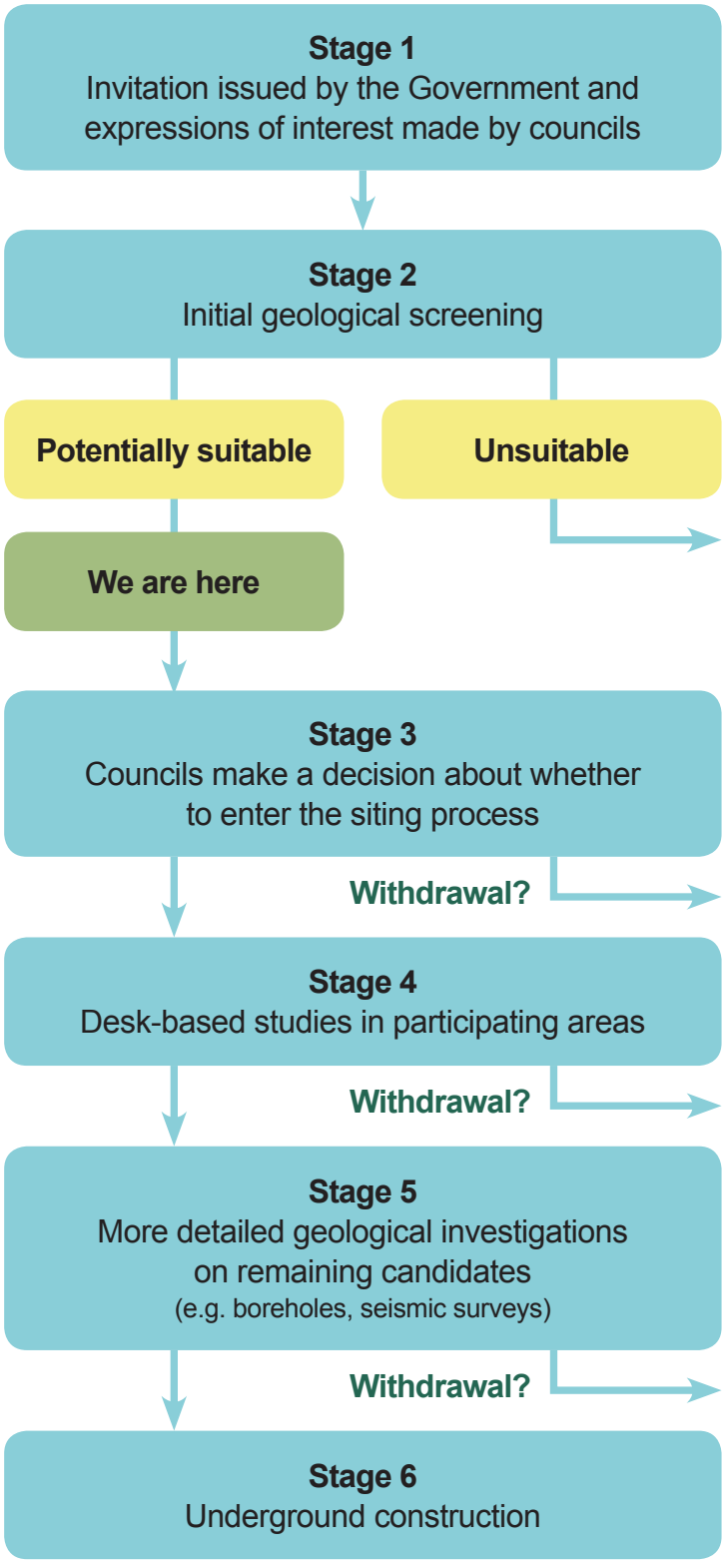
2.19 CoRWM also has an ongoing role in scrutinising the plans for implementing geological disposal.

Stages and timescales of the Government's MRWS process

2.20 **Timescales.** The Government has laid out its overall timescales for the MRWS process across a number of stages that span several decades, currently estimating two to three decades between the beginning of the site-selection process and the first waste going into a GDF.

2.21 The Government's current expectation is that a GDF would open to receive waste around 2040. However, the Minister of Energy has stated an aspiration for this date to be brought forward to 2029, and the NDA is assessing whether this might be possible. See paragraph 6.38 for more discussion of this issue.

Figure 2.3: Timeline showing the different stages (1 to 6) in the MRWS process



2.22 **Where are we in the process?** Currently we are at Stage 3 (see **Figure 2.3** above). Following the publication of this report, Allerdale Borough, Copeland Borough and Cumbria County Councils will take a formal decision on whether to move to Stage 4 – the first stage of the search for a suitable location. We refer to this throughout the report as a '**decision about participation**'. This decision will take account of a number of factors, including whether there is credible support locally for the decision. Throughout this report we refer to a decision to move to Stage 4 of the MRWS process as a '**decision to participate**' and a decision not to move to Stage 4 of the MRWS process as a '**decision to withdraw**'.

Decision about participation: The process of each of the decision-making bodies making a formal decision about whether or not to proceed to Stage 4 of the MRWS process.

Decision to participate: A decision to proceed to Stage 4 of the MRWS process.

Decision to withdraw: A decision not to proceed to Stage 4 of the MRWS process.

2.23 **Decisions about participation.** The three DMBs will take separate decisions on whether the areas of Allerdale and/or Copeland should enter Stage 4 of the process, after considering this report from the Partnership and other relevant matters. The three Councils have agreed a Memorandum of Understanding that shows how they will take and coordinate these decisions.

Document 235: Memorandum of Understanding between the Councils, December 2011
Document 240: Letter from DECC regarding the Councils' Memorandum of Understanding, 7 November 2011

For an area to formally enter Stage 4, both the Borough Council and the County Council would need to be in agreement. DECC will not be involved in this local decision making, but will have to make its own separate judgement about any local decision to participate and the credibility of a decision in relation to public and stakeholder views. This means that three levels of agreement to participate would be required for the process to continue in West Cumbria: borough, county and central

government, with the Government decision being a separate and sequential one to that of the borough and county levels. It is possible that both areas of West Cumbria could move to Stage 4, or only one, or neither.

2.24 **How the process could stop.** According to the Government, the process could stop for the following reasons once Stage 4 has been entered into:

- If a community exercises the right of withdrawal.
- If no suitable site is found (for example if the geology is not suitable) and therefore a **safety case** cannot be made.

Safety case: A structured argument or body of evidence that is intended to demonstrate that a system is safe. It also provides evidence to show **how** claims of safety are met.

2.25 **What happens if West Cumbria (and potentially the rest of the UK) says no to hosting a GDF?** The Government says that it is committed to the voluntarist approach and that, were this approach to fail first time round, it would make every effort to find out why it failed and see what could be done to make the approach work better. It also says that, if it became clear that there is no possibility of the current MRWS approach succeeding in any part of the country, it would have to consider alternative ways forward to manage the waste long-term, with the immediate fallback position being continued surface storage.

Document 287: DECC responses to actions commissioned by the Partnership, May 2012

3. A geological disposal facility (GDF)

Features of a geological disposal facility (GDF)

3.1 The Government says in its MRWS White Paper that the purpose of a GDF would be to isolate radioactive waste in a suitable rock formation deep underground so that no harmful quantities of radioactivity can reach the surface. Such a facility would be designed so that the geological and engineered barriers work together to minimise the escape of radiation over long periods of time. This is called a **multi-barrier approach**.

Multi-barrier approach: A combination of engineered barriers (packaging, vaults and backfill/refilling of earth or other materials) and a natural barrier (the rock) working together to ensure the necessary levels of safety for a repository.

3.2 The MRWS White Paper outlines two main parts of a GDF[5]: the surface facilities, and the underground facilities, divided into facilities for waste with lower radioactivity, and those for high level waste and **spent fuel**.[6]

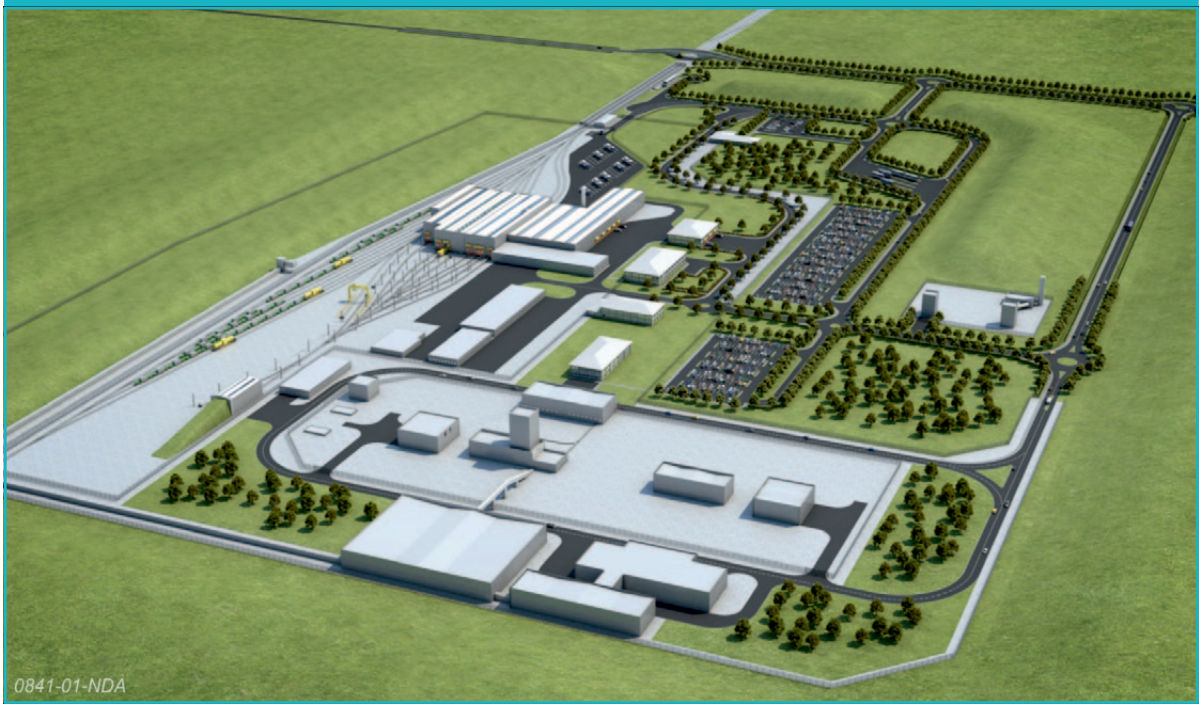
Spent fuel: Nuclear fuel that has been removed from a reactor.

3.3 Surface facilities would include buildings such as construction support facilities, management and administration offices, workshops and possibly a **spent fuel encapsulation plant** and a visitor centre. There may also be railway sidings and roads or other transport infrastructure. See **Figure 3.1** below.

5. Throughout this report we refer to 'a GDF' in reference to the surface and the underground facilities, although it should be noted that the surface and underground facilities could be separated by some distance (see paragraph 3.7).
6. See Annex A of the MRWS White Paper.

Spent fuel encapsulation plant: A facility to package used fuel from nuclear power stations in preparation for disposal.

Figure 3.1: Representation of an aerial view of GDF surface facilities



3.4 The waste would be placed in the underground facilities, accessed through one or more sloping tunnels or shafts from the surface facilities. There may also be the option for waste in a GDF to be taken out of the facility after it has been placed inside – this is called **retrievability** and is discussed further in Chapter 9 on design and engineering.

Retrievability: The ability in principle to recover waste or entire waste packages once they have been emplaced in a repository.

3.5 The three main phases of a GDF (construction, operation and closure) are also outlined in the MRWS White Paper as shown in **Box 3.2** below.

Box 3.2: Phases of a GDF as outlined in the MRWS White Paper (Annex A page 72)

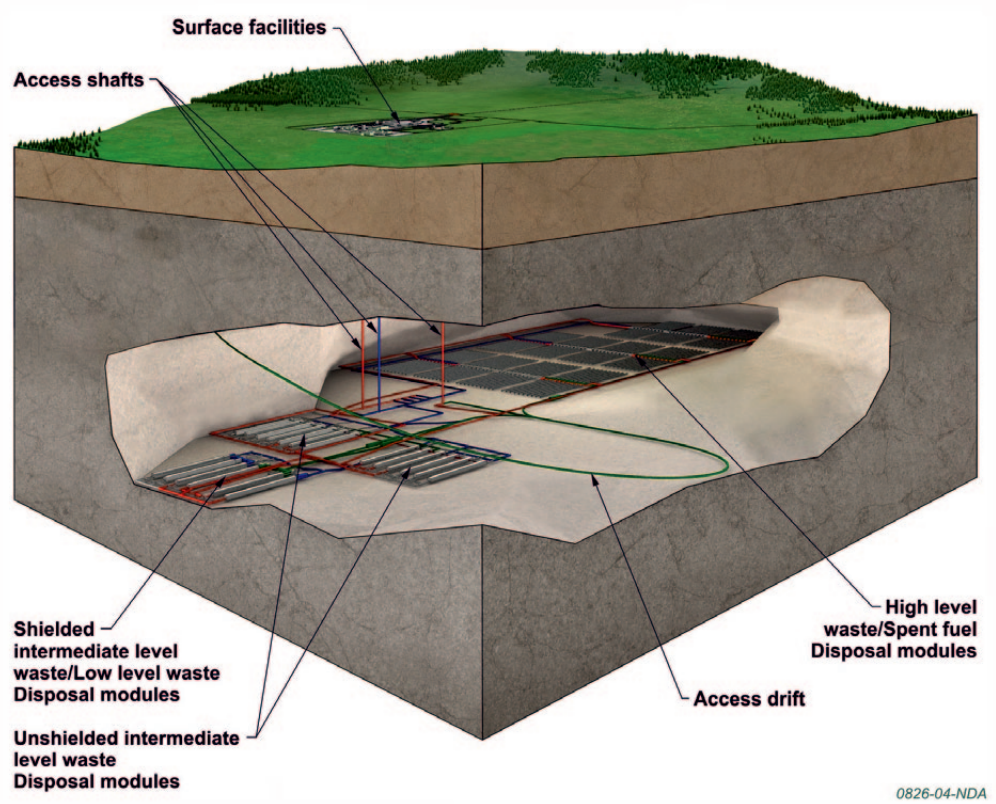
- **'Construction and operations:** Construction of a geological disposal facility would employ standard techniques that are used in the underground construction and nuclear industries for other major engineering projects, and have already been used to construct operational underground radioactive waste facilities in other countries. The project will also require ongoing involvement of the scientific (and in particular the geological) community. Underground facilities would be developed in stages to enable waste emplacement operations to begin as soon as practicable once relevant approvals had been received. Main facilities would be developed first, after which additional vaults and deposition tunnels would be constructed, equipped and commissioned as required throughout the life of a geological disposal facility. Construction and waste emplacement activities would be managed to ensure physical segregation of the two activities.'
- **'Closure:** Once a geological disposal facility has been filled with waste, a process which could take many decades, the shafts and tunnels can be backfilled and sealed and the surface facilities dismantled or used for something else. There will then follow a period of post-closure institutional control and monitoring in accordance with regulatory requirements. What happens to the site will be a matter for future generations – the site could be farmed, forested, allowed to return to nature, or used for construction or other purposes, with the waste itself isolated within the multi-barrier system in the geological formations hundreds of metres below the ground. Records of the location and general contents of the facility would be held by The National Nuclear Archive.'

Specific design considerations

3.6 As previously discussed, it is possible that more than one facility might be needed depending on the type and amount of waste disposed of, and the location or locations finally decided upon.

3.7 The NDA says that the underground and surface facilities could be located above one another or, in some circumstances, they could be separated by a horizontal distance of up to 10km, possibly further. This means that the surface and underground parts of a GDF could be in different locations.

Figure 3.3: Possible design for a GDF in higher strength rock



3.8 The surface facilities could cover an area of around 1km^2 and the depth of the underground facilities of a GDF is likely to be between 200 and 1000 metres (see **Figures 3.4** and **3.5** below). The anticipated **footprint** of the underground facilities could range from 6km^2 to 23km^2 [7] depending on the type of rock, and how much and what kind of waste would be placed into the facility. This would be between approximately one and four times the size of the Sellafield site. There is more discussion of design and engineering in Chapter 9.

Footprint: The area covered by a specific building or development.

3.9 The figures above are based on the waste being placed on one level underground, but it is also possible that the waste would be placed at different depths within the facility, which would mean a smaller overall footprint. In any case, this would be a very large

7. Since we produced our consultation document, in which we gave 25km^2 as the higher figure, the NDA RWMD has done further work to look at vault dimensions and has revised this figure.

engineering project for the UK, roughly similar in scale to the construction of the Channel Tunnel. There is more discussion of the impacts of development of a GDF in Chapter 11.

Figure 3.4: Representation of the minimum and maximum depth of the underground GDF (for indicative purposes only)

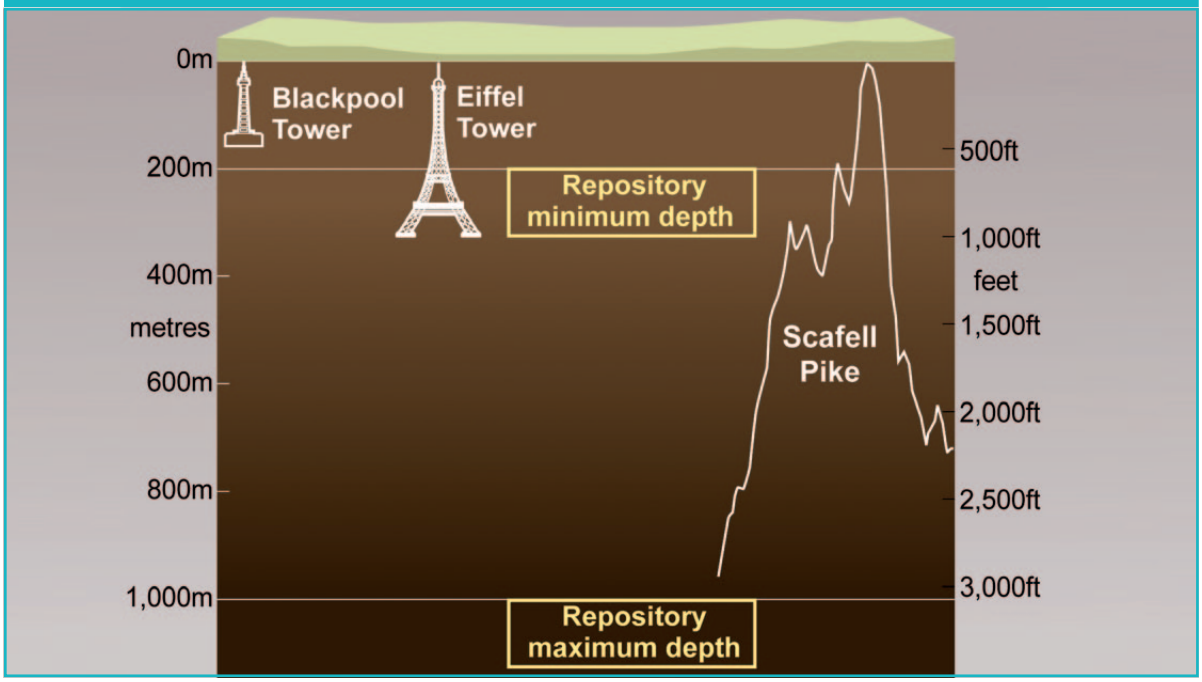
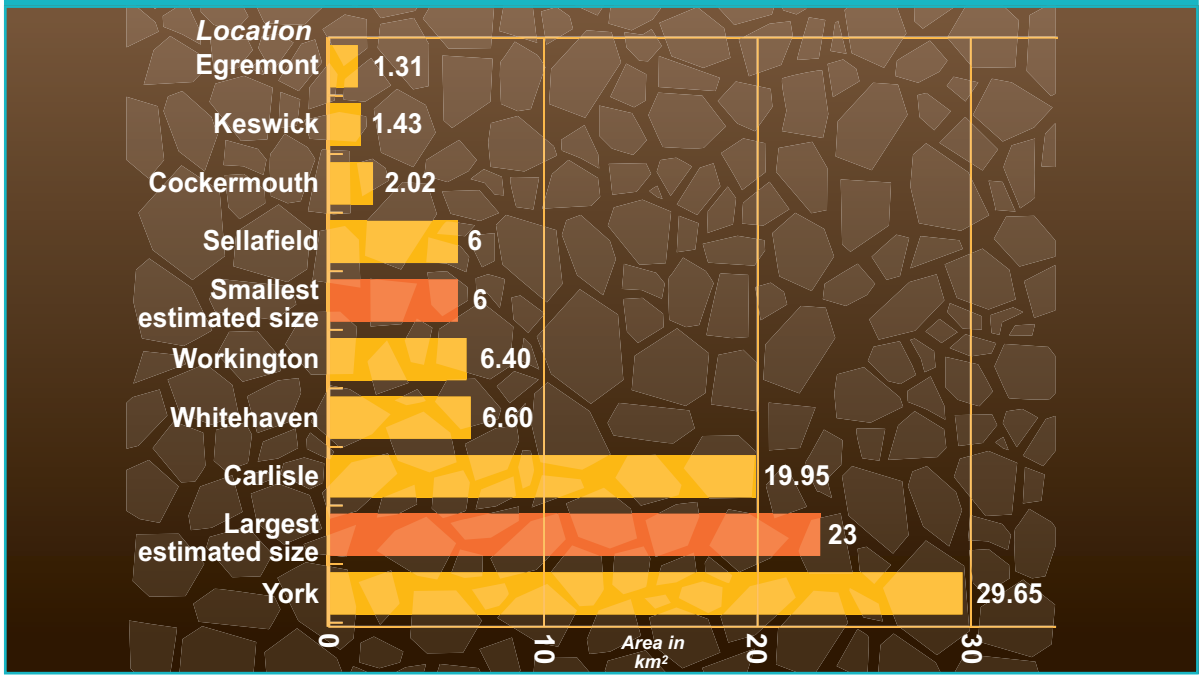


Figure 3.5: Representation of the potential footprint of the underground GDF (for indicative purposes only)



Waste destined for geological disposal (the inventory)

3.10 Most of the waste that would go into a facility (the inventory) would be higher activity radioactive waste, although there would also be some lower activity waste (see Chapter 7 for more detailed discussion of the inventory). The amount of waste that would go into a GDF depends on a lot of things, including whether a facility is only used for existing waste, or would also take waste from new nuclear power stations. Based on current estimates of the volume of waste that could go into a GDF (including all packaging materials) we estimate that the underground facilities could be between six and eleven times the size of the Royal Albert Hall in terms of volume (m^3).

3.11 The Government says that, although it is technically possible and desirable from its point of view that a GDF would take waste from new UK nuclear power stations, doing so has implications for the design and operation and would have to be discussed with any community that has a GDF. We discuss this further in Chapter 7.

3.12 The handling of different waste types within a GDF is outlined in Annex A of the White Paper as shown below in **Box 3.6**.

Box 3.6: Underground facilities for different waste types in a GDF as outlined in the MRWS White Paper

- **'Intermediate level waste [ILW] and low level waste [LLW]:** ILW/LLW wastes will typically be immobilised in a cement-based grouting material within standardised, highly engineered stainless steel or concrete-lined stainless steel containers. The waste packages will then be placed in horizontal engineered vaults or other suitable structures within the host geological environment. The waste packages can then be stored underground until the decision is taken to close the vaults. Following emplacement of the wastes the vaults would be 'backfilled' when technically required, for example with alkaline grout, specially formulated to inhibit dissolution of any radionuclides, and then sealed.'
- **'High level waste [HLW] and spent fuel:** Because they generate heat, HLW and spent fuel (if classified as waste for disposal) require different disposal structures and layouts from ILW, LLW and other non-heat generating radioactive materials. There are a number of ways in which HLW and spent fuel could be packaged and contained, and research in this area is likely to present

alternative models over the coming years. For example, one method that is planned to be used in Sweden and Finland, and could potentially be applicable in the UK to stocks of HLW and spent fuel, is based on sealing the waste in copper canisters with a cast iron internal frame for strength. These canisters are placed in individual deposition holes drilled in the floor of deposition tunnels and surrounded by bentonite clay, which expands on contact with water and so seals the space around the canister. Under appropriate conditions copper is extremely resistant to corrosion, and in a suitable geo-chemical environment such as this the canisters can be expected to maintain their integrity for hundreds of thousands of years. Following waste emplacement, the deposition tunnels would be backfilled and sealed.'

Other countries' experience of managing higher activity radioactive waste

3.13 Geological disposal is the internationally preferred approach for dealing with higher activity radioactive waste. Whilst there is not yet an operational facility for high level waste or spent fuel, as of 2009/10, 24 countries have taken a policy decision in favour of deep geological disposal. These include Belgium, Canada, Finland, France, Germany and Sweden. The USA implements deep geological disposal for some waste at its Waste Isolation Pilot Plant (WIPP – see **Figure 3.7** below), and in parallel is studying options for spent fuel management. The remaining 14 countries that have radioactive waste have taken no decision as yet, and five of these have a preference for geological disposal. Scottish Government policy for higher activity radioactive waste is that it should be held in near-surface facilities located close to the site where the waste is produced.

3.14 The Finnish programme is currently underway, with excavations at its Eurajoki site on target to have an operating GDF available in 2020. The Swedish waste management organisation chose the site at Forsmark in 2009 to host Sweden's final GDF for spent fuel, which should become operational in 2023.

France is continuing to investigate its site for deep geological disposal, and in October 2011 representatives from the Partnership and the NDA visited the Underground

Research Laboratory (URL) near Bure. The main purpose of the visit was to improve our knowledge and understanding of the way that France is tackling its radioactive waste management.

Figure 3.7: Underground facilities at the WIPP plant in New Mexico (source: WIPP)

Regulation

3.15 Regulators are bodies independent of the Government and industry that make sure relevant laws, rules and regulations are followed, for example on health, safety, security and the environment. Regulators for the nuclear industry, and thus for the potential development of a GDF, include the Environment Agency and the Office for Nuclear Regulation (ONR) (see **Box 3.8** below). If at any point the regulators were not satisfied that the GDF process was meeting specific environmental or safety criteria, the process would be stopped or paused. There is more detailed discussion of this in Chapter 10.

There is a recognition that local authorities across the country, including those in Cumbria, also have regulatory roles around planning and development management, resilience and emergency planning and environmental protection. Whilst these roles

exist, we have not for the purposes of this report termed them 'regulators', so as to avoid confusion with the core regulatory roles of the Environment Agency and the ONR.

Box 3.8: The main regulators involved in the development of a GDF

- **Environment Agency:** The regulator responsible for the enforcement of environmental protection legislation in England and Wales. Its activities include regulating disposal of radioactive wastes from licensed nuclear sites and other premises using radioactive substances by granting permits.
- **Office for Nuclear Regulation (ONR):** An agency of the Health and Safety Executive (the regulator responsible for protecting people against risks to health or safety arising out of work activities). Established on 1st April 2011, the ONR regulates nuclear safety and security, and regulates the safety of radioactive material transport by road, rail and sea.

4. The West Cumbria MRWS Partnership and our work

Background and purpose

Document 2: The Partnership's Terms of Reference (working draft)[8]

4.1 A large amount of the country's existing higher activity radioactive waste is already at Sellafield in West Cumbria. This was a key factor in Allerdale Borough Council, Copeland Borough Council and Cumbria County Council expressing an interest in talking to the Government about siting a GDF in West Cumbria.

4.2 Having this existing waste at Sellafield already has a range of social, environmental and economic impacts for West Cumbria. Because of this, the three Councils wanted to involve residents in the process to decide what happens to the waste in the future.

4.3 We (the Partnership) were set up to ensure a wide range of community interests were involved in discussions. We have only been involved in talking to the Government rather than taking any decisions. Our role was to advise the Councils, who are the decision-making bodies (DMBs) in the MRWS process. Now that our Final Report has been published, we have completed our work.

4.4 Government policy is for geological disposal. Therefore, we have only discussed geological disposal and not other potential approaches to managing higher activity radioactive wastes in the long term. However, we recognise that, for some people, the policy of geological disposal is an issue in itself (we discuss this further in Chapter 6). We also recognise that research into alternatives is ongoing.

8. Note that these Terms of Reference have always remained a working draft.

Funding and budget

4.5 The Government provides an 'Engagement Package' to communities that get involved in this process to cover the direct costs of all the work they need to do to look into the issues involved, including things such as: public information; liaison, consultation and engagement; salaries and associated costs of Partnership staff; organisational costs of running the Partnership and working groups; and commissioning specialist research and advice. We have secured funding each year through the Engagement Package to cover the costs of the work we have done on behalf of local people, and have always had full control over how this money is spent. The Government has never interfered with our choices over which experts to hear from, or who or how to consult.

A summary of the money spent by the Partnership is published on our website in Document 106.

Document 106: Engagement Package statement, May 2012 (working draft)

Membership

4.6 Our members are from the following organisations (the number of places allocated to the members of each organisation is shown in brackets):

- Allerdale Borough Council (4)
- Barrow Borough Council (1)
- Carlisle City Council (1)
- Churches Together in Cumbria (1)
- Copeland Borough Council (4)
- Cumbria Association of Local Councils (2)
- Cumbria Chamber of Commerce (1)
- Cumbria County Council (4)
- Cumbria Tourism (1)
- Eden District Council (1)
- GMB/Unite Unions (1 jointly)
- Lake District National Park Authority (1)
- National Farmers Union (1)

- Nuclear Legacy Advisory Forum (1)
- Prospect Union (1)
- South Lakeland District Council (1)

4.7 We always kept one place, and later two places, open on the Partnership for representatives of local environmental non-governmental organisations (NGOs) in order to expand the range of views and voices directly contributing to our work. These places were declined but we continued to seek active engagement with the NGOs throughout the process.

4.8 Individuals from organisations such as the NDA, DECC, CoRWM, the Environment Agency and the ONR were observing members of the Partnership – they attended meetings but did not take part in discussions except to provide information or answer questions.

Our Work Programme

4.9 At the start of our work, we decided which issues we wanted to know more about in order to help inform the DMBs' decisions about participation. This led to the development of our Work Programme (see Appendix 4), which contains seven areas of work (work streams):

- Safety, Security, Environment and Planning (see Chapter 10)
- Geology (see Chapter 8)
- Community Benefits and Impacts (see Chapters 11 and 12)
- Design, Engineering and Inventory (see Chapters 7 and 9)
- Siting Process (see Chapter 13)
- Other Activity, e.g. Ethics (see Chapter 6)
- How Public and Stakeholder Views Will Be Used (see Chapter 14)

4.10 For each area of work we developed at least one **criterion** – this is a statement about a specific thing that we would want to see in order to help us decide what advice to give to the three Councils. The work streams are all covered in the chapters below, laying out the criterion or criteria for each one, how we as the Partnership have developed our thinking, and what our opinions are in relation to each topic.

Criterion / Criteria: A series of tests developed by the Partnership for each area of its Work Programme.

4.11 In order to fulfil our Work Programme we have looked at reports and literature, heard from experts in the field, commissioned independent research and invited reviews by independent experts. Throughout the process so far we have had a dialogue with the Government to make sure we get the level of detail we need about key issues, and in order to be satisfied that, should West Cumbria take a decision to participate, the Government will follow through on key commitments.

Although we have not always been entirely satisfied with the speed and nature of responses we have received from the Government and other official bodies, having members of these key agencies present at Partnership meetings as observing members has been essential in order for us to directly access their expertise when required. On the whole we have appreciated their efforts to support our work.

4.12 We have carried out a range of public and stakeholder engagement (PSE) activities to enable us to hear public concerns and get feedback on key issues. PSE has been central to our work and three stages of engagement have been built-in to our Work Programme in order to inform, seek input from and give feedback to the general public and **stakeholder organisations** in West Cumbria, the rest of Cumbria and beyond. See Chapters 5 and 14 for more detail on our PSE programme.

Stakeholder organisations: Organisations that represent people with a clear or specific interest in the MRWS process.

4.13 We have also actively sought critical challenge and alternative views on a range of issues, through presentations at Partnership meetings, written reports and direct invitations to engage in the process.

4.14 Since its inception, our Work Programme has evolved in response to public and stakeholder views and new information. This means that, in some cases, the focus for particular topics has shifted, and in others we have added completely new topics or issues. Although this report is structured around the issues and criteria within our Work

Programme, other issues arising (particularly as a result of public and stakeholder input) are discussed where relevant.

4.15 **Legal advice**. We have sought legal advice throughout the Partnership process, including on the corporate governance of the Partnership, covering issues such as predetermination and member interests.

Document 225: Legal advice on governance of the Partnership process, September 2011
Document 257: Updated legal advice on governance, February 2012
Document 296: Legal advice on making voluntarism legally binding, June 2012
Document 299: Legal advice on voluntarism and the public interest, June 2012

Meetings and structure

4.16 Throughout our programme of work we have met approximately every six weeks at full Partnership meetings. These meetings were open for members of the public to attend to watch discussions and ask questions.

4.17 A small Steering Group comprised of Partnership members met regularly between Partnership meetings in order to oversee our work and process. The Chair of the Partnership rotated at six-monthly intervals between the three DMBs. We also set up working groups as required to investigate and report back on key issues, including the ongoing PSE Sub-Group, which oversaw all PSE activities throughout the process.

4.18 All of our meetings and our programme of work have been managed and reported by independent professional facilitators. This has helped to ensure that no one view has dominated, enabled fair and balanced reporting, and facilitated the overall running of our Work Programme and PSE activities.

Timescales

4.19 Our work as a Partnership has spanned more than three years. This is longer than originally set out in our Work Programme for a number of reasons. In some cases we needed more time to work towards agreement on key issues; in others we were waiting for responses on specific actions or issues from various organisations, including in one case a delay in agreement of funding from the Government. Decisions to pause or extend our programme have always been based upon the desire to ensure we carry out our work as thoroughly as we can, but we have also remained aware of the need to deliver our Final Report to the DMBs in an efficient and timely manner.

Evaluation

4.20 All of our work has been independently evaluated by a third party. Rather than a purely observational process, evaluation has involved ongoing conversations in order to continually improve our approach to the Work Programme and delivery of engagement activities. We expect the final evaluation report of our work to be published on our website later in 2012.

Document 80: Evaluation report of the first phase of the West Cumbria MRWS Partnership's work, June 2010
Document 158.1: Interim evaluation report of the West Cumbria MRWS Partnership, March 2011

5. Public and stakeholder engagement

The role of public and stakeholder engagement in our work

5.1 Public and stakeholder engagement (PSE) has played a key role throughout our work. We recognised the importance of PSE from the outset, firstly due to the requirements set out in the White Paper, and secondly due to the moral and practical need to engage widely on an issue of such sensitivity, especially given the history of radioactive waste management in West Cumbria.

5.2 Our original overall objectives for our PSE programme[9] included:

- To provide a mix of engagement opportunities to share information and ensure feedback from stakeholder organisations and members of the public.
- To identify the extent of support for a decision whether to participate or not, any issues of concern, and the reasons given for and against participation.
- To demonstrate the credibility of our work and opinions, including through demonstrating good practice in consultation.
- To produce a report setting out the approach taken to engagement, the activities undertaken, and the outcomes, including feedback on support, concerns and opposition.

5.3 Where possible we tried to adopt an approach to PSE that would:

a. Ensure that engagement activities took place at key points in order to ensure maximum input/influence on key issues.
b. Use a variety of methods (existing and new) to reach different people.
c. Be willing to make tangible changes as a result of the views received.
d. Give prompt feedback as to how views have been taken on board.
e. Give regular updates on progress.
f. Be as inclusive as possible in our engagement activities.

9. See Document 15.3, Appendix A, on the Partnership's website.

The three stages of PSE

5.4 We felt that it was important not to engage with people for the sake of engaging, or as a 'tick box' exercise. We therefore planned three stages of PSE for key points in our Work Programme, at points in the programme where they could have maximum usefulness and impact. **Figure 5.1** below shows how we planned these three stages of PSE.

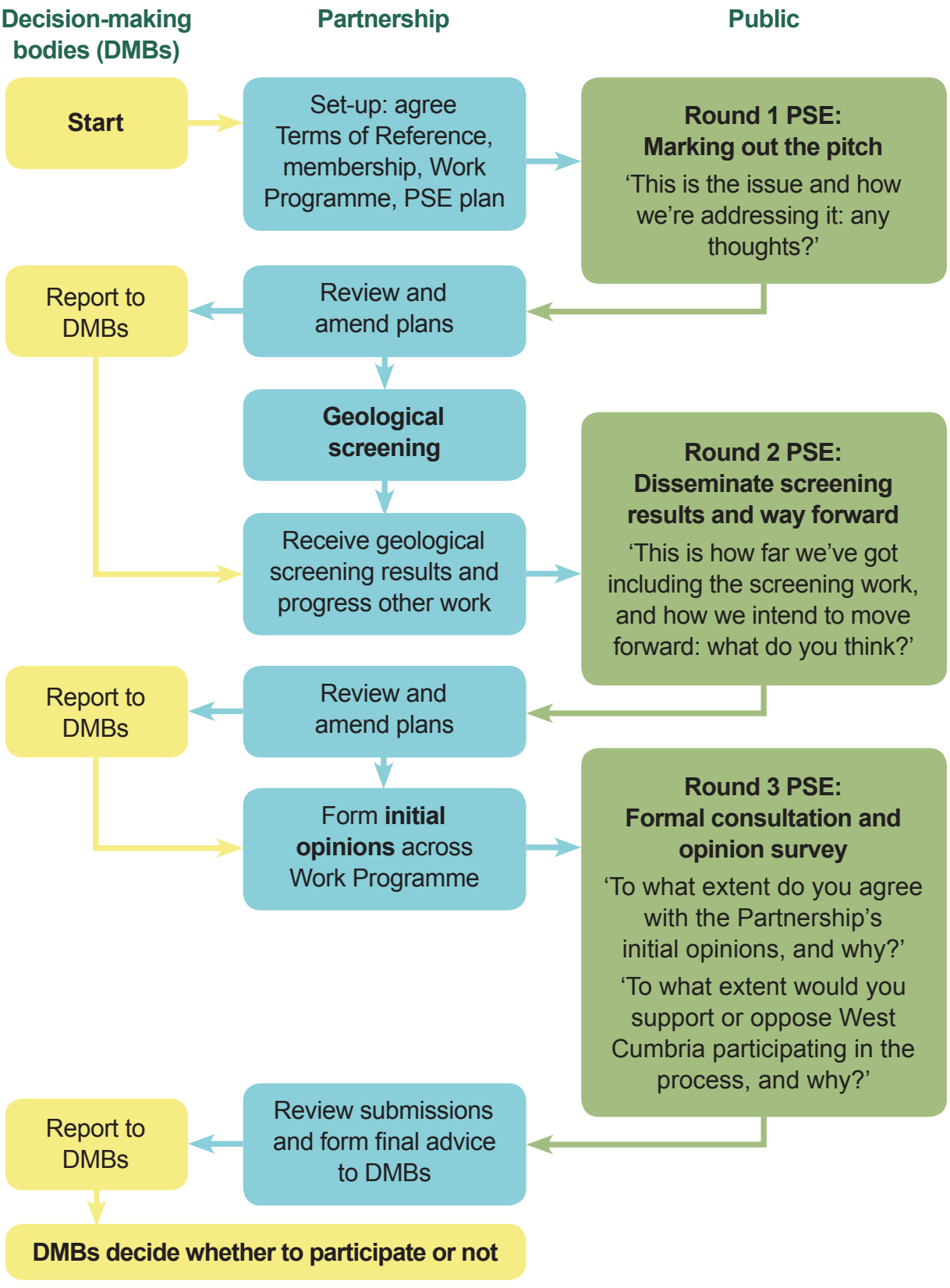
5.5 **PSE1 and PSE2.** The first two stages of engagement (PSE1 November 2009 to March 2010, and PSE2 November 2010 to February 2011) involved a variety of activities including: neighbourhood forums; residents' panels; workshops with stakeholder organisations; a discussion pack (enabling discussion of key issues in small groups to provide feedback); community drop-in events; and a large amount of information giving through media channels, leaflets, e-bulletins and the Partnership website.

5.6 The objectives of these stages were primarily to build an understanding of our work and of the overall process amongst the public and stakeholder organisations, and for us to understand what the key issues were for the public and stakeholders. In addition, PSE2 also sought specific input on:

- How public and stakeholder views would inform our work.
- Impacts and community benefits.
- Community involvement in the siting process.

5.7 **PSE3.** Our third stage of public and stakeholder engagement (PSE3) took place between November 2011 and March 2012. It involved our formal consultation (a qualitative approach, focusing on the nature of evidence and arguments), and an **opinion survey** (a quantitative approach, providing a statistically significant result). The consultation presented our initial opinions on each work stream alongside supporting information, and asked for people's views on the opinions so that we could examine the reasons for people agreeing or disagreeing with them. The aim of the opinion survey was to gauge views in Cumbria on whether or not the DMBs should take a decision to participate in Stage 4. The consultation was carried out with the Government Code of Practice on Consultation in mind. The opinion survey was carried out by Ipsos MORI, and the approach and methodology were reviewed by two industry experts.

Figure 5.1: The Partnership's three stages of public and stakeholder engagement



Opinion survey: A poll of public opinion from a sample or sub-set of a particular group or population. Opinion surveys are used to gauge public opinion without having to survey every member of a group or population (in this case everyone in West Cumbria).

5.8 Following each round of PSE we produced a report summarising public and stakeholder views, and responding to the key issues raised. In many cases we have made changes to our Work Programme and have sought answers to issues of key concern as a direct result of public and stakeholder input. In particular, responses to our formal consultation led us to revisit some of our opinions and make changes, either to the opinions themselves or to the supporting information and advice we provided alongside the opinions. Throughout this report we indicate where input from engagement activities has contributed to or changed our work, distinguishing between input from **PSE1 and 2** and input from our **formal consultation** (as part of PSE3). See Chapter 14 for more detail on the outcomes of our PSE programme.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

Assessing public and stakeholder views

5.9 We thought carefully about the best way to take account of the views of the public and stakeholders that were expressed during our formal consultation, and decided to develop and use what we call **Indicators of Credibility**. These indicators were discussed in our second round of engagement (PSE2) and, taking into account what we heard, we adopted them at our meeting in May 2011.

Indicators of Credibility: These are criteria about public and stakeholder views that the Partnership has decided should be met to be satisfied that there is public support for continuing with the process.

5.10 The indicators were developed so that we could judge whether our **initial opinions** were credible given public and stakeholder views. There are three indicators: broad support; understanding and addressing concerns; and net support. These are defined as follows:

1. **Broad support for the Partnership's initial opinions.** Broad support for the Partnership's initial opinions on the criteria for participation from its current member organisations and those engaged through its programme of public and stakeholder engagement.
2. **Understanding and addressing concerns.** Evidence that a) concerns raised have been, or will be, addressed where appropriate, including explanations as to why not where relevant, and b) reasons for opposition have been identified, understood and taken into account in reaching opinions on the criteria for participation.
3. **Net support for continuing with the process.** The percentage of the surveyed public in Copeland and/or Allerdale that support without commitment participation in the process for identifying a potential candidate site should be greater than the percentage that oppose it (i.e. there should be net support).

Applying the Indicators of Credibility

5.11 In Chapter 14 of this report we revisit our Indicators of Credibility in the light of public and stakeholder views, and provide a commentary on each one.

6. Overarching issues

6.1 Our work over the past three years has been focused around the specific work streams contained within our Work Programme (see Appendix 4). This has enabled us to concentrate our work on the key issues that we felt the decision-making bodies (DMBs) would require detailed consideration of to aid their decisions about participation. However, we are aware that focusing on a specific set of criteria can lead to a lack of attention to wider and cross-cutting issues. There are particular issues that either run across all of our work streams, or provide an important context for the DMBs' decision making. Many of these issues became particularly apparent through public and stakeholder input, and especially in the responses to our final consultation.

6.2 These overarching issues are summarised below, along with any steps we have taken or that could be taken to address them, and any advice to the DMBs.

Uncertainty

6.3 **The issue.** At the outset, when setting out our Work Programme, we recognised that uncertainty was a key characteristic of the MRWS process – it is inherent in every aspect of our work. The long timescales, technical challenges and geological unknowns all add up to a complex decision-making environment dominated by high levels of uncertainty, and requiring a step-by-step process.

6.4 We have done a large amount of work to attempt to reduce specific uncertainties in each part of our programme of work. However, a great many uncertainties remain, primarily because they relate to issues that can only be clarified at a later date in Stages 4 or 5 of the MRWS process or beyond. For example, the Government has said it wants to negotiate some specific issues (such as inventory and community benefits) with **potential host communities**, but these communities would not be

identified until the next stage of the process. In other cases there are specific issues (such as design and detailed impacts) that cannot be fully defined until other issues (for example geology, siting and inventory) are resolved, which would inevitably be much later in the process. Other uncertainties may never be completely eliminated, only reduced over time.

Potential host community: An area in which a facility could be built (see also host community).

Current key uncertainties range from detailed site-specific uncertainties through to higher-level uncertainties about the overall process. Examples include:

- Could a suitable site that meets regulatory requirements be found in West Cumbria? For example could specific concerns such as the release of heat or radioactive gases be managed safely through design?
- Would the uncertainty of West Cumbria's geology mean that it is worth continuing to a borehole programme in Stage 5?
- Would the Government be willing to offer a binding and significant commitment to long-term investment in the area, to recognise the service to the nation that the community would be fulfilling if it hosted a GDF?
- Would the Government give enough control to the local community over the inventory disposed of in a GDF?
- Would the public and stakeholders have enough trust in the MRWS process for them to maintain confidence?
- Would the public and stakeholders support a programme of physical investigations including boreholes in one or more potential site areas?

6.5 It is common for high levels of uncertainty to bring high levels of contention. Indeed, the areas where it has been most difficult to reach agreement within the Partnership have been the topics with, arguably, the highest levels of uncertainty – geology and the siting process. These two topics have also attracted the most concerns and strongest views from stakeholders and communities.

6.6 The concerns of many respondents to our formal consultation were rooted in uncertainty about specific issues (in particular geology). It was also particularly apparent that people have a variety of concerns about what the potential risks and impacts are, when they might occur and how long they might last for.

6.7 **How uncertainty has been or could be addressed.** Throughout this report we have outlined the work we have already done to reduce uncertainties for each work stream topic, including the development of sets of principles to aid future negotiations or planning, information about the range of supporting information we have drawn upon, and clarifications we have sought from the Government and other bodies. We have also identified key ongoing uncertainties for each topic, and suggestions for future work to reduce them, either before a decision about participation or afterwards, should a decision to participate be taken.

6.8 We note that, should West Cumbria proceed to Stage 4, there are various processes in that stage that would help to reduce uncertainty, for example the process of negotiation on the inventory (see Chapter 7) and community benefits (see Chapter 12), as well as the more detailed geological and other criteria applied to the search for **potential site areas** (see Chapter 8). Chapter 13 of this report provides more detail on when specific uncertainties could be expected to be reduced, should the process continue in West Cumbria (see **Figure 13.3** in Chapter 13).

Potential site area: A combination of a possible surface site area and a large volume of host rock for the underground facilities of a repository.

6.9 **Advice to the DMBs.** Should a decision to participate in Stage 4 be taken we would advise that a **community siting partnership (CSP)** uses the indicative schedule provided in the 'Stage 4 and 5' chapter (Chapter 13) to build its Work Programme and work with the NDA to prepare and publish a comprehensive overall work programme so that stakeholders and the public can see when various uncertainties will be addressed.

Community siting partnership (CSP): A partnership of local community interests that would work with the NDA and with other relevant interested parties in future stages of the MRWS process, to ensure that questions and concerns of potential host communities and wider local interests are addressed and resolved as far as reasonably practicable, and to advise the decision-making bodies at each stage of the process.

Risk

6.10 We considered risk as inherent in our various work stream topics (particularly safety, security, environment and planning) but not as a standalone issue. However, several respondents to our formal consultation expressed concerns that risks (either the overall scale of risks or specific risks around safety, environment and other issues) were not laid out clearly enough in our consultation document. In response to these concerns we cover risk more explicitly in various places in this report (for example in Chapter 10 on safety and Chapter 8 on geology). We have also looked at other sources of information on risk as outlined below.

6.11 The risk of radiation release is a key concern for the public and stakeholders. In relation to this, we note CoRWM's position in its 2006 report to the Government as outlined in **Box 6.1** below.[10]

Box 6.1: Extract from the 2006 CoRWM report relating to risk of radiation exposure

- 'After taking account of the various uncertainties that still exist, regulators have been satisfied that risk targets can be met in all countries where individual sites have been examined.
- If these risk targets were met, using ICRP [International Commission on Radiological Protection] assumptions about the relationship between radioactivity and health impact, the uncertainties associated with predicting the amount of radioactivity and the time that it would take to reach the biosphere would mean that the maximum level of radiation exposure (approximately 10 millisieverts per year to the most exposed members of the population) occurring 200,000 years in the future, would not exceed natural background radiation levels in some parts of the UK today. Ten millisieverts is approximately five times greater than the UK's average natural background level. By contrast the 'most likely' case suggests a negligible human dose over the relevant period of several hundreds of thousands of years. The decay of radioactivity means that its potential for harm eventually reduces to natural background levels. In the case of HLW [high level waste], this 'crossover' time is a few thousand years, though for spent fuel the period is much longer, of the order of 300,000 years.
- As a result of the combination of design and geology, it is therefore considered very unlikely that radioactivity will reach the biosphere in quantities large enough to cause significant harm to human or other populations even over many hundreds of thousands of years.'

10. From CoRWM's Recommendations to Government July 2006 – available on CoRWM's website at **corwm.decc.gov.uk**.

6.12 The NDA's published Risk Register provides a good basis for understanding the wider risks being considered across the whole MRWS programme. The Risk Register[11] categorises risks and provides signposts to other documents (for example the **generic Disposal System Safety Case (gDSSC)**[12] and the NDA's research and development (R&D) programme[13]), which give more detail on how and when specific risks would be addressed. Also see Chapter 10 for more detail on the safety case process and the NDA's R&D programme, both of which touch on the issue of risk.

Generic disposal system safety case (gDSSC): An integrated suite of safety documents produced by the NDA covering the transport and disposal of the UK's higher activity radioactive wastes. It is not specific to a particular site and presents methods, evidence and arguments concerning the safety of the transport of wastes to a GDF, construction, operation and closure of a facility, and environmental safety in the long term after the facility has been sealed and closed.

The NDA also has an Issues Management Process[14] which identifies challenges and concerns that might affect the implementation of a geological disposal system. This is being developed through engagement with the regulators and stakeholders.

6.13 **Advice to the DMBs.** Should a decision to participate in Stage 4 be taken we advise that a CSP monitors the NDA's Risk Register and Issues Management Process to understand the range of risks in the MRWS programme and to satisfy itself that uncertainties and associated risks are being managed effectively.

Trust

6.14 **The issue.** A sense of a lack of trust in and between the various parties involved in the current MRWS process has emerged at various points within our work and is particularly apparent across the full set of submissions to our formal consultation. This ranges from a lack of trust in parish or town councils up to central government (primarily DECC and the Treasury), with borough and county councils, the NDA, and

11. See **www.nda.gov.uk/aboutus/geological-disposal/rwmd-work/risk-register.cfm**.
12. See **www.nda.gov.uk/aboutus/geological-disposal/rwmd-work/dssc/**.
13. See **www.nda.gov.uk/research/**.
14. See **www.nda.gov.uk/documents/upload/Geological-Disposal-RWMD-approach-to-issues-management-March-2012.pdf**.

the regulators in between, as well as some respondents expressing a lack of trust in the current Partnership and, potentially, a future CSP.

A lack of trust appears to us to be at the root of many of the key concerns raised by the public and stakeholders, for example, lack of trust in the Government to deliver community benefits or stick to inventory agreements, lack of trust in the NDA or the independence of the regulators, and lack of trust in the DMBs when it comes to the siting process and respecting the views of potential host communities.

6.15 We see the problem of trust (or lack of it) as being quite common and widespread and not at all unique to our work. However, we also see the building and maintaining of trust as vital to any future MRWS process, whether that is in West Cumbria or elsewhere. In response to this issue we discussed several ways in which trust might begin to be engendered in this process.

6.16 **How lack of trust has been or could be addressed.** The development of our principles on various topics (inventory, community benefits and siting – see Chapters 7, 12 and 13 respectively) is an example of actions already taken in relation to a lack of trust between various parties. In addition, as part of our response to PSE3 and our formal consultation, we spent a day discussing the issue of trust and considering different ways in which trust between various parties could begin to be built, either now or in the future, for example if a decision to participate is taken. The outputs of our discussions about trust are spread throughout this report within the relevant chapters – they include a range of actions we have already undertaken, and suggested future actions for the DMBs or a potential CSP. A good example of this is discussing with the Government putting the MRWS process on a legal footing (see paragraph 6.17).

We have also published a direct response to each of our rounds of PSE, to demonstrate openly what we have done in response to the input we received.

6.17 **Legal footing.** The most important factor that would increase trust in the process would be to make the footing of the MRWS process more robust and legally binding. We therefore advised the DMBs that they needed a commitment from the Government that, by the end of Stage 4, the Government will have decided how and when the MRWS process will be put on a legal footing. We emphasised the importance of it being legally binding and that the choice of mechanisms should be reached via close engagement with any CSP.

We have now received this commitment in a letter from the Minister of Energy dated 12th July 2012, which says:

> 'I am happy to make a commitment to see this objective delivered such that, by the end of Stage 4 of the MRWS process, Government will have decided what mechanisms it will use to put subsequent aspects of the MRWS process (such as the Right of Withdrawal, planning, inventory change control, and reaching agreements on community benefits) on a clear, transparent and more certain path, and to have started the steps to put these in place. These mechanisms should be legally binding – although we should not rule out other means at this stage, provided they are found to be acceptable to both Government and Decision Making Bodies in due course. The choice of mechanisms should be reached via close engagement with any Community Siting Partnership.'

Document 295: Discussion note on codifying elements of the MRWS process, 20 June 2012
Document 303: Letter from DECC regarding the Partnership's Community Benefits Principles and codifying elements of the MRWS process, 12 July 2012

6.18 **Advice to the DMBs.** We recognise that trust cannot be built through written words alone, but by demonstration, reciprocal action and mutual respect across a significant period of time. We emphasise that the building of trust between all parties is absolutely essential if the MRWS process continues in West Cumbria, particularly because of the unique process of voluntarism involved. We advise that the DMBs take note of the suggested future actions related to building trust that are contained within this report, and maintain a close watch on efforts from all parties to build and maintain trust should a decision to participate be taken.

If the DMBs proceed to Stage 4, then we advise the following:

- **Legal footing.** A CSP should liaise with DECC early in its work programme to explore and agree how and when key aspects of the MRWS process should be put on a legal footing.
- **Finance**. The DMBs should explore with the Government ways of ensuring financial continuity to the MRWS process.

- **Acceleration.** There should be no acceleration of the MRWS process by the Government without local agreement from the relevant DMBs, in close liaison with any CSP.
- **Review of the regulators and the NDA.** A CSP should commission reviews into the capacity of the regulators and the NDA. This is explained more fully in paragraphs 10.40 and 10.67 in Chapter 10.

In addition, we advise that a CSP should continue our approach to transparency and an extensive programme of PSE, operating by consensus where practical, and seeking agreements from others where useful e.g. regarding legislation.

Ethics

6.19 **The issue.** We included **ethics** in our Work Programme. We wanted to gain a broad understanding of what the ethical issues are, and reassurance that they could be addressed in the future.

Ethics: Moral principles that govern a person's or group's behaviour.

6.20 **How ethics has been or could be addressed.** To help us understand the ethics of radioactive waste management, we looked at the work already done by CoRWM in relation to this topic. We asked the professor who led CoRWM's work on ethics to summarise their investigations in the area. He helped us understand that ethical considerations do not make decisions or answer questions for us, and that each person brings their own sense of ethical values into discussions such as these. Many of these ethical issues, in particular the intergenerational aspect of a GDF or other waste management options, were also raised by respondents to our formal consultation.

Document 139: Partnership meeting report, 19 January 2011
CoRWM Document 700: Managing our radioactive waste safely, CoRWM's recommendations to Government, July 2006 (available from **corwm.decc.gov.uk**)

6.21 We feel that we have a good understanding of the ethical issues involved, based on the work done by CoRWM on this subject. What to do with the UK's radioactive waste

is an ethical issue in many ways. It involves making decisions now that will impact many generations to come, whether that decision is to leave the waste where it is, or to place it in a GDF. It also involves making decisions about where to manage the waste and how to balance different views within decision-making processes. In addition, in its 2006 report to the Government, CoRWM noted the ethical distinction between the management of existing legacy wastes, and any waste from new build nuclear power stations.

6.22 **Advice to the DMBs.** If a decision to participate is taken, ethics will remain an important and cross-cutting issue for consideration by any CSP. If a decision to withdraw is taken, the ethical issues surrounding the management of radioactive waste will remain relevant, because the waste will still exist and will still need managing. We advise the DMBs to bear in mind the range of ethical issues presented by a decision to either participate in or withdraw from the process during their decision-making processes.

Government policy and international guidelines/law

6.23 Two issues are covered in this section: firstly the order in which voluntarism and geology are prioritised in the MRWS process and whether Government policy is consistent with International Atomic Energy Agency (IAEA) guidelines on this point; and secondly, whether the UK Government's MRWS policy is consistent with European and UK legislation on **Strategic Environmental Assessments (SEAs)**.[15]

Strategic Environmental Assessment (SEA): A system of incorporating environmental considerations into policies, plans, and programmes, by assessing their potential social, economic and environmental impacts.

6.24 **Consistency with IAEA guidelines**. There are two aspects to this issue: what the IAEA guidelines say about the relationship between geology and other factors (covered here); and what the IAEA guidelines say about geological setting (covered in Chapter 8 on geology).

15. See IAEA Specific Safety Guide 14: **www-pub.iaea.org/MTCD/publications/PDF/Pub1483_web.pdf**, Directive 2001/42/EC: **http://www.central2013.eu/fileadmin/user_upload/Downloads/Document_Centre/OP_Resources/04_SEA_directive_2001_42_EC.pdf** and Environmental Assessment of Plans and Programmes Regulations 2004: **www.legislation.gov.uk/uksi/2004/1633/pdfs/uksi_20041633_en.pdf.**

6.25 It is important to note that the Partnership was set up after the three Councils had expressed an interest in the MRWS process and thus implicitly accepted the approach laid out in the White Paper. The voluntarism approach, supported by suitable geology, as laid out in the White Paper, was therefore part of the context in which we were working, rather than an issue we felt needed further debate. However, responses to our formal consultation show that some people are uncomfortable with the current process and believe that geology should have a much greater prominence by being the primary factor in determining a potential site location. Some respondents feel that the current MRWS policy is not in keeping with international guidelines for this kind of facility.

6.26 In response to these concerns we asked the Government and the NDA to clarify the degree to which they are satisfied that international guidelines/practice are being followed by the MRWS process, given the focus on voluntarism. We have also asked them to clarify the financial implications of approaching the process by assessing the whole of the UK's geology first.

6.27 The Government and the NDA have confirmed that they are confident that the MRWS process is consistent with international guidelines given the need for both a willing community and suitable geology, and the use of initial geological screening in West Cumbria through the **British Geological Survey (BGS)** study (see Chapter 8).

British Geological Survey (BGS): The BGS provides expert services and impartial advice in all areas of geoscience.

The Government consulted on the MRWS process before finalising the White Paper. The Government also believes that:

> 'applying the criteria after initial expressions of interest is the right approach as applying the screening criteria to every part of the UK would be prohibitively expensive and time-consuming and is, in any case, unnecessary in a voluntarist process.'

6.28 Although we as a Partnership were aware of the Government's position on this issue when the process started, not all Partnership members are satisfied with the Government's current explanation of consistency with IAEA guidelines.

6.29 **Strategic Environmental Assessment (SEA).** For projects such as a GDF, European and UK legislation requires an SEA to be carried out, to assess the likely effects on the environment and to consider 'reasonable alternatives'. We note that the NDA has already conducted a generic assessment based on its illustrative designs.[16] As there are no potential sites at this stage, 'reasonable alternatives' were not considered as part of this assessment. The NDA also plans to conduct a full SEA in Stage 4, and then more detailed assessments in Stage 5.

6.30 We met with the NDA to gain a better understanding of its approach. The NDA believes the best time to strategically assess the impacts on possible site areas is after a community has decided to participate in the siting process, so that possible site areas can be identified and compared. They say that if an SEA was done in Stage 3 it would have to be very generic and so be less useful to decision makers.

Document 294: Notes from meeting with the NDA regarding Strategic Environmental Assessment, 20 June 2012

6.31 We understand that this is the NDA's choice as developer, but would point out that some people may challenge this at a later date. In particular, the issue of reasonable alternatives was not considered as part of the NDA's earlier generic environment and sustainability assessment. This, therefore, leaves the DMBs considering whether to participate in the siting process without an SEA having been conducted on reasonable alternatives (see 6.32 for an outline of what 'reasonable alternatives' covers).

6.32 **Advice to the DMBs.** Partnership members agree that an assessment of reasonable alternatives within the SEA framework is essential, and that reasonable alternatives should cover alternative sites, alternative disposal methods, and also alternatives to the current process of voluntarism. Members also agree that such an assessment should happen as soon as possible within the process. However, there is a difference of view on the timing of it, specifically whether it should happen *before* or *after* a decision about participation.

16. See **www.nda.gov.uk/documents/upload/Geological-Disposal-Generic-Environmental-and-Sustainability-Report-for-a-Geological-Disposal-Facility-Non-Technical-Summary-October-2010.pdf**.

Our advice to the DMBs is therefore as follows:

- Some members believe that the aspect of an SEA that assesses reasonable alternatives should take place *before* a decision about participation, so that the DMBs have this assessment to hand when taking their decisions. It would also remove any possibility of legal challenge on this point. These members advise the DMBs to request that the NDA upgrades its generic environment and sustainability assessment to a legally compliant SEA before a decision about participation, including consideration of reasonable alternatives.
- Other members believe that the NDA's plans for carrying out an SEA after a potential decision to participate are appropriate, because it will allow more specific and useful comparisons to be made. They note the NDA's plan to start any Stage 4 with an SEA Scoping Report that can and should be influenced by a CSP so that local interests are content with how the issue of reasonable alternatives would be handled. These members advise that no further work on SEA is required before a decision about participation.

All members agree that, if the DMBs proceed to Stage 4, the NDA should publish its draft Scoping Report as soon as possible, so that any future CSP can influence how the NDA will assess reasonable alternatives. The CSP should also review the SEA Environment Report towards the end of Stage 4.

Doubts about the right of withdrawal

6.33 Concerns about the right of withdrawal cut across many of the responses to our formal consultation. This includes concerns about the right of withdrawal not happening in reality (either not being possible or not being exercised by the DMBs), or that it would become increasingly difficult to exercise further into Stages 4 and 5. For many people this relates to the concern that there is an element of predetermination about a potential GDF in West Cumbria. We note the commitments to a right of withdrawal in Government policy, an excerpt of which is in **Box 6.2** below.

6.34 There is little written in the White Paper that specifically makes it harder to leave the MRWS process in Stage 4 than in Stages 1 to 3. However, we recognise that some people feel the perceived increase in expectation once Stage 4 is entered would make it more difficult to exercise the right of withdrawal in practice. They make reference

Box 6.2: Right of withdrawal

The 2008 MRWS White Paper (para 6.38) describes the right of withdrawal as follows:

'The Right of Withdrawal (RoW) is an important part of the voluntarism approach intended to contribute to the development and maintenance of community confidence. Up until a late stage, when underground operations and construction are due to begin, if a community wished to withdraw then its involvement in the process would stop. As with other key local decisions in the siting process, the Decision-Making Body will be responsible for exercising the RoW, based on advice and recommendations from the local Community Siting Partnership.'

to paragraph 6.39 of the White Paper that says 'all parties in a Community Siting Partnership should work positively to seek to avoid the need to exercise the Right of Withdrawal'.

It is correct to say that paragraph 6.44 of the White Paper suggests that in Stage 5, before an expensive borehole programme is undertaken, criteria for a 'post-borehole right of withdrawal' would be agreed between the Government and the community. Whilst this may reduce the flexibility of the community's ability to withdraw, it is important to note that the CSP and DMBs would have to agree these criteria at the start of Stage 5: if the community is not content with them, then the borehole programme would not commence.

6.35 The leaders of Allerdale Borough, Copeland Borough and Cumbria County Councils received a letter from DECC in November 2011 reinforcing its commitment to voluntarism and clarifying what would happen if the three local authorities could not reach agreement on key issues or were minded to take different decisions. In order to proceed into Stage 4, both tiers would have to agree (borough and county), and DECC would also have to agree to a decision to participate for either or both boroughs.

6.36 However, we recognise and understand that some people are sceptical that the Government will honour commitments to a right of withdrawal. This was particularly clear in responses to our formal consultation. DECC confirms in the White Paper that the right of withdrawal would be available to participating local authorities up to the end of Stage 5 (surface-based investigations). This is therefore Government policy, but many respondents to our consultation are concerned that policy is not enough.

6.37 In response to concerns, we have explored options for putting the MRWS process on a firmer basis, for example by putting the right of withdrawal on a legally binding footing. We believe that the letter we have received from the Minister of Energy and the related advice we have given to the DMBs on seeking a legal footing for the MRWS process directly address this concern (see also paragraphs 6.17 and 6.18).

Document 82: Partnership meeting report, 25 June 2010 (para 2.14)
Document 139: Partnership meeting report, 19 January 2011 (Appendix 3)
Document 240: Letter from DECC regarding a decision to participate and the right of withdrawal, 7 November 2011

Timescales and acceleration

6.38 There is currently uncertainty regarding the timeline for the MRWS programme in the light of the Minister of Energy's desire to accelerate timescales. This was noted by some respondents to our formal consultation, with particular concerns about shortcuts jeopardising safety. However, this report is based on the timescales in the White Paper. Shorter timescales would have an impact on the whole process and thus on the DMBs' decisions about participation.

6.39 We asked the Government for an update on the 'acceleration' work currently being undertaken (see paragraph 2.21). They told us that the initial work undertaken by the NDA has been reviewed by CoRWM and the Royal Academy of Engineering, and as a result the potential for some acceleration has not been ruled out. Work on acceleration will, therefore, continue, although the Government has assured us that this would not impact upon the early stages of the programme, and that the 'involvement of communities in discussions about how acceleration might impact the programme to site a GDF would be an important part of the process'.

Document 221: Letter to DECC regarding acceleration of timescales, 6 September 2011
Document 236: Letter from DECC regarding acceleration of timescales, 12 October 2011
Document 287: DECC responses to actions commissioned by the Partnership, May 2012

6.40 As stated in paragraph 6.18 above, we advise that there be no acceleration of the MRWS process by the Government without local agreement from the relevant DMBs, in close liaison with any CSP.

Research into alternative options for managing waste streams

6.41 Some submissions to our formal consultation pointed out that CoRWM supported geological disposal as part of a mixed programme, on the basis that further R&D is required on both storage and geological disposal. In response to this, we asked the NDA/DECC to provide an update on how they are responding to CoRWM's fifth recommendation (continuing R&D on alternative options for managing waste streams).

The RWMD has clarified that:

> 'keeping alternative long-term waste management options to geological disposal (options such as long-term storage, deep borehole disposal and technologies e.g. partitioning and transmutation) under review is one of the 16 strategic activities set out in our Technical Strategy.'

They have told us that findings from their reviews of options will be published periodically and that they will pass on information to the Government about any options identified as 'sufficiently well developed that the option potentially requires consideration relative to geological disposal'.

Document 286: NDA responses to requests for clarifications from the Partnership, May 2012

6.42 **Advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that a CSP should:

- Engage closely with the NDA and CoRWM on the delivery of the NDA's R&D programme, including on alternatives to disposing of waste in a GDF.
- Consider commissioning an independent review of the NDA's R&D programme during Stage 4, once more progress has been made.

The Localism Act

6.43 The question of the **Localism Act** was raised through our formal consultation. We acknowledge that the Localism Act is now in force, but since it has not yet been tested in court it is hard to know with any precision the effect it will have in practice. If the DMBs proceed to Stage 4, we advise that they should continue to watch carefully how the Localism Act may affect the MRWS process, especially any test cases in the courts.

Localism Act: An act of parliament containing key measures that underpin the decentralisation of power from central to local government and local organisations. The Act makes provision for: functions and procedures of local government; town and country planning; the Community Infrastructure levy; and the authorisation of nationally significant infrastructure projects.

Past experience and historical context

6.44 West Cumbria is an area with a particular history of nuclear industry activities, and relatively recent experience of previous geological investigations through the **Nirex** process (see paragraph 8.32 for more on this). This historical context presented itself in several forms in submissions to our formal consultation.

Nirex: The former Nuclear Industry Radioactive Waste Executive which was previously responsible for managing the country's radioactive waste. It was formed by the nuclear industry, then owned by the Government and merged with the NDA RWMD.

6.45 Firstly, West Cumbria's nuclear industry history presents a dilemma over whether to specialise or to diversify – some people are keen that the existing nuclear experience and expertise in the area be developed further and built upon, for example, to create a hub of excellence; others are extremely concerned that not seeking diversification and/or moving away from nuclear would leave West Cumbria wedded to a nuclear future and suffering economic losses from the tourism and agricultural industries.

6.46 Secondly, the particular history of West Cumbria suggests, in some people's minds, a degree of predetermination in the MRWS process, particularly in light of the lack of other areas of the UK expressing an interest and the history of the Nirex Inquiry in the 1990s.

6.47 Finally, in a lot of cases, personal experience provides the context for people's responses to the whole issue of a potential GDF in West Cumbria. Those with positive experiences of the nuclear industry or regulators tend to differ in their views to those with negative experiences. Neither perspective is necessarily right or wrong, instead providing an important context to the overall issue of a potential GDF in the area and, fundamentally, to the level of trust in the industry and the overall process.

6.48 **Advice to the DMBs.** We do not believe the process is predetermined. However, we do believe that West Cumbria's particular history with the nuclear industry provides a unique and important context to any decision about participation and, potentially, a Stage 4 and 5 process. We suggest that the DMBs explicitly recognise the wide and often polarised range of views that exist about the nuclear industry in West Cumbria, and about the possibility of a GDF in the area. The DMBs should note that, whatever the decision about participation, many of these views are unlikely to change or meet in the middle, and that the full range of views should continue to be sought in any future process.

7. Inventory

What would be disposed of in a GDF?

Context and focus of our work

7.1 **Context.** The types and amounts of radioactive wastes for disposal – the **inventory** – could affect a GDF in a number of ways, including its design, the size of the underground footprint, the period of operation, the developing safety case and, potentially, the number of required GDFs.

Inventory: The type and amount of radioactive waste that would be placed and managed in a repository.

7.2 We have spent time trying to understand what would or could be disposed of in a GDF and how this might change, including how communities might be involved in discussions about the inventory. Some Partnership members are concerned about whether some radioactive materials, particularly **spent fuel** and plutonium, should be disposed of as wastes, when they could, in principle, be used for further reprocessing and fuel manufacture at Sellafield. Many respondents to our formal consultation also expressed concerns about specific waste streams, in particular overseas waste and waste from new nuclear power stations.

Spent fuel: Nuclear fuel that has been removed from a reactor.

7.3 **Focus of our work on inventory.** Our Work Programme contained the following criterion in relation to inventory:

4b. Criterion on **inventory: 'Whether the Partnership is satisfied with the proposed inventory to be managed in a facility.'**

However, we realised as we worked on the issue of inventory that, given the timescales and outstanding uncertainties about what exactly the inventory **would** be, it would be more useful for us to understand what the inventory **could** be and how it might be changed.

We decided that we needed to understand several things in order to form our opinion. This originally included:

- What might go into a facility.
- What level of influence the community could have over any changes (changes might mean an increase or decrease in the overall amount of waste, or of particular kinds of waste, being placed in a GDF).
- Principles for how the inventory might be changed.

Following public input through our first and second rounds of public and stakeholder engagement (PSE1 and 2), we decided that we also wanted to understand the implications of new nuclear build for the inventory and associated requirements for a GDF (including facility size, footprint, design and length of time it would need to be open).

Our work in relation to inventory

7.4 **Hearing from the NDA.** The NDA gave us an introduction to the inventory at our August 2010 meeting, and an update in October 2010 to address subsequent questions.

This included an introduction to the 'baseline' and 'upper' inventories (see **Box 7.3** for more on this), related design assumptions, details on the waste currently held at Sellafield (by packaged volume and activity), the implications of changes to the inventory and some details of specific waste streams such as military waste.

Document 93: Partnership meeting report, 5 August 2010
Document 119: Partnership meeting report, 28 October 2010

7.5 **Inviting a 'critical challenge'.** We invited Pete Roche from Nuclear Waste Advisory Associates (NWAA) to provide a 'critical challenge' of the inventory. This included the implications of nuclear new build and the distinction that CoRWM made between legacy and new build waste in relation to a GDF, discussion of materials not currently

classified as waste (such as spent fuel, uranium and plutonium), reference to reprocessing, and questions about how a community might influence the inventory.

Document 94: Inventory critique by Pete Roche, August 2010

7.6 **Responding to public and stakeholder input.** During PSE1, some stakeholders said that we should make sure we understood the implications of the proposed programme of new nuclear power stations. In response, we added this as a task to our Work Programme. People also wanted clarification about whether overseas wastes might be disposed of in a UK GDF.

Feedback from stakeholders, and inviting critical challenge, helped us to understand the uncertainties in the inventory and the way in which it depends on a large range of expectations and assumptions. For example, this includes nuclear power station lifetimes, how quickly nuclear plants are decommissioned, and the size of any new nuclear build programme. It led to the agreement that a set of **Inventory Principles** should be developed (see paragraph 7.17) and was important in helping us to identify what we wanted to know from the Government in its inventory statement.

Inventory Principles: A set of principles developed by the Partnership that set out the commitments needed from the Government about how inventory issues will be handled if a decision to enter the siting process is taken. In particular, they address how the inventory would be agreed and potentially changed during the process of siting and constructing a repository.

Responses to our final consultation highlighted concerns about the overall level of outstanding uncertainty relating to the inventory. We discuss this further in paragraph 7.24 below.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

7.7 **The Government's inventory statement.** We asked the Government to provide an up-to-date inventory statement (a summary of lower and upper inventories and a high-level view of other key issues relating to what might be placed in a GDF) so that

we could develop our understanding of what the inventory could be. The 2010 **UK Radioactive Waste Inventory (UKRWI)** was provided to us by DECC, and helps us to answer key questions about the inventory:

1. **What** might be disposed of in a GDF?
2. **How much** waste could be placed into a GDF?
3. How would a **change in inventory** affect a GDF?

UK Radioactive Waste Inventory (UKRWI): A public record of information produced by DECC and the NDA on the sources, quantities and properties of radioactive wastes that existed in the UK at a particular date and were projected to arise after that date.

Document 241: 2010 UK Radioactive Waste Inventory

7.8 **Key question 1: What might be disposed of in a GDF?** The Government's inventory statement explains which categories of wastes and materials could be sent for geological disposal (see **Box 7.1** below).

Box 7.1: The Partnership's summary of DECC's response on what might go into a GDF

DECC says that the following types of waste **could** go into a GDF:

- **Higher activity waste**. This includes both **high level waste (HLW)** and **intermediate level waste (ILW).** HLW is the most radioactive type of waste and is a by-product from the reprocessing of spent nuclear fuel. It occurs mostly in liquid form but would be solidified in glass before being placed in a GDF. ILW is less radioactive than HLW and occurs mostly from the reprocessing of spent fuel, and from operations and decommissioning at civil and military nuclear sites, including from submarines. It can include metal items such as fuel cladding and reactor components, and sludges from the treatment of radioactive liquid effluents.
- A small amount of **low level waste (LLW)** not suitable for other disposal facilities because of the specific type of radioactive material it contains.
- Other materials currently not classified as waste could go into a GDF if, at some point in the future, it is decided they are of no further use and they are classified as waste. These materials include **spent fuel** from nuclear reactors, and **plutonium** and **uranium** produced as a result of reprocessing spent fuel.

- Higher activity waste and spent fuel from **new nuclear power stations** would also need to be disposed of, but DECC has confirmed that this would be discussed with a CSP(s) if the process proceeds.
- The amount of each waste type (or potential waste type) that could go into a GDF depends on several uncertainties and assumptions. These are discussed further in **Box 7.2** below.

7.9 **Responding to concerns on specific waste streams.** In response to public and stakeholder concerns about specific waste streams, particularly in our final consultation, we have sought clarification from the Government about its assumptions in relation to overseas waste, new build waste, Scottish waste (given the difference in Scottish Government policy), and military waste. See **Box 7.2** below.

Box 7.2: Assumptions and clarifications about specific waste streams

Overseas waste. We asked the Government to respond to public concerns on overseas waste. Government policy states that there is a presumption that only UK radioactive waste should be disposed of in this country. For over 30 years, overseas used nuclear fuel has been reprocessed in the UK, under contract at Sellafield, to separate and recover the reusable nuclear materials. In 1986 the Government decided to exercise an option contained in reprocessing contracts signed after 1976 for radioactive waste to be returned to its country of origin. Since then it has been Government policy that the wastes resulting from reprocessing should be returned to the country of origin. Some of this waste is returned under a policy called 'substitution' whereby additional amounts of high level waste are returned overseas in place of lower activity intermediate and low level waste. This 'substituted' high level waste will be radiologically equivalent to the amount of intermediate and low level waste it replaces. This enables earlier return of overseas waste and results in a six-fold reduction in the number of waste shipments around the world.

DECC has confirmed that there are no current plans or intention to change the current policy on overseas waste.

There are ongoing concerns, particularly from stakeholders and members of the public, that either the current UK Government or a future government could go back on any initial agreements on inventory made with a host community and force the acceptance of overseas waste. However, we note that, prior to the end of Stage 5, the community siting partnership (CSP) could at any time advise the decision-making bodies (DMBs) to exercise the right of withdrawal if unexpected

or unwanted changes to the inventory took place. In addition, Principle 2 of our Inventory Principles highlights the need to agree the circumstances under which local DMBs should have a veto on changes to the inventory, once the right of withdrawal has passed (should the process reach that stage). We have revisited our initial opinion on inventory as a result of ongoing public and stakeholder concerns about the change process (see paragraph 7.26).

New build waste. In seeking clarification on the assumptions about new build waste, we have been pointed by DECC towards the following section of the 2008 White Paper on Nuclear Power:

> 'Having reviewed the arguments and evidence put forward, the Government believes that it is technically possible to dispose of new higher-activity radioactive waste in a geological disposal facility and that this would be a viable solution and the right approach for managing waste from any new nuclear power stations. The Government considers that it would be technically possible and desirable to dispose of both new and legacy waste in the same geological disposal facilities and that this should be explored through the Managing Radioactive Waste Safely programme. The Government considers that waste can and should be stored in safe and secure interim storage facilities until a geological facility becomes available.
>
> Our policy is that before development consents for new nuclear power stations are granted, the Government will need to be satisfied that effective arrangements exist or will exist to manage and dispose of the waste they will produce.
>
> The Government also believes that the balance of ethical considerations does not rule out the option of new nuclear power stations.'

This position was reiterated in the 2011 National Policy Statement on new nuclear power which said that the Government favours a single GDF for all higher activity wastes if that proves technically possible.[17]

Scottish waste. DECC has confirmed that the current baseline inventory does contain waste expected to be managed under the Scottish Government's policy for higher activity waste. This is because the inventory is UK-wide and was last updated prior to the announcement of the Scottish Government's policy in April 2010.[18]

17. See **www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1943-nps-nuclear-power-annex-volII.pdf**.
18. See **www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/16293/higheractivitywastepolicy**.

The NDA is working with the Scottish Government to develop a strategy for implementation of Scottish policy (management of higher activity radioactive waste in near-surface facilities, near to where the wastes are produced). At a future stage as that strategy is being developed, the implications on the inventory for a GDF would be established and discussed with a CSP.

The NDA reports to both UK and Scottish ministers in relation to its activities as required by the Energy Act (2004), and this ensures a unified approach to radioactive waste management, within the context of each Government's radioactive waste policies.

Military waste. DECC has provided the following clarifications regarding military waste:

> 'Defence related Intermediate-level waste (ILW) and Low-level waste (LLW) unsuitable for near surface disposal, declared in the 2010 UK Radioactive Waste Inventory (UKRWI), are included in both the Baseline and Upper Inventories. Defence related ILW and LLW is managed at ten sites owned by the Ministry of Defence (MoD), which undertake operations in support of the atomic weapons programme (Aldermaston), the nuclear submarine propulsion programme (Barrow-in- Furness, Derby, HMNB Devonport, Clyde, Rosyth and Vulcan) and other activities (Donnington, Eskmeals and HMNB Portsmouth).
>
> In addition to this waste, MoD may need to dispose of stocks of plutonium and highly enriched uranium from defence programmes and depleted uranium from enrichment activities as well as spent fuel from submarines. This material is not currently classified as waste but is included in the Upper Inventory only. There is also some historic MoD radioactive material stored at Sellafield.'

7.10 **Co-location of different waste types.** Concern about placing different waste types together in one GDF arose in responses to our formal consultation. This is both a design issue and one which the safety case would cover. The **generic design concept** illustrates how different wastes might be disposed of in a GDF, but ultimately if the regulators do not think a safety case can be made for a GDF in a specific location with a specific inventory, it will not be built.

Generic design concept: An illustrative design for geological disposal for a specific geology.

7.11 **Key question 2: How much waste could be placed into a GDF?** The Government's inventory statement explains how amounts of waste can change over time and describes the most recent (2010) baseline and upper inventories. The baseline inventory is the 'working assumption' about the volume of wastes and materials that will be sent for geological disposal. The upper inventory provides a possible higher-volume inventory, including radioactive wastes and spent fuel from a new nuclear build programme in the UK (see **Box 7.3** below).

7.12 Responses to our formal consultation showed that some people are concerned about the amount of higher activity waste that could go into a GDF, and the potential safety or security issues such a concentrated amount of waste could present. Others are concerned about the implications of a change in inventory on the design and safety requirements of a GDF. The generic design concept illustrates how waste might be positioned in a GDF, but, as stated in paragraph 7.10 if the regulators do not think a safety case can be made for a GDF in a specific location with a specific inventory, it will not be built.

7.13 We also understand that the nuclear industry currently works to apply the **waste hierarchy**, which means taking steps to avoid or minimise waste production and only disposing of what it has to. There are already R&D projects underway and planned to tackle this issue. The NDA has pointed us towards its Integrated Waste Management Strategy Development Programme (May 2012), which focuses on better application of the waste hierarchy including more characterisation, sorting, segregating, re-use and recycling. They also confirmed that application of the waste hierarchy is a 'fundamental principle of NDA Strategy and is embodied within UK regulation'.

Waste hierarchy: Introduced into UK waste management policy in the 1990s, the hierarchy states that only if waste cannot be prevented, reused, recycled, reclaimed or recovered should it be disposed of into the environment, and this should be undertaken in a controlled and authorised manner.

Box 7.3: The Partnership's summary of DECC's response on how much waste could go in to a GDF

The amount of waste of different types will change over time depending on nuclear site operations (e.g. keeping a reactor open for longer), developing waste management technology and practices (e.g. changes to the way in which waste is packaged), changes to the definition of waste, and the development of new nuclear power stations.

DECC says that the inventory will continue to change as the MRWS process continues and that 'any final agreement with a community on a preferred site for a geological disposal facility would need to address possible changes to the inventory in future years'.

The Government keeps track of the UK's '**baseline inventory**', which is the amount of different materials (including high level waste, intermediate level waste, low level waste, and other radioactive materials such as spent fuel, plutonium and uranium that are not currently classified as wastes) currently estimated for geological disposal. This is outlined in 'Radioactive Wastes in the UK: The 2010 Estimate of Radioactive Waste for Geological Disposal'.[19]

It is not possible to estimate a maximum inventory that could be disposed of in a GDF due to uncertainties in the amount and type of waste that will be present in the future. However, the Government has produced what it calls an '**upper inventory**'. This gives a realistic estimation of a potential inventory should certain scenarios (e.g. new nuclear power stations) lead to higher volumes of waste in the future.

The differences between the baseline and upper inventories are based on several assumptions, including: operating lifetimes of existing nuclear power stations; the amount of new nuclear build; the rate of decommissioning of existing nuclear stations; and direct disposal of non-commercial reactor spent fuel and of uranium and plutonium from UK defence activities.

Taking into account the volumes of the various packaging materials required, the 2010 baseline inventory compared to the upper inventory estimated in 2010 is as follows:

Radioactive waste and other radioactive materials	2010 baseline inventory	Upper inventory as estimated in 2010 (a 10 GW(e) new build programme)	Upper inventory based on a 16GW(e) new build programme
Low level waste (m^3)	13,800	150,000	150,000
Intermediate level waste (m^3)	490,000	786,000	801,000
High level waste (m^3)	6,910	12,000	12,000
Spent fuel (m^3)	6,440	22,200	34,400
Plutonium (m^3)	7,820	10,400	10,400
Uranium (m^3)	106,000	183,000	216,800
TOTAL (m^3)	**631,000**	**1,160,000**	**1,224,600**

19. See **www.nda.gov.uk/documents/upload/Radioactive-Wastes-in-the-UK-The-2010-estimate-of-radio active-waste-for-Geological-Disposal.pdf**. Also published as Document 241 on the Partnership's website.

7.14 **Key question 3: How would a change in inventory affect a GDF?** The Government's inventory statement summarises what it is possible to say at this stage about the implications of the baseline and upper inventories for GDF design, size, period of operation, the safety case, R&D needs, and the number of facilities. This summary helps to clarify the implications of an increase or decrease in the inventory for a GDF, for example the implications of a new nuclear build programme (see **Box 7.4** below).

7.15 Some respondents to our formal consultation expressed concerns about the potential for the inventory to expand after construction has started or after the final right of withdrawal has passed. This issue relates to community influence over the inventory change process, and also to design. In terms of design, this would be an issue for the regulators and engineers to consider. We believe our Inventory Principles provide a strong foundation for ensuring ongoing community influence and we highlight the need for early agreement of a change process, should West Cumbria proceed with Stage 4 of the process and potentially beyond.

7.16 We anticipate that any site extension after construction is complete would need planning approval through whatever process exists at that time for national infrastructure projects, as well as requiring a safety case that is acceptable to the regulators. We share concerns about a lack of local control over a future planning process (see paragraph 10.28) and believe that this highlights the importance of the power of local veto in Stage 6 and beyond over unwanted changes to the inventory as a means of preventing further unwanted development. We suggest that this issue should be taken up in negotiations about the inventory change control process.

Box 7.4: The Partnership's summary of DECC's response on how a change in inventory would affect a GDF

A GDF would consist of two major parts: the surface facilities and the underground facilities. No matter how much and what type of waste goes into a GDF, the surface facilities are expected to cover an area of around 1km^2.

The size of the underground facilities would be affected more significantly than that of the surface facilities by higher volumes of waste, depending on the type of rock involved. DECC has provided an illustrative example based on the 2010 baseline inventory and estimated upper inventory.

Illustrative example of the footprint of the underground facilities of a GDF:[20]

Type of rock	2010 baseline inventory	Current upper inventory as estimated in 2010 (a 10 GW(e) new build programme)	Upper inventory based on a 16GW(e) new build programme
Higher strength rock	6 km^2	10 km^2	11 km^2
Lower strength sedimentary rock	10 km^2	20 km^2	23 km^2
Evaporite rock	9 km^2	18 km^2	22 km^2

A 10GW(e) new nuclear build programme was assumed in the upper inventory. However, developers are currently planning for a 16GW(e) programme, which could mean that the footprint could be as much as 23km^2 .

A change in the inventory is not expected to present any new **technical challenges** for the design and construction of a facility, but there would be a proportionate increase or decrease in the construction and backfill materials required and the spoil generated, as well as changes to the amount of infrastructure required underground.

Based on the 2010 baseline inventory, it is assumed a GDF would be **in operation** for around 100 years prior to closure. The upper inventory estimated in 2010 would probably increase this to around 130 years.

For implications of changes in inventory for the generic Disposal System Safety Case (gDSSC) and the generic Environment and Sustainability Assessment see paragraph 10.42. Essentially the NDA has said the changes between the 2007 and 2010 inventory have no significant impact on either of these things.[21]

It is not possible to say whether or not **more than one facility** might be required based on the 2010 inventory data. This would depend upon the site or sites under consideration as well as ongoing R&D into disposal concepts.

The latest inventory figures can be found in the joint DECC/NDA 2010 UKRWI (Document 241).

20. See also Document 88.2 on the Partnership's website: Inventory presentation from the NDA, November 2010.
21. See **www.nda.gov.uk/documents/loader.cfm?csModule=security/getfile&PageID=48204**.

7.17 **The Partnership's Inventory Principles.** The Inventory Principles we have written (see **Box 7.5** below) ask for commitments from the Government about how inventory issues will be handled if a decision to enter Stage 4 is taken. They cover:

- When agreement should be reached about what the inventory for disposal will be.
- Commitment to negotiate a process that would be used to change the inventory.
- Commitments to provide information about the inventory.
- Acknowledgement that negotiations about community benefits should take into account significant changes to the inventory, for example in terms of volume and radioactivity.

7.18 We have been through a series of discussions with DECC in order to reach a set of principles that are realistic and agreed as far as possible at this stage in the process.

In his letter to us about the Inventory Principles, the Minister of Energy 'warmly welcomes the broad approach' taken and states that 'there is much common ground between us'. The Minister welcomed our approach to managing inventory uncertainties and possible changes in future years 'through aiming to set principles at this early stage which then govern how the issues are to be tackled as we go forward'.

Document 189: Response from DECC to the Inventory Principles, June 2011

7.19 DECC's more detailed response to each principle shows where there is straightforward agreement, and where there is a more qualified response (see **Box 7.5** below).

Box 7.5: The Partnership's Inventory Principles and DECC's responses to them

Partnership Principle 1. The Government should make clear its commitment to agreeing with a CSP what the inventory for disposal in a GDF will be. This agreement will be reached by the end of Stage 5 (surface-based investigations). Subsequent significant changes to the inventory would be subject to an agreed inventory change process.

DECC response. 'The Government fully accepts that participating communities will want to understand the potential inventory of waste to be disposed of in a GDF by the end of surface based investigations so as to decide whether to withdraw from the process at that point. The Government reaffirms its commitment to work

with the NDA on further refining the expected inventory for the GDF so that any Community Siting Partnership can provide informed advice to local decision-making bodies on whether to move forward or to exercise their right of withdrawal at the end of Surface Investigation.

Even at that point there will be some uncertainty about the waste which will require geological disposal over the lengthy operational phase of a facility, but Government recognizes that communities will want to understand how the inventory may potentially change and what the effects of any such change may be on them.'

Partnership Principle 2. Following any decision to participate, the Government will enter into negotiation with a CSP to develop a mutually acceptable process for how the inventory for disposal in a GDF would be changed and for how host communities and the DMBs can influence this. That process should be defined and agreed as a working draft by the end of Stage 4 (desk-based studies). The negotiation about a mutually acceptable process will agree the circumstances under which local DMBs should have a veto on changes to the inventory.

DECC response. 'Following a decision to participate decision-making bodies will be able to withdraw until a late stage in the process and this provides a route for communities to pull out of the process if they feel the impacts of a proposed inventory are unacceptable. Of course, the Government recognizes that communities will want the impacts of any changes to the inventory to be acceptable if a decision to participate is made and this is also reflected in the MRWS White Paper.

The Government would expect to develop a process for dealing with such changes during the desk based studies stage, although it is important to recognize that there is likely to be a considerable period of surface investigation during which the community can continue to withdraw from the process. This process might reach decisions based on pre-agreed principles. These principles may include, for example, the circumstances under which decision-making bodies may feel the impacts of any change to the inventory to be unacceptable but should also recognize that estimates of future waste arisings are inherently variable and that geological disposal needs to provide a means to safely dispose of the higher activity radioactive waste in the UK which requires geological disposal.'

Partnership Principle 3. During Stages 4 and 5 (desk-based studies and surface-based investigations), the Government will inform a CSP at the earliest opportunity when significant changes occur to (a) the baseline inventory and (b) the upper inventory, and will clarify the implications for (i) the design of a

GDF and surface facilities, (ii) the size of the underground footprint, (iii) the period of operation of the GDF, (iv) the developing GDF safety case, (v) the number of required GDFs and (vi) the use of alternative disposal methods.

DECC response. 'During the desk-based studies and surface-based investigation stages Government will of course inform participating communities in a timely way when significant changes occur to estimates of the baseline inventory of waste expected to require geological disposal or to estimates of the upper inventory of waste which may be consigned to geological disposal.

When significant changes take place, for example when the UK Radioactive Waste Inventory is updated, Government will inform local communities of any resulting significant changes to (i) the design of a GDF and surface facilities, (ii) the size of the underground footprint, (iii) the period of operation of the GDF, (iv) the developing GDF safety case, (v) the number of required GDFs and (vi) the use of alternative disposal methods.'

Partnership Principle 4. The Government will provide an 'inventory statement' prior to local decision making at the end of Stages 3, 4 and 5 of the GDF siting process in order to inform a partnership's recommendations at that time. The statement will describe the baseline and upper inventories and a high-level summary of the implications for aspects (i) to (vi) as stated in Principle 3.

DECC response. 'Government will provide communities with the information described in response to Principle 3 above and will provide an inventory statement to the West Cumbria MRWS Partnership in the summer of 2011 reflecting the updated 2010 radioactive waste inventory.

We are committed to continuing to engage positively with Community Siting Partnerships to ensure wherever possible they have the information they require to inform recommendations and decision making as part of the MRWS process. We will therefore also produce inventory statements for any Community Siting Partnership during Stages 4 and 5, unless an alternative approach is agreed.

However, as officials have previously discussed with the MRWS Partnership that we have concerns about the extent to which a *single* inventory statement document will provide the most appropriate means during Stages 4 and 5 to provide timely, and potentially detailed information on all of the areas described under (i) to (iv) and believe flexibility should be retained if a decision to participate is made to ensure participating communities receive appropriate and clear information.'

Partnership Principle 5. Each 'inventory statement' should include a high-level overview of the main areas of research still to be undertaken to enable development of the GDF safety cases that would be associated with (a) baseline and (b) upper bound inventories.

DECC response. 'The Government attaches great importance to work on the GDF being underpinned by necessary research including research to underpin the development of safety cases. While, as described above, we have some concerns about whether inventory statements are the most effective approach we see no problem in providing a high level overview of the main areas of research still to be undertaken to support safety cases associated with baseline and upper bound inventories.'

Partnership Principle 6. The Government acknowledges that negotiations about community benefits will take account of any significant changes to the inventory.

DECC response. 'Future discussions about the benefits that the communities would receive from hosting a GDF will need to consider the implications of significant changes to the inventory.'

7.20 We agree that there is much common ground between our Inventory Principles and the Government's response. However, we also know from responses to our formal consultation and other PSE work that lack of trust in the Government (either current or future) is an overriding issue for many people. We share these concerns, which is why we have developed our Inventory Principles and sought Government agreement to them. In particular, Principle 2 of our Inventory Principles highlights the need to agree the circumstances under which local DMBs should have a veto on changes to the inventory, once the right of withdrawal has passed. The current assumption is that the inventory would be signed off by DMBs at the end of Stage 5 alongside agreement with any future CSP. Should the process move as far as Stage 6, we would expect a process for community veto on inventory changes to have been agreed.

7.21 We recognise that the agreement to our Inventory Principles from the Government could be stronger and would anticipate the DMBs building on our initial work to seek full agreement from the Government, either before or after a decision about participation.

7.22 **Public and stakeholder views.** Following our formal consultation, we revisited our Inventory Principles in the light of public and stakeholder comments about specific principles or the principles as a whole. Although we decided that no specific changes to our Inventory Principles should be made, there were some key issues arising from this analysis. These issues are summarised below in **Box 7.6**, alongside our response to each one.

Box 7.6: Our response to public and stakeholder comments about our Inventory Principles

Issue	Our response
Concern that DECC's overall response to the principles was poor, did not inspire confidence, that they had not agreed to the principles, and that there is a lack of trust.	We agree that DECC has not given unconditional agreement to all of our Inventory Principles. However, we note the commitment to put the MRWS process on a legally binding footing, including agreements around inventory, and also an agreement to agree a process for inventory control by the end of Stage 4. These two are crucial agreements.
Queries over how the right of withdrawal relates to a yet to be defined 'agreed inventory change process' (as mentioned in Principles 1 and 2) and whether or not that change process should include a veto and who should be able to exercise that veto (i.e. DMBs or a host community or a CSP)?	We anticipate this could be covered when the MRWS process is put on a legally binding footing, to ensure clarity on a community veto on the inventory and who would exercise it.
Queries over the link between changes to the inventory and any community benefits package (Principle 6 – see also Chapter 12). Specifically, the point that changes to the inventory or the operating life of a GDF might occur after a community benefits package has been agreed and, if that was the case, the benefits package might need to be revisited.	We suggest this needs bearing in mind if and when the Community Benefits Principles (see Chapter 12) form the basis for a negotiation around a benefits package.

Concern that the principles are not good enough without statutory backing.	See above.
Should agreement on the inventory be left as late as Stage 5 when the right of withdrawal will be that much tougher to implement?	If the right of withdrawal is legally binding, then this concern is eased, although it will never be completely resolved.
The 'presumption' that the GDF will only take UK waste is too weak and there should be a specific principle stating that it will only take UK waste.	We largely agree, and are giving the DMBs some specific advice on the exclusion of overseas waste, allowing for the Government's policy of substitution.

Outstanding uncertainties around inventory

7.23 **Overall uncertainty.** Although we have a good understanding of what could go into a GDF, currently we do not have a definite picture of what actually would go into a GDF. This is because of outstanding uncertainties around issues such as nuclear site operations (for example, keeping a reactor open for longer), developing waste management technology and practices (for example, changes to the way in which waste is packaged), changes to the definition of waste and the development of new nuclear power stations.

7.24 We know that uncertainty is a big issue for the public and stakeholders. However, the principles we have agreed with the Government allow for progressively clearer agreements to be developed around the inventory as the siting process advances. As noted above, agreement over a change process would be made before any final decision is made about hosting a GDF. We do also note though, that the Government says that, even at this point, there will be some uncertainty about the waste that will require geological disposal, but we expect it to be significantly less than it is now. If the CSP and DMBs are not satisfied at that point and negotiations cannot resolve it, we would expect the right of withdrawal to be exercised.

7.25 **Scope of the inventory.** The current approach to the scope of the inventory is to specify the types of radioactive wastes and their volumes. Critics argue that the

inventory should also specify the radionuclide and chemical characteristics of the wastes, as these are necessary to enable risk assessment.

Document f: NWAA Issues Register, pages 4 to 5
Document 157.1: PSE2 Report
Document 288: PSE3 Report

Whilst this suggestion has been made, we recognise that DECC and the NDA believe that this information is already considered in other design, R&D, and safety case documentation, and would make the inventory statement too unwieldy for its purpose.

Our opinions on inventory

7.26 Criterion on **inventory: 'Whether the Partnership is satisfied with the proposed inventory to be managed in a facility.'**

What we found out. We have found out what could be disposed of in a GDF in terms of the volumes of waste and specific waste streams. We understand the implications of a change in the inventory and have developed a set of principles to ask for commitments from the Government about how inventory issues will be handled if a decision to enter Stage 4 is taken. We have sought further clarity on specific waste streams in response to public and stakeholder concerns.

Our opinions. Overall, our opinion is that we are unable to say at this stage that we are satisfied with the proposed inventory because we do not yet have definite information on what actually would go into a GDF (GDF operation is more than 25 years away). We recognise the ongoing uncertainty about the inventory and stress the importance of reducing this at the earliest practicable time. Specifically, we have received an inventory statement from the Government that explains the difference between baseline and upper inventories. This gives us a good understanding of what could go into a GDF.

We think the inclusion of specific waste streams such as new build waste is for the DMBs to negotiate at a later stage. However, given the existing Government presumption and significant public concerns about overseas waste, our opinion is

that a GDF should be for UK waste only (allowing for the policy of substitution).[22] Progress has been made towards agreeing the principles that define an acceptable process for how the inventory could be changed, including how the community can influence this.

7.27 **Additional advice to the DMBs.** We advised that the DMBs should secure a commitment from the Government to put the MRWS process on a legally binding footing, which would include agreements about the inventory. This commitment has now been received (see paragraph 6.17). If the DMBs proceed into Stage 4, then we advise that a CSP should:

- Review the inventory statement from the Government before the end of Stage 4, consider its implications (as per Inventory Principle 4), and take a view on the inclusion of specific waste streams in the inventory.
- Enter into negotiations with the Government to develop a mutually acceptable process for how the inventory would be changed, including the circumstances under which DMBs should have a veto on changes to the inventory even after the right of withdrawal has ceased (as per Inventory Principle 2). This process should be defined and agreed as a working draft by the end of Stage 4.
- Explore a specific definition of UK waste that it finds acceptable.[23]
- Establish that one of the 'criteria for post-borehole right of withdrawal' should be 'satisfaction with the process for inventory change control' or similar. This should be agreed with the Government before the end of Stage 4.

22. A few days before this Final Report was agreed, DECC announced that the UK was taking title to 4 tonnes of German plutonium (Pu) in a commercial arrangement, with the intention that the Pu be managed in the UK's anticipated re-use programme i.e. to make the Pu into fuel and use in a nuclear reactor. Our initial reaction is that this decision may be inconsistent with our position above about a GDF being for UK waste only. However, we advise that the DMBs seek clarification from DECC about the implications of this as a matter of urgency.
23. See **www.nda.gov.uk/documents/upload/Radioactive-Wastes-in-the-UK-The-2010-estimate-of-radio active-waste-for-Geological-Disposal.pdf** for the current baseline and upper inventories (also published as Document 241 on the Partnership's website).

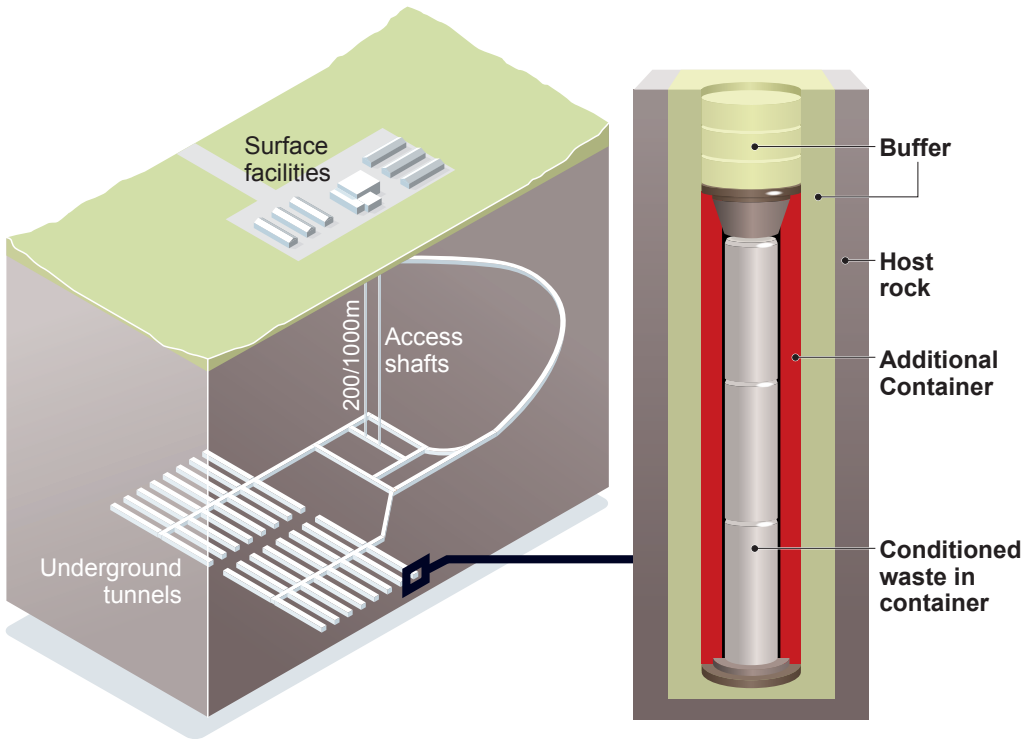
8. Geology

Could there be geology suitable for a GDF in West Cumbria?

Context and focus of our work

8.1 **Context.** The purpose of a GDF would be to isolate radioactive waste in a suitable rock formation deep underground so that no harmful quantities of radioactivity can reach the surface. Such a facility would be designed so that the geological and engineered barriers work together to minimise the escape of radiation over long periods of time. This is called a **multi-barrier approach** (see **Figure 8.1** below). Finding a suitable rock formation that can act as an effective barrier is therefore essential for the construction of a safe disposal facility. A key factor is to identify long-term, suitably low groundwater flows in any potential host rock.

Figure 8.1: Multi-barrier illustration/cross section



Multi-barrier approach: A combination of engineered barriers (packaging, vaults and backfill/refilling of earth or other materials) and a natural barrier (the rock) working together to ensure the necessary levels of safety for a repository.

8.2 **An initial geological study.** As a first step, the Government said that any area expressing an interest in hosting a GDF should have a 'sub-surface unsuitability' test carried out by the **British Geological Survey (BGS)**.

British Geological Survey (BGS): The BGS provides expert services and impartial advice in all areas of geoscience.

8.3 The test involves a **desk-based study** that looks at a number of criteria set down in the Government's MRWS White Paper that were determined by two independent groups of scientists (see **Box 8.3** for more detail on these criteria). The BGS study is designed to rule out certain areas as being clearly unsuitable and thereby enable a judgement about whether the remaining area is enough to continue investigations for a potential site. It avoids money being wasted if there is no prospect of suitable geology being found in an area.

Desk-based study: A process of looking at available facts and figures without carrying out any new practical investigations.

8.4 This study has already been carried out in West Cumbria (see 'Our work in relation to the BGS screening report' below) and is the only geological assessment required by the Government at this early stage in the process. If West Cumbria enters the siting process, more detailed geological assessments would be carried out in later stages of the process. If no suitable location were found, the process would come to an end, or, if the decision-making bodies (DMBs) were not convinced by the evidence that there were suitable surface and underground sites, they would have the option to withdraw from the process.

8.5 **Focus of our work on geology.** Our Work Programme contained the following criteria in relation to geology:

2a. Criterion on **integrity of the BGS screening report**: **'Whether the Partnership is confident in the integrity of the BGS screening work/report.'**

2b. Criterion on **areas remaining in West Cumbria**: **'Whether there are sufficient areas remaining in West Cumbria after initial screening to make further progress worthwhile.'**

In relation to 2b, we also decided that, instead of just focusing on the physical area remaining in West Cumbria after the BGS study, we also needed to consider whether the remaining area was potentially geologically suitable for a GDF.

Our work in relation to the integrity of the BGS screening report

8.6 **What the BGS screening report says.** The geological screening report covers the known geology of Allerdale and Copeland and an adjoining area up to 5km offshore. **Figure 8.2** shows the areas screened out by the BGS study. The report applies a number of criteria to identify areas that have clearly unsuitable geology for a GDF at a depth likely to be between 200 and 1000 metres underground. These criteria are summarised in **Box 8.3**. Note that areas not screened out by the report may not be suitable at all depths.

The BGS report does not show areas where a facility could be located. More rigorous geological assessments would be required if decisions are taken to proceed to future stages in the MRWS process.

Document 115: BGS non-technical summary, October 2010
Document 116: BGS Report, October 2010

8.7 In **Figure 8.2** the **PINK** areas are those ruled out by the BGS report. N.B. some additional areas in Copeland are deemed unsuitable at specific depths because of the presence of **aquifers** (rock with water in it that may be used as a water source).

The **BROWN** area is the Lake District National Park.

The **BLUE** border shows the area surveyed (the dashed blue line is the Allerdale/ Copeland border).

Figure 8.2: Results of the BGS screening report

This map shows the areas screened out by the BGS screening study (excluded areas) where one or more of the exclusion criteria apply to the whole rock volume between 200m and 1000m depth. The 'Excluded Area' is shown overlain on the 1:1m scale Ordnance Survey base map. All information other than the Excluded Area (shown in pink) and the boundaries of the screened area (shown in blue) is taken from the Ordnance Survey base map and is shown for context only. The dashed blue line indicates the Allerdale-Copeland boundary.

Aquifer: A layer of water-bearing rock from which groundwater can be usefully extracted.

Box 8.3: The geological exclusion criteria applied by the BGS in its screening report

These criteria were derived in 2007 by two independent expert groups, that were established based on discussions and nominations from the Royal Society, the Geological Society and the Royal Academy of Engineering. The criteria were then consulted on by the Government before the final publication of the MRWS White Paper in 2008.

	To be applied as exclusion criteria?	Reasons/explanations and qualifying comments
Natural resources		
Coal	Yes	Intrusion risk to depth, only when resource at >100m depth
Oil and gas	Yes	Intrusion risk to depth, for known oil and gas fields
Oil shales	Yes	Intrusion risk to depth
Metal ores	Some ores	Intrusion risk only where mined at depths of >100m
Disposal of wastes/ gas storage	Yes	Only where already committed or approved at >100m depth
Groundwater		
Aquifers	Yes	Where all or part of the geological disposal facility host rock is located within the aquifer
Shallow[24] permeable formations	Yes	Where all or part of the geological disposal facility host rock would be provided by permeable formations that might reasonably be exploited in the future
Specific complex hydro-geological environments	Yes	Deep karstic[25] formations and known source rocks for thermal springs

(Reproduced from Document 115: BGS non-technical summary.)

24. Shallow is defined as less than 500m below the surface (therefore 'deep/at depth' means more than 500m below the surface in this context.
25. Karstic refers to rock mass consisting of carbonate rocks (e.g. limestone) characterised by dissolution through the action of slightly acid surface and groundwater.

8.8 **Is the BGS screening report reliable?** We hired two independent reviewers of the BGS study to check it was accurate. These were Dr Jeremy Dearlove (FWS Consultants Ltd) and Professor Agust Gudmundsson (Royal Holloway College, University of London), both geological experts. Following several rounds of comments, and amendments by the BGS, both peer reviewers published a statement saying that the Partnership can rely on the study.

8.9 **What did stakeholders say?** The results of the study were widely publicised during the Partnership's second round of engagement (PSE2), including on radio and TV. There was no significant criticism of the study's integrity from the public and stakeholders, although many pointed out that the screening study was specified in a limited way. This was echoed in responses to our final consultation.

Document 111: Expert review of the BGS Report by Professor Gudmundsson
Document 113: Expert review of the BGS Report by Dr Dearlove

8.10 **What the study did not do.** We recognise the limited nature of the screening study – it did not consider certain criteria and interpreted others narrowly, which is appropriate to this stage in the process. Wider criteria would need to be subject to further rigorous assessment in later stages of the MRWS process if a decision to enter the siting process is taken.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

8.11 During our consultation period, DECC published its revised framework for Stage 4. This includes Annex A which sets out the work the NDA will undertake in Stage 4, including how/when they will assess the criterion of 'geological setting' to identify potential site areas. Concern was expressed in our formal consultation about a lack of information on the more detailed criteria which would be used to assess sites in Stage 4. The revised framework is a generic (national) document and focuses on the technical requirements for Stage 4 rather than the challenges of voluntarism and partnership working. However, we believe the document goes some way to helping us understand the technical work programme required in Stage 4, and we note the references to flexibility, safety and the importance of engagement and partnership working.

Outstanding uncertainties around the integrity of the BGS screening report

8.12 Given the feedback we have received from our expert reviewers and from the public and stakeholders on the BGS report, and recognising the limited nature of the study, we do not believe there are any outstanding uncertainties regarding the integrity of the BGS report. However, there is significant uncertainty around our second criterion on geology – see paragraphs 8.23 onwards below.

Our opinions on the integrity of the BGS screening report

8.13 Criterion on **integrity of the BGS screening report**: **'Whether the Partnership is confident in the integrity of the BGS screening work/report.'**

What we found out. The BGS screening study was undertaken and underwent peer review. We also noted the limited scope of the screening study.

Our opinions. We are confident in the integrity of the BGS screening report because two independent reviewers endorsed it and there is little criticism of the study's integrity from elsewhere. We note, however, that the BGS screening study was of limited scope, and that much more detailed desk-based studies and physical investigations would have to be undertaken if the process proceeds.

8.14 **Additional advice to the DMBs.** We have no additional advice for the DMBs in relation to the BGS report.

Our work in relation to areas remaining in West Cumbria

8.15 Deciding whether there is enough area of rock remaining in West Cumbria to make entering the siting process worthwhile involves making a judgement about both the amount of land and the geological suitability of the volume of rock in this area. We gathered information on both of these issues.

8.16 **BGS study.** The BGS study showed how much of West Cumbria was not yet ruled out on basic geological criteria.

Document 116: BGS Report, October 2010

8.17 **Geology seminars.** We held two geology seminars, which included the results of the BGS study, detail on technical advances since the 1990s, and (particularly in the second seminar) an opportunity to read and hear views from a number of experts about the suitability of West Cumbria's geology for a GDF.

Document 123: Report from first geology seminar, November 2010
Document 200: Report from second geology seminar, June 2011

8.18 **A range of views on suitability from experts, public and stakeholders.** We have heard a wide range of views particularly about the geological suitability of West Cumbria for a GDF – see paragraph 8.23 and **Box 8.4** below.

8.19 **NDA reports.** We received two reports from the NDA, outlining relevant geological developments since the 1990s and why it believes the prospects of finding a site for a GDF in West Cumbria are sufficiently good to justify proceeding further. These documents covered the following points:

- Improved understanding of the role of geology in containing radionuclides (i.e. radioactive elements).
- Improved 3-D seismic surveying and improved 3-D computer modelling.
- Commentary on the Nirex process and its relevance to a potential West Cumbrian site selection process.
- How geological information would be taken account of in a site selection process.
- International guidance.
- Commentary on the prospects of finding a site for a GDF in West Cumbria.
- Uncertainties and future R&D needs.

Document 143: NDA briefing on geology, November 2010
Document 167: Further information on geology from the NDA, June 2011

8.20 **Review of the NDA report by our independent advisor.** The finalised NDA report was reviewed by Dr Jeremy Dearlove, our independent advisor on geology, prior to its publication. He felt this to be an improvement on the first report, although did point out some areas where the level of clarity could be further improved.

Document 194: Review of the NDA's information on geology by Dr Dearlove, May 2011

8.21 **Is there enough area of land not ruled out by the BGS study?** Out of the 2,536km² studied by the BGS, about 646km² (25.5%) was excluded as clearly unsuitable. This leaves up to 1,890km² (74.5%) potentially available for further investigation.

The BGS report also indicated that an additional volume of rock would need to be excluded because of the presence of aquifers (rocks containing large volumes of extractable water), as these could potentially be used as water sources in the future. The NDA has said that it is not possible to provide an estimate of this volume at this stage in the MRWS process.

The **footprint** of the underground facilities of a GDF could range from 6km² to 23km² depending on what goes into it and the type of rock it is placed in. This is a national estimate based on a range of different rock types, some of which are not present in West Cumbria.

Footprint: The area covered by a specific building or development.

Just in terms of square metres, it is our opinion that there is a sufficient area remaining for investigation, should West Cumbria enter the siting process without commitment to having a GDF.

8.22 We also note that the underground and surface facilities could be separated in some circumstances by a horizontal distance of up to 10km, possibly further. This could mean that much of the area excluded for the underground facilities by the BGS study could potentially still be suitable for the surface facilities.

8.23 **Is the geology of that remaining area suitable for a GDF? – a range of views.** Whether West Cumbria is, or could be, geologically suitable for hosting a GDF has been the subject of considerable public debate. We have tried to facilitate this debate by holding two seminars and publishing differing views in our newsletters, as well as collecting views through our formal consultation. The issue has been well debated, with strong views involved.

8.24 We have heard and considered a range of concerns, responses and evidence on this issue. This has included the views of a variety of professional geologists, including the Geological Society, and of CoRWM. It has also included the views of the public and stakeholders about the geological suitability of West Cumbria, which we heard during our PSE2 process, at the second geology seminar and in our formal consultation. **Box 8.4** summarises the range of views we have heard about West Cumbria's geological suitability for a GDF.

Box 8.4: A range of views on the geological suitability of West Cumbria for a GDF

Summary of views	Supporting documents
Source: Public and stakeholder views	
Concerns which are specific to geological suitability: • Professor David Smythe has submitted a number of papers to the Partnership supporting his view that there is currently enough information available to rule out the whole of West Cumbria on geological grounds. Several respondents to our formal consultation referred to Professor Smythe's views in support of their own concerns about West Cumbrian geology being unsuitable, and we received two notably substantive consultation responses laying out detailed arguments about the unsuitability of West Cumbria as a whole. • Concerns that the outcome of the Nirex Planning Inquiry implies that some, perhaps all, of the geology of West Cumbria is unsuitable are reflected by some members of the public. There is also uncertainty about how this MRWS process is different from that followed by Nirex in the 1990s,	**Document 61:** PSE1 Report **Document 157.1:** PSE2 Report **Document 288:** PSE3 Report **Document h:** Analysis of the Nirex Inquiry by Professor Smythe, February 2011 **Document j:** Response from Professor Smythe to CoRWM (Document 162), April 2011 **Document m:** Response from Professor Smythe to Dr Dearlove (Document 194), September 2011

and concerns that the findings from this process have been disregarded by the Partnership.

- There are concerns that we do not yet know enough to say definitively that the geology is suitable or unsuitable, and that there would be a risk of wasting time and taxpayers' money by going ahead.
- A report summarising the arguments against the rock characterisation facility at Longlands Farm was provided to the Partnership at our February 2012 meeting.
- The Geological Society's response to our formal consultation expressed a degree of comfort with the level of uncertainty, and was in support of the Partnership's approach and initial opinions.
- In response to Dr Dearlove's latest review, Professor Smythe clearly states: 'In my view there is no real debate left or doubt remaining; we know more than enough already to rule out the entire Partnership area from further consideration.'

Document n: Letter from Professor Smythe regarding unsuitability of Eskdale granite, October 2011

Document o: Input from Professor Smythe regarding spoil, October 2011

Document p: Response from Professor Smythe to the NDA regarding spoil, November 2011

Document q: Response from Professor Smythe to Dr Dearlove (Document 237), December 2011

Document s: Response from Professor Smythe to the review of consultation submissions on geology by Dr Dearlove (Document 285), June 2012

Document t: Response from Professor Haszeldine to the review of consultation submissions on geology by Dr Dearlove (Document 285), June 2012

Source: CoRWM

CoRWM originally told us that, in their view, 'there is presently no credible scientific case to support the contention that all of West Cumbria is geologically unsuitable'.

We then asked them to revisit this view in relation to certain key consultation inputs about geology. They said the following: 'There is evidence to show that the

Document 162: CoRWM's view on the geological suitability of West Cumbria, February 2011

hydrogeology of West Cumbria is considerably more varied than suggested by Professors Smythe and Haszeldine, supporting the position that more investigations will be required during site identification and assessment, and consistent with the MRWS staged process.'… 'It is clear that resolution of many of the issues raised by the respondents to PSE3 require levels of geological investigation that are planned for Stages 4 to 6 of the MRWS process. In our view it will not be possible to settle the arguments about the geology and hydrogeology of West Cumbria until further data have been obtained in later Stages of the MRWS process.'	**Document 282:** Letter from CoRWM regarding geology, June 2012
Source: Nirex Inquiry Inspector	
CoRWM also say that the Nirex Inquiry Inspector did not draw conclusions about the suitability of West Cumbria as a whole. This view is confirmed in the note of the meeting between the NDA and the Nirex Inquiry Inspector dated 12th March 2011. In addition, the Steering Group met with the Lead Inspector from the Nirex Inquiry and the Technical Assessor and Advisor on Geology and Hydrogeology in May 2012 in order to discuss their views on geology and the MRWS process in more detail. Their presentation covered the key findings of the Nirex Inquiry, the wider politico-legal context of the MRWS White Paper, specifics about the Longlands Farm area at the centre of the Inquiry and approaches towards assessment of potential suitability. They confirmed that they had never said that the whole of the geology of West Cumbria was unsuitable, but also emphasised that, in their view, the probability of finding a site in West Cumbria is low.	**Document 193:** File note from meeting between the NDA & the Planning Inspector for the Nirex Inquiry, 12 March 2011 **Document 267:** Steering Group minutes, March 2012

Source: Independent geologist advising the Partnership

We asked Dr Jeremy Dearlove to review the arguments. Dr Dearlove originally said: 'I do not agree that there is enough geological information available to rule all of West Cumbria out at this stage of the process.'

We then asked him to revisit this view in relation to certain key consultation inputs about geology. His conclusion was: 'There remain two potentially suitable rock volumes in West Cumbria, for which insufficient data and no published authoritative reviews are currently available, that have the potential to be suitable GDF host rocks. Neither of these two rock volumes should be regarded at this stage as particularly promising, in terms of their potential to eventually be identified as suitable GDF host rock, but until available data have been reviewed by a suitably impartial authoritative body, they cannot be ruled out AT THIS STAGE from the MRWS Partnership process.'

Document 175: Dr Dearlove's review of Professor Smythe's views on geology (Documents h and j), May 2011

Document 194: Dr Dearlove's review of the NDA's information on geology (Document 167), May 2011

Document 237: Dr Dearlove's review of Professor Smythe's further views on geology (Documents m & n), October 2011

Document 285: Dr Dearlove's review of consultation submissions on geology, June 2012

Source: The NDA

The NDA provided a more detailed briefing to clarify why it believes the prospects of finding a site for a GDF in West Cumbria are good enough to justify proceeding further.

The NDA's view is that '…there are a number of rock types present in the West Cumbria area which have the generic geological characteristics consistent with the guidelines at depths suitable for the location of a geological disposal facility.'

However, the NDA is unable at this early stage to provide a range of positive geological indicators that would have given added confidence in the possible suitability of West Cumbria's geology.

Document 167: Further information on geology from the NDA, June 2011

Source: The Environment Agency	
The Environment Agency responded to the Partnership's request (see paragraph 8.30 below) to say that, as the environmental regulator, they will review permit applications from the developer of a GDF. However, the selection of sites within the MRWS process is a matter for the UK Government, not the Environment Agency. Therefore, to maintain their independence the Environment Agency said it is not appropriate for them to comment on the potential suitability, or otherwise, of regions or areas unless it is part of a permit application review.	**Document 304:** Letter from the Environment Agency, 20 July 2012
Source: The Geological Society	
Following their submission to our formal consultation, we met with the Geological Society of London. Discussions included a particular focus on geological uncertainty and the prospects of finding a suitable site in West Cumbria. Following a review of some key consultation submissions, the Geological Society still believes that 'the Partnership is correct in asserting that the consensus in the geoscience community is that the whole of West Cumbria cannot be ruled out at this stage'. Several other points of discussion are included in Document 292, for example discussion of the Nirex Inquiry, international guidelines and scrutiny, including ways in which the Geological Society could contribute advice or scrutiny in the future (with the point being stressed that they do not do consultancy work or receive Government money so they can maintain their independence unambiguously).	**Document 292:** Notes from meeting with the Geological Society of London, June 2012

8.25 **West Cumbrian geology.** We have received information about the nature of West Cumbria's geology from several expert sources. Our understanding is that West Cumbria is founded on a wide variety of rocks with a long geological history. Older

igneous and sedimentary rocks form the Lake District core, surrounded by lower-lying, younger sedimentary strata which generally thicken towards the Irish Sea and Solway lowlands. The rocks are generally characterised by significant faulting which has the potential for allowing groundwater flow and the transport of radionuclides, driven by the high hydraulic pressures created by the adjacent Lakeland fells.

However, it is our understanding that, in general, the hydraulic transmissive properties of most strata reduce with an increasing thickness of overlying rocks. Those that rely specifically on fracture flow may, as a consequence of burial beneath overlying strata, be subject to a reduction in hydraulic transmissivity due to increased burial pressures squeezing the rock fractures together and thus inhibiting groundwater flow along them. However, many other factors, for example infilling of fractures and the degree of interconnectedness of the various fractures, may also reduce hydraulic transmissivity. It is also possible that hydraulic transmissivity in fractures, even at depths in excess of 500m, may not be significantly reduced as a result of burial. For example, in the Sherwood Sandstone aquifer, which has both intergranular and fracture flow, flow rates in excess of 100s of litres per second are possible along deep fractures.

Only detailed hydrogeological investigations can properly identify the level of hydraulic transmissivity of fractures in a rock body.

8.26 We have received conflicting assessments from professional geologists about the potential suitability of West Cumbria's geology, but the one area of agreement appears to be that, overall, the area's geology can be viewed as 'complex'; a description that does not appear to be consistent with the International Atomic Energy Agency (IAEA) Specific Safety Guide on Geological Disposal Facilities for Radioactive Waste.[26] With respect to geology, the guidelines state: 'Uniform rock formations in comparatively simple geological settings are preferred because they are likely to be more easily characterized and their properties are likely to be more predictable.' On hydrogeology the Safety Guide states: 'Natural features such as aquifers or fracture zones are potential release pathways for radionuclides. Such paths should be limited in the disposal facility host rock so that the protective functions of the geological and engineered barrier systems remain compatible.'

26. Available at: **www-pub.iaea.org/books/iaeabooks/8535/Geological-Disposal-Facilities-for-Radioactive-Waste-Specific-Safety-Guide**.

8.27 Several stakeholders and members of the public highlighted this apparent mismatch between the international guidelines and the West Cumbria geological environment, and in response the NDA has said that these IAEA guidelines are intended to be applied flexibly in a way appropriate to the specific circumstances in different countries and should be applied in an integrated way alongside other criteria. The NDA's view is that 'although characterising and demonstrating safety is more challenging for a comparatively complex site than for a simpler site this does not prevent complex sites from being considered'.[27]

8.28 **Overarching public and stakeholder concerns about uncertainty.** A large number of respondents to our formal consultation, in addition to other stakeholder opinions previously heard by the Partnership, express doubts and challenge the likelihood of suitable geology being found in West Cumbria, and/or challenge current Government policy and its implementation.

8.29 Some assert the fact that enough is known already and that the geology of West Cumbria is simply not suitable. Others take a different view, that further geological assessments are essential before the likelihood of finding a suitable site can be properly assessed.

This presents a dilemma. The crucial concern is whether the time, cost, effort and potential disruption of further geological assessment and investigations in subsequent stages of the process is justified given the range of views expressed and associated risk of spend without reward. In addition, if it is decided that these investigations are justified, the question of when these further assessments would ideally occur would need to be considered by the DMBs.

8.30 In order to help us address this dilemma we asked the Environment Agency, CoRWM, and our independent geologist Dr Dearlove to review various key inputs we have received on this topic to see if it changes their view about the likelihood (or not) of suitability. We also met with the Geological Society of London to explore in more depth various aspects of their consultation submission. The results of these requests and conversations are included in **Box 8.4** above.

27. From Document 167, paragraph 3.10.

8.31 We do not underestimate the scale of the challenge presented by West Cumbria's geology and recognise it is an issue that has already caused strong opinions to be voiced on all sides of the debate around suitability.

8.32 **Information about the Nirex Inquiry.** Concerns about the Nirex Inquiry, as outlined in **Box 8.4** above, also extend to queries about whether and where information from the Nirex process can be found in the public domain.

The NDA has provided us with the following information:

> 'The main Nirex Planning Inquiry reports (which give a detailed account of the planning application and rejection) can be found quickly through a web search.[28] Detailed geological reports are held by the British Geological Survey and are not electronically available. There are also a number of useful reports on the NDA Bibliography which are not currently downloadable but can be requested free of charge. There appears to be no central place where all of the documents can be accessed.'

8.33 We suggest that the NDA or DECC provide a single webpage that explains the status and location of documents related to the Nirex Inquiry.

Outstanding uncertainties around areas remaining in West Cumbria

8.34 We have learnt from our discussions with a wide range of stakeholders that there is uncertainty about the potential suitability of West Cumbria's geology.

Our work shows us that, even if West Cumbria enters the siting process, geological conditions may not provide a suitable site for a GDF that meets regulatory requirements. We highlight this as an uncertainty at this early stage, although we also acknowledge

28. For example various documents can be found at: **www.jpb.co.uk/nirexinquiry/nirex.htm** and **www.davidsmythe.org/nuclear/documents.htm**. The BGS West Cumbria Memoir is readily available (for a cost of £25) from **shop.bgs.ac.uk/Bookshop/product.cfm?p_id=EM028**. Various documents such as Nirex 95: 'A Preliminary Analysis of the Groundwater Pathway for a Deep Repository at Sellafield' can be requested from **www.nda.gov.uk/documents/biblio/search.cfm**.

there are a range of views about the likelihood of this happening. We emphasise that the process must stop if the geology is found to be unsuitable in the future.

Our opinions on areas remaining in West Cumbria

8.35 Criterion on **areas remaining in West Cumbria**: **'Whether there are sufficient areas remaining in West Cumbria after initial screening to make further progress worthwhile.'**

What we found out. We found out how much land, in terms of area, was not screened out by the BGS screening study. We heard a number of different views about whether or not that remaining area would be geologically suitable for a GDF, characterised by a high level of uncertainty.

Our opinions on area of land. We believe that the 1,890km² of land not ruled out as clearly unsuitable by the BGS screening study provides a sufficient amount of land, in terms of area, available for investigation.

Our opinions on suitability of geology. We have noted the uncertainties surrounding the suitability of West Cumbria's geology and the differences of view amongst professional geologists and other stakeholders about whether further geological investigations are worthwhile. We have received expert geological submissions arguing that West Cumbria's geology is unsuitable and further progress is not worthwhile. However, we have also received contrary expert advice stating that further progress is worthwhile because not enough is yet known to be able to say that all of West Cumbria should be ruled out. This marked difference of view suggests to us that it is impossible to say whether a suitable site could ultimately be found or not. The DMBs should therefore be aware of the distinct possibility that, if the search proceeds, a site may never be found.

The Partnership agrees that it is inherently uncertain at this stage whether a suitable site can be found, that more geological work is therefore required, and that it should be done as soon as possible. However, there is a difference of view in the Partnership about whether this further geological work should be done *before* or *after* a decision about participation in Stage 4.

1. Most Partnership members feel that it is not necessary or appropriate to do this work now as part of Stage 3. More thorough desk-based studies are already planned as the first step of Stage 4 to identify potential site areas, which includes a geological assessment over the first 12 to 18 months of Stage 4.
2. On the other hand, some Partnership members are concerned about the absence of a sufficiently positive picture of the prospects of finding a suitable site to justify proceeding. They advise that a formal decision about participation be deferred until a peer-reviewed appraisal of West Cumbria's geology has been presented which describes and evaluates the prospects of finding a suitable site. It is the view of these members that such a geological appraisal would provide a more robust and credible basis for a decision about whether to enter Stage 4 or not.

8.36 **Additional advice to the DMBs.** Regardless of the difference of view above, the Partnership agrees that, if the DMBs proceed to Stage 4, a CSP should put in place a robust mechanism for independently reviewing the NDA's work during Stage 4, in particular the geological assessments.

9. Design and engineering

Based on geology and inventory, what might a GDF look like?

Context and focus of our work

9.1 **Context.** Knowing how a GDF might be designed and engineered is important because:

- It helps people to visualise what a GDF might look like and appreciate the scale of the project.
- It can affect, and be affected by, what goes into it (the inventory) and where it is located.
- The design affects the safety of the facility, especially given the long timescales of any GDF development.

9.2 The Government has said that any GDF would use a multi-barrier approach (see Chapter 3). This means the waste would have several layers of protection around it, with the ultimate barrier being the rock surrounding the facility.

9.3 A particular issue of concern to us at this early stage of the process is making sure that any designs being developed do not rule out the option to retrieve waste from the facility at a later date. This issue of whether retrievability should actually be a design requirement is one that would be dealt with much later in the process, taking account of the views of local communities.

9.4 **Focus of our work on design and engineering.** Our Work Programme contained the following criterion in relation to design and engineering:

4a. Criterion on **design and engineering: 'Whether the Partnership is satisfied that the design concepts being developed are appropriate at this stage.'**

We decided that the key points for us to focus on in order to aid the decision-making-bodies (DMBs) with their deliberations were the overall design concept (is it acceptable; does it provide flexibility?) and the issue of retrievability (do we understand what it means; is it an option to be kept open?).

Our work in relation to design and engineering

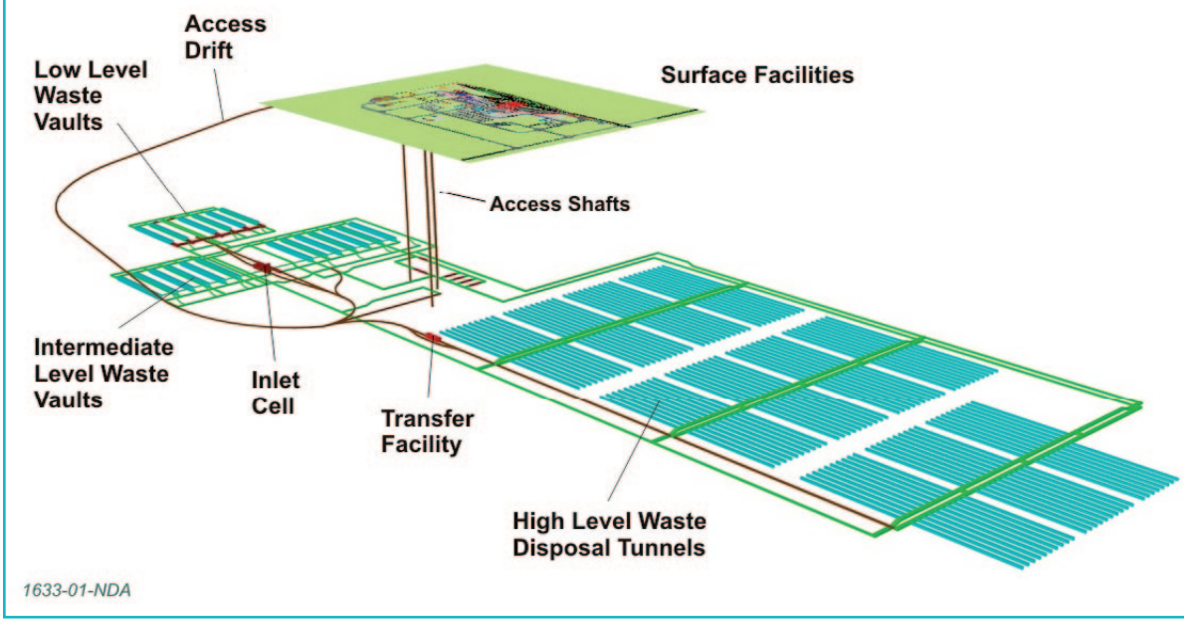
Design concept

9.5 **Generic design concept.** In order to examine the **generic design concept** and how this would translate into a specific design, depending on any location ultimately chosen and on the inventory, we received a presentation and papers from the NDA. Further clarification was provided in response to questions raised at the September 2009 Partnership meeting and again in response to issues raised in PSE1.

Generic design concept: An illustrative design for geological disposal for a specific geology.

9.6 Presentations about the generic design concept showed us that design and engineering choices are site-specific as they depend on the eventual location of a GDF. Actual design must be tailored to the geography and specific geological structure at the site in question. Generic designs indicate that the area covered by the surface facilities would be around 1km^2. The underground facilities would be situated between 200 and 1000 metres below ground, and national estimates predict that the footprint could range from 6km^2 to 23km^2 depending on the inventory and the type of rock.

Figure 9.1: Generic design for a GDF (image provided by the NDA)



Document 29: Briefing note from the NDA on how generic design concepts will evolve, October 2009
Document 30: Clarifications from the NDA on generic design concepts, October 2009
Document 20: Partnership meeting report, 4 September 2009
Document 93: Partnership meeting report, 5 August 2010

9.7 Our work on design and engineering has mainly been to collect information on overall generic designs and the process that the NDA would follow to design and engineer the facility if a site (or sites) are ever identified. The NDA/DECC position is still that the details of design and engineering are a site-specific issue and this is reflected in the responses they have given to any points that have been raised. We have accepted and agreed with this position as a reasonable reflection of where we currently are in the MRWS process, but recognise specific concerns raised by the public and stakeholders in relation to specific design considerations – we have outlined these concerns below.

9.8 **Specific design concerns.** Our consultation on our initial opinions showed that some people are still concerned about the level of uncertainty associated with the overall design of a GDF at this stage, including concerns over untested technology and overall design life. However, it is worth remembering that if the regulators were not satisfied that a safety case could be made for a GDF at a specific location, it would not be built there. Also, if West Cumbria decides to proceed to Stage 4, we would anticipate more clarity on what a specific design might look like as the process of narrowing down potential site areas and discussions on inventory occurred.

9.9 The technical considerations that informed the NDA's **generic Disposal System Safety Case (gDSSC)** and the generic design concept are outlined in the respective documents at some length. In addition, we have compiled a list of specific design concerns and considerations raised through our formal consultation process and have published these as a Partnership document.

Generic Disposal System Safety Case (gDSSC): An integrated suite of safety documents produced by the NDA covering the transport and disposal of the UK's higher activity radioactive wastes. It is not specific to a particular site and presents methods, evidence and arguments concerning the safety of the transport of wastes to a GDF, construction, operation and closure of a facility, and environmental safety in the long term after the facility has been sealed and closed.

Document 29: Briefing note from the NDA on how generic design concepts will evolve
Document 305: Lists of contextual points raised in responses to the Partnership's formal consultation

9.10 Some consultation respondents expressed concerns that we had not sought more information on encapsulation and fuel mixing, and the implications of these for the surface facilities of a GDF. We recognise that other facilities such as a spent fuel encapsulation plant could be sited near or at the surface facilities. We acknowledge that any additional facilities such as these would have implications on the scale of the land required, as well as on the various positive and negative impacts of construction and operation. However, there is no Government policy on this yet, and we understand there will not be in the foreseeable future. We have provided some advice to the DMBs on this issue below (paragraph 9.29).

9.11 **Costing different designs.** Some respondents to our formal consultation asked about the varying costs of different design concepts. Earlier on in our Work Programme this was one of a number of clarifications we asked the NDA for. Bearing in mind a number of assumptions including the need for local engagement, the NDA told us the estimated figure for implementing a design concept in a higher strength rock and in an evaporate rock are very similar.

For example, based on the inventory information in the MRWS White Paper, if the baseline inventory (excluding plutonium and uranium) is to be included then the cost is of the order of £12 billion (at 2008 money values and **undiscounted**), or around £14 billion with the inclusion of plutonium and uranium. This would increase for lower strength rock (under the same assumptions) to around £16 billion, or £20 billion with the inclusion of plutonium and uranium.

Undiscounted: An approach to costing where no allowance is made for the reduced value of future expenditure compared with immediate expenditure.

Document 30: Clarifications from the NDA on generic design concepts, October 2009

Retrievability

9.12 **Definition of retrievability.** We wanted to develop a shared understanding of the meaning of retrievability and other terms (reversibility and recoverability), as well as how flexible the generic design concept is in relation to this point.

We received a presentation from the NDA on retrievability and circulated copies of the Nuclear Energy Agency's (NEA) leaflet on the **Retrievability Scale** (see **Box 9.2** below).

Retrievability Scale: A scale developed by the Nuclear Energy Agency to illustrate the degree and type of effort that is needed to retrieve waste before and after it is placed in a repository.

Document 90: Partnership briefing note on retrievability
Document 47: Partnership meeting report, 13 January 2010
Document 45.1: NEA Retrievability Scale leaflet, November 2011

Box 9.2: NEA Retrievability Scale – latest definitions of retrievability and reversibility

- **Retrievability** is the ability in principle to recover waste or entire waste packages once they have been emplaced in a repository; **retrieval** is the concrete action of removal of the waste. Retrievability implies making provisions in order to allow retrieval should it be required.
- **Reversibility** describes the ability in principle to reverse or reconsider decisions taken during the progressive implementation of a disposal system; **reversal** is the concrete action of overturning a decision and moving back to a previous situation.

CoRWM have also adopted these terms (see CoRWM Document 3003).

9.13 We agreed on a common definition of retrievability as the latest NEA definition, i.e.: 'the ability in principle to recover waste or entire waste packages once they have been emplaced in a repository'. CoRWM notes that 'the term 'retrievability' has been, and continues to be, used as a catch-all for all of these'.[29]

29. See CoRWM Document 3003 at the CoRWM website **corwm.decc.gov.uk**.

9.14 **The NDA's views on retrievability.** A section from our April 2011 Partnership meeting report summarises an NDA response to the question of retrievability as follows:

> 'It was acknowledged that there is not a great deal of information about retrievability in the [g]DSSC as retrievability is so site-specific. It was also acknowledged that, from the perspective of a safety case, retrievability has benefits and disadvantages – from a safety case point of view, backfilling and closing sooner is preferable, but from a retrievability point of view it is not. It was noted that this is something that should be discussed with a host community, and it was further noted that, whatever the NDA did, they would have to make sure that it did not compromise the overall safety case.'

9.15 **CoRWM views on retrievability.** CoRWM also recognises the tension between flexibility and safety. They noted that a phased approach to disposal gave greater flexibility to future decision making, but also that 'leaving a facility open, for centuries after waste has been emplaced, increases the risks disproportionately to any gains'.

9.16 **Regulator views on retrievability.** The Environment Agency's position (taken from the Guidance on Requirements for Authorisation (GRA)) is that:

> 'if a developer/operator makes provisions for retrievability, these should not unacceptably affect the environmental safety case. For example, a developer/operator might propose to keep a facility open that would otherwise be ready for closure, solely to maintain the option to retrieve waste emplaced in the facility. In such circumstances, the environmental safety case would need to demonstrate that processes such as degradation of waste packages would not unacceptably affect the safety of people or the environment. Such a demonstration would need to consider the effect of remaining open on the environmental safety case both for the period before the delayed closure and for the post-closure period.' [30]

9.17 **Government policy on retrievability.** Government policy requires that the design concept should not exclude the possibility of retrievability at this stage.

30. See CoRWM Document 700 at the CoRWM website **corwm.decc.gov.uk**.

Policy Position (MRWS White Paper – Section 4.22): 'Government's view is that the decision about whether or not to keep a geological disposal facility (or vaults within it) open once facility waste operations cease can be made at a later date in discussion with the independent regulators and local communities. In the meantime the planning, design and construction can be carried out in such a way that the option of retrievability is not excluded.'

9.18 At this point in the process, all parties (DECC, the NDA, the Government and the regulators) are content that the option should be kept open.

9.19 **Public and stakeholder views on retrievability.** Responses to our formal consultation show this to be an important issue for the public and stakeholders, with strong feelings in both directions. Some people would like retrievability to be built-in to any design, to enable access if something goes wrong or in case future technology enables the waste to become useful, or less hazardous. Some want retrievability to be ruled out because of the safety and security implications it presents over longer timescales. Others are content to leave the option open.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

9.20 **Our views on retrievability.** We agreed that retrievability should be explicitly included within generic designs at this stage. We also note that any final decisions on whether or not to build in retrievability to a site-specific design would be made many years from now, through discussion between DMBs, local communities, the Government, the site operator and the independent regulators. However, we also note that public and stakeholder concerns about this issue lean in both directions.

9.21 **Monitoring.** We are aware that the waste must be monitored while it is in the facility, and the importance of monitoring any waste inside a GDF was highlighted in several consultation submissions. Research is being carried out to assess the best ways of doing this. However, the research is still in its early stages, so we note that more work would need to be done if the process goes ahead.

We have been kept up to date by the NDA on progress of the European MoDeRn (Monitoring Developments for Safe GDF Operation and Staged Closure) project. This provides a reference framework for the development and possible implementation of monitoring activities during relevant phases of the radioactive waste disposal process. The framework includes: objectives; techniques for monitoring; and analysis of monitoring results, including case studies for how the framework would be applied.

Document 203: Briefing note from the NDA on the MoDeRn Project, June 2011

9.22 **Communicating with future inhabitants.** This was a particular concern raised through our formal consultation, due to the very long timescales of development for a GDF. We asked the NDA to provide us with detail of any work currently being undertaken in relation to this issue. They clarified that the need to maintain access to knowledge and information is recognised as a key objective for long-term radioactive waste management and that a wide range of options have been looked at internationally, including various options for marking facilities or preserving the memory of facilities. They have told us that the methods chosen should be the result of collaboration between various parties, including the local community, and that these could change over time depending on needs. We also note that the issue of institutional controls would be covered by the environmental safety case for a GDF.

Outstanding uncertainties around design and engineering

9.23 **Detailed design.** The main point to note is that, at this early stage in the process, it is not possible to say exactly what a GDF would look like. The detailed layout and design of the facilities, both above and below ground, would depend on the location and would be tailored to the geography and specific geological structure at the site in question.

9.24 **Distance between surface and underground facilities.** Another uncertainty is the horizontal distance between the surface and underground facilities. The NDA has stated that this could be up to 10km, or more in some circumstances, and so clearly affects the overall footprint of the GDF.

9.25 **How many repositories.** We are aware that the Government has said that it would be possible to build more than one GDF, but also that this would depend on the inventory

and the eventual location or locations under discussion. Because of this, we have had no detailed discussions on this issue. We note that committing to one GDF does not automatically commit an area to having a second one.

9.26 **Timescale of retrievability.** Although the key agencies involved (see paragraphs 9.14 to 9.17) are content to keep the option of retrievability open for the time being, it is not clear exactly how long it will be before a final decision is needed. Whilst the option of retrievability needs to be designed into a GDF (possibly in the next several years), any decision to backfill vaults and tunnels can be taken by future generations under the circumstances posed at the time (many years away).

9.27 **Monitoring.** More work would need to be done on monitoring if the process goes ahead. Local communities would understandably want to know exactly how monitoring will happen if a facility is ever built.

Our opinions on design and engineering

9.28 Criterion on **design and engineering: 'Whether the Partnership is satisfied that the design concepts being developed are appropriate at this stage.'**

What we found out. The NDA told us about the generic design concept and the site-specific nature of more detailed design. We heard concerns and suggestions from the public and stakeholders about specific design considerations and have compiled a list of these. However, we have also been told by the NDA that many of the details of design would depend on the location of the above-ground and underground sites, as well as negotiation of the inventory, should Stage 4 proceed.

We understand the meaning of retrievability, and have heard that the Government, the NDA and the regulators are all content for the option to be kept open for now. Some members of the public have told us they would like retrievability to be built-in, whilst others are concerned about the safety implications this could present.

Our opinions. Our overall opinion is that we are content that detailed design issues are largely site-specific and, as such, cannot and should not be resolved at this time. Specifically, we understand the **generic design concepts** being worked on, and they fit with our expectations. We have also confirmed that **retrievability** of waste is an option, to be decided on in the future.

9.29 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that a community siting partnership (CSP) should:

- Establish a timeline outlining when decisions about retrievability have to be made and when retrievability options will start to be closed off.
- Engage with international research on techniques to monitor waste in geological disposal facilities. A starting point could be to engage directly with the MoDeRN project, via the NDA.
- Review the NDA's high-level designs for a facility during Stage 4, during the assessment of potential site areas (see Chapter 13).
- Investigate the likely additional plant that could be developed near to, or at, the surface facility, so that the full design impacts and implications can be assessed.

10. Safety, security, environment and planning

What needs to be considered before a GDF could be built and during its operation and closure?

Context and focus of our work

10.1 **Context.** Making sure that any GDF would be as safe, secure and environmentally sound as possible is of the highest importance, and of particular concern to members of the public and stakeholders.

10.2 Safety can never be 100% guaranteed for any development in any industry, but mechanisms, checks and processes can be put in place to minimise the risk of anything going wrong. This is particularly important given the hazardous nature of the waste that would be contained within a GDF.

10.3 Before the building of any GDF, an assessment of the potential risks and impacts to the public, workforce and the environment would have to be undertaken. This would mainly be through the development of a **safety case**, as well as through the statutory planning and permitting processes.

Safety case: A structured argument or body of evidence that is intended to demonstrate that a system is safe. It also provides evidence to show **how** claims of safety are met.

10.4 The NDA has developed a generic Disposal System Safety Case (gDSSC) based on its understanding of the scientific and engineering principles supporting geological disposal and not specific to a particular site or geology. The NDA says the following about the gDSSC:

> 'By describing something as 'safe', we mean there is little risk associated with it or that we can manage the situation to keep the risk to an acceptable level.

Safety in the context of a geological disposal facility addresses the packaging of waste, the transport of the waste from storage to the facility as well as the construction and operation of the facility and safety in the long term after the facility has been closed.

The aim of the Disposal System Safety Case is to provide evidence to show that the geological disposal system will be safe to operate; will remain safe after it is closed and meets all applicable regulatory requirements.

Our generic Disposal System Safety Case explains why, even at this early stage, we can have confidence in the safety of a geological disposal facility, based on our knowledge of the scientific and engineering principles that underpin geological disposal and existing experience of handling radioactive wastes, both in the UK and overseas.'

10.5 The regulators (see paragraph 3.15) have an extremely important role in ensuring safety and security, and minimising environmental damage. In order to construct and operate any GDF, a developer (the people building the GDF) would need to demonstrate that its safety cases meet regulatory requirements. The developer will also need to possess the necessary licences and permits which the regulators will issue if they accept the developer's safety cases. The safety cases would also be reviewed periodically, and the developer would need to have their safety cases accepted before the facility could be 'de-licensed' and have its permit revoked at the end of its operations.

The regulators have the power to require improvements, deny permission to proceed, or to stop operations if they are not satisfied with respect to safety, security or environmental protection at any stage once permits have been granted. **Ultimately, if the regulators were not satisfied that a safety case could be made, they would not allow a facility to be built**.

10.6 Planning authorities (for example Cumbria County Council, the Lake District National Park Authority or the Borough Councils) are responsible for considering planning applications on a case-by-case basis, depending on the location and the nature of the application. See **Box 10.3** for our understanding of how planning would work in a siting process, if it goes ahead.

10.7 **Focus of our work on safety, security, environment and planning.** Our Work Programme contained the following criteria in relation to safety, security, environment and planning:

1a. Criterion on **regulatory and planning processes: 'Whether the Partnership is satisfied that suitable regulatory and planning processes are in place or being developed to protect residents, workforce and the environment.'**

1b. Criterion on **safety: 'Whether the Partnership is satisfied that the NDA RWMD has suitable capability and processes in place to protect residents, workforce and the environment.'**

Under criterion 1a we focused on regulatory bodies and processes, regulator communications and the planning process as key issues to find out more about.

For criterion 1b the focus was on safety and the safety case process, as well as the adequacy of the NDA's research and development (R&D) programme.

However, during our work on this topic, and particularly in submissions to our formal consultation, it became clear that security and transport were two issues of concern that we needed to give more attention to. In response to this we have sought and included more detail on these issues, as well as developing additional opinions on security and transport.

Our work in relation to regulatory and planning processes

Regulatory bodies and processes

10.8 **Reorganised regulation.** We received a Government announcement that the Office for Nuclear Regulation (ONR) had been created as a new independent statutory body to regulate nuclear safety and security, including for any potential GDF (**www.hse.gov.uk/nuclear**).

10.9 We heard from the regulators regarding their specific roles and responsibilities, how they coordinate their activities and how they interact with the NDA. We also learnt how the regulators are planning for extra capacity within the workforce and the need for new skills and capabilities in the future. (See **Box 10.1** below for more on this.)

Document 47: Partnership meeting report, 13 January 2010
Document 36.1: Regulators' roles and processes in the implementation of MRWS, October 2009 & updated March 2011
Document 57: Regulator responses to questions on roles

10.10 We received a presentation by members of CoRWM on their original recommendations and options for geological disposal including the Environment Agency's views on geological disposal and subsequent Q&A/discussion.

10.11 There were also discussions between the Environment Agency and the Cumbria Association of Local Councils (CALC) on the resources available to the Environment Agency in terms of structure and expertise, including availability of technical skills, filling of potential skill gaps and planning for the future

Document 120: Report from CoRWM seminar, September 2010
Document 126: Notes from CALC and Environment Agency meeting about regulatory resources, November 2010

10.12 **Regulator roles.** As described in Chapter 3, the Environment Agency is the regulator responsible for the enforcement of environmental protection legislation in England and Wales. Its activities include regulating disposal of radioactive wastes from licensed nuclear sites and other premises using radioactive substances by granting permits. The ONR is an agency of the Health and Safety Executive (the regulator responsible for protecting people against risks to health or safety arising out of work activities). Established on 1st April 2011, the ONR regulates nuclear safety and security, and regulates the safety of radioactive material transport by road, rail and sea.

10.13 **Regulator relationships.** We have received several reports and presentations on the work of the regulatory bodies. Our current view is that there is an acceptable level of understanding of the roles and responsibilities of the various bodies and their joint working arrangements. For example, there is a memorandum of understanding between the Health and Safety Executive and the Environment Agency which sets out an overarching framework recognising the need for effective coordination, and another which is more specific to radioactive waste management. The joint working approach has already been established between the Health and Safety Executive and the

Environment Agency for the Generic Design Assessment (GDA) of new reactor designs, and the regulators also coordinate their work on the scrutiny of the NDA's activities.

Box 10.1: A summary of the information received on regulator relationships, roles and capacity

The regulators gave us details on the following points:

- How they would consider an application for a GDF, bringing together consideration of land-use planning matters, nuclear site licensing and staged environmental regulation.
- How members of the wider community and local stakeholders can influence the regulatory process.
- Reassurance about the independence of the regulators.
- Arrangements for the regulation of the transport of radioactive materials.
- The regulators' ongoing role of scrutiny of the NDA.
- The regulators' work with the NDA RWMD to support the RWMD in its task to become an 'implementing organisation' for geological disposal.
- The resources and resource plans in place or being developed – including increases in team numbers and skills, and capacity development (including through accessing external expertise and progressing nuclear skills development in younger people).

10.14 A number of the main processes are, not surprisingly, 'work in progress' but they are being developed. We believe there is evidence that positive changes are being made to the range, scope and structure of the bodies which are responsible for these issues, for example the development of the ONR, which brings health, safety and security regulation for the nuclear industry into one body.

10.15 We welcome the fact that the regulators are working together and engaging with the NDA on the implementation of geological disposal. The regulators are already providing the NDA with advice and scrutiny on matters of regulatory interest about a potential GDF, and have developed a process to manage issues of regulatory concern arising from their scrutiny work. We believe there is clarity of roles and responsibilities across the regulators and they are functioning in a joined-up and coordinated fashion. This is demonstrated by the existing joint regulatory working on the GDA process and NDA scrutiny, and a continued commitment to coordinate work on radioactive waste management.

10.16 **Regulator independence and capacity.** We heard some concerns through our formal consultation process about the independence of the regulators and their capacity to effectively deliver all of the work that future MRWS stages would require of them. In response to these concerns we asked the Environment Agency and the ONR at the highest possible level (the Chief Executive of the Environment Agency and the Executive Head of the ONR) to provide a statement that illustrates their capacity, their independence and their willingness to stand up to pressure from parties to license a borderline site and say 'no', and examples of where they have enforced **authorisation conditions** on major projects before.

Authorisation conditions: When granting authorisations, these are limitations and conditions applied by the regulators in order to protect people and the environment from the hazards posed by radioactive wastes.

Both the Environment Agency and the ONR responded to our request and provided a strong level of reassurance about their capacity and independence in relation to the MRWS process.

Document 284: Letter from the ONR, June 2012
Document 293: Letter from the Environment Agency, June 2012

10.17 **Trust and confidence in the regulators and the Partnership's understanding of regulatory set-up.** Through our formal consultation we understand that some members of the public and stakeholders have a lack of confidence and trust in the regulators. Others are concerned that we have an incomplete understanding of the regulatory set-up and therefore question the basis for our confidence in regulation.

10.18 We acknowledge that some members of the public have these concerns but, given what we have heard from the regulators over the past three years, we do not currently share these concerns. Our confidence in the regulators is based on information provided in Document 36.1, and also the level of challenge that they currently provide in their reviews of the NDA's work, for example their comments on the gDSSC.

10.19 We have sought reassurance from the Environment Agency and the ONR (see paragraph 10.16) about their capacity and independence, and feel we have a good understanding of the regulatory set-up for the potential development of a GDF. We

also suggest that any future community siting partnership (CSP) should maintain a watching brief on development of regulatory processes, and robustness of regulation.

10.20 **Environmental Impact Assessments.** To gain a broad understanding of the potential impacts of geological disposal we heard a presentation from the NDA which included information on the use of Strategic Environmental Assessments (SEAs) and Environmental Impact Assessments (EIAs).

We also received a briefing note from the NDA on the use of Environmental Assessments in Stage 4 of the MRWS process. This outlined what an Environmental Assessment is and why it is necessary, as well as the opportunities it presents and detail on what it involves. We also met the NDA to discuss the timing of the various assessments in Stages 3, 4 and 5. There is some discomfort within the Partnership with the timing of the consideration of 'reasonable alternatives' within the SEA process overall, and this is covered in more detail in Chapter 6.

10.21 The NDA's generic Environment and Sustainability Assessment was published in March 2011 and is based on 2007 inventory data. An initial analysis has found that using the 2010 data would make 'no material difference' to the generic assessment findings. However, there are some differences such as the volume of rock and spoil generated, transport movements and direct employment.

Document 27: Summary note from the NDA on the potential impacts of implementing geological disposal, October 2009
Document 219: Briefing note on environmental assessments in Stage 4 of the MRWS process, August 2011

Regulator communications

10.22 We heard from the Environment Agency about how they currently engage with communities, how they might engage in the future and how local residents and stakeholders can influence the regulatory process.

The presentation given to us by the Environment Agency highlighted the importance of engagement and consultation with the public on any permitting decisions. We understand that the Environment Agency can tailor its approach to consultation

in response to local circumstances and link its activities with those of the other regulators. We also note a general willingness to engage and communicate if the process continues.

10.23 We have welcomed the fact that the regulators have been present at our meetings as observing members since May 2009, and have provided information and support when we have asked.

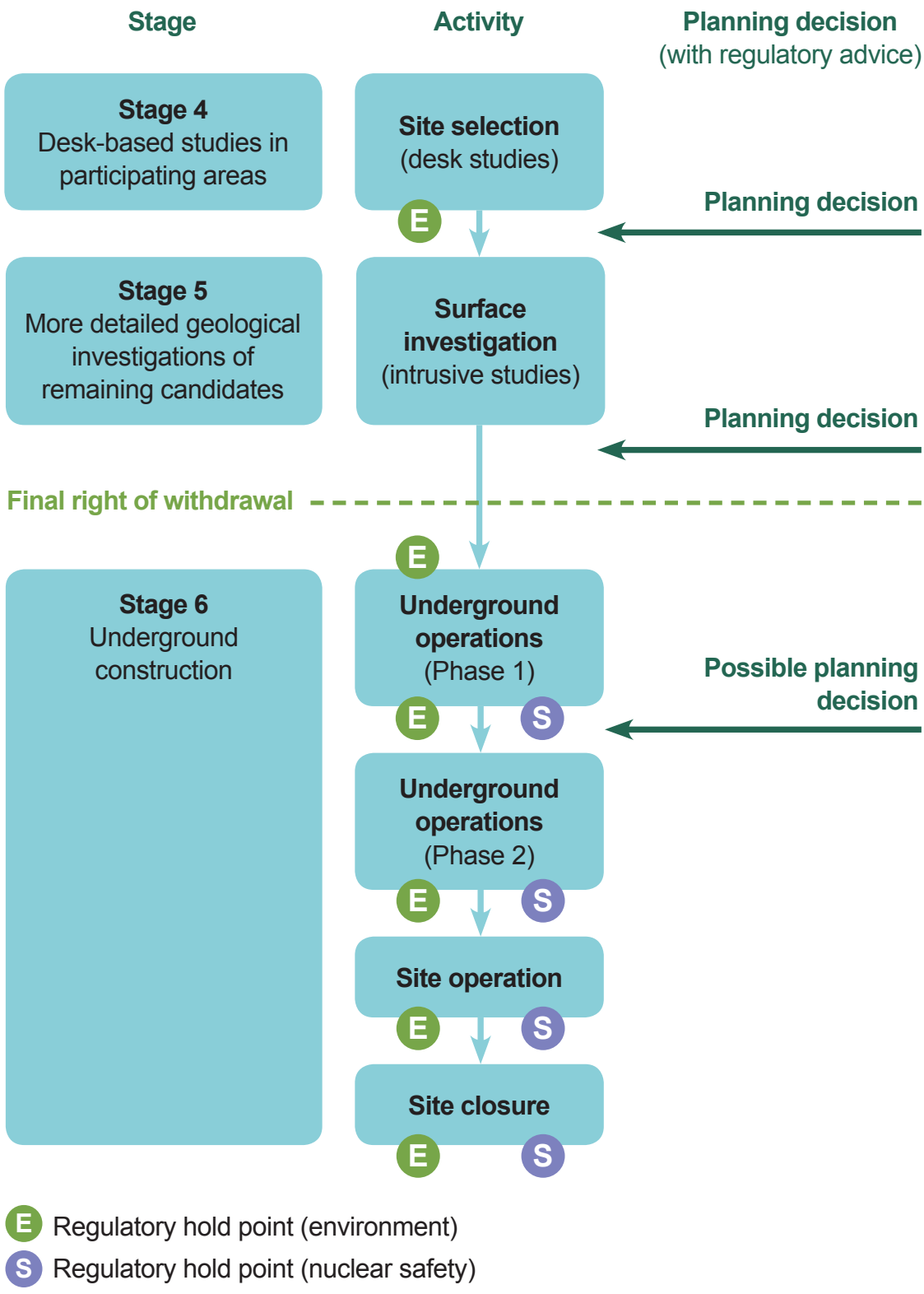
Document 130: Regulatory interfaces with the community, January 2011
Document 36.1: Regulators' roles and processes in the implementation of MRWS, March 2011

Regulation and planning interfaces

10.24 Based on what we have heard, we understand the various roles that the planning system and the regulators would play during a number of important steps within Stages 4, 5 and 6 of the MRWS process (see **Figure 10.2** below).

The Environment Agency has developed staged regulation that interfaces well with nuclear licensing and land-use planning. This would mean decisions being made across environmental safety and nuclear safety at the same time, and also between the regulatory regimes and the planning regimes at the same time.

Figure 10.2: The Partnership's view on planning interfaces with GDF stages, roles etc.



The planning system

Box 10.3: A summary of the information gathered on the planning system

Current Town and Country Planning Act process

- If the process for taking forward a GDF proceeds, a planning application for a GDF is not likely to be made for around 15 years, provided no acceleration is agreed (see also reference to earlier planning applications for investigative work below). Depending on its location, under current legislation this would be submitted to the County Council and/or the Lake District National Park Authority for determination.
- We acknowledge that the law places responsibility on local planning authorities to follow certain procedural rules when determining a planning application. We note that, even though the local planning authorities would be working together with host communities and wider local interests as part of a future partnership, this does not diminish their responsibilities or restrict their discretion to determine planning applications in accordance with their statutory responsibilities. These include those that are set out in the Town and Country Planning Act 1990 (as amended) and the Town and Country Planning (Development Management Procedure) (England) Order 2010 and other relevant regulations.
- The first time a planning application would be submitted is likely to be in around 5 to 6 years time, for site investigation work such as boreholes. Under current legislation, such proposals relating to a waste management development would be considered by Cumbria County Council, the Borough Councils and/or the Lake District National Park Authority depending on their location. It is also possible that applications for some ancillary developments would be considered by the Borough Councils or the Lake District National Park Authority.

Nationally significant infrastructure projects and the development consent process

- Under the Planning Act 2008 the then government introduced a process designed to streamline the planning process for large scale infrastructure projects, described as **nationally significant infrastructure projects (NSIPs)**, referred to as the development consent process. Under the Localism Act 2011 the Major Infrastructure Planning Unit (MIPU) – now called the **National Infrastructure Directorate (NID)**[31] – within the Planning Inspectorate

31. The name MIPU has recently been replaced with the 'National Infrastructure Directorate (NID)'.

became responsible for operating the development consent process and for making recommendations regarding specific proposals to the relevant Government Secretary of State, who would make the decision. Currently a GDF does not fall within the remit of MIPU/the NID.

- DECC has confirmed that to extend the scope of the development consent process to include a GDF would require secondary legislation to be passed.
- Were such secondary legislation to be passed, a development consent application for a GDF would be considered by MIPU/the NID within the Planning Inspectorate rather than the local planning authority. In this case, the local planning authority and other local stakeholders and communities of interest would be invited to submit comments and views on the proposals as part of the development consent process, for consideration by MIPU/the NID, who would then make a recommendation to the Secretary of State. However, we noted that if the scope of NSIPs work does not change to cover a GDF, an application for a GDF would be considered and decided by Cumbria County Council or the Lake District National Park Authority, depending on the location, as the waste planning authorities.

Local planning policy

- In terms of planning policy, both Copeland and Allerdale Borough Councils have prepared their Core Strategy and Development Management Policies documents for consultation, with adoption likely in summer 2013.[32] The Lake District National Park Authority Core Strategy was adopted in October 2010.
- The Cumbria Minerals and Waste Development Framework (MWDF) Core Strategy and Generic Development Control Policies were formally adopted by Cumbria County Council in April 2009. The County Council is likely to commence work in the immediate future on its Minerals and Waste Local Plan, under the new planning system that the Government introduced in April 2012. An important part of this Local Plan will be a review of the MWDF Core Strategy radioactive waste policies.

Nationally significant infrastructure project (NSIP): A large-scale infrastructure project, for example the construction or extension of a generating station, the installation of an electric line above ground, a development relating to underground gas storage facilities, and so on.

32. See **www.allerdale.gov.uk/localplan** and **www.copeland.gov.uk/default.aspx?page=2498**.

National Infrastructure Directorate (NID): The proposed new name for the body which will operate the development consent process for nationally significant infrastructure projects such as offshore wind farms and nuclear power stations. This replaces the IPC and supersedes the proposed new name MIPU.

10.25 **Local planners.** Under current planning arrangements we are clear as to how Cumbria County Council or the Lake District National Park Authority would consider an application for a GDF, depending on whether it was made inside or outside the National Park boundary.

Figure 10.4: Borehole drilling in Sweden (source: SKB/Alf Sevastik Kustbild)

10.26 Our formal consultation showed that some people are concerned about a potential conflict of interest for local decision-making bodies (DMBs) because of their role in partnership arrangements and planning decisions. Others have a lack of trust in the planning system's integrity and ability to resist the development of a GDF, or are concerned that a GDF application would also be outside the normal remit of local planners. We note this concern and also note that this is likely to be related to overall issues about trust and risks of predetermination that cut across many of the consultation responses we have received. It is difficult to change perceptions without a long process of trust building, however we have considered several ways in which trust between various parties involved in the process can be continually improved. (See Chapter 6 for further discussion of trust.)

10.27 We have sought legal advice throughout the Partnership process, including on the corporate governance of the Partnership, covering issues such as predetermination and member interests (Document 225). We would also expect any future CSP to accommodate this kind of conflict of interest between involvement in the MRWS process and any planning applications.

10.28 **National project?** There is some concern from within the Partnership and from the public and stakeholders about the uncertainty over the designation of a GDF as a

nationally significant infrastructure project. We have asked for clarification from DECC on this issue, and they have provided the following response:

> 'The MRWS White Paper didn't specify a particular planning route, but indicated that the Government was 'currently inclined: to use the planning system that was at that time due to come into force – that is, the single consent regime for nationally significant infrastructure projects ('NSIPs')'.
>
> A decision has not yet been taken on planning as the need for a planning application(s) for Stage 5 investigations or Stage 6 operations is still a long way off. Decisions on this issue would be premature when we do not yet have a community that has decided to participate in the siting process.
>
> Government is proposing, in the next stage of work (Stage 4), to consider the available options in detail, and how they might interact with other issues that may call for a legally binding footing. Consideration of this could form part of any wider discussions about putting aspects of the MRWS process on a legally binding footing.'

We understand how a planning application for a GDF would be handled as far as is possible at this stage, and that planning permission to build a GDF would not happen if the DMBs exercised their final right to withdraw from the process after surface-based investigations.

10.29 **Balancing views.** Many of the concerns we have heard about a potential planning process for a GDF primarily relate to uncertainty about who would influence a process, for example whether local views would outweigh national views, or vice versa. We address this issue in paragraph 13.11.

10.30 Another concern is that a national planning process might impact upon voluntarism. However, we note that the planning and voluntarism processes are two separate processes. Voluntarism is enshrined in policy so, as we understand it, currently a centralised planning process could not override the process of voluntarism, except to refuse planning where a community has already volunteered.

Outstanding uncertainties around regulatory and planning processes

10.31 **Timescales and regulatory planning.** The voluntarism and partnership aspects of the siting process present many site-specific uncertainties, for example around technical and design aspects, making it challenging for the regulators to plan for. However, the long timescales and the regulators' early engagement with the NDA assist them in their planning. The regulators are also aware that they may need some additional skills or resources to support the regulation of a GDF.

10.32 **Uncertainty about a planning application and surrounding process.** We know that if the siting process were to proceed, the planning application for the actual construction of a GDF would probably still be about 15 years away.

10.33 We know that the planning process could change between now and the potential development of a GDF, and we recognise the fears and tensions that exist over different views dominating the process. We asked DECC for further clarification about whether MRWS would be handled through the NID or not (see **Box 10.3**). We note the ongoing uncertainty on this issue and also recognise that, ultimately, host communities and the DMBs would have influence over the wider MRWS process through the CSP.

10.34 We have investigated options for gaining greater assurance about the right of withdrawal – see paragraph 6.33 for more on this.

10.35 In addition, the DMBs or a future CSP may wish to look in more detail at the potential role of statutory consultees, neighbourhood planning and Local Development Frameworks in the planning process, with the view to potentially exploring different ways of involving host communities in the planning process.

10.36 **National Park.** We recognise that planning policies, relevant strategies and legislative frameworks relating to land use will need to be considered as an early step if the process moves forward.

Consideration will include the following (though this is not an exhaustive list):

1. The purposes of National Park designation which were established in the National Parks and Access to the Countryside Act 1949, and amended by the Environment Act 1995, to:

   - Conserve and enhance the natural beauty, wildlife and cultural heritage (of the National Parks); and
   - Promote opportunities for the understanding and enjoyment of the special qualities (of the National Parks) by the public.

   In pursuing the statutory purposes, National Park Authorities have a duty to seek to foster the economic and social well-being of local communities.

2. Section 62 of the Environment Act 1995 also requires all relevant authorities and public bodies, such as DECC, the NDA, district and county councils to take National Park purposes into account when they make decisions or carry out activities which might affect the National Park.

3. The National Planning Policy Framework (NPPF) 2012 recognises the importance of National Parks and continues to regard National Park designation as conferring the highest status of protection as far as landscape and natural beauty is concerned. Both the NPPF and the English National Parks and the Broads Circular 2010 outline the tests for major development. Paragraph 115 of the NPPF states:

   > 'planning permission should be refused for major development in designated areas [this includes National Parks] except in exceptional circumstances and where it can be demonstrated they are in the public interest. Consideration of such applications should include an assessment of:
   >
   > - The need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;
   > - The cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and
   > - Any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.'

4. The Lake District National Park Partnership has agreed 'The Partnership's Plan: The Management Plan for the LDNP 2010-2015'. This forms the overarching strategy

for the National Park, setting out the Vision and establishing the framework for all policy and activity in the National Park.

5. The Lake District National Park Authority's Core Strategy sets out the planning policies that will facilitate the delivery of the Vision. Officers from the National Park Authority responded to the Partnership's formal consultation and included the following statements:

> 'We do not believe it will be possible to accommodate a surface facility in the region of 100 hectares in the National Park, and which may or may not include construction material and spoil from the underground element. There would inevitably be adverse impacts upon the character of the National Park and its special qualities.'
>
> 'Based on the criterion listed in Policy CS12 [outlining criteria for major developments] and policy CS01, National significance and distinctive nature of the Lake District, it is our view that surface facilities for a geological disposal facility could not be supported in the National Park.'

10.37 Our formal consultation in PSE3 has reaffirmed that the public (local residents, parish councils and others both in and outside the Park) hold the Lake District National Park in the highest regard. We appreciate the Lake District National Park Authority's view that surface facilities could not be successfully located within the National Park without resulting in significant harm to the special qualities of the National Park. If there is any intent to impinge on the National Park, above or below ground, then the Lake District National Park Authority would, amongst other things, require consideration of alternative sites to be exhausted in order to satisfy planning policies and legislative frameworks. Careful consideration would also need to be given to development which may have an adverse impact on the setting of the National Park, including proposals for boreholes and spoil, as well as surface facilities. This provision applies to all development outside the National Park that may prejudice the achievement of National Park purposes (as set out in paragraph 10.36 above).

10.38 **Other designated areas and local plans.** The presence of Local Plans, Local Development Frameworks and designated areas other than the National Park would also need to be considered as part of any planning process, and could have implications for the potential siting of a GDF. In addition, any application for a World

Heritage Site in or near West Cumbria would need monitoring in relation to any GDF development and potential impacts on the application.

Our opinions on regulatory and planning processes

10.39 Criterion on **regulatory and planning processes: 'Whether the Partnership is satisfied that suitable regulatory and planning processes are in place or being developed to protect residents, workforce and the environment.'**

What we found out. We found out about the roles of different regulators, including the newly formed ONR, in the development of a GDF. We have been given reassurance about regulatory capacity and independence. We have sought more detail on EIAs and SEAs. We understand how the regulatory and planning processes would fit together in a GDF development process. We have sought as much detail as is possible at this stage on how a potential planning application for a GDF would be handled.

Our opinions on regulatory bodies and processes. We are as confident as is possible at this stage that the necessary regulatory bodies exist and have, or are developing/modifying, processes by which they will consider proposals for a GDF.

Our opinions on regulator communications. We are confident that the Environment Agency has adequately described its intentions regarding its approaches to community engagement both now and going forward to a potential CSP.

Our opinions on the planning system. We understand how a planning application for a GDF would be handled as far as is possible at this stage, and recognise that further scrutiny of the planning process would be required if the process proceeds, as much could change in the 15 years before an application could occur.

10.40 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that:

In relation to regulatory bodies, processes and communications, a CSP should:

- Maintain a watching brief on regulatory bodies and processes.
- Consider commissioning an independent review of the regulators' capacity and funding stability to support the MRWS programme. This could include whether the regulatory funding regime has been problematic in other areas or previous work,

what stakeholder attitudes are to the funding regime, and therefore whether it is likely to be a problem for the MRWS process.[33]

In relation to the planning system:

- A CSP should maintain a watching brief on developments in the planning system, take a view on their implications for the MRWS process, and secure any necessary clarity or agreements with the Government before the end of Stage 4.
- Areas within the National Park should not be considered for surface facilities because of the likely impact this would have on the special qualities of the Park, which would not be consistent with current planning policies.

Our work in relation to safety

Developing a safety case

10.41 **The generic Disposal System Safety Case (gDSSC).** In order to better understand the NDA's gDSSC (see paragraph 10.4) we received the NDA's introduction to it and an independent 'Peer Review Panel' report on the safety case. We also received interim review comments from the regulators on the gDSSC; the regulators then completed their review in December 2011. This was followed by a presentation from the Environment Agency at our February 2012 meeting and a response to this presentation from the NDA.

10.42 The gDSSC was based on 2007 inventory data. The differences between the 2007 and 2010 inventories are primarily due to volume rather than the nature and characteristics of the wastes. An initial analysis of the 2010 update to the baseline and upper inventories has found that the gDSSC findings would remain largely unchanged.

Document 160: Introduction to the NDA's gDSSC, December 2010
Document 161: Summary report on the peer review of the NDA's gDSSC, January 2011
Document 215: Partnership meeting report, 29 July 2011 (Appendix 5)
Document 253: Environment Agency and ONR joint gDSSC review, December 2011
Document 256: Partnership meeting report, 21 February 2012

33. Note also CoRWM's work in this area.

10.43 In addition, we invited presentations on the Nuclear Waste Advisory Associates (NWAA)[34] Issues Register and Greenpeace's[35] 'Rock Solid?' report. We considered these alongside the regulators' Joint Regulatory Issues Resolution Process, and the NDA's Issues Management Process.

Document 165.1: Partnership meeting report, 14 April 2011

10.44 A summary of some of the main views and information we have received on the safety case is outlined below in **Box 10.5**.

Box 10.5: A summary of some of the information we have considered in relation to the safety case

What is it?	What does it say?	Supporting documents
Nuclear Waste Advisory Associates (NWAA) Issues Register		
A report on outstanding scientific and technical issues relating to the production of a robust safety case for the deep geological disposal of radioactive waste.	The Issues Register lists the issues which the NWAA considers need resolving if a robust safety case for deep geological disposal is to be developed. The issues are categorised under a number of headings, e.g. inventory, gases, site considerations, construction issues, the waste package and GDF components, and several more.	**Document f:** Issues Register published by the NWAA, March 2010
'Rock Solid?' report		
A scientific review of geological disposal of high level radioactive waste commissioned by Greenpeace.	The report is based on a review of papers published in peer-reviewed scientific journals. It identifies a number of scenarios in which 'a significant release of radioactivity could occur, with serious implications for the health and safety of future	**Document g:** 'Rock Solid?', a report by Dr Helen Wallace for Greenpeace International, September 2010

34. See **www.nuclearwasteadvisory.co.uk**.
35. See **www.greenpeace.org.uk**.

	generations'. The scenarios include consideration of things like the effects of intense heat generated by radioactive decay, build-up of gas pressure in the GDF, and poorly understood chemical effects.	
Regulator comments		
A note from the regulators commenting on the NWAA Issues Register and 'Rock Solid?', as well as outlining the Joint Regulatory Issues Resolution Process.	The document responds to some specific process concerns from the NWAA Issues Register. It outlines the production of an Environment Agency (soon to be joint regulators') report each year summarising the scrutiny of the NDA's work on geological disposal. It also summarises some of the steps in the Joint Regulatory Issues Resolution Process, including: documenting and communicating issues, defining regulator expectations of the NDA in resolving issues, monitoring progress, and providing an audit trail towards the resolution of issues.	**Document 154:** The regulators' comments on the NWAA Issues Register and 'Rock Solid?', April 2011
NDA issues resolution process briefing note and Issues Management Process		
A briefing note requested by the Partnership, in particular with respect to how the NDA is responding to the NWAA Issues Register.	The note describes at a high level the process that the NDA plans to operate for managing issues from a range of sources internal and external to the NDA, including those raised by the NWAA. It provides an overview of the NDA's process for managing issues, including the identification,assessment, screening, evaluation and management of these issues. It also outlines regulatory and stakeholder interactions in relation to issues resolution.	**Document 159:** Briefing note on the NDA's issues management process, April 2011

This has been followed by the RWMD issuing a document in March 2012 outlining its approach to issues management, including a list of issue topics and version 2 of its Issues Register.	Version 2 of the NDA's Issues Register includes issues that have been raised by the regulators, CoRWM, waste producers, peer reviewers of the gDSSC, NWAA, 'Rock Solid?' and technical experts involved with the work of the West Cumbria MRWS Partnership. The register shows how the issues relate to the various topics of the RWMD work programme, including how they have been evaluated. The RWMD is now planning to engage with issue raisers individually to talk through how their issues are being managed, how they are being used to influence the work programme and try to understand a way forward for their resolution. The RWMD has committed to updating the register on a periodic basis to demonstrate progress with the resolution of issues and to communicate how it is managing any new issues that may arise. This will include adding any issues, technical queries or observations that are formally raised by the Joint Regulatory Issues Resolution Process.	**NDA document:** RWMD approach to issues management[36]

10.45 **Peer review of safety case.** The NDA asked a peer review panel to review the gDSSC. Whilst the panel commented that the gDSSC itself was largely satisfactory, they criticised the peer review process and highlighted lessons for the NDA for the future. The NDA has agreed to take these lessons on board.

36. See **www.nda.gov.uk/documents/loader.cfm?csModule=security/getfile&PageID=50494**.

Document 161: Summary report on the peer review of the NDA's gDSSC, January 2011

10.46 **Regulators' review.** The regulators have reviewed the gDSSC. Their views are outlined in **Box 10.6** below.

Document 253: Regulator review of the NDA's gDSSC, December 2011

Box 10.6: The regulators' views on the generic Disposal System Safety Case

The regulators have reviewed the gDSSC under voluntary arrangements agreed for regulatory scrutiny of RWMD; it does not form the basis of any regulatory decision. Their views were that:

> 'We consider that the broad structure of the gDSSC is acceptable in terms of the general coverage of the documents and of the links shown between them, and that the documentation is of generally high quality. The gDSSC provides confidence, to a degree appropriate at this early stage in implementing geological disposal, that a safety case for a GDF in the UK could be made, providing a suitable site is available. Our position is, however, subject to some reservations that we present in this review.
>
> From our review of the gDSSC, we have identified no specific issues that would prevent a safety case, capable of meeting transport, operational and environmental regulatory requirements, being made for a GDF in the future, providing a suitable site is available and RWMD continues to work with us to address our issues and concerns.'

The regulators' reservations included:

- The need to explain the future role of the gDSSC and develop a clear route map towards the development of a site-specific disposal system safety case.
- The presence of repetition and overlap between documents in the gDSSC and the need for more effective referencing of supporting documents.
- The need to continue working toward the gDSSC as a reasonably accessible document to a wide audience.
- The need to clarify how the RWMD would apply change control to the suite of documents and the statements it contains.
- The desirability of a wider exploration of waste inventory uncertainty.

The NDA RWMD provided the following response to the regulators' review:

> 'RWMD is pleased to receive this constructive feedback from regulators based on this early stage engagement. In terms of the three specific topics that we raised when we asked for the scrutiny review we have concluded:
>
> - There are no fundamental issues that would prevent a future safety case for a geological disposal facility being made subject to a suitable site being available;
> - We have been provided with valuable advice and guidance from regulators which we will use to inform and guide our future development of the safety case, helping us to prepare safety cases in line with regulatory expectations; and,
> - A number of specific areas have been identified where further work is required as our programme moves forward.'

The RWMD report provides responses against the five reservations highlighted by the regulators and commits to working with the regulators to agree a way forward and to give visibility as to how recommendations will impact the future work programme.

Document 254: Briefing from the NDA on its response to the regulators' review of the gDSSC, February 2012
Full NDA report: Response to regulatory review of the gDSSC, June 2012 (available from the NDA's website[37])

10.47 CoRWM conducted a review of the gDSSC process which was published in March 2012[38] and continues to scrutinise how the process is being developed. The key findings of CoRWM's review are summarised below in **Box 10.7**.

10.48 **External challenge**. We invited presentations on the NWAA Issues Register and Greenpeace's 'Rock Solid?' report, which we considered alongside the regulators' Joint Regulatory Issues Resolution Process, and the NDA's Issues Management Process.

37. See **www.nda.gov.uk/documents/upload/Geological-Disposal-Response-to-regulatory-review-of-generic-Disposal-System-Safety-Case-June-2012.pdf**.
38. CoRWM Document 2994 available from **corwm.decc.gov.uk**.

Box 10.7: A summary of key findings from CoRWM's review of the gDSSC (from CoRWM Document 2994)

- 'From its assessment of the suite of safety case documents, CoRWM concluded that, in general, the gDSSC shows that RWMD's understanding of the scientific and technical knowledge underpinning geological disposal is sufficiently comprehensive for the current stage of its work.
- CoRWM identified some topics for which it appears that RWMD's understanding and ability to use knowledge will need to be increased before any site specific DSSC is produced. However, the Committee believes that it will be straightforward for RWMD to make any improvements that are required.
- CoRWM also concluded that RWMD has, or will have, appropriate processes in place to fill gaps in its knowledge through R&D.
- CoRWM concluded that RWMD's site characterisation strategy and plans are not yet comprehensive but that they are developing in appropriate directions at this stage of the implementation of geological disposal.'

10.49 **Handling technical uncertainty.** The NDA responded to the NWAA Issues Register, and this was also the subject of a meeting between the NDA, DECC, stakeholders and representatives of the Partnership. The NDA outlined plans to create an overarching Issues Register which is publicly available on the internet and lists all issues that have been raised by stakeholders or outlined in reports.

Version 2 of the Issues Register is currently available as Appendix B in the document 'RWMD approach to issues management'.[39] It identifies key issues that would need to be resolved before a GDF could be licensed to operate. This may require more research to be carried out, so we recognise the link between the Issues Register and the NDA's R&D programme. The register also considers issues highlighted in the 'Rock Solid?' report published by Greenpeace.

Document 159: Briefing note on the NDA's issues management process, April 2011
NDA document: RWMD approach to issues management (see footnote 9 for weblink)

39. See **www.nda.gov.uk/documents/upload/Geological-Disposal-RWMD-approach-to-issues-management-March-2012.pdf**.

10.50 **Ongoing review and scrutiny.** We note that the NDA's process for developing its gDSSC is subject to a range of review and scrutiny processes. It has already undergone external peer review and will continue to be reviewed internally and by the regulators.

10.51 We support the development of a publicly accessible issues register. The NDA has also started to establish an issues management process. It highlights how issues will be identified, assessed and evaluated, as well as potential links or impacts on the R&D programme.

10.52 **Additional public and stakeholder concerns about safety.** Respondents to our formal consultation mentioned several specific concerns in relation to safety risks surrounding a potential GDF. These included human error, co-location with other nuclear sites, impacts **on** a GDF (for example fracking, seismic events and climate change events), risk of a catastrophe or criticality event, and concern that the ALARP (as low as reasonably practicable) principles would not be met.

In addition to what we have already said about risk (see Chapter 6) we note that the NDA's Risk Register and the gDSSC consider a number of these issues. For example a safety case would take into account existing facilities and relevant developments nearby a potential GDF. However, we also understand concerns that a GDF would be in existence over an extremely long timeframe and that, for some people, the risk of an error or incident happening over the total life of a GDF is simply too much to accept.

We accept that safety cannot be 100% guaranteed for a GDF, but this is true of any development in any industry. The process of making a safety case exists to assess whether or not the level of risk is acceptable from the point of view of the regulators. If the regulators were not satisfied that a safety case could be made, they would not allow a facility to be built.

The principle of ALARP underpins risk management and safety case development in the nuclear industry. It involves weighing a risk against the trouble, time and money needed to control it. ALARP describes the level to which the regulators expect to see workplace risks controlled. We note that if a safety case for a GDF in a specific location could not meet ALARP principles it would not be accepted by the regulators and a facility would therefore not be built in that location.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

The NDA's research and development (R&D) programme

10.53 **The NDA's R&D programme.** In February 2011 the NDA published its R&D programme – it is available at **www.nda.gov.uk/documents/upload/Geological-Disposal-Research-and-Development-Programme-Overview-February-2011.pdf**.

10.54 **CoRWM view.** CoRWM has commented on the R&D programme, acknowledging that a lot has happened since CoRWM issued its 2009 report and that the Government has responded to its recommendations and is acting on most of them. They have noted that the R&D agenda is given a lot of emphasis in current work and the topic is discussed in DECC's annual report. CoRWM is continuing to scrutinise the NDA's R&D programme, and, whilst it is recognised that many issues cannot be resolved at the moment, it is their impression that there has been considerable progress, and a realisation by all parties of the significance of R&D. The general feeling is, therefore, that R&D is being given far more strategic significance than when the issue of R&D was raised by CoRWM in 2009.

10.55 **Regulator view.** The regulators say that they will expect the NDA to use sound science and good engineering practice in developing any future safety case for geological disposal. The NDA will need to decide what R&D is required to support the safety case at any particular stage in developing a GDF. The regulators will review the evolving R&D programme as part of their ongoing scrutiny of the NDA. The regulators are encouraging the NDA to publish as many aspects of its R&D as possible without compromising commercial and security requirements.

10.56 It is not the role of the regulators to undertake R&D to support safety case development. Regulators commission R&D to increase understanding of technical issues relevant to their roles, and use the output from R&D to inform their views and advice, and to aid decision making.

Document 147: Regulator views on the NDA's R&D programme, March 2011

10.57 **Responding to a critical review.** We requested and funded a critique of the NDA's R&D programme by Professor Stuart Haszeldine (Edinburgh University). Whilst not a full list of the points he raised, some of his views included:

- The programme of R&D is comprehensive but complex with 203 research areas.
- More prioritisation between research areas would be helpful.
- Duration and cost information is not included.
- An observation that different people prioritise the research areas differently.
- Independent critique of future research is required, including funding of regulators and communities so that research is both scientific and balanced.

Document 146: Review of the NDA's R&D programme by Professor Haszeldine, March 2011
Document 184: Response from the NDA to Professor Haszeldine's review of its R&D programme
Document 185: Further response from Professor Haszeldine, May 2011
Document 217: Further information from the NDA on R&D, July 2011

10.58 The NDA has responded to Professor Haszeldine's issues and has provided a number of related future actions with timescales for completion (see **Box 10.8** below).

Box 10.8: The NDA's actions in response to issues raised by Professor Haszeldine (the list of actions was created in 2011, and the updates (in brackets) are from July 2012)

'The actions that we propose, set out below, recognise the need for continued interaction with stakeholders within a framework of review and scrutiny of our programme by the regulators and Government.'

1. 'We invite feedback from stakeholders on all our publications and we would welcome comments on our R&D programme document.' (Ongoing action.)
2. 'If, through feedback, we find that there are areas where there is significant disagreement about the R&D needs or our assessment of the priority, we will

discuss these with stakeholders through workshops or other mechanisms and explore the range of views and the reasons for them.' (Ongoing action.)

3. 'We hold periodic meetings where we seek stakeholder input on our programme.' (One such is the workshop on the Current Status of Science and Technology Underpinning Geological Disposal of Higher Activity Waste, held at Loughborough University in October 2011.)
4. 'We will record any changes to the scope or content of our R&D programme document through a series of addenda to the document.' (An updated draft has been produced, showing progress to March 2012 and this is going through the RWMD document approval process.)
5. 'We have improved the way in which we procure our work from suppliers in order to give the technical specialists a greater involvement in shaping our forward programme. We call this 'solution-based' contracting.' (Implemented from April 2011.)
6. 'In response to a number of comments received, we will improve access to our technical information by making more of our reports directly downloadable from the Bibliography.' (All reports produced since 2009 are now available to download at **www.nda.gov.uk/documents/biblio/**. Work is ongoing to make older documents downloadable.)
7. 'We are starting the process of development of the R&D programme for MRWS Stage 5. We will consider ways in which we can engage stakeholders on the overall approach to identifying and prioritising R&D needs. This could take the form of a series of technical workshops. We envisage that we would involve the Learned Societies in this process, acting as an independent voice to ensure that our approach is based on sound scientific processes for document development and peer review.' (RWMD has held some initial discussions and this is now being taken forward by the newly appointed Head of Research.)
8. 'From this year [2011], we will publish the values of the R&D contracts we award.' (A list is now available and is updated regularly. Information will also be available via the Government 'contracts finder'.[40])
9. 'We recognise the specific technical issues raised by Professor Haszeldine as what we call 'potential issues', which we will address using our issues management process.' (RWMD has added the specific technical issues raised by Professor Haszeldine to its Issues Register. As part of this process RWMD is planning to engage with Professor Haszeldine to talk through how the issues are being managed, how they are being used to influence RWMD's work programme and try to understand a way forward for their resolution.)

40. See **www.contractsfinder.businesslink.gov.uk**.

10. 'As part of our issues management process, any potential issues will be evaluated to see whether there is an R&D need and then these will be prioritised and added to the R&D programme document as an addendum.' (The RWMD published a report on its Issues Management Process in March 2012.[41] As part of this process the RWMD is planning to engage with issue raisers to talk through how the issues are being managed, how they are being used to influence the RWMD's work programme and try to understand a way forward for their resolution.)
11. 'During MRWS Stage 5, we will develop plans for the underground research that will be required during Stage 6. These plans will include consideration of whether or not a stand-alone rock laboratory is required.' (A meeting was held in March 2012 to discuss what underground research would be needed in later stages of the MRWS process and what research RWMD should be doing now in international facilities. Since the workshop RWMD has signed a collaboration agreement with the Swedish underground research laboratory. Other actions will be progressed during Stage 5 of the MRWS process.)

10.59 **Ongoing scrutiny.** We recognise that the NDA's R&D programme would have to be subject to significant independent ongoing scrutiny by any future CSP, by the regulators and by CoRWM, including the use of expert review and independent specialists.

10.60 **Additional public and stakeholder concerns about the NDA and its R&D programme.** Respondents to our formal consultation expressed the following concerns about the NDA and its R&D programme:

- The NDA's R&D programme is progressing too slowly and is not wide enough in scope. In addition, the requirements of the R&D programme need to be more clearly defined and the Partnership needs to pay more attention to the importance of R&D to the success of the programme.
- There is a lack of confidence and trust in the NDA.
- Close independent assessment and scrutiny is required for the safety case process/ R&D/NDA activities.
- The issues in the NWAA issues list and 'Rock Solid?' report are not sufficiently dealt with and there should be a more effective response to critics (for example responses to the NWAA issues list and Professor Haszeldine's critique).

41. See **www.nda.gov.uk/documents/loader.cfm?csModule=security/getfile&PageID=50494**.

10.61 We have identified specific concerns about trust in the NDA and suggestions for addressing this lack of trust from the consultation responses. We will pass these on to the NDA. In addition we believe that there is a need to review the regulators' assessment of the NDA's fitness for purpose as developers, and to commission an independent audit and review of the NDA's capacity, funding stability, skill base and **cultural norms** to support the MRWS programme, especially in light of austerity measures.

Cultural norms: The behavioural expectations and cues within a particular society or group.

We note that the NDA RWMD has worked to put in place a process for issues management, and to integrate it with its other programmes. We welcome the RWMD's revised approach to issues management. It allows greater integration with existing programmes, including R&D, and provides a mechanism for ensuring that stakeholder issues are addressed. It gives us greater confidence that key issues or concerns will be picked up and responded to where relevant, including in the R&D programme. However we also agree that independent scrutiny of the NDA's work is essential in any future process, and that further work is needed on many of the issues raised by the NWAA Issues Register and the 'Rock Solid?' report, should the process continue. We suggest a way forward to the DMBs on this matter below.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

Outstanding uncertainties around safety

10.62 **Site-specific safety case.** Detailed independent reviews of any site-specific safety case would be undertaken by the regulators, and we recommend that they should also be undertaken by a CSP, if the process proceeds.

10.63 **Scope and coverage of the NDA's R&D programme.** We recognise that through the further development of the R&D programme, through stakeholder engagement

and via input from the Issues Register, the scope and coverage of the programme will inevitably change.

10.64 **Ongoing scrutiny.** Further independent scrutiny would be required should the process move forward, and it would be necessary, for example, to see a clearer indication of which uncertainties might potentially represent 'show-stoppers' for the MRWS programme at some point in the future, as well as the size of each research task to enable a greater degree of transparency for community representatives.

10.65 We are aware that there is much more work to do in the area of R&D if the process moves forward, but our current view is that, given where we are in the MRWS process, this is hardly surprising. The NDA should consider the comments made by Professor Haszeldine when it next reviews its R&D programme.

Our opinions on safety

10.66 Criterion on **safety: 'Whether the Partnership is satisfied that the NDA RWMD has suitable capability and processes in place to protect residents, workforce and the environment.'**

What we found out. We have learnt about the NDA's generic Disposal System Safety Case (gDSSC), and heard a range of views in relation to this and the NDA's R&D programme. We understand how risks are being identified and managed, but also recognise there is more work to do on both safety and R&D, should the process continue.

Our opinions on the safety case. Given all of the evidence we have heard on the processes and the various levels of scrutiny in place, and the NDA's development of an Issues Register, we believe that the NDA will have suitable capability and an acceptable process in place to develop site-specific safety cases. Of course, any site-specific safety cases would need further monitoring and independent reviews before they are deemed adequate by the regulators and other stakeholders.

Our opinions on the NDA's R&D programme. Our opinion is that, overall, the NDA's R&D programme is acceptable. However, we note that there remain some concerns about the lack of progress with the programme, as well as the lack of clarity over the timescales for completing individual research topics. The creation by the NDA of an

Issues Management Process has gone some way to addressing these concerns, but it is still very much in its infancy and we would encourage the NDA to guard against underestimating the importance that stakeholders attach to its R&D programme.

10.67 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that:

In relation to the safety case, a CSP should:

- Secure an Engagement Package from the Government that allows it to commission independent reviews of any information or work conducted by the NDA, including safety-related work.
- Frequently request independent advice and/or reviews of the NDA's work, potentially via setting up a panel of independent experts on call-down or framework contracts, to be on hand to provide advice and input to the CSP from an independent perspective.
- Review the regulators' ongoing assessment of the NDA's fitness for purpose as developers.
- Consider commissioning an independent review of the NDA's capacity, funding stability, skill base and cultural norms to support the MRWS programme, especially in light of austerity measures.[42]

In relation to the R&D programme, a CSP should:

- Engage closely with the NDA and CoRWM on the delivery of the NDA's R&D programme, including on alternatives to disposing of waste in a GDF.
- Consider commissioning an independent review of the NDA's R&D programme 12 to 18 months into Stage 4, once more progress has been made.

Additional work on security and transport

10.68 **Security.** We wanted to be 'satisfied that suitable regulatory and planning processes are in place or being developed to protect residents, workforce and the environment'. Our initial work, and indeed our initial criteria on this topic, led us to understand a great deal about safety, regulation and planning but less on the issue of security, other than to be reassured that security would be dealt with through a 'Site Security Plan'.

42. Note also CoRWM's work in this area.

Respondents to our formal consultation highlighted concerns that we had not found out enough about security, citing specific issues, but also more generally people wanted more detail on aspects such as generic security features overall, underground vs surface security, the nature of physical security measures, and understanding the level of security needed.

In order to find out more we requested information from the ONR. As background to the issues, the ONR provided a copy of 'The state of security in the civil nuclear industry and the effectiveness of security regulation April 2009 to March 2011' – a report to the Minister of Energy by the Director of Civil Nuclear Security in the ONR, published in May 2011[43].

It is worth reiterating that the ONR was formed on 1st April 2011 and is responsible for the regulation of security, safety and safeguards within the UK's nuclear industry. The former Office for Civil Nuclear Security (OCNS) is now part of the ONR and use of the term OCNS has been discontinued. The report predates the formation of the ONR and therefore refers to OCNS. In October 2011 the Radioactive Materials Transport Team from the Department for Transport also joined the ONR. The ONR conducts its regulatory activities under the Nuclear Industries Security Regulations 2003.

10.69 **Organisational and legislative context.** Within the UK's civil nuclear industry, security is regulated by an independent regulator, now the ONR, whose Director is accountable to Government ministers. Operators of civil licensed nuclear sites are legally and financially responsible for security at their sites and they must demonstrate that the security measures which are maintained at their sites are appropriate to protect the nuclear inventories held there. The ONR approves the level of security at all civil licensed nuclear sites, conducts a programme of routine and no-notice inspections to ensure compliance, and has the power to compel the operators to make improvements if necessary.

The UK complies with internationally accepted best practice (as endorsed in the extant version of the IAEA's nuclear security guidance document 'The Physical Protection of Nuclear Material and Nuclear Facilities INFCIRC/225/Rev4') in putting in place security measures and procedures which are designed to prevent the theft or sabotage of nuclear material or the sabotage of nuclear facilities.

43. See **www.hse.gov.uk/nuclear/ocns/ocns0911.pdf**.

Ministerial responsibility for the security of the civil nuclear industry rests with the Secretary of State for Energy and Climate Change. The Anti-terrorism, Crime and Security Act 2001 (the 2001 Act) enabled the Secretary of State to make the Nuclear Industries Security Regulations 2003 (the Regulations). The Regulations place significant obligations on the operators of civil licensed nuclear sites with regard to: physical security measures; the security of sensitive nuclear information; the vetting of permanent staff and contractors; and the movement of nuclear material by road and rail within the UK and globally in UK-flagged vessels.

The 2001 Act also extended the jurisdiction of the United Kingdom Atomic Energy Authority Constabulary (UKAEAC), the forerunner of today's Civil Nuclear Constabulary (CNC), to include the UK's nuclear power stations and anywhere within 5 km of them. The primary role of the CNC is the protection of civil licensed nuclear sites and the safeguarding of nuclear material. In practice, this means the provision of an armed response capability at sites designated by the security regulator and also for designated moves of nuclear material. The designation of such civil licensed sites or such moves is determined, respectively, by the category of nuclear material stored at the site or being moved.

The 2001 Act also made it an offence intentionally, or recklessly, to disclose information which prejudices the security of any nuclear site.

The Energy Act 2004 enabled the formation of the CNC and the establishment of the Civil Nuclear Police Authority as a non-departmental public body with the function of securing the maintenance of the CNC. The Secretary of State has extensive powers under the Energy Act 2004 to ensure that the CNC provides an efficient and effective policing service in order to comply with security plans at civil licensed nuclear sites and during moves of nuclear material.

10.70 **Operational matters.** Protective security at civil licensed nuclear sites covers the four distinct, yet interrelated areas of:

- Site security.
- Transport security (see paragraphs 10.71 and 10.72 below).
- Information security.
- Personnel security (vetting).

These specialist areas are each addressed in the Regulations and the ONR's regulatory activities concentrate on ensuring that appropriate standards of security are met and subsequently maintained.

10.71 **Transport.** Respondents to our formal consultation also highlighted concerns that we had not found out enough about transport, in particular the regulation of transport safety and security in relation to development of a GDF. We summarise what we found out from the ONR as a result of these concerns below, followed by a summary of DECC information on transport provided on their MRWS website (**Box 10.9** below).

10.72 **Summary of information from the ONR.** The transportation of radioactive materials is regulated by the Carriage of Dangerous Goods Regulations (2009) as amended (2011) which are reviewed and updated on a regular basis and reflect international agreements and European Directives. Dangerous goods are defined within the Regulations as being 'substances and articles that have been tested and assessed against internationally-agreed criteria – a process called classification – and found to be potentially dangerous (hazardous) when carried'. Dangerous goods are assigned to different 'Classes' depending on their predominant hazard.

There are regulations to deal with the carriage of dangerous goods, the purpose of which is to protect everyone either directly involved (such as consignors or carriers), or who might become involved (such as members of the emergency services and the public). Regulations place duties upon everyone involved in the carriage of dangerous goods, to ensure that they know what they have to do to minimise the risk of incidents and guarantee an effective response. Audits to check for compliance to the Regulations are, for radioactive materials, carried out by the ONR who regulate, amongst others, the consignors (i.e. those responsible for sending the materials) to ensure their procedures for movement of the materials by either road or rail meet the requirements of the Regulations.

Box 10.9: Our summary of an extract on transport from DECC's MRWS website

Transport packages

- The regulatory requirements of the Carriage of Dangerous Goods Regulations set out what types of transport package are allowed, how much radioactivity they are allowed to contain, and how they should perform against specified tests. Approval from the transport regulator is required for certain package designs, their shipments and the quality programmes associated with the design and manufacture of transport packaging, the filling of the packages with waste, and handling and transporting of the waste.
- The performance requirements for packages containing radioactive material are dependent upon the quantity and type of radioactive material they contain.
- All types of packages have defined limits in the transport regulations concerning the radiation dose rates on their surface and at distances from their conveyance (road or rail vehicle and hold of a ship). There are also limits for the total quantity of radioactive material loaded onto a conveyance.
- Packages used for the transport of the highest activity materials, such as high level waste (HLW), spent nuclear fuel, and some types of intermediate level waste (ILW), have to be able to survive tests that are representative of the conditions that could be experienced in normal and severe transport accidents.

Transport safety

- Transport safety is principally based on the transport package, and it has to be demonstrated that these packages provide the necessary protection appropriate to the radioactive material they contain. The transport regulations provide a graded approach to the design of transport packages whereby the package integrity is related to the potential hazard of its contents, taking into account the different conditions of transport (routine transport, minor mishaps and accident conditions).
- Before a transport package can be used it must be demonstrated that the regulatory design requirements and test procedures appropriate to the package type have been met.
- As part of the process of demonstrating safety with the transport regulations, a transport package design safety report is produced.

Transport risks

Transport risks associated with traffic volumes and modes of transport will be mitigated by strategies currently used such as:

- A comprehensive training regime for all staff.
- Use of specially trained staff to transport waste.
- A dedicated fleet of transport vehicles for road, rail and/or sea depending on where the disposal facility is located.
- A robust programme of quality assurance and controls for all transport activities.
- Transport vehicles will be tracked by satellite at a dedicated operations centre.

The **siting process** would also provide the opportunity for CSPs to discuss and explore issues around the implications for waste transport, for example: safety and security, the amount and frequency of traffic, the impact of transport routes on specific communities and so on.

Our opinions on security and transport

10.73 **Security.** Although not originally a specific criterion within our Work Programme, we decided to find out more detail about security and form an opinion on it in response to public and stakeholder concerns, particularly those arising from our formal consultation.

What we found out. We have found out how security for a GDF would be regulated, and by whom. We have been provided with further detail on the kinds of operational matters that are taken into account to ensure that appropriate standards of security are met and subsequently maintained.

Our opinions. Our opinion is that, in generic terms, we are satisfied with how security is being handled. However, we think that security issues can only be addressed in specific terms if and when potential site areas are identified, and we stress the importance of this given the level of stakeholder concern.

10.74 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that:

- A CSP should assess when it is possible to form firmer views on security arrangements, as designs and potential locations become clearer.

10.75 **Transport.** Although not originally a specific criterion within our Work Programme, we decided to find out more detail about transport regulation and form an opinion on

it in response to public and stakeholder concerns, particularly those arising from our formal consultation.

What we found out. We have been provided with details of how transport, in particular transport safety and security, would be regulated for a GDF.

Our opinions. Our opinion is that we are satisfied with what we have heard about transport provisions and plans for a GDF at this stage, including the regulation of security and safety of transport. We understand that more work on transport assessments is planned if and when potential site areas are identified. This would include the NDA conducting a Strategic Transport Assessment in Stage 4.

10.76 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that:

- A CSP should review the transport assessments that the NDA conducts. This would primarily be via the Strategic Transport Assessment that the NDA is planning to conduct in Stage 4.

11. Impacts

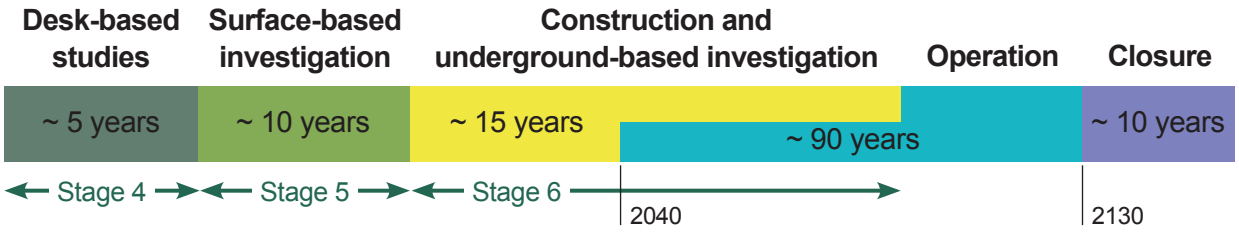
If a GDF is built, what might the positive and negative impacts be?

Context and focus of our work

11.1 If a GDF were to be sited in West Cumbria it could lead to a number of different negative and positive impacts for the community, the economy and the environment. These might include the immediate effects of construction such as: noise and dust; whether there would be any impact on health in the short or long term; changes in investment in the area, employment and population; traffic impacts; and possible effects on the visual or physical environment and on tourism. These impacts, both positive and negative, would ultimately need weighing up against the impacts of the waste remaining in its current form, and of the above-ground storage arrangements at Sellafield or elsewhere in the country.

11.2 In addition to identifying **what** the impacts of a GDF might be, it is also important to consider **when** and for **how long** they might occur – see **Figure 11.1** below for an indicative timeline of the key future phases of a geological disposal programme. The process of entering Stage 4 (if this happens) could have 'pre-construction' impacts for example on the tourism and land-based economies – we discuss this further in the section on brand protection below. Impacts could be expected to vary between the construction, operation and closure of a GDF, for example a large amount of spoil would need to be excavated upfront, then stored on site until it could be used (see paragraph 11.18).

Figure 11.1: Geological disposal programme timeline indicating phases



In addition, the issue of long-term impacts continuing for a long time after a GDF has closed was a key concern for many of the respondents to our formal consultation.

11.3 Processes such as the **Environmental Impact Assessment (EIA)** (see paragraphs 11.9 and 11.10 below), and the development of a safety case (see Chapter 10) are a key part of assessing potential risks and impacts. The **Strategic Environmental Assessment (SEA)** and EIA would focus on the period up to and including GDF closure. The assessments would also consider the much longer-term post-closure phase, but given the degree of uncertainty associated with assessments over very long timescales this is likely to be at a relatively high level. The safety case would consider a time period many hundreds of thousands of years into the future.

Environmental Impact Assessment (EIA): An assessment of the possible positive or negative impacts that a proposed project may have on the environment, together consisting of the natural, social and economic aspects.

Strategic Environmental Assessment (SEA): A system of incorporating environmental considerations into policies, plans, and programmes, by assessing their potential social, economic and environmental impacts.

11.4 **Focus of our work on impacts.** Our Work Programme contained the following criteria in relation to impacts:

3b. Criterion on **direct impacts: 'Whether the Partnership is confident that appropriate possibilities exist to assess and manage environmental, social and economic impacts appropriately if they occur.'**

3c. Criterion on **long-term direction: 'Whether the Partnership is confident that the possibility of a repository fits appropriately with the overall direction of the relevant community/ies.'**

3d. Criterion on **economic sustainability: 'Whether the Partnership is confident that accepting a GDF at some point in the future, and committing the host area to a nuclear future for many generations to come, is economically advantageous and will contribute to economic sustainability.'**

Our work in relation to direct impacts

11.5 **Generic impacts and assessment of impacts in Stage 4:** We requested a paper and presentation from the NDA covering potential generic impacts of a GDF. This helped us begin to understand the likely broad impacts (positive and negative) of hosting a GDF, and how they might be mitigated. We also received a briefing note from the NDA on how impacts would be assessed in Stage 4 of the MRWS process. This information, alongside public and stakeholder input, was fed into the development of our **Schedule of Impacts** (see **Box 11.2** and **Box 11.3** below).

Schedule of Impacts: A table drawn up by the Partnership that identifies specific impacts of a potential repository and when the developer (the NDA) will assess them. The purpose of the table is to satisfy the Partnership that the NDA a) recognises all the important impacts and b) has plans in place to fully assess them before development.

Document 27: NDA paper on the generic impacts of a GDF, October 2009
Document 219: Briefing note on environmental assessments in Stage 4 of the MRWS process, August 2011

11.6 **Transport infrastructure.** In response to concerns arising during our first round of public and stakeholder engagement (PSE1), we received a briefing on transport impacts from the NDA. Cumbria County Council transport planners reviewed the NDA's generic transport impacts information and considered whether transport requirements could be accommodated on existing infrastructure. It would, however, be necessary to understand the detailed requirements in site-specific proposals for a GDF before any firm view could be reached.

Document 178: Letter from the NDA regarding transport movements, May 2011

11.7 **Perceptions research.** We commissioned some qualitative research to help us understand the potential impacts on perceptions of West Cumbria and other parts of the county, should a GDF be sited in West Cumbria. The research looked at the perceptions held by current and prospective residents, visitors, businesses and potential investors.

The research identified visitor concerns about environmental and health impacts. Within the West Cumbrian urban and business communities, on the whole, perceptions appeared to be positive, but less so in the rural community where there were concerns about landscape impacts as well as land and property prices. The research showed that a GDF would be expected (by those asked in the research) to bring investment to road infrastructure and have a positive impact on employment, which could help retain young people in West Cumbria and reduce the numbers moving out of the area.

Document 165.1: Partnership meeting report, 14 April 2011
Document 163: Partnership report on the impacts of a GDF, updated July 2011
Document 168: Report from research into community, visitor and business perceptions of the impacts of a GDF, April 2011

11.8 **Schedule of Impacts.** Following the paper and presentation from the NDA at the October 2009 Partnership meeting, and taking account of public and stakeholder concerns, we developed a Schedule of Impacts, which is a list of the key impacts we felt needed to be addressed in more detail.

11.9 Specific and overall impacts remain a concern for many members of the public and stakeholders. Many of these impacts are considered in the NDA's early generic impacts assessment. The NDA says that if the process continues, all of the issues would be addressed initially by an SEA in Stage 4, and later EIAs in Stage 5. At each stage the assessment work would become more detailed and there would be less uncertainty associated with its findings. The NDA's Permissions Schedule provides a clear picture of when these would happen.[44]

11.10 We would expect any future community siting partnership (CSP) to monitor and review the outputs of impact assessments so that views on the acceptability of impacts, and proposed measures to avoid or reduce those impacts, can be made at appropriate points within the process. The SEA and EIA have an important role in identifying impact avoidance or reduction schemes, which could help a future CSP to take a view on the acceptability or otherwise of impacts.

44. See **www.nda.gov.uk/documents/upload/Geological-Disposal-Permissions-Schedule-for-Geological-Disposal-of-Higher-Activity-Radioactive-Waste-November-2010.pdf**.

Document 163: Appendix A – Schedule of Impacts to be assessed

11.11 Our Schedule of Impacts lists a number of direct impacts that we think need to be addressed, including impacts on the environment, health and communities.

Box 11.2: The impacts listed in the Partnership's Schedule of Impacts (see **Box 11.3** for an example of how each of these impacts is looked at in more detail)

- Air quality
- Biodiversity and ecosystem services
- Climate change (greenhouse gas emissions)
- Communities: population, employment and viability
- Communities: supporting infrastructure, including transport
- Human health and well-being
- Cultural heritage
- Landscape
- Soils, geology and land use
- Water: hydrology (water sources) and geomorphology (underground structures)
- Water: water quality (including surface, coastal and marine)
- Water: supply and demand
- Water: groundwater quality and flow
- Flood risk

11.12 For each impact a number of questions are answered along with any additional comments – this all contributes to the level of confidence we have in whether or not key impacts will be assessed by the NDA in a timely and effective manner. An example of this is shown in **Box 11.3**.

11.13 **Brand protection**. We commissioned a new piece of work to understand the potential impacts on the branding of the area, and to suggest ways to offset any negative reputational impacts that the siting process may have across Cumbria. Whilst this study had its limitations in terms of not being able to quantify the risk to the area, we believe it sets out the key considerations if the MRWS process proceeds any further. It also starts to address the concerns expressed by members of the public and some stakeholders that there could be a negative impact on people's perceptions of the area.

Box 11.3: Example section from the Partnership's Schedule of Impacts

Impact	Assessable prior to a decision about participation?	Confident can be answered later?	Covered satisfactorily in NDA Generic Assessments or commitment to address in SEA and EIA?	Further assessment likely to be necessary or desirable prior to a decision about participation?	Assessment available from other source?
Human health and well-being: To avoid adverse impacts on physical and mental health. To avoid the loss of access and recreational opportunities.	Yes – at a generic level	Yes	Yes	No	N/A
Comments: Will be assessed as part of the SEA during MRWS Stage 4 and as part of the EIAs for surface-based investigation and underground operations during MRWS Stages 5 and 6. NDA RWMD's SEA and EIA work will include an integrated Health Impact Assessment (HIA). Identified effects will be assessed by regulators at the planning and authorisation stages.					
Guide questions:					
Will it adversely affect the health of local communities through accidental radioactive discharges or exposure to radiation?	Yes – at a generic level	Yes	Yes	No	N/A
Will the storage or disposal of radioactive waste result in adverse physical and mental health effects for local communities?	In relation to physical effects – yes at a generic level	Yes	Yes	No	N/A
Comments: See comment on guide questions under Air Quality. Health clearly addressed as part of the SEA process; also note HIA will be prepared and integrated.					

11.14 We acknowledge that there are potential risks to some parts of the economy in the county if the process moves forward, in particular the visitor, land-based and food and drink sectors. We have included a suggested way forward on brand protection as part of our opinions below.

Document 269: Brand protection strategy report, March 2012

11.15 **Additional public and stakeholder concerns.** Responses to our formal consultation and previous rounds of engagement highlight several outstanding concerns about impacts that are already listed in our Schedule of Impacts. Impacts would be assessed in more detail should West Cumbria enter Stage 4 of the MRWS process. In addition to this, we have addressed the specific issues of spoil and property value protection in more detail below (paragraphs 11.16 and 11.18). We have also provided advice to the decision-making bodies (DMBs) in relation to property value protection.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

Outstanding uncertainties around direct impacts

11.16 **Property value protection.** We commissioned a briefing on how property values can be affected by large infrastructure projects and how they can be protected via schemes called **property value protection (PVP) plans**. These are schemes underwritten by the Government whereby homeowners are recompensed if there is a demonstrable drop in the value of their property when they sell it. International experience suggests that these schemes can provide reassurance and confidence to a community. Such PVP schemes are usually only developed when a specific site is found, so that geographic boundaries can be drawn, and clear rules for applying for compensation can be agreed. We are, of course, not at this stage yet. However, any future CSP should consider if, when and how to develop a PVP plan with the Government.

Property value protection (PVP) plans: These are schemes underwritten by the Government whereby homeowners are recompensed if there is a demonstrable drop in the value of their property when they sell it.

Document 231: Information on property value protection plans, October 2011

11.17 **Jobs and skills.** The NDA has stated that, legally, jobs cannot be set aside just for local people. As a result, it recognises that there will be a requirement for pre-development investment in local skills training if the siting process starts. This will be essential if the West Cumbria workforce is to be well equipped to compete for jobs arising from any future GDF construction and operation.

11.18 **Spoil.** Considerable amounts of spoil would be generated by a GDF, roughly equivalent to that excavated for the Channel Tunnel. The total volume of rock excavated is large, and it would occur over a timescale of many years. To provide a sense of scale, the expected annual extraction rates range from 57,000 to 391,000 tonnes per year, which compares to the current crushed rock extraction permissions of 4.02 million tonnes per year in Cumbria (reference from the North West Regional Aggregates Working Party Annual Monitoring Report 2010, page 70). Illustrative designs published by the NDA assume that much or all of this spoil would be kept on site by building embankments 12m high. Where possible, this spoil would be used as backfill in the GDF or removed from site for resale as aggregate. Further information on this is available in the NDA's Generic Environmental and Sustainability Report that can be found at: **www.nda.gov.uk/documents/upload/Geological-Disposal-Generic-Environmental-and-Sustainability-Report-for-a-Geological-Disposal-Facility-Non-Technical-Summary-October-2010.pdf**.

The issues regarding spoil that would need to be addressed if the siting process occurs would include:

a. What is the maximum amount on site at the peak?
b. What value and usage does it have e.g. for resale or as backfill?
c. What is the transport impact of moving it off site? And to where?
d. What are the environmental impacts of storing it on site?
e. If the excavated rock is suitable for sale by the NDA, what is the impact on local aggregate businesses given the significant tonnages involved?

11.19 However, we are aware that the specific site location and inventory have a significant influence on how much spoil there is, whether it can be used as backfill, and whether it can be sold as aggregate or not. This is, therefore, a key area of exploration and understanding for any future CSP, if and when specific sites are identified.

Document o: Input from Professor David Smythe on spoil, October 2011
Document 234: Response from the NDA regarding spoil, October 2011

Our opinions on direct impacts

11.20 Criterion on **direct impacts: 'Whether the Partnership is confident that appropriate possibilities exist to assess and manage environmental, social and economic impacts appropriately if they occur.'**

What we found out. We have found out about generic impacts of a GDF and how these would be assessed. We have undertaken perceptions and brand protection research to better understand some of the less tangible impacts. We have produced a schedule of impacts, which lists a number of direct impacts that we think need to be addressed.

Our opinions. We have received a good deal of information on the generic impacts, both positive and negative, of developing a GDF. Our overall opinion is that, at this stage, we are fairly confident that an acceptable process can be put in place during the next stage of the MRWS process to assess and mitigate negative impacts, and maximise positive impacts. We acknowledge, however, that a huge amount of work regarding identifying and quantifying impacts will be required in future possible stages.

Additionally, our opinion is that, although they are hard to quantify, we acknowledge there are potential risks to some parts of the economy in the county if the process moves forward, in particular the visitor, land-based, and food and drink sectors. We advise that a coordinated strategy and action plan is prepared to support those aspects of Cumbria's visitor and land-based economic activity. The strategy would encompass three main elements:

1. Ensuring Cumbria-wide communication through a coordinated action plan between existing agencies, that 'protects' the visitor and land-based aspects of Cumbria's economic activity.
2. Creating a phased communication programme that appreciates that there are a number of key milestones in a project of this nature.
3. Using a broad range of communication channels to get closer to key audiences.

Such a strategy should be initiated by the DMBs and existing agencies and taken forward forthwith, in order to be in a position to progress to implementation at the time that a decision about participation is taken, should such a decision to participate be forthcoming.

11.21 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, we advise that:

Regarding brand protection:

- A CSP should monitor whether there is any impact on the area's brand during Stage 4, and in parallel deliver the brand protection strategy that has been agreed.
- Before the end of Stage 4, the DMBs should take a definitive view with the NDA on how public education should be delivered and specifically if, how and when facilities such as a visitor centre should be established.

Regarding property value protection:

- A CSP should consider developing a PVP plan with the Government to protect against potential property value changes if and when specific sites start to be identified in the process.

Our work in relation to long-term direction and economic sustainability

(We have combined these criteria in this section due to their strong relation to each other and the similarity of information gathered in relation to each one.)

11.22 **Vision for West Cumbria.** We received a presentation in March 2011 about the current economic vision for West Cumbria, followed by updates in 2012 (see **Box 11.4**).

Box 11.4: A summary of the information we found out on the economic vision for West Cumbria

Presentation and update

At the March 2011 Partnership meeting, a Partnership member speaking on behalf of the principal authorities (Allerdale Borough, Copeland Borough and Cumbria County Councils) and Britain's Energy Coast, gave us a presentation on 'The Vision for West Cumbria'. Some of the key points from the presentation included:

- West Cumbria has had nuclear operations for over 50 years and can now be said to have a 'nuclear dependence' – for example 40% of local suppliers depend on Sellafield for 50% of their business.
- The West Cumbria Strategic Masterplan was produced in 2006/7, followed by the Britain's Energy Coast brand and programme. This was against a backdrop of predicted job losses from 2011/12 onwards due to an increased focus on decommissioning nuclear facilities.

In March 2011, strategic partners including Britain's Energy Coast, the NDA and the local authorities engaged with private sector partners in an attempt to 'refresh' the 2006/7 Energy Coast Masterplan recognising changes in the local economy, to develop an 'economic blueprint' for West Cumbria (to 2027).

The West Cumbria Economic Blueprint

The 'West Cumbria Economic Blueprint – Realising the Potential of Britain's Energy Coast' was officially launched in June 2012. It:

- Sets out a joint approach to economic development, as well as highlighting a shortlist of priority programmes and projects.
- Proposes a strategy for the development of the local economy around creating an environment in which businesses and individuals are encouraged to innovate.
- Lays out short-term measures to ensure that as much of the substantial investment in nuclear new build and decommissioning is captured by local businesses as possible.

The strategy has four objectives:

1. Optimising worldwide nuclear investment and building on our expertise.
2. Business expansion and diversification.
3. Providing a supportive physical infrastructure.
4. Growing the asset base.

In order to achieve the strategy, delivery will be focused on the Britain's Energy Coast Innovation Zone. The Zone will broadly cover the area in which the

major research, business, labour force and employment assets of the area are located and will cover the key towns of Whitehaven and Workington, the port of Workington, Lillyhall, Westlakes Science and Technology Park, the Sellafield site and the Low Level Waste Repository near Drigg. Delivery will be focused on a small number of transformational actions within the Innovation Zone underpinned by an annual implementation plan describing partner's contributions and potential sources of funding. The actions relate to:

- Applied research.
- Research and development/demonstration.
- Enterprise.
- Business support.
- Skills and training.
- Accessing markets.
- Infrastructure.
- Sites and premises.

The Blueprint does not currently mention a GDF as it did not want to prejudge a decision about participation in the MRWS process.

Document 150.2: Partnership meeting report, 3 March 2011
Document 255: Update on planning and the economic vision, February 2012

11.23 **Employment.** We received a presentation and paper from the NDA on employment and skills required for the development of a GDF. According to the NDA, a facility would create direct employment of an average of 550 jobs over 140 years, with up to 1,000 people being employed during construction and early facility operation. Indirect employment would also be created. Government figures suggest that between 1 and 1.5 extra jobs would be created for each GDF job, though figures from the United States suggest more than this. For more information on specific job types see Document 179, the NDA's Manpower and Skills Report. Relevant data from this report include that:

- Half of the jobs would be classified as 'skilled'.
- Around a quarter of the jobs would be classified as 'management and professional'.
- Over the whole programme, around 75% of the manpower would **have** to be based on the GDF site. The remaining 25% **could** be based off site.

11.24 These employment figures are only part of the story, and would need to be considered in the light of any employment lost due to potential negative impacts on the image of the area, and also any employment gained via investment in community benefits (see Chapter 12). The NDA is planning further work on this subject during Stage 4 of the MRWS process as appropriate.

Document 179: The NDA's report on manpower and skills requirements for a GDF, May 2011
Document 176: Partnership meeting report, 24 May 2011

11.25 **Perceptions research.** The perceptions research (see paragraph 11.7) identified a concern about the impact on Cumbria's visitor economy. It also reflected a concern that a prosperous 'nuclear-driven' economy could hamper future development of tourism across Cumbria and a concern that any investment would be 'channelled away' from local people who might not benefit from the building of a GDF. Concerns such as these are being explored further by the work on brand protection (see paragraph 11.13).

Document 168: Report from research into community, visitor and business perceptions of the impacts of a GDF, April 2011

11.26 **Scoping and monitoring ongoing economic impacts from an early stage.** Issues relating to economic sustainability and long-term impacts on an area are complex, and can be difficult to measure. These impacts could also begin at an early stage, for example a decision to participate in Stage 4 of the MRWS process in itself could have impacts, which we have already discussed in relation to brand protection. We therefore recognise the importance of starting to monitor economic impacts early and to continue monitoring them, should the Stage 4 process begin in West Cumbria – we have provided some advice to the DMBs on this issue below.

11.27 **Compatibility with existing policies and plans.** Existing policies and development plans suggest that the presence of a GDF is potentially compatible with the economic aspirations of West Cumbria as presented to the Partnership. However, there is some concern within the Partnership that, although current policies support the nuclear industry, they also support the diversification away from nuclear in the longer term. We

also recognise that current planning policies would rule out certain scenarios such as surface facilities within the National Park boundary – see paragraphs 10.36 and 10.37 for more on this. The impact on rural and urban areas will be different, and policies for the affected areas will need to be kept under review.

11.28 **Link to Community Benefits Principles.** Our Community Benefits Principles (see Chapter 12) include the need for long-term support that makes a difference, and which has the potential to transform the economic and social well-being of West Cumbria.

11.29 **Additional public and stakeholder concerns.** Some members of the public and stakeholders were concerned that a GDF would not contribute to economic sustainability in West Cumbria, that it would damage other industries such as tourism and agriculture, and that West Cumbria should diversify away from the nuclear industry. Others were keen for West Cumbria to specialise, believing that a GDF would impact positively on employment and economic sustainability, and that West Cumbria has the necessary skills and experience for such a facility. We recognise there is a wide range of views about the positive and negative impacts of the nuclear industry in West Cumbria and have discussed this in Chapter 6, paragraphs 6.44 to 6.48.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

Outstanding uncertainties around long-term direction and economic sustainability

11.30 **Future economic development.** Concerns remain within the Partnership about job creation and diversification of the local economy away from the nuclear industry in the future. We would suggest that, if decisions are taken to enter the siting process, then a future CSP should consider undertaking a longer-term visioning exercise over at least a 20 to 50 year horizon to understand the economic implications more clearly. Such a visioning exercise should cover both the urban and rural economy, as far as these can ever be separated and clearly defined.

11.31 We must fully understand the implications for employment in tourism, agriculture and associated industries which form significant sectors within the Lake District and Cumbrian economies for both job creation and income generation. For example in 2010 the value of tourism to the Lake District was £900 million, employing 15,000 people, and for Cumbria as a whole this was £2.2 billion, employing 33,000 people.[45]

Our opinions on long-term direction and economic sustainability

11.32 Criterion on **long-term direction: 'Whether the Partnership is confident that the possibility of a repository fits appropriately with the overall direction of the relevant community/ies.'**

Criterion on **economic sustainability: 'Whether the Partnership is confident that accepting a GDF at some point in the future, and committing the host area to a nuclear future for many generations to come, is economically advantageous and will contribute to economic sustainability.'**

What we found out. We have learnt about the economic vision for West Cumbria and have received information on potential employment from development of a GDF. We understand the importance of scoping economic and longer-term impacts at an early stage, and monitoring these on an ongoing basis.

Our opinions on long-term direction. Our opinion is that the development of a GDF appears broadly compatible with the economic aspirations of West Cumbria, although all members recognise the desire for diversification of the economy. Also, we recognise the need to understand the implications of a GDF in the long term on the different components of the local economy, such as industry, agriculture and tourism.

Our opinions on economic sustainability. The Community Benefits Principles (see Chapter 12) provide the basis for future discussions between community representatives and the Government about how long-term sustainable employment and appropriate diversification could be achieved.

45. Figures from STEAM (Scarborough Tourism Economic Activity Monitor), Cumbria Tourism.

11.33 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, we advise that:

In relation to long-term direction:

- They consider commissioning a long-term economic visioning exercise during Stage 4, integrating with the economic impact assessments that will be conducted (see below).

In relation to economic sustainability:

- A CSP should conduct a full economic impact analysis during Stage 4, to look at the short to medium-term impacts. This should be conducted for each potential site area, and in each case should integrate impacts locally, countywide and beyond. Note that this economic impact assessment may be linked to the longer-term economic visioning exercise mentioned in previous advice. The longer-term visioning exercise would focus on the less certain impacts over a longer timescale. It might be appropriate to deliver both together as a single piece of work.
- A CSP should independently review the NDA's assessments of impacts that it will conduct as part of its environmental assessment process.
- A training programme should be put in place to enable the West Cumbria workforce to compete for jobs arising from the process.

12. Community benefits package

If a GDF is built, what could a community expect in terms of additional benefits?

Context and focus of our work

12.1 **Context.** The Government has said that any area in which a GDF is sited would expect some kind of **community benefits package**. Exactly what this package might be and when it might happen cannot be decided yet. However, we would expect it to be a substantial long-term investment in things like infrastructure, services or skills provided by the Government that benefits the whole community.

Community benefits package: A set of benefits provided by the Government to an area in which a repository is sited, including those over and above any direct benefits to the area from the construction and operation of a repository.

12.2 We should point out that there are currently three types of funding for communities under discussion in relation to the MRWS process:

- **Engagement package:** Funding to cover the direct costs of participating in the process. This includes for example the costs of officer and member time, external communications, running consultations, and commissioning independent advice.
- **Impact mitigation/compensation:** Funding to mitigate impacts or, where necessary, compensate for unavoidable impacts from the siting process or construction of any facility. This could include for example the costs of a brand protection communications strategy, or the costs of mitigating or even compensating for localised disruption from a borehole drilling programme.
- **Community benefits package:** Additional benefits beyond the above two categories, in recognition of a local community fulfilling an essential service to the nation. This could include a variety of investments or funding streams.

12.3 This chapter discusses only the third of these – a community benefits package – and not the other two.

12.4 **Focus of our work on a community benefits package.** Our Work Programme contained the following criterion in relation to a community benefits package:

3a. Criterion on a **community benefits package: 'Whether the Partnership is confident that an appropriate community benefits package can be developed.'**

As well as gaining a greater understanding of the Government's perspective on community benefits, we decided it would be important for the decision-making bodies (DMBs) to know what has happened in other countries in relation to benefits packages, and to work up a set of principles by which community benefits would be discussed, agreed and potentially administered, including how benefits might be allocated to different communities.

When discussing benefits we clarified that this would mean benefits are:

- Beyond those which derive directly from the construction and operation of the facility, and in addition to those which the community would normally expect, so that other funding would not be displaced. For example, where possible in a potential Stage 4, we would expect jobs related to the siting process or research and development to be based in West Cumbria itself, not elsewhere in the country.
- Beyond compensation for impacts from construction/operation of a facility.
- Beyond mitigation for any site investigation works such as boreholes.

Our work in relation to a community benefits package

12.5 **DECC and NDA presentations.** We received presentations from DECC to outline the Government's view on community benefits, and from the NDA to outline what has happened elsewhere in the world.

Document 20: Partnership meeting report, 4 September 2009

12.6 **International experience.** We also gathered a range of independent information on UK and international experience of community benefits. Examples are shown below in **Box 12.1**.

Box 12.1: Examples of community benefits in other countries (for illustrative purposes only)

These have included things like cash payments to the area, lower taxes and extra facilities. For example:

- In Sweden £130 million is being invested into regional projects in the communities that volunteered to have the GDF, in various ways and only when milestones are met.
- In South Korea a community was given funds and a new science park when they agreed to have a low level waste GDF.
- In Spain and Italy, the benefits are linked to the amount of waste that goes into the facility.

Document 31: Briefing note from the NDA on international benefits packages, October 2009
Document 140: Review of international experience of benefits packages by Galson Sciences, October 2010
Document 156: Report from a virtual visit to the Waste Isolation Pilot Plant in the USA, March 2011
Document 238: Report from a visit to the Underground Research Laboratory in France, October 2011

12.7 **Responding to public and stakeholder concerns.** Feedback from our public and stakeholder engagement (PSE), and particularly from our formal consultation, showed that, whilst many people feel community benefits are expected or necessary, others feel they are a bribe or that they would not be enough to outweigh the negative impacts of a GDF. Many people consider health and safety to be more important than community benefits.

12.8 We have noted concerns about the ethics of community benefits (bribe or rightful reward?). However, we believe that a community benefits package could be a reasonable opportunity for a local community that hosts a national facility, assuming

firstly that safety and site suitability could be proven, and secondly that a package is negotiated transparently and fairly, using appropriate principles to guide negotiations and the distribution of benefits.

The principles outlined in **Box 12.2** aim to make sure that the way in which we believe a package could be negotiated is transparent, to avoid it being seen as a bribe. A bribe would be corrupt, covert and illegal, whereas a community benefits package seeks future investment for an affected area to ensure that its economy and environment are protected for the future. We see a significant difference between the two.

12.9 There is also a strong concern that either this Government or a future government would not follow-through on commitments made with respect to benefits, with some of these concerns being based on previous experience or a general mistrust of government. We have been exploring ways in which the principles could be strengthened or made more binding in response to this concern (see Chapter 6).

12.10 Some respondents to the consultation feel that the DMBs would not do a good job in negotiating benefits. In response to this issue we note that it would not only be for the DMBs to negotiate benefits – they would have input and assistance from wider members of a community siting partnership (CSP), including host communities when they are identified.

12.11 There are also other concerns about specific elements of a community benefits package, such as how benefits should be distributed or who should decide them. Many of these specific issues are covered by our Community Benefits Principles below, and we have amended the principles in the light of public and stakeholder concerns.

The lack of detail about the specifics of a community benefits package was a concern expressed in our formal consultation. However, we stand by our view that the details of any potential package (what, when, who and how) cannot be decided until a siting process begins. This is for various reasons, including:

- Until sites are narrowed down, it is impossible to:
  - Define what an appropriate package might look like.
  - Involve the relevant host communities in discussions about benefits.
- It would be inappropriate for explorations about benefits to run ahead of explorations about geology and site suitability/safety.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

12.12 **Developing our Community Benefits Principles.** We have taken on board concerns from the public, including a perceived lack of trust in central government, in developing our **Community Benefits Principles**. These are wide in scope and ambition for Cumbria as a whole, and West Cumbria in particular. The principles stress the expectation of additional benefits in recognition of the national service that a GDF would provide to the whole country. We amended our original principles in the light of input to our formal consultation.

Community Benefits Principles: A set of principles developed by the Partnership by which community benefits would be discussed, agreed and potentially administered, if the siting process begins. The Government has agreed the Partnership's principles as a basis for negotiation in the next stage of the process.

12.13 Near-term pre-development impacts (e.g. potential negative media coverage amplifying negative perceptions of West Cumbria, loss of visitors, tainting of the Cumbrian brand image for quality produce, potential blight, or longer-term intrusive investigations (e.g. boreholes) at candidate sites), have been looked at in the brand protection work, and we recognise there is still more discussion needed on these issues. The Partnership meeting in May 2011 agreed that a dialogue with the Government was needed now to understand these impacts and the help that might be available to mitigate them. Any future CSP would need to consider how to develop an evidence base against which pre-development impacts could be measured, as well as agree specific mitigation or compensation measures.

12.14 We recognise that the term 'community' has to be considered in its broadest sense when considering community benefits, including potentially more than one geographical community, communities of interest such as National Park users, and communities over time including future generations beyond the potential closure of a facility.

12.15 **Government agreement to the principles.** The Government agreed to our initial set of principles as 'a basis for negotiation in a potential Stage 4'. However, we updated

Principles 4, 5, 9, and 12 in the light of submissions to our formal consultation in PSE3, and Principle 13 was added as a new principle. The updated principles are all set out in **Box 12.2**. The Minister of Energy has agreed that the updated principles 'will form the basis for negotiation in a potential Stage 4'.

Document 227: DECC's response to the Partnership's Community Benefits Principles, September 2011
Document 176: Partnership meeting report, 24 May 2011
Document 303: Letter from DECC regarding the Partnership's Community Benefits Principles and codifying elements of the MRWS process, 12 July 2012

12.16 We would expect the principles to be made binding as part of the process of putting the MRWS process on a firmer legal footing (see paragraph 6.17).

Box 12.2: The Partnership's Community Benefits Principles

Principle 1 – Overall: International best practice shows that community benefits are commonly used to ensure a positive contribution to the well-being of host and other affected communities, and are therefore worthy of consideration in West Cumbria.

Principle 2 –Timescale: Any benefits must deliver both short and long-term community well-being for West Cumbria as a whole.

Principle 3 – Making a Difference: Benefits must put the area in a better position, both economically and socially, than if no GDF were to be developed.

Principle 4 – Additionality: Benefits must be additional to existing and planned investments, rather than replacing them. Other national and local government funds or opportunities must not be displaced, and the approach must be at no cost to the community. Benefits must also be in addition to the investment that will be necessary to create a GDF and its associated facilities.

Principle 5 – Impact Mitigation: Preference should be given to mitigating rather than compensating for impacts recognising the long timescales over which impacts could potentially occur. All reasonable steps should be taken to mitigate and/or compensate for any impacts arising from the siting process itself, as well as from hosting a potential facility.

Principle 6 – Scale: The scale of any benefits must have the potential to transform the economic and social well-being of West Cumbria (taking into account best practice from other countries).

Principle 7 – Defining Scale: The magnitude of benefits must bear a clear relationship to the overall scale, nature and national significance of the development.

Principle 8 – Flexibility: There must be flexibility over how community benefits are distributed over time and between different communities.

Principle 9 – Distribution: Benefit distribution must be equitable, in terms of the scale of the impact on different stakeholders, both locally and nationally. It is anticipated for example that a proportion of the benefits would be ring-fenced for the relevant host communities' use, whilst other benefits would reach more widely.

Principle 10 – Delivery: Effective mechanisms must be agreed between national and local government for the provision of benefits. These mechanisms must ensure value for money and incorporate the principles of fairness, equity and flexibility in relation to communities and local businesses.

Principle 11 – Longevity: Agreements on community benefits will need to endure over a substantial period of time because of the multi-generational nature of the proposed development. These agreements could take a range of forms including legislation.

Principle 12 – Community Confidence: In order to establish and maintain community confidence, any agreement on a community benefits package must provide a guarantee that any agreed benefits will be delivered if a site is developed.

Principle 13 – Timing of Agreement: Outline community benefits packages should be agreed with the Government by the end of Stage 4, providing a clear indication of scale, distribution and specific investments that are envisaged to be made, for each of the different potential siting areas under discussion. Further detail and formal agreement should then happen during Stage 5, as it becomes clear which (if any) site is to be selected.

Outstanding uncertainties around a community benefits package

12.17 We acknowledge that the key questions on community benefits, such as 'when exactly will they be decided?', 'who would influence them?' and 'what exactly are the benefits?', can only be answered in detail if the next stage of investigations occurs and discussions continue. If it emerges from these discussions that any aspect of a community benefits package is unacceptable, then the right of withdrawal could be used.

Our opinions on a community benefits package

12.18 Criterion on a **community benefits package: 'Whether the Partnership is confident that an appropriate community benefits package can be developed.'**

What we found out. We understand what sort of benefits a community benefits package could include, including learning from international experience. We recognise there are a number public and stakeholder concerns about community benefits and have developed a set of Community Benefits Principles in an effort to provide a solid foundation for any future negotiation of benefits. We recognise the details of a benefits package would not be decided until later in the process.

Our opinions. We have agreed a set of principles with the Government as the basis for any future negotiations. This gives us a certain amount of confidence that an acceptable community benefits package could be negotiated. However, we cannot be certain what specific package the Government might agree to this far in advance and, therefore, whether the amount and type of these benefits would match the expectations of local people. We also recognise that there is widespread scepticism that future governments would follow-through with agreements.

12.19 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4, then we advise that:

- A CSP and the DMBs should base their negotiations with the Government about benefits on the Community Benefit Principles agreed by this Partnership and the Minister of Energy.
- A CSP should agree an 'outline community benefits package' for each potential siting area being considered. Each outline package should set out possible governance arrangements, investments, scale and distribution of benefits. Government agreement to these should be secured before the end of Stage 4, to avoid a mismatch in understanding prior to expensive site investigations in Stage 5.
- A CSP should include agreement on a satisfactory community benefits package as one of the criteria for a post-borehole right of withdrawal. These criteria should be agreed with the Government before the end of Stage 4.
- A CSP should consider how and when to make agreements on benefits binding upon the Government.
- We recognise that a final decision on a GDF is at least 15 years away. However, we believe the final decision to accept a GDF should only be made if the community is

convinced that the Government – and future governments that follow – will honour commitments on community benefits.

13. Stages 4 and 5 of the MRWS process

What might a Stage 4 and 5 process look like?

Context and focus of our work

13.1 **Context.** The Government has laid out the stages for the MRWS process in the MRWS White Paper. These are shown in **Figure 13.1**.

13.2 West Cumbria is currently approaching the end of Stage 3 of the Government's process, at which point Allerdale Borough Council, Copeland Borough Council and Cumbria County Council will make decisions about whether to move to Stage 4 of the process.

13.3 We have spent time considering how a site for a GDF or GDFs would be found if a decision to participate were taken. This is because we want to be confident that a good process can be put in place before, and if, the next steps are taken.

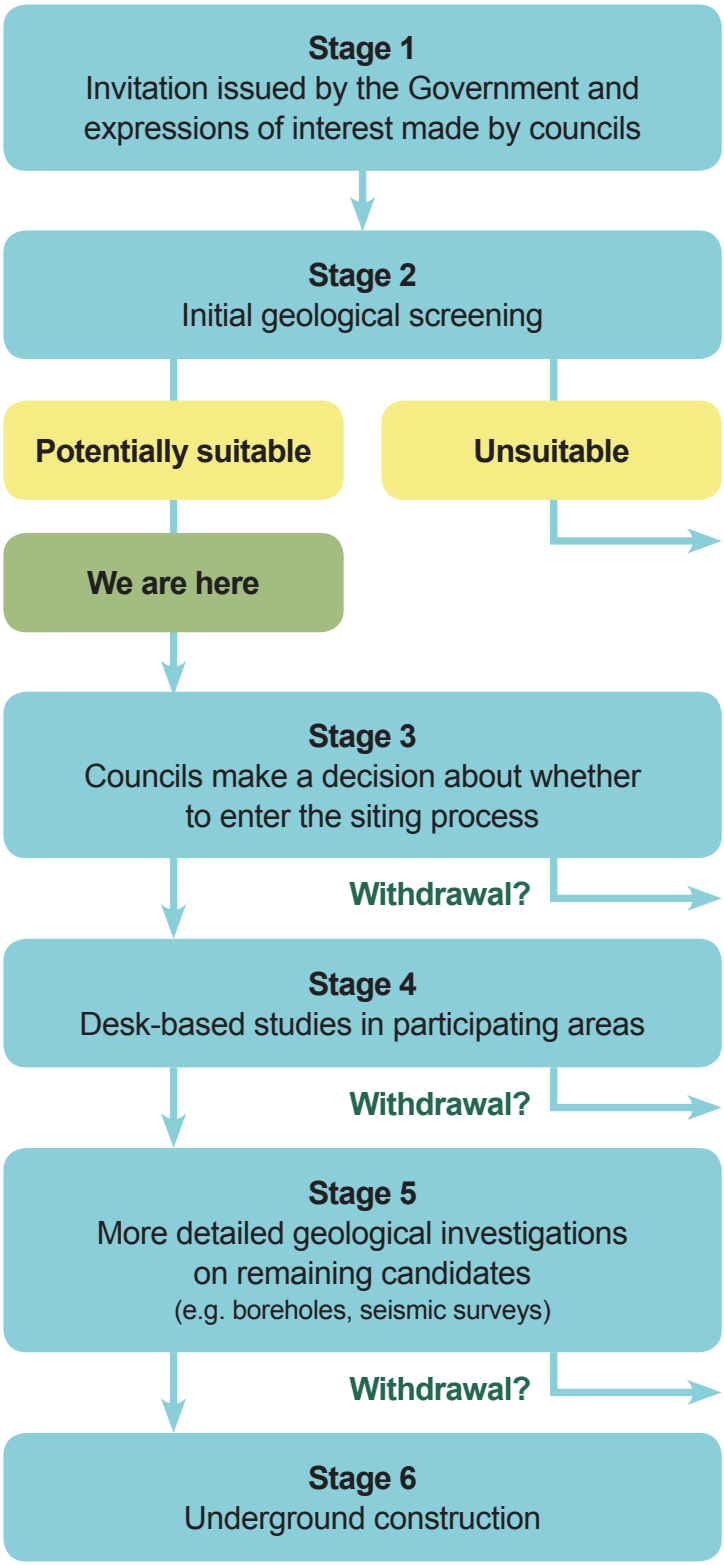
13.4 The right process must be fair and meet the needs of potential host communities, decision-making bodies (DMBs) and wider local interests (see definitions in Chapter 2 in **Box 2.2**). It also needs to inform the DMBs in a clear and thorough way, ensuring that local issues and technical challenges are properly addressed. It must also meet the requirements of the Government, the NDA, the regulators and the planning system.

13.5 **Focus of our work on Stages 4 and 5 of the MRWS process.** Our Work Programme contained the following criterion in relation to a siting process:

5a. Criterion on a **siting process: 'Whether the Partnership is confident that the siting process is sufficiently robust and flexible to meet its needs.'**

However, we also recognise that Stages 4 and 5 are about more than just finding a site, and that a large amount of work on other issues such as inventory, community benefits, safety and impacts would also be carried out should a decision to participate

Figure 13.1: Timeline showing the different stages in the MRWS process



be taken. We have therefore expanded this chapter of our Final Report to cover the whole potential Stage 4 and 5 process, rather than just the siting elements.

We begin by summarising what we found out from the Government about the siting elements of Stages 4 and 5. We then lay out our thoughts on a wider Stage 4 and 5 process, including roles and tasks for a future community siting partnership (CSP), our approach to voluntarism, and other issues such as specific public and stakeholder concerns.

Our work in relation to the process for Stages 4 and 5

The Government's proposals for the siting elements of a Stage 4 and 5 process

13.6 As explained in Chapter 8 on geology, if a decision to participate is taken, then substantial areas of West Cumbria remain available for assessment and investigations for both surface and underground facilities. The question then arises of how to identify potential sites, whilst working within the Government's framework of voluntarism and partnership.

13.7 We have considered the Government's proposals for the siting process. This included submitting comments to the Government's consultation on Stage 4 of the MRWS siting process. A brief summary of the Government's proposals is shown in **Box 13.2** below.

Document 228: DECC's consultation document and the Partnership's response, September 2011

Box 13.2: Summary of the Government's proposals for Stage 4

The Government calls its proposals 'Desk-based indentification and assessment of potential candidate sites for geological disposal'. The proposals set out a framework for addressing the two main tasks in Stage 4: 4a) identifying potential site areas and 4b) assessing the potential site areas.

Stage 4a – Identifying potential site areas

- The first part of Stage 4 would identify **potential site areas** where desk-based assessments would be carried out. A potential site area is a combination of a possible surface site area and a large volume of host rock for the underground facilities.
- Surface facilities could be sited in areas screened out by the high-level geological screening study undertaken by the British Geological Survey (BGS) (see Chapter 8).
- The surface and underground facilities could be separated by a considerable distance – up to 10km and possibly further. This means that potential site areas are likely to be large at this relatively early stage of the narrowing down process, probably encompassing many potential host community areas, towns or villages.
- The Government proposes that to provide local flexibility, future partnerships would be able to adapt or develop the process to identify potential site areas, by using local criteria and incorporating local issues, as well as using the criteria published in the MRWS White Paper.

Stage 4b – Desk-based assessments

- The assessments would be consistently applied across any potential site area against the following criteria:
  - Geological setting.
  - Potential impact on people.
  - Potential impact on the natural environment and landscape.
  - Effect on local socio-economic conditions.
  - Transport and infrastructure provision.
  - Cost, timing and ease of implementation.
  - Local criteria determined by the local communities.
- As part of the assessment process, the NDA would work with a future partnership to gather information relevant to each criterion.
- An expert 'scoring' process would be combined with a 'weighting' process using local stakeholder views on the relative importance of different criteria.
- The results of this work would be used by a future partnership and DMBs to help make a decision about whether or not to proceed to the next stage.

- The Government considers that voluntarism is based on community support and as such it would apply to all communities and sites.
- The rock volumes and land areas in a participating area could be considerably larger than would be required for an underground GDF. This is because the existing information available to desk-based assessments may only allow a relatively high-level geological assessment. Therefore the whole rock volume in which a host rock is thought to be present may be identified as a potential site area.
- In parallel with the site identification and assessment work, the NDA will be undertaking a Strategic Environmental Assessment (SEA) and associated assessments to look at the potential environmental, social and economic effects of implementing a GDF in the potential site areas.
- We understand that all of Stage 4 would take about 4 to 5 years.

Stage 5 – Geological investigations

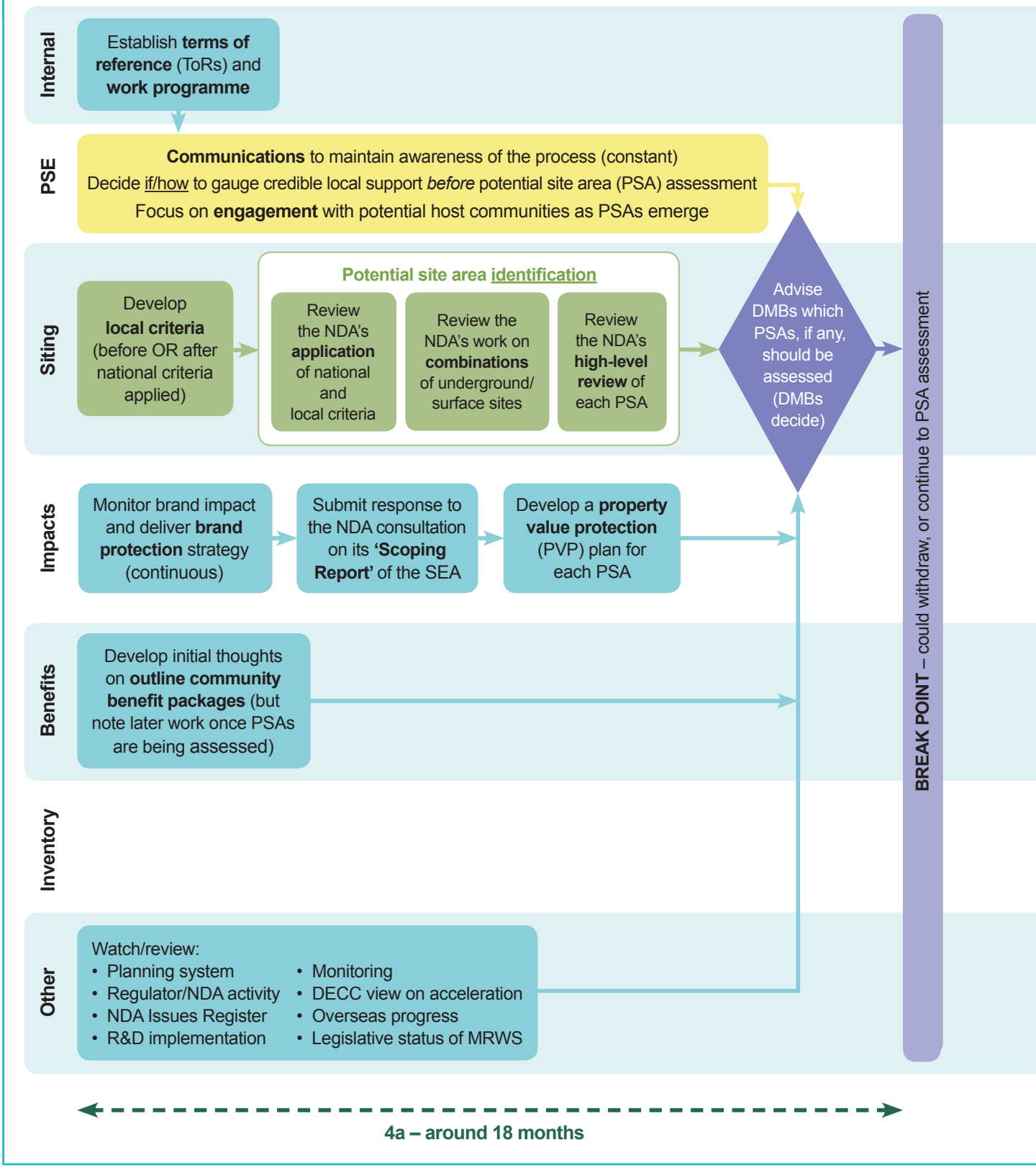
- In Stage 5 (surface-based investigations) there would still be fairly large areas under which a GDF could be built that would be considered.
- Although potential host communities would become clearer by the start of Stage 5, there would still be a group or groups of potential host communities rather than one specific host community.
- We understand that Stage 5 would take about 10 years.

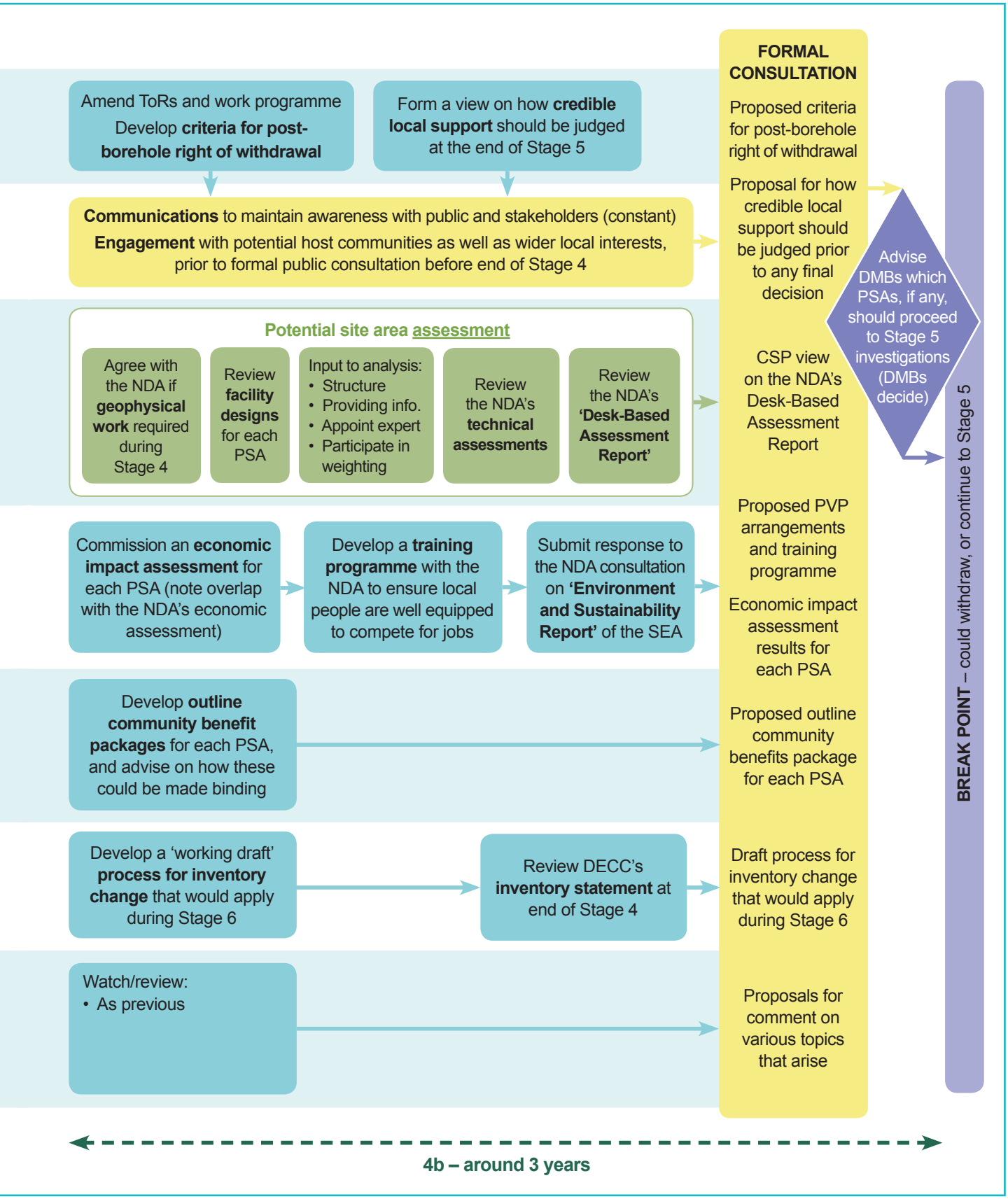
Our thoughts on roles and tasks for a Stage 4 and 5 process

13.8 **Potential work for a CSP in Stage 4 (and 5).** In response to concerns about ongoing uncertainties across all of our Work Programme topics, and in an attempt to better understand the work that a CSP (or CSPs) might be involved in, we have thought about what an indicative schedule of work for a future CSP(s) might look like, and thus where particular uncertainties might be expected to be resolved or reduced.

Our thoughts on what the CSP roles and tasks for a Stage 4 process might look like are shown below in **Figure 13.3**, followed by a summary of proposed steps in **Box 13.4**. We highlight that all of the suggestions below would be subject to any terms agreed alongside a decision to participate, should this be taken by the DMBs.

Figure 13.3: Indicative schedule for a CSP during Stage 4




Amend ToRs and work programme
Develop **criteria for post-borehole right of withdrawal**
Form a view on how **credible local support** should be judged at the end of Stage 5
Communications to maintain awareness with public and stakeholders (constant)
Engagement with potential host communities as well as wider local interests, prior to formal public consultation before end of Stage 4
Potential site area assessment
Agree with the NDA if **geophysical work** required during Stage 4
Review **facility designs** for each PSA
Input to analysis:
• Structure
• Providing info.
• Appoint expert
• Participate in weighting
Review the NDA's **technical assessments**
Review the NDA's **'Desk-Based Assessment Report'**
Commission an **economic impact assessment** for each PSA (note overlap with the NDA's economic assessment)
Develop a **training programme** with the NDA to ensure local people are well equipped to compete for jobs
Submit response to the NDA consultation on **'Environment and Sustainability Report'** of the SEA
Develop **outline community benefit packages** for each PSA, and advise on how these could be made binding
Develop a 'working draft' **process for inventory change** that would apply during Stage 6
Review DECC's **inventory statement** at end of Stage 4
Watch/review:
• As previous
FORMAL CONSULTATION
Proposed criteria for post-borehole right of withdrawal
Proposal for how credible local support should be judged prior to any final decision
CSP view on the NDA's Desk-Based Assessment Report
Proposed PVP arrangements and training programme
Economic impact assessment results for each PSA
Proposed outline community benefits package for each PSA
Draft process for inventory change that would apply during Stage 6
Proposals for comment on various topics that arise
Advise DMBs which PSAs, if any, should proceed to Stage 5 investigations (DMBs decide)
BREAK POINT – could withdraw, or continue to Stage 5
4b – around 3 years

Box 13.4: Summary of the Partnership's proposed steps for Stages 4 and 5, should a decision to participate be taken

Decision to enter the siting process taken by DMBs

Set-up period

a. The DMBs should widely communicate the decision to enter the siting process and the next steps, across Cumbria and beyond.
b. Working closely with representatives of potential host communities and wider local interests, the DMBs should map out options for a new CSP in the light of our guidelines for organisational arrangements (see **Box 13.6**). Via negotiation, all parties should agree a set of arrangements that are fit for purpose.
c. Potential host communities would need time to decide how they will be represented on an initial CSP. Other organisations invited to join the new arrangements would also decide how they want to be represented.
d. The DMBs should negotiate an Engagement Package with the Government on behalf of all CSP participants.

The role of DMBs during Stage 4

- Enable the establishment and resourcing of a CSP.
- Take formal decisions on continuation or otherwise in the MRWS process.

Our view, in part informed by the MRWS White Paper, is that the role of a CSP during Stage 4 would be to advise the DMBs on their continued involvement in the Government's process to find a site for a GDF for higher activity radioactive waste. Specifically the CSP should:

- **Independently review** the NDA's work to identify and assess potential siting areas via desk-based studies.
- **Secure agreements** from the Government and others to address community concerns.
- **Engage** the public and stakeholders, to keep them up to date and seek their views at key points.
- **Report** to the DMBs at the end of Stage 4, including advice on entry into Stage 5 and the use of the right of withdrawal.

Stage 4a – Initial identification of potential site areas

Specific CSP priorities in Stage 4a

a. The new CSP would oversee and be involved in the identification of potential site areas. The NDA would lead on technical aspects, with officers from local authorities.

The CSP would lead on engagement with potential host communities and others.

b. The new CSP should engage closely with potential host communities, keeping them up to date with the technical work being carried out and seeking their contributions and views. It should also oversee the publication of the initial findings.
c. We would suggest that there would need to be a high level of communications and engagement across Cumbria and beyond. In particular, securing the active involvement of people in the potential site areas may require providing resources for parish councils and other community groups to help the CSP engage people in their areas.

Tasks in the schedule (Figure 13.3 above)

At the end of **Stage 4a**, the CSP should report to the DMBs to advise them on which, if any, of the identified potential site areas should be assessed by the NDA. In doing so, the CSP will have:

Internal

- Established its terms of reference, including roles of a CSP.
- Agreed a work programme, including specific tasks.
- Reviewed the platform provided by previous decisions and advice, including: advice from this Partnership, decisions by the DMBs and DECC, the Principles for Community Involvement (see **Box 13.5** below) and the Government's framework for Stage 4.
- Agreed how the new partnership would operate, including a partnership agreement (see paragraph 13.14).
- Reviewed its terms of reference and work programme after 18 months.

Public and stakeholder engagement

- Communicated the setting up of the CSP to residents and stakeholders.
- Engaged potential host communities.[46]
- Decided how and when it is going to gauge credible support.
- Gauged credible support, as appropriate.

Siting

- Decided whether to ask the NDA to apply national criteria before developing local criteria.
- Developed local criteria for identification of potential site areas.
- Reviewed the NDA's application of both national and local criteria.
- Reviewed the NDA's work on potential combinations of surface sites and underground sites.

46. Although representatives of potential host communities would be part of a CSP from the start (see 'Set-up period' in Box 13.4), we would expect there to be certain points during Stage 4 where more in-depth involvement of residents in potential host communities would occur in order to seek their views on specific issues.

- Reviewed the NDA's high-level review of each potential site area.
- Taken a view on the NDA's overall site identification process to date, and advised the DMBs accordingly.

Impacts

- Monitored the impact on the area's brand.
- Delivered the brand protection strategy.
- Developed a property value protection (PVP) plan for each potential site area.
- Planned how the CSP will influence and review the NDA's impact assessments in Stage 4b, including responding to the NDA's Scoping Report consultation as part of its SEA process.

Benefits

- Developed *initial* thoughts on an outline community benefits package for each potential site area – each outline package would *start* to set out possible governance arrangements, investments, scale and distribution.
- Developed *initial* thoughts on when and how agreements on benefits should be made binding.

Inventory

- No work planned for Stage 4a: deferred until Stage 4b.

Other

- Reviewed changes to the planning system, and taken a view on the implications for the MRWS process.
- Reviewed the processes of the regulators and the NDA, including commissioning independent reviews of capacity and impartiality.
- Engaged with the NDA to influence its Issue Management Process to ensure it reflects community concerns.
- Engaged with the NDA and CoRWM to stay up to date with research in the field and the implications for the local MRWS process, including on alternative options for waste disposal or management.
- Engaged with the NDA to understand the techniques for monitoring waste in a GDF, potentially via the MoDeRN project (see paragraph 9.21).
- Reviewed DECC's position on acceleration, and advised the DMBs accordingly.
- Engaged with the NDA to stay up to date with overseas progress on research.

Gauging credible local support (1)

a. The key points to assess credible support are at the ends of Stages 4 and 5. However, there are circumstances where it may be appropriate for the CSP to consider using a method such as a representative opinion poll to gauge whether there is support for moving to desk-based assessments from within the suggested potential site areas and the wider area. The decision about whether to do this would probably

depend on how much smaller the potential site areas are than the areas covered by Allerdale and Copeland Borough Councils, and the feedback the CSP has had from potential host communities.

b. Engagement with these communities (possibly including an opinion poll) may show support for moving forward across the potential host communities as a whole, but one or more communities may decide they do not want to take part in desk-based assessments. Within the framework of the partnership agreement between DMBs and other community representatives (see paragraph 13.14), the CSP would need to understand the reasons for the community not wishing to participate and make a judgement about whether undertaking desk-based assessments in the potential site area (with modified boundaries, if appropriate) has credible local support.
c. The CSP would then give its recommendations to the DMBs on which potential site areas should proceed to desk-based assessments.
d. The DMBs would consider the recommendations of the CSP and the views of potential host communities and other stakeholders, and take a formal decision on which potential site areas, if any, they would wish to see proceed to desk-based assessments.
e. DECC would then need to reach a judgement about whether it was appropriate to move forward with the potential site areas put forward by the DMBs.

Stage 4b – Desk-based assessments of potential site areas

Specific CSP priorities in Stage 4b

a. There should be a review of representation of potential host communities in the light of areas chosen for assessment. Representation would be on a 'without commitment' basis.
b. The CSP should review and amend its organisational arrangements to accommodate an increase in numbers and a potential change of focus. We would suggest this includes potential sub-groups in each potential site area to meet roughly every quarter to provide updates, answer questions from local people and report back to the full partnership.
c. The CSP should agree the desk-based assessment process with the NDA.
d. The NDA should lead on the technical work, with partnership oversight.
e. The CSP should start negotiations with the Government on a community benefits package.
f. There should be ongoing engagement across all potential site areas to ensure that people at the potential host community level understand the work that is taking place. The CSP should aim to get the active involvement of people in the potential site areas and this will also mean providing resources for parish councils and other community groups to help the CSP engage people in their areas.
g. The CSP should oversee the publication of the desk-based assessments, and give its opinion on the implications of these assessments.

Tasks in the schedule (Figure 13.3 above)

At the end of **Stage 4b**, the CSP should report to the DMBs to advise them on which, if any, of the potential site areas should proceed to Stage 5 for borehole investigation and other tests. In doing so, the CSP will have:

Internal

- Amended its terms of reference and work programme.
- Developed and agreed with the Government a set of criteria for post-borehole right of withdrawal.
- Taken a view on when and how credible support should be judged prior to any final decision to accept a GDF.

PSE

- Communicated to residents and stakeholders to maintain awareness.
- Engaged potential host communities and wider local interests at key points, prior to a formal consultation at the end of Stage 4.
- Carried out a formal public consultation, including the gauging of credible support, prior to advising the DMBs on continuing to Stage 5.

Siting

- Overseen and independently reviewed various aspects of the NDA's site assessment process (see **Figure 13.3** for more detail).
- Taken a view on the NDA's overall site identification process to date, and advised the DMBs accordingly.

Impacts

- Monitored the impact on the area's brand, and delivered the brand protection strategy.
- Implemented the PVP plans as required.
- Influenced the NDA's impact assessments, including responding to the NDA's Environment and Sustainability Report as part of their SEA process.
- Commissioned a full economic impact assessment for each potential site area (note the overlap with the NDA's economic assessment).
- Developed a training programme with the NDA to ensure local people are well equipped to compete for jobs arising in Stage 5.

Benefits

- Refined and agreed with the Government an outline community benefits package for each potential site area that may proceed to Stage 5. Each outline package would set out possible governance arrangements, investments, scale and distribution.
- Taken a view on when and how agreements on benefits should be made binding.

Inventory

- Developed and agreed a 'working draft' inventory change control procedure that would be implemented in Stage 6, including the circumstances under which a

community veto could be used (even after the full right of withdrawal is no longer available).
- Reviewed and commented on an updated inventory statement from the Government.

Other
- Continued to keep a watching brief on all the 'other' issues listed above.

Gauging credible local support (2)

a. We would suggest that the consultation carried out by the CSP at the end of Stage 4 would involve a further step change in the level of communications and engagement across Cumbria and beyond, with a particular focus on the potential host communities. We also anticipate that it would be useful to consider a method such as a representative opinion poll to gauge whether there is support for moving into Stage 5 from within the suggested potential site areas.
b. Engagement with these communities (possibly including an opinion poll) may show support for moving forward across the potential host communities as a whole, but one or more communities may decide they do not want to take part in surface-based investigations. Within the framework of the partnership agreement between DMBs and other community representatives (see paragraph 13.14), the CSP would need to understand the reasons for the community not wishing to participate and make a judgement about whether undertaking surface-based investigations in the potential site area (with modified boundaries, if appropriate) has credible local support.
c. The CSP would then give its recommendations to the DMBs on which areas should proceed to the surface-based investigations.
d. The DMBs would consider the recommendations of the CSP and the views of potential host communities and other stakeholders and take a formal decision on which areas, if any, should proceed to the next stage, where surface-based investigations such as boreholes would be done.
e. DECC would then need to reach a judgement about whether it was appropriate to move forward to the next stage with the areas put forward by the DMBs.

Stage 5 – Surface-based investigations

Given that Stage 5 would not start for a number of years we have considered this stage in less detail. The membership and role of the CSP would need to be reviewed again as the focus would be on a smaller number of potential host communities, who in turn may wish to be more closely involved in the discussions. Prior to the start of borehole investigations the CSP would also need to agree with DECC the criteria for exercising a right of withdrawal beyond this point.

The technical investigations would be significant at this stage, taking many years and costing hundreds of millions of pounds. It would be important to ensure that the CSP had appropriate independent technical support to assess the results of this work. The CSP would also complete detailed negotiations with the Government on a community benefits package.

There would need to be a further step change in the level and type of communications and engagement activity by the CSP, with a particular focus on working very closely with a smaller number of potential host communities and among wider local interests. Before the final right of withdrawal comes to an end, we think it will be particularly important to use various methods, including something like a representative opinion poll or a referendum, to gauge whether there is support for a GDF being located at the site, from within the potential host communities and among wider local interests.

Tasks in the schedule (Figure 13.3 above)
By the end of **Stage 5**, a CSP is expected to have:

- Refined and agreed the criteria for post-borehole right of withdrawal (done at the start of Stage 5, before any borehole programme commences).
- Refined and agreed the inventory change control procedure that would be implemented in Stage 6, including the circumstances under which a community veto could be used (even after the full right of withdrawal is lost).
- Agreed a detailed community benefits package with the Government, including how it will be made binding.
- Overseen and independently reviewed the NDA's geological investigations, as well as other technical assessments completed during the stage.
- Continually kept residents and stakeholders updated, and sought their views at key points.
- Publicly consulted on its findings, including gauging whether credible support exists, before reporting to the DMBs.
- Reported to the DMBs prior to them taking a final decision.

Our views on how voluntarism would work

13.9 We decided that we needed to develop our own views on the way in which voluntarism should work during a siting process. This covers four areas:

Area 1: Principles for Community Involvement.
Area 2: Weight given to views of local communities.
Area 3: How voluntarism should work during the different stages of the siting process.
Area 4: Organisational arrangements for a future CSP.

Document 186: Preliminary assessment report for the siting process (Criterion 5), June 2011

13.10 **Area 1: Principles for Community Involvement.** We have agreed a set of **Principles for Community Involvement** (see **Box 13.5**). These were consulted on during our second round of public and stakeholder engagement (PSE2) and amended to take the findings of this consultation into account. In our view it is essential that these principles are followed to ensure there is a voluntary approach during the siting process.

Principles for Community Involvement: A set of principles developed by the Partnership that recommend how the different levels of community should be engaged in decision making if West Cumbria enters the siting process for a repository.

Document 157.1: PSE2 Report

Box 13.5: The Partnership's Principles for Community Involvement

Principle 1: Ensure that the siting process is developed in a way that inspires confidence and engenders a sense of ownership of the process on the part of potential host communities and wider local interests.

Principle 2: Ensure that there is sufficient time, resources and an effective process for identifying, involving and empowering potential host communities and wider local interests.

Principle 3: Ensure that organisational arrangements after any decision to enter the siting process are sufficiently flexible to effectively involve representatives of

potential host communities and wider local interests as they are identified.

Principle 4: Strive for a constructive, deliberative and consensual process, with an emphasis on effective communication, engagement, joint working, respect for divergent views and reasoned weighing of evidence and arguments.

Principle 5: Draw on appropriate specialist knowledge, including local knowledge and expertise in timely and effective ways.

Principle 6: Secure the most equitable collective outcome for potential host communities, DMBs and wider local interests, including the distribution of benefits.

Principle 7: Only move to site-specific investigations if there is 'credible local support'.

13.11 **Area 2: Weight given to views of local communities.** In PSE3 a number of parish councils and others expressed the view that 'voluntarism' in the Stage 4 siting process means that potential host communities (see definitions of community, **Box 2.2**) should be free to decide whether or not their community should be included; in effect giving a community a veto. We were concerned that this interpretation of voluntarism would take the decision-making responsibility away from the DMBs and would be contrary to the DMBs' public law obligation to take decisions in 'the public interest'. We therefore decided to obtain legal advice on the issue.

Document 299: Legal advice on voluntarism and the public interest, June 2012

13.12 The legal advice confirmed that, in order to avoid the risk of legal challenge, the DMBs would need to be able to show that they had taken account of the views of the host community, wider local interests and also the wider public interest around the provision of a GDF. The advice pointed out that a DMB could come to the conclusion that a potential host community's reasons for seeking exclusion from the siting process were so well founded that they overrode other considerations, but it would need to show that other considerations had been properly taken into account and a balanced judgement made. If a DMB made a decision operating on a principle that a potential host community's view about participation in the siting process automatically prevailed, then it would be vulnerable to legal challenge.

13.13 Within these legal guidelines, we then considered how the views of a potential host community should be weighed in DMB decisions and judgements about credible local support (Principle 7). Our view is that the Stage 4 process would be unlikely to secure community confidence and trust unless voluntarism is at the forefront of thinking, and the views of potential host communities are seen to be carrying very significant weight in the decisions of the DMBs. In a situation where a potential host community has provided a well-reasoned justification for exclusion from the siting process which has general community support, a DMB would normally be expected to conclude that credible local support had not been secured for sound reasons which outweighed other considerations. However, we recognise that this may not always be the case. There could be exceptional circumstances where credible local support could reasonably be judged to exist, notwithstanding the contrary views of one community within the local area concerned.

13.14 We recognise that this is a very sensitive issue that could seriously undermine community trust in the process if not handled properly. If a decision to enter Stage 4 is taken, we advise the DMBs to negotiate a 'partnership agreement' with other CSP members (consisting of representatives of potential host communities, and wider local interests) about the way decisions would be taken and views taken into account, including the roles and responsibilities of the NDA and DECC.

13.15 **Area 3: How voluntarism should work during the siting process.** In **Box 13.4** above we set out a series of suggested steps for the DMBs and any future CSPs that may exist during the siting process, should a decision to participate be taken. These suggested steps would need to be applied flexibly, based on the circumstances at the time, and bearing in mind the Principles for Community Involvement above.

13.16 We have considered how the process might work through Stage 4 and to some extent Stage 5, so that we and the public can have a sense of how voluntarism might work up to the point when a final decision would be made (ahead of Stage 6). There are clearly limitations in looking this far ahead. We accept that we cannot tie the hands of future CSPs but we do have a responsibility to give our opinion on how the process can be fair and workable.

13.17 We believe the emphasis on a strong commitment to voluntarism and community 'willingness to participate' is one that parties should keep at the forefront of their minds if this process continues. At each stage, any future CSP should seek to maximise

consensus amongst the DMBs, local authorities, potential host communities and wider local interests.

13.18 **Area 4: Organisational arrangements for any future CSP.** We would expect the nature of a new CSP's work in Stage 4 and Stage 5 to be different to Stage 3 and, therefore, the existing Partnership arrangements are unlikely to be appropriate. We reviewed our original suggestions for organisational arrangements in the light of public and stakeholder views arising from our formal consultation. Our amended guidance is outlined in **Box 13.6** below.

One of the most important challenges future arrangements will have to meet is ensuring an appropriate relationship between the CSP and the DMBs. Any CSP must be independent in order to hold the trust of the organisations and communities involved. However, we consider that DMB representation will be important to provide some political guidance so that the CSP's deliberations are well informed and its recommendations are realistic. We agree that this cannot result in the CSP being (intentionally or otherwise) pressured or controlled by the DMBs, as this would clearly undermine its independence and, consequently, its ability to hold the trust of other community representatives. This means, for example, that it would be inappropriate for an elected representative of the DMBs to chair the CSP or any steering group established, unless all members of the CSP agree otherwise at the time.

We believe that the organisational arrangements would have to be developed through discussion and negotiation between the community representatives and representatives of the DMBs involved (see paragraph 13.14). If agreement cannot be reached, we feel it is questionable whether the process could be started credibly and therefore continue successfully.

Box 13.6: The Partnership's suggested steps for organisational arrangements (should a decision to participate be taken)

- In the initial set-up period after a decision to enter the siting process has been taken (see **Figure 13.3**) there should be an opportunity to consider lessons learnt from the experience of the current Partnership, its functions and activities, to ensure these are applied to any new arrangements to follow.
- The arrangements should facilitate the achievement of all of the Principles for Community Involvement (see **Box 13.5**) and thereby engender and maintain trust in the CSP and the MRWS process as a whole.

- Consideration should be given to the use of a similar framework (based on the Principles for Community Involvement), for ongoing, transparent and independent evaluation of the CSP's work.
- The best available methods of community engagement, as appropriate for a process based on partnership and voluntarism, must be used.
- Arrangements need to enable a number of key functions, particularly for a CSP, including: a) accountability b) strategic and operational decision making; c) coordination and integration of technical work and community engagement (including operational decisions); d) engagement of potential host communities and wider local interests; and e) consensus and agreement building.
- CSP decisions and recommendations to the DMBs should be based on consensus.
- Representatives of potential host communities and wider local interests should be members of a CSP from the outset, and should be involved in all aspects of Stage 4 work, including discussions on community benefits.
- Any new CSP's work should be designed and managed to meet Community Involvement Principle 1 – inspiring confidence in the process. Therefore, careful consideration should be given to how this can be best achieved, for example through the main elements of process management (such as chairing, facilitation, programme management, evaluation etc.) being independently provided.
- We would suggest that any future CSP steering or coordinating group has at least two people representing wider local interests, in addition to the representatives from the DMBs and potential host communities.
- Members of any CSP must not underestimate the time and effort required to work closely with small communities within any potential site areas identified. We would expect this to include dedicated staff/staff time within the more active partnership member organisations, and almost certainly a dedicated team working on behalf of the whole partnership to manage the workload involved, in particular the community engagement programme.
- The DMBs should put in place arrangements to coordinate their decisions, and should involve representatives of potential host communities in those arrangements.
- All participants should be properly resourced to play a full and active role. This is likely to include building the capacity of CSP members and DMBs to operate in this new environment.

Other issues

13.19 **Pause points.** We considered whether formal pause points are needed but decided these were not necessary because the siting process is based on voluntarism, and because of the DMBs' right of withdrawal which can be exercised up to the end of Stage 5. We also note our direct experience of pressing an informal 'pause button' in the current process when needed.

13.20 **Right of withdrawal.** We have discussed the right of withdrawal in Chapter 6 on overarching issues (see paragraph 6.33).

13.21 **Continued funding from the Government.** We have noted that, despite the severity of public spending cuts, Government funding for the MRWS programme and our work has been preserved. We also note that the process is supported in parliament by the Conservative, Liberal Democrat and Labour parties and that the MRWS policy has already made the transition across a change of government.

13.22 **Public and stakeholder concerns about a Stage 4 and 5 process.** Many of the specific concerns about a Stage 4 and 5 process arising through our formal consultation, are a reflection of the issues of mistrust discussed in Chapter 6, including concerns over the right of withdrawal, balancing different views in a voluntarism process, and concerns about predetermination. Other issues around the MRWS process include the lack of interest from elsewhere in the UK, a lack of clarity about decision making and what happens if West Cumbria says no.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report

13.23 **Responding to public and stakeholder concerns about a Stage 4 and 5 process.** We have responded to a number of public and stakeholder concerns about Stages 4 and 5 elsewhere in this report, particularly in Chapter 6. Three additional responses are outlined below.

In response to concerns about the decision-making process which will be used by the DMBs, we asked all three DMBs to set out clearly the process by which their decisions

about participation will be taken (i.e. Cabinet or Full Council) and why. A briefing paper that explains the different approaches has been drafted and is available on our website.

Document 297: Decision making by the DMBs in the MRWS process in West Cumbria, July 2012

In response to concerns about there being no other areas of the UK expressing an interest in the MRWS process, we asked DECC to set out more clearly what they have done to canvas expressions of interest from elsewhere in the country. DECC has confirmed that they wrote twice to all local authorities in England in 2008 and 2010 explaining the MRWS process and inviting them to express an interest, and that the Welsh Government did the same. DECC has taken opportunities to speak with or present to a variety of audiences including the National Association of Local Councils, the Local Government Association and the Nuclear Legacy Advisory Forum (NuLeAF). DECC has also highlighted the fact that another district council is currently engaging with members of the public and stakeholders about whether to formally express an interest in the MRWS process.

We also asked DECC to confirm that the Partnership's proposed process and definition of voluntarism (as set out in Chapter 10 of the consultation document and now in this chapter of our Final Report) is consistent with the MRWS White Paper. The Government has confirmed that the text given in Chapter 10 of the Partnership's consultation document is consistent to the approach set out in the White Paper.

Outstanding uncertainties around the Stage 4 and 5 process

13.24 As we have highlighted in many places throughout this report, there is a great deal of uncertainty still surrounding many aspects of the MRWS process both generally and in terms of West Cumbria more specifically. However, we also recognise that many of the activities that would occur in Stages 4 and 5 would help to reduce or manage these uncertainties. The diagram shown in **Figure 13.3** shows where we think specific uncertainties would be reduced based around the work of a potential CSP.

In addition, we have developed thoughts on how a Stage 4 and 5 process might work throughout this chapter, as well as in relation to more specific issues through our Community Benefits Principles and Inventory Principles. The advice we give to the DMBs throughout this report is further designed to help manage some of the uncertainties arising, should a decision to participate be taken.

Our opinions on the Stage 4 and 5 process

13.25 Criterion on a **siting process: 'Whether the Partnership is confident that the siting process is sufficiently robust and flexible to meet its needs.'**

What we found out. We found out about the Government's proposed process for Stages 4 and 5 of the MRWS process, particularly the siting elements. We looked at what the wider potential roles and tasks for a CSP would be in Stages 4 and 5, including aspects such as negotiation of benefits and the inventory. We thought about what voluntarism would mean in practice, and sought legal advice on this matter. We have also responded to a number of public and stakeholder concerns in relation to a potential Stage 4 and 5 process.

Our opinions. Our opinion is that the process and arrangements for Stages 4 and 5 described above provide a good basis for more detailed discussions and agreement should a decision be taken to proceed into Stage 4. However, we are not yet fully confident that all parties agree on what a CSP should look like and how it should operate to ensure an appropriate balance between attributes such as independence, operational effectiveness, political relevance and fairness in decision making. We felt it was inappropriate to set out precise organisational arrangements before a site search had started, but this has perhaps inevitably left doubts about exactly how it would work.

13.26 **Additional advice to the DMBs.** If the DMBs proceed to Stage 4 then we advise that:

- Any CSP should be established and operated in line with all of the guidance set out in the chapter above.
- The very first challenge will be to negotiate an acceptable set of organisational arrangements amongst community representatives.

14. Public and stakeholder views

How do we gauge what people think about our work and the decision about participation?

Context and focus of our work

14.1 **Context.** As we have already stated in Chapter 5, public and stakeholder engagement (PSE) has played a key role throughout our work. It has helped us to identify key issues of concern, and to adapt or add to the work we have done across the full range of topics.

14.2 **Focus of our work on public and stakeholder views.** Our Work Programme contained the following criterion in relation to public and stakeholder views:

6a. Criterion on **public and stakeholder views: 'Whether the Partnership's recommendations are credible given public and stakeholder views.**'

(Note: the word 'credible' here is used to reference the criterion in paragraph 6.22 of the MRWS White Paper.)

14.3 In addition to running an extensive programme of PSE, we thought carefully about the best way to take account of the views of the public and stakeholders that were expressed during our formal consultation, and decided to develop and use what we call **Indicators of Credibility**.

Indicators of Credibility: These are criteria about public and stakeholder views that the Partnership has decided should be met to be satisfied that there is public support for continuing with the process.

The indicators were developed so that we could judge whether our **initial opinions** were credible given public and stakeholder views. There are three indicators: broad support; understanding and addressing concerns; and net support.

Box 14.1: The Partnership's Indicators of Credibility

Indicator (what the Partnership was looking for)	What does this mean?	How we said the indicator would be used
1 – Broad support for the Partnership's initial opinions. Broad support for the Partnership's initial opinions on the criteria for participation from its current member organisations and those engaged through its programme of public and stakeholder engagement.	This is not about the numbers of people or organisations expressing a particular view. It is about asking a range of organisations and people interested or involved in the Partnership's work what they think about the quality of evidence and argument set out in this document.	We said: 'After this consultation, the Partnership will examine views about its initial opinions, and decide whether they should be changed or not.'
2 – Understanding and addressing concerns. Evidence that a) concerns raised have been, or will be, addressed where appropriate, including explanations as to why not where relevant, and b) reasons for opposition have been identified, understood and taken into account in reaching opinions on the criteria for participation.	This is about the Partnership understanding and addressing concerns and reasons for opposition, and explaining how they have been taken into account.	We said: 'The Partnership will use this consultation to gather evidence about concerns and reasons for opposition. These will then be reviewed and taken into account in reaching final opinions.'

3 – Net support for continuing with the process. The percentage of the surveyed public in Copeland and/or Allerdale that support without commitment participation in the process for identifying a potential candidate site should be greater than the percentage that oppose it (i.e. there should be net support).	In order for the Partnership to take the view that West Cumbria should enter the siting process, there would have to be more people* in favour of moving forward than against. This is called 'net support'. *(in this case, people surveyed in West Cumbria)	We said: 'The Partnership will conduct a statistically representative opinion survey to see whether net support exists. The indicator will just apply to West Cumbria, as it is only within this area that participation may result in the actual siting of a GDF. The views of people living in the rest of Cumbria will be taken into account in reaching opinions on the first two indicators.'

Document 157.1: PSE2 Report
Document 171: Preliminary assessment report on public and stakeholder views and the Indicators of Credibility, May 2011

14.4 In our consultation document we said the following would have to be true for the indicators to be met:

Broad support: A range of organisations and people interested or involved in the Partnership's work consider the initial opinions in this document to be reasonable in the light of the available evidence.

Understanding and addressing concerns: The Partnership can demonstrate that it has understood and taken into account concerns and reasons for opposition, and does not consider any arguments or evidence put forward in PSE3 to be 'show-stoppers'.

Net support: Of the people surveyed in Copeland and/or Allerdale, more are in favour of entering the siting process than are against.

14.5 In our consultation document we also clarified that there is no indicator more important than the others, and that they would not be weighted against each other, but are all equally important.

Using net support as an appropriate indicator

14.6 Net support basically means the 'yeses' are more than the 'nos' – those who remain neutral or say 'I don't know' are not counted.

We chose net support because we think this is an appropriate indicator to use at this stage in the process. The decision at this stage is about entering the next stage of the process, without commitment to eventually hosting a GDF. It is not about saying a final 'yes' or 'no' to having a GDF in West Cumbria, and there are still a number of details that would be site-specific and as yet uncertain.

14.7 Feedback from PSE2 showed that some people were concerned that if a large number of people say 'I don't know', net support would not be a valid indicator. We commissioned three opinion surveys at various points in the process prior to the final PSE3 opinion survey, and each time between 2% and 5% of people said 'don't know', with on average 22 to 23% remaining neutral. Based on these consistently low levels of 'don't knows', we were confident that net support was a fair indicator to use.

Opinion survey or referendum

14.8 Feedback from PSE2 also showed that some people were concerned about the method used to gauge net support. There was a mix of views expressed, particularly about the relative pros and cons of using **opinion surveys** and **referendums**.

Opinion survey: A poll of public opinion from a sample or sub-set of a particular group or population. Opinion surveys are used to gauge public opinion without having to survey every member of a group or population (in this case everyone in West Cumbria).

Referendum: Putting a question directly to the vote of the whole electorate.

We discussed this issue at length and concluded that, at this stage in the process, an opinion survey, rather than a referendum, should be used to gauge whether or not net support for a decision to participate exists. This is because:

- It avoids the claimed negative features of referendums such as low or unrepresentative turnout, manipulation of views by organised interests, over-simplification of the issues, and the risk of other issues influencing people's responses.
- PSE2 found that there is a mix of opinion on using referendums. Although some participants asked that referendums be used as a method of gauging support, on considering the practical implications they concluded that referendums would have to be carried out when more detail is available, for example, on impacts, benefits and siting. This detail would only be available later in the process.
- In the limited number of countries where referendums have been used in a volunteer process (Hungary and South Korea), this has only been done at the stage when potential sites and well defined potential host communities have been identified, which is later in the process than we currently are at.

14.9 We suggest that the potential use of referendums and other methods to inform decision making in later stages of the process can be kept open for review if a decision to participate is taken.

14.10 We wanted to make sure that the opinion survey we undertook was independent and statistically representative, and that a legitimate approach was taken. We therefore used a reputable polling company, Ipsos MORI, and also hired two expert reviewers to check the methodology and survey, as well as the polling company's work. The reviewers were Dr Sandy Ochojna (independent consultant) and Professor Patrick Sturgis (University of Southampton). We also put the questionnaire out for public comment, which substantially changed the final questionnaire used.

Document 251.1: Response to public comments on the opinion survey and copy of the survey questions, March 2012

Our work in relation to public and stakeholder views

14.11 **PSE1.** Feedback from PSE1 raised many issues, which are addressed in the main body of this report together with our responses to them. However, five key messages stood out – these are listed below with the three main responses we made as a result of each:

1. **Overcoming cynicism and gaining trust.** Our three main responses were to:
   - Seek written reassurance from the Government on its commitment to the principle of voluntarism and the right of withdrawal.
   - Publish a briefing note clearly setting out the differences between this MRWS process and the Nirex process in the 1990s.
   - Publish a clear list of changes made as a result of public input: these are also included in this report.

2. **Clarifying decision making.** Our three main responses were to:
   - Publish a briefing note clearly setting out the respective roles of the PSE work, the Partnership and the decision-making bodies (DMBs).
   - Form and publish a view about how decisions should be informed by stakeholders' views and public opinion. This includes both a potential decision to participate and also any ultimate decision about a facility.
   - Agree a set of principles that set out how the DMBs, the Cumbria Association of Local Councils (CALC), the parish councils and others could work together **if** a decision to participate is taken.

3. **Being rigorous.** Our three main responses were to:
   - Buy in expertise to advise the Partnership on technical issues such as geological suitability, in order to provide independent and trusted peer review.
   - Commission our own independent research on the potential impact of a facility on the image of West Cumbria in terms of tourism and inward investment.
   - Seek independent expertise to advise the Partnership, including both pro and anti viewpoints.

4. **Striving to engage.** Our three main responses (carried out in PSE2) were to:
   - Double the investment in communications activity the Partnership carried out.
   - Increase the number and diversity of people being reached by the Partnership's work, in particular young people.

- Offer an extensive range of methods by which *anyone* could engage with the Partnership's work including meetings, workshops, the website, presentations, exhibitions and a discussion pack.

5. **Securing community benefits.** Our three main responses were to:
   - Start developing principles by which community benefits would be negotiated and distributed, *if* a decision to participate is taken.
   - Investigate how successive governments can be held to binding agreements about delivering community benefits, *if* a decision to participate is taken.
   - Identify the ethical implications of hosting a facility, including how impacts and benefits might affect different areas and generations.

Document 61: PSE1 Report

14.12 **PSE2.** Some of the main messages arising from PSE2 are outlined below. For full details on all of these and other issues please see the full PSE2 Report (Document 157.1).

1. **Seeking input**
   - Net support indicator: There were no clear arguments against the concept of using net support as an indicator of public support or opposition. There were, however, concerns about the method of gauging net support. There was a marked mix of opinion on the issue of a referendum before Stage 4 or further investigations. Although the credibility of a referendum was clear in some people's minds with several asking for this as a method of gauging support, several others pointed out that it would be meaningless unless carried out at a later stage in the MRWS process, after a possible decision to participate in the siting process and when more detail is available on issues such as impacts, benefits and siting. There were also some reservations about the use of net support in circumstances where there is a substantial percentage of people saying 'I don't know'.
   - Impacts: Concerns raised included in particular the issues of health and safety, as well as uncertainties around potential economic impacts. These issues were raised by people who supported and people who opposed a facility.
   - Community benefits:
     – Principle: The idea of receiving community benefits was felt by many people to be a necessary or expected compensation for the presence of a GDF. However, some felt they were a bribe and a few thought they would simply not be enough to outweigh the potential negative impacts of a GDF.

  - Specifics: It was generally felt that community benefits should be secured, and the highest proportion received, in advance of any construction, to ensure that the Government followed through on its commitments. People also generally tended to feel that areas closer to a facility should receive a higher proportion of the benefits.
- Community involvement in a siting process: There were no substantive challenges to our suggested Principles for Community Involvement. However, the need for a clear forward process with well defined decision-making powers and processes was central to many responses in PSE2. This sat alongside the desire for more engagement and more information, although there was some tension between the call for more detail and more accessible information. The need for local awareness and acceptability of any forward process was key for many people.

2. **Building understanding**
   - The nature of the British Geological Survey (BGS) screening study appeared to be partially understood. For example, some people realised for the first time that the BGS study only ruled out areas for the underground site and not the site for the surface facilities. In addition, the Nirex Inquiry was still a significant issue for many people. For example, some people were still unsure how the MRWS process is different to the Nirex investigations. There were also repeated assertions from some people that the Nirex Inquiry has already ruled out all of West Cumbria as being suitable for a GDF.

3. **Understanding issues and information needs**
   - Overall, people wanted to continue to see clear, unbiased information and a transparent process for decision making.

4. **Overall levels of awareness and support for the process**
   - Awareness of our work and the MRWS process was seen to be increasing. At the same time, attitudes towards West Cumbria continuing its participation in the MRWS process remained relatively unchanged.

Partnership response to issues raised in PSE2. We spent some time reviewing the issues identified in PSE2, and responses to these issues were developed by various sub-groups and/or individuals on behalf of the Partnership. Responses included: agreeing to consider specific issues or ideas in the design of the next round of PSE, outlining how specific issues are or will be addressed in the Partnership's decision-

making process, and confirming where issues will need to be considered further down the line, should the process continue. These responses are laid out in full in Section 11 of the PSE2 Report (Document 157.1).

Document 157.1: PSE2 Report

14.13 **PSE3 – formal consultation.** During PSE3, we published a consultation document containing our draft initial opinions and asked for feedback from stakeholder organisations and the public. The formal consultation part of PSE3 was an essential part of our Work Programme; we used it to inform people of our work so far, and seek feedback on our initial opinions.

We asked people what they thought about our initial opinions on each of our work stream topics: geology; safety, security, environment and planning; impacts; a community benefits package; design and engineering; inventory; and the siting process (now called a Stage 4 and 5 process as in Chapter 13 of this report). Our initial opinions on each topic were presented alongside supporting information so that we could examine the reasons for people agreeing or disagreeing with them. The consultation was carried out with the Government Code of Practice on Consultation in mind.

The formal consultation part of PSE3 was designed to collect qualitative information. In terms of reporting, this means looking at what was said and how strongly this came across rather than assessing absolute numbers.

All consultation submissions were circulated to all Partnership members alongside being analysed for themes and issues by our independent programme managers, 3KQ. 3KQ acted as a neutral third party overseeing the analysis process and the authoring of this Final Report, and there were also several layers of audit and guidance from us as a Partnership.

Partnership response to issues raised in PSE3. There was a wide range of views and issues arising through our formal consultation. We considered each issue raised in the PSE3 Report and responded to it in two ways:

- In the PSE3 Report we gave an initial reaction to the issue and, where relevant, details of how the issue would be dealt with in the Final Report.

- Throughout this Final Report references are made to public and stakeholder views, and how we have responded to them, in particular by providing more detailed clarifications, changes or additions.

A summary of some of the key issues raised in the consultation and our responses are given below. See the full PSE3 Report (Document 288) for more detail on all of the issues raised on each topic and our responses to them. In addition, we collated a number of lists of contextual points from the consultation responses, covering issues such as wider Government energy policy, comments on specific organisations, and comments on the consultation. These are compiled within Document 305.

1. **Geology.** The uncertainties about West Cumbrian geology were strongly reflected in consultation submissions. Many respondents expressed concerns that West Cumbria is not or may well not be suitable, and that previous investigations or particular evidence had not been taken into account; others took the view that the uncertainties can only be resolved by undertaking more investigations. As a result of this range of views we asked the Environment Agency, CoRWM, and our independent geologist Dr Dearlove to review various key inputs we received on this topic to see if it changed their view about the likelihood (or not) of suitability. We also met with the Geological Society of London to explore various aspects of their consultation submission in more depth. We have refined our initial opinion on geology to better reflect the ongoing uncertainty and the range of views within the Partnership on this issue (see paragraph 8.35).

2. **Safety, security, environment and planning.** We received many views about regulatory and planning processes and about the way safety issues would be handled, with references to the responsible agencies. In response to this we have added advice about the need for independent reviews of regulator and NDA activity and resources. Some respondents were concerned about the impact of a GDF on the National Park and potential conflicts with its statutory purpose; as a result we added some advice to the DMBs about not considering the siting of surface facilities in the National Park (see paragraph 10.40). Security and transport were two areas where members of the public and stakeholders felt we had not found out enough information. In response to this we found out more detail from the ONR and formed two new opinions on security and transport (see paragraphs 10.73 to 10.76).

3. **Impacts.** Concerns about the potential impacts of a GDF and of participating in Stage 4 were raised in the consultation, as well as longer-term impacts on the economy. The positive impacts of employment were cited frequently, as were concerns about

potential negative impacts on other parts of the economy such as the visitor, land-based, and food and drink sectors. As a result we added advice and opinions on brand protection and economic impact assessment (see paragraphs 11.20, 11.21, 11.32 and 11.33).

4. **Community benefits package.** Many submissions focused on whether community benefits were a bribe, or a genuine opportunity for the community in the long term. Common concerns were that future governments cannot be trusted to follow-through with promises made, especially since the details have not yet been agreed, and also that the immediate host community around a potential facility should receive a fair share of any benefits. As a result we amended our Community Benefits Principles to ensure that an outline community benefits package would have to be agreed with the Government before any borehole programme can start, and that any benefits package would have to include a ring-fenced proportion for the host community. We asked DECC to agree to these revised principles, and they have been agreed in writing by the Minister of Energy. The Minister has also agreed that key parts of the MRWS process such as community benefits should be put on a legally binding footing (see paragraph 12.15).

5. **Design and engineering.** We heard a number of views about retrievability as part of our consultation. In response we clarified the various views about retrievability from official bodies, and added some advice to the DMBs about timescales for deciding upon retrievability (see paragraph 9.29).

6. **Inventory.** Concerns about new build waste and overseas waste led us to seek clarification on the Government's assumptions about these two waste streams and to revise our opinions on inventory to include mention of specific waste streams. We are now advising that overseas waste should not be included in the inventory to be disposed of in a potential GDF (see paragraph 7.26).

7. **Siting.** We heard a number of concerns about the level at which voluntarism would occur, about the right of withdrawal being difficult or progressively more difficult to exercise, and about balancing different views within a potential Stage 4 and 5 process, as well as about the overall uncertainties surrounding a future process. We responded to these concerns in several ways, for example by revising our opinion and supporting information on a Stage 4 and 5 process, describing the potential tasks and roles for a CSP, and recognising in our advice that other mechanisms by which trust in individual organisations or a future process could be built still require further development and discussion (see paragraphs 13.25 and 13.26).

8. **Trust.** We identified trust (or lack of it) as an issue underlying many consultation responses. Concerns about Government commitment to the right of withdrawal and other issues (such as community benefits delivery and community control over inventory) led us to seek legal advice on and discuss with DECC the potential for putting the MRWS process on a legal footing. We have received Ministerial agreement to this commitment (see paragraph 6.17). We have also added some advice to the DMBs on this issue, including specific mention of voluntarism, the right of withdrawal, the planning process, inventory agreements and community benefits agreements (see paragraph 6.18).

Document 288: PSE3 Report
Document 305: Lists of contextual points raised in responses to the Partnership's formal consultation

14.14 **PSE3 – opinion survey.** In order to gauge net support, we said that we would conduct a statistically representative opinion survey to see whether net support exists. We said that this indicator would just apply to West Cumbria, as it is only within this area that participation may result in the actual siting of a GDF, but that the views of people living in the rest of Cumbria would also be taken into account in reaching opinions on the first two Indicators of Credibility.

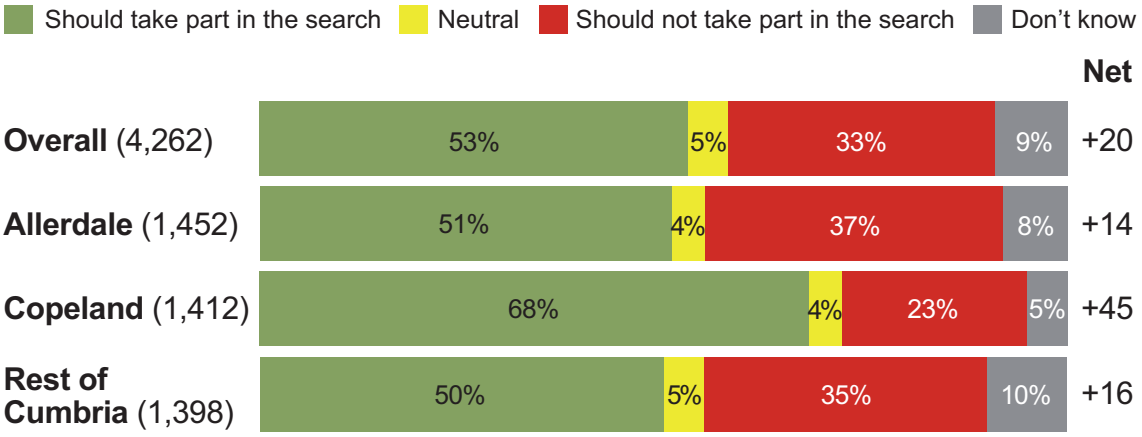
Ipsos MORI carried out a telephone-based opinion survey on behalf of the Partnership towards the end of the formal consultation period in PSE3. We issued a briefing note setting out the rationale and methodology for this opinion survey. **Figure 14.2** below is an extract from Ipsos MORI's report (Document 281) and shows the results of the key survey question – seeking views on whether or not West Cumbria should take a decision to participate in the next stage of the MRWS process – in order to inform our net support Indicator of Credibility. (Other questions were also asked in the survey but these did not feed directly into the Partnership's Indicators of Credibility – see Document 251.1 for details of the survey questions.)

Document 247: Briefing note on the Partnership's opinion survey, January 2012
Document 251.1: Response to public comments on the opinion survey and copy of the survey questions, March 2012
Document 281: Opinion survey report, May 2012
Document 281.1: Data from the opinion survey, May 2012

Figure 14.2: Extract from Ipsos MORI's report on the opinion survey

Continue or stop the search?

Q4. From what you know at the moment, do you think that XXX[47] council and XXX council should or should not take part in the search for a suitable site in XXX for a deep underground disposal facility for higher activity radioactive waste?



Base : All respondents (see above). Source: Ipsos MORI

In Copeland, 68% thought the search should continue, and this was significantly higher than both Allerdale (51%) and the rest of Cumbria (50%). Conversely, the proportion in Copeland who thought that the search should not go ahead was lower than in the other areas (23% vs 37% in Allerdale and 35% in the rest of Cumbria).

A simple way to summarise the overall spread of opinion is to calculate the difference between the proportions who think that the council(s) should take part in the search and those who think they should not – the net support for continuing with the search – which stands at +20 percentage points across the county overall and +14 in Allerdale, +45 in Copeland and +16 in the rest of Cumbria.[48]

Based on the results of the survey, it can be said that net support for continuing with the search in West Cumbria does exist. However, the three Indicators of Credibility are to be looked at in parallel, with no indicator being more important than the other two.

47. 'XXX' depended on whether the person being surveyed was from Allerdale, Copeland or the rest of Cumbria. Those from Allerdale or Copeland were only asked about their own area proceeding; those from the rest of Cumbria were asked about Allerdale and Copeland combined.
48. N.B. the 'rest of Cumbria' results are presented for context and will not be used by the Partnership to formally gauge net support.

14.15 **Credible support?** We originally said that all three indicators would have to be met for a recommendation to enter the next stage of the process to be made, but since writing that statement we have agreed not to make a single recommendation about participation. We also realise the difficulty in applying the qualitative indicators due to their subjective nature. However, we believe it is still appropriate for us to consider how well each Indicator of Credibility was met for our initial opinions. In our PSE3 Report we said we would consider how well each Indicator of Credibility has been met including a more detailed commentary for each indicator in the light of PSE3 responses. We do this below.

14.16 **Indicator 1: Broad support for the Partnership's initial opinions.** We said: 'After this consultation, the Partnership will examine views about its initial opinions, and decide whether they should be changed or not.' We did this by considering the set of issues arising from our formal consultation process one by one, deciding how to respond to each issue directly as part of our PSE3 Report, and within this, our Final Report. Responses appearing in our Final Report range from actions undertaken to seek clarification or reassurance, to amendments of our initial opinions or even the addition of new opinions.

14.17 We recognise the difficulty in applying the qualitative indicators, particularly in the case of broad support, which is difficult to define and is subjective in its interpretation. Our broad support indicator is based on the 'quality and evidence of argument' rather than on numbers. It is, therefore, a matter for individual Partnership members, and ultimately the DMBs, to make a judgement about.

Different Partnership members have a range of views on whether broad support existed or not for each of our initial opinions in the light of formal consultation responses. We have done a lot of work to respond to consultation responses. This has led to significant changes to supporting information, the addition of clarifications, the provision of advice to the DMBs on each topic, and changes or additions to our initial opinions, ranging from minor to more significant amendments.

14.18 We believe it is up to each member of the DMBs to make up their own mind on the credibility of our opinions and advice as part of their decision-making process.

14.19 **Indicator 2: Understanding and addressing concerns.** We said: 'The Partnership will use this consultation to gather evidence about concerns and reasons for opposition. These will then be reviewed and taken into account in reaching final opinions.' Again, we did this by considering the set of issues arising from our formal consultation process one by one, deciding how to respond to each issue directly as part of our PSE3 Report, and within this, our Final Report.

14.20 **Indicator 3: Net support for continuing with the process.** We said: 'The Partnership will conduct a statistically representative opinion survey to see whether net support exists. The indicator will just apply to West Cumbria, as it is only within this area that participation may result in the actual siting of a GDF. The views of people living in the rest of Cumbria will be taken into account in reaching opinions on the first two indicators.' We undertook the opinion survey as part of our PSE3 process, alongside the formal consultation. Although formally the net support indicator was only to apply to West Cumbria, it is interesting to note that the results show that net support does exist within Allerdale, Copeland, West Cumbria collectively, and the whole of Cumbria, although the size of net support varies between these areas.

Document 61: PSE1 Report
Document 157.1: PSE2 Report
Document 288: PSE3 Report
Document 171: Preliminary assessment report on public and stakeholder views and the Indicators of Credibility (Criterion 6), May 2011

14.21 **Evaluators' view of PSE3.** The independent evaluators for the Partnership have provided us with the following thoughts on PSE3:

'It was observed that the PSE3 programme provided the residents of West Cumbria, Cumbria, and areas beyond with an opportunity to engage with the Partnership's initial opinions and submit feedback without restriction. The Partnership provided residents with a free choice from a range of information resources and feedback channels. Extensive efforts to maximise the accessibility of information and the consultation have been observed throughout.

Given the complex nature of the issues presented, and the volume of information collated by the Partnership, the consultation is considered to have realised all

opportunities to maximise the breadth and depth of response whilst minimising constraints on feedback. Within the bounds of the West Cumbrian focus specified in the PSE3 objectives, no improvements to the frequency, balance, and targeting of the associated publicity campaign have been identified during the evaluation.

We observed a structured and transparent process for processing consultation feedback; the Partnership and its facilitators going to substantial lengths to ensure all responses were considered fully by all members of the Partnership. We observed members of the Partnership taking their responsibilities with regard to consideration of public consultation responses seriously.

We acknowledge the inherent challenges presented by a qualitative analysis on this scale in adequately representing every individual issue raised. We consider the process of analysis and reporting to effectively and faithfully represent the breadth and depth of feedback without unjustified omission. The process of analysis has been transparent throughout; 'raw' data and the analysis process being accessible to all parties. All responses to the consultation are published on the Partnership website.

Feedback to the consultation has been observed to have directly impacted the Partnership's work and initial opinions; with additional inquiries and clarifications undertaken throughout the PSE3 programme.

Despite broad endorsement of PSE3's achievements measured against its objectives, it is apparent that the objectives of PSE3 and the terms of MRWS Stage 3 have in some instances generated complaints of predetermination and constraint in the consultation process. This has been exacerbated by an underlying societal mistrust of local and national government. In this regard, judgement on the efficacy of PSE3 is in some part dependent on the follow-through of commitments made by DECC and Partnership members with regard to geological appraisal, safety and risk management, referenda, and the right to withdraw in any future MRWS stages.'

Our opinions on public and stakeholder views

14.22 We believe that all the results of our PSE work – polling and consultations – should be viewed as equally important and considered together by the DMBs. We consider that the results of the Ipsos MORI survey provide important quantitative information on the public's views about participation in the MRWS process. Our three rounds of public consultation have provided valuable qualitative views from stakeholders and the public about the information we assembled and the initial opinions we expressed. In the light of these views we have made significant changes to our opinions and advice as summarised in paragraphs 14.11 to 14.13 above.

Overall most Partnership members are satisfied that the opinions and advice given in this report reflect the public and stakeholder views we have received. However, some members feel this is not the case on some topics and this has been noted in the relevant chapters, Chapters 8 and 13.

14.23 **Additional advice to the DMBs.** Our experience in using Indicator 1 (broad support) is that it has usefully focused our attention on the credibility of our opinions in the light of public and stakeholder views. However, it cannot serve as a quantitative indicator that is objectively either 'met' or 'not met' as it provides no threshold against which to measure. If the DMBs proceed to Stage 4 we therefore advise that any CSP is not over prescriptive in the way in which it gauges credible support. We suggest that a CSP should do the following:

- Use public and stakeholder engagement to gather evidence about concerns, learn about reasons for opposition or support, and help inform the CSP's views. In particular it is of paramount importance that any CSP continues to try to understand public and stakeholder concerns and address them clearly and transparently.
- Develop a robust quantitative indicator against which to measure the level of public and stakeholder support in a statistically significant way.

15. Taking forward the Partnership's work

15.1 **A bridging period.** Now that our Final Report has been published we have completed our work. We will not meet again as the Partnership unless invited to do so by the decision-making bodies (DMBs). However, we have suggested that a number of Partnership-related activities need to continue until the DMBs have taken their respective decisions about participation, for possibly a 3 to 6 month period. We have therefore agreed the establishment of a small 'bridging group' to act in the Partnership's interests to:

- Update former Partnership members about progress toward a decision about participation and other issues arising.
- Oversee ongoing support contracts (communications, programme management and evaluation) and budgets.
- Oversee communications activity (including responding to enquiries and media requests, and maintaining the website and social media).
- Support the deliberations of the DMBs in preparation for a decision about participation (e.g. clarification of Partnership opinions).
- Oversee work to prepare a 'brand protection strategy'.

15.2 The group should not develop this Partnership's work in any substantive way, beyond any specific mandate given by the Partnership before its close. For example, the bridging group will only be able to give comment on the Partnership's work and opinions where this can be done consistently with this Final Report.

We anticipate membership comprising of officers (and members where required) from the three DMBs, with potentially two co-opted representatives from non-DMBs.

This group would come into existence on publication of the Partnership's Final Report and might expect to meet on approximately a six-weekly basis. We expect it to continue until either a decision about participation is made or, in the event that the

DMBs decide to enter Stage 4, potentially until new arrangements are put in place. The group would then close.

15.3 **Decision-making bodies and their decision making.** The three DMBs will take separate decisions on whether the areas of Allerdale and/or Copeland should enter the siting process, without commitment to host a repository. Each council will consider the report from the Partnership and other relevant matters, and we understand that they will all take a decision in their Executive or Cabinet (Document 297). The three Councils have agreed a Memorandum of Understanding that shows how they will take and coordinate these decisions (Document 235). The Government has confirmed that for an area to formally enter the siting process, both the Borough Council and the County Council would need to be in agreement (Document 240).

Document 235: Memorandum of Understanding between the three Councils, December 2011
Document 240: Letter from DECC regarding the Councils' Memorandum of Understanding, November 2011
Document 297: Decision making by the DMBs in the MRWS process in West Cumbria, July 2012

15.4 **Advice to the DMBs.** We advise that, if a community siting partnership (CSP) comes into existence (i.e. if there is a decision to participate in Stage 4 of the MRWS process), it should consider the benefits of continuing to use the existing database, branding, communication mechanisms, website, and social media platforms that this Partnership has developed. Much time and effort could be saved, and continuity of communication would be gained. We do not envisage the transfer of such assets to a future CSP being legally problematic, but of course this would need to be confirmed in the light of the specific organisational arrangements put in place. Within the legal constraints relevant at the time, we give permission for a future CSP to use these assets in connection with the MRWS process.

The Partnership's opinions and advice

15.5 The full set of opinions and advice contained within this report is compiled below. We commend all of these opinions and advice to the DMBs (Allerdale Borough, Copeland Borough and Cumbria County Councils) in order to inform and assist their decisions about whether or not to enter Stage 4 of the MRWS process.

Overarching issues – Uncertainty

Advice
Should a decision to participate in Stage 4 be taken we would advise that a CSP uses the indicative schedule provided in the 'Stage 4 and 5' chapter to build its Work Programme, and works with the NDA to prepare and publish a comprehensive overall work programme so that stakeholders and the public can see when various uncertainties will be addressed.

Overarching issues – Risk

Advice
Should a decision to participate in Stage 4 be taken we advise that a CSP monitors the NDA's Risk Register and Issues Management Process to understand the range of risks in the MRWS programme and to satisfy itself that uncertainties and associated risks are being managed effectively.

Overarching issues – Trust

Advice
We recognise that trust cannot be built through written words alone, but by demonstration, reciprocal action and mutual respect across a significant period of time. We emphasise that the building of trust between all parties is absolutely essential if the MRWS process continues in West Cumbria, particularly because of the unique process of voluntarism involved. We advise that the DMBs take note of the suggested future actions related to building trust that are contained within this report, and maintain a close watch on efforts from all parties to build and maintain trust should a decision to participate be taken.

If the DMBs proceed to Stage 4, then we advise the following:

- **Legal footing.** A CSP should liaise with DECC early in its work programme to explore and agree how and when key aspects of the MRWS process should be put on

a legal footing.

- **Finance.** The DMBs should explore with the Government ways of ensuring financial continuity to the MRWS process.
- **Acceleration.** There should be no acceleration of the MRWS process by the Government without local agreement from the relevant DMBs, in close liaison with any CSP.
- **Review of the regulators and the NDA.** A CSP should commission reviews into the capacity of the regulators and the NDA. This is explained more fully in Chapter 10 in paragraphs 10.40 and 10.67.

In addition, we advise that a CSP should continue our approach to transparency and an extensive programme of PSE, operating by consensus where practical, and seeking agreements from others where useful e.g. regarding legislation.

Overarching issues – Ethics

Advice

If a decision to participate is taken, ethics will remain an important and cross-cutting issue for consideration by any CSP. If a decision to withdraw is taken, the ethical issues surrounding the management of radioactive waste will remain relevant, because the waste will still exist and will still need managing. We advise the DMBs to bear in mind the range of ethical issues presented by a decision to either participate or withdraw from the process during their decision-making processes.

Overarching issues – Strategic Environmental Assessment (SEA)

Advice

Some members believe that the aspect of an SEA that assesses reasonable alternatives should take place *before* a decision about participation, so that the DMBs have this assessment to hand when taking their decisions. It would also remove any possibility of legal challenge on this point. These members advise the DMBs to request that the NDA upgrades its generic environment and sustainability assessment to a legally compliant SEA before a decision about participation, including consideration of reasonable alternatives.

Other members believe that the NDA's plans for carrying out an SEA *after* a potential decision to participate are appropriate, because it will allow more specific and useful comparisons to be made. They note the NDA's plan to start any Stage 4 with an SEA Scoping Report that can and should be influenced by a CSP so that local interests are

content with how the issue of reasonable alternatives would be handled. These members advise that no further work on SEA is required before a decision about participation.

All members agree that, if the DMBs proceed to Stage 4, the NDA should publish its draft Scoping Report as soon as possible, so that any future CSP can influence how the NDA will assess reasonable alternatives. The CSP should also review the SEA Environment Report towards the end of Stage 4.

Overarching issues – Research into alternative options

Advice

If the DMBs proceed to Stage 4, then we advise that a CSP should:

- Engage closely with the NDA and CoRWM on the delivery of the NDA's R&D programme, including on alternatives to disposing of waste in a GDF.
- Consider commissioning an independent review of the NDA's R&D programme during Stage 4, once more progress has been made.

Overarching issues – The Localism Act

Advice

If the DMBs proceed to Stage 4, then we advise that they should continue to watch carefully how the Localism Act may affect the MRWS process, especially in light of any test cases in the courts.

Overarching issues – Past experience/historical context

Advice

We do not believe the process is predetermined. However, we do believe that West Cumbria's particular history with the nuclear industry provides a unique and important context to any decision about participation and, potentially, a Stage 4 and 5 process. We suggest that the DMBs explicitly recognise the wide and often polarised range of views that exist about the nuclear industry in West Cumbria, and about the possibility of a GDF in the area. The DMBs should note that, whatever the decision about participation, many of these views are unlikely to change or meet in the middle, and that the full range of views should continue to be sought in any future process.

Inventory

Opinions

Overall, our opinion is that we are unable to say at this stage that we are satisfied with the proposed inventory because we do not yet have definite information on what actually would go into a GDF (GDF operation is more than 25 years away). We recognise the ongoing uncertainty about the inventory and stress the importance of reducing this at the earliest practicable time. Specifically, we have received an inventory statement from the Government that explains the difference between baseline and upper inventories. This gives us a good understanding of what could go into a GDF.

We think the inclusion of specific waste streams such as new build waste is for the DMBs to negotiate at a later stage. However, given the existing Government presumption and significant public concerns about overseas waste, our opinion is that a GDF should be for UK waste only (allowing for the policy of substitution).[49] Progress has been made towards agreeing the principles that define an acceptable process for how the inventory could be changed, including how the community can influence this.

Advice

We advised that the DMBs should secure a commitment from the Government to put the MRWS process on a legally binding footing, which would include agreements about the inventory. This commitment has now been received (see paragraph 6.17). If the DMBs proceed into Stage 4, then we advise that a CSP should:

- Review the inventory statement from the Government before the end of Stage 4, consider its implications (as per Inventory Principle 4), and take a view on the inclusion of specific waste streams in the inventory.
- Enter into negotiations with the Government to develop a mutually acceptable process for how the inventory would be changed, including the circumstances under which DMBs should have a veto on changes to the inventory even after the right of withdrawal has ceased (as per Inventory Principle 2). This process should be defined and agreed as a working draft by the end of Stage 4.
- Explore a specific definition of UK waste that it finds acceptable.[50]
- Establish that one of the 'criteria for post-borehole right of withdrawal' should be 'satisfaction with the process for inventory change control' or similar. This should be agreed with the Government before the end of Stage 4.

49. A few days before this Final Report was agreed, DECC announced that the UK was taking title to 4 tonnes of German plutonium (Pu) in a commercial arrangement, with the intention that the Pu be managed in the UK's anticipated re-use programme i.e. to make the Pu into fuel and use in a nuclear reactor. Our initial reaction is that this decision may be inconsistent with our position above about a GDF being for UK waste only. However, we advise that the DMBs seek clarification from DECC about the implications of this as a matter of urgency.
50. See **www.nda.gov.uk/documents/upload/Radioactive-Wastes-in-the-UK-The-2010-estimate-of-radio active-waste-for-Geological-Disposal.pdf** for the current baseline and upper inventories (also published as Document 241 on the Partnership's website).

Geology – Integrity of the BGS screening report

Opinions

We are confident in the integrity of the BGS screening report because two independent reviewers endorsed it and there is little criticism of the study's integrity from elsewhere. We note, however, that the BGS screening study was of limited scope, and that much more detailed desk-based studies and physical investigations would have to be undertaken if the process proceeds.

Advice

We have no additional advice for the DMBs in relation to the BGS report.

Geology – Areas remaining in West Cumbria

Opinions on area of land

We believe that the 1,890km² of land not ruled out as clearly unsuitable by the BGS screening study provides a sufficient amount of land, in terms of area, available for investigation.

Opinions on suitability of geology

We have noted the uncertainties surrounding the suitability of West Cumbria's geology and the differences of view amongst professional geologists and other stakeholders about whether further geological investigations are worthwhile. We have received expert geological submissions arguing that West Cumbria's geology is unsuitable and further progress is not worthwhile. However, we have also received contrary expert advice stating that further progress is worthwhile because not enough is yet known to be able to say that all of West Cumbria should be ruled out. This marked difference of view suggests to us that it is impossible to say whether a suitable site could ultimately be found or not. DMBs should therefore be aware of the distinct possibility that, if the search proceeds, a site may never be found.

The Partnership agrees that it is inherently uncertain at this stage whether a suitable site can be found, that more geological work is therefore required, and that it should be done as soon as possible. However, there is a difference of view in the Partnership about whether this further geological work should be done *before* or *after* a decision about participation in Stage 4.

1. Most Partnership members feel that it is not necessary or appropriate to do this work now as part of Stage 3. More thorough desk-based studies are already planned as the first step of Stage 4 to identify potential site areas, which includes a geological assessment over the first 12 to 18 months of Stage 4.

2. On the other hand, some Partnership members are concerned about the absence of a sufficiently positive picture of the prospects of finding a suitable site to justify proceeding. They advise that a formal decision about participation be deferred until a peer-reviewed appraisal of West Cumbria's geology has been presented which describes and evaluates the prospects of finding a suitable site. It is the view of these members that such a geological appraisal would provide a more robust and credible basis for a decision about whether to enter Stage 4 or not.

Advice
Regardless of the difference of view (as outlined in Chapter 8 and in our opinions), the Partnership agrees that, if the DMBs proceed to Stage 4, a CSP should put in place a robust mechanism for independently reviewing the NDA's work during Stage 4, in particular the geological assessments.

Design and engineering

Opinions
Our overall opinion is that we are content that detailed design issues are largely site-specific and, as such, cannot and should not be resolved at this time. Specifically, we understand the generic design concepts being worked on, and they fit with our expectations. We have also confirmed that retrievability of waste is an option, to be decided on in the future.

Advice
If the DMBs proceed to Stage 4, then we advise that a CSP should:

- Establish a timeline outlining when decisions about retrievability have to be made and when retrievability options will start to be closed off.
- Engage with international research on techniques to monitor waste in geological disposal facilities. A starting point could be to engage directly with the MoDeRN project, via the NDA.
- Review the NDA's high-level designs for a facility during Stage 4, during the assessment of potential site areas (see Chapter 13).
- Investigate the likely additional plant that could be developed near to, or at, the surface facility, so that the full design impacts and implications can be assessed.

Safety, security, environment and planning – Regulatory and planning processes

Opinions on regulatory bodies and processes

We are as confident as is possible at this stage that the necessary regulatory bodies exist and have, or are developing/modifying, processes by which they will consider proposals for a GDF.

Opinions on regulator communications

We are confident that the Environment Agency has adequately described its intentions regarding its approaches to community engagement both now and going forward to a potential CSP.

Opinions on the planning system

We understand how a planning application for a GDF would be handled as far as is possible at this stage, and recognise that further scrutiny of the planning process would be required if the process proceeds, as much could change in the 15 years before an application could occur.

Advice

If the DMBs proceed to Stage 4, then we advise that:

In relation to regulatory bodies, processes and communications, a CSP should:

- Maintain a watching brief on regulatory bodies and processes.
- Consider commissioning an independent review of the regulators' capacity and funding stability to support the MRWS programme. This could include whether the regulatory funding regime has been problematic in other areas or previous work, what stakeholder attitudes are to the funding regime, and therefore whether it is likely to be a problem for the MRWS process.[51]

In relation to the planning system:

- A CSP should maintain a watching brief on developments in the planning system, take a view on their implications for the MRWS process, and secure any necessary clarity or agreements with the Government before the end of Stage 4.
- Areas within the National Park should not be considered for surface facilities because of the likely impact this would have on the special qualities of the Park, which would not be consistent with current planning policies.

51. Note also CoRWM's work in this area.

Safety, security, environment and planning – Safety

Opinions on the safety case

Given all of the evidence we have heard on the processes and the various levels of scrutiny in place, and the NDA's development of an Issues Register, we believe that the NDA will have suitable capability and an acceptable process in place to develop site-specific safety cases. Of course, any site-specific safety cases would need further monitoring and independent reviews before they are deemed adequate by the regulators and other stakeholders.

Opinions on the R&D programme

Our opinion is that, overall, the NDA's R&D programme is acceptable. However, we note that there remain some concerns about the lack of progress with the programme, as well as the lack of clarity over the timescales for completing individual research topics. The creation by the NDA of an Issues Management Process has gone some way to addressing these concerns, but it is still very much in its infancy and we would encourage the NDA to guard against underestimating the importance that stakeholders attach to its R&D programme.

Advice

If the DMBs proceed to Stage 4, then we advise that:

In relation to the safety case, a CSP should:

- Secure an Engagement Package from the Government that allows it to commission independent reviews of any information or work conducted by the NDA, including safety-related work.
- Frequently request independent advice and/or reviews of the NDA's work, potentially via setting up a panel of independent experts on call-down or framework contracts, to be on hand to provide advice and input to the CSP from an independent perspective.
- Review the regulators' ongoing assessment of the NDA's fitness for purpose as developers.
- Consider commissioning an independent review of the NDA's capacity, funding stability, skill base and cultural norms to support the MRWS programme, especially in light of austerity measures.[52]

In relation to the R&D programme, a CSP should:

- Engage closely with the NDA and CoRWM on the delivery of the NDA's R&D programme, including on alternatives to disposing of waste in a GDF.
- Consider commissioning an independent review of the NDA's R&D programme 12 to 18 months into Stage 4, once more progress has been made.

52. Note also CoRWM's work in this area.

Safety, security, environment and planning – Security and transport

Opinions on security

Our opinion is that, in generic terms, we are satisfied with how security is being handled. However, we think that security issues can only be addressed in specific terms if and when potential site areas are identified, and we stress the importance of this given the level of stakeholder concern.

Opinions on transport

Our opinion is that we are satisfied with what we have heard about transport provisions and plans for a GDF at this stage, including the regulation of security and safety of transport. We understand that more work on transport assessments is planned if and when potential site areas are identified. This would include the NDA conducting a Strategic Transport Assessment in Stage 4.

Advice

If the DMBs proceed to Stage 4, then we advise that:

In relation to security:

- A CSP should assess when it is possible to form firmer views on security arrangements, as designs and potential locations become clearer.

In relation to transport:

- A CSP should review the transport assessments that the NDA conducts. This would primarily be via the Strategic Transport Assessment that the NDA is planning to conduct in Stage 4.

Impacts – Direct impacts

Opinions

We have received a good deal of information on the generic impacts, both positive and negative, of developing a GDF. Our overall opinion is that, at this stage, we are fairly confident that an acceptable process can be put in place during the next stage of the MRWS process to assess and mitigate negative impacts, and maximise positive impacts. We acknowledge, however, that a huge amount of work regarding identifying and quantifying impacts will be required in future possible stages.

Additionally, our opinion is that, although they are hard to quantify, we acknowledge there are potential risks to some parts of the economy in the county if the process moves forward, in particular the visitor, land-based, and food and drink sectors. We advise that a coordinated strategy and action plan is prepared to support those aspects of Cumbria's

visitor and land-based economic activity. The strategy would encompass three main elements:

1. Ensuring Cumbria-wide communication through a coordinated action plan between existing agencies, that 'protects' the visitor and land-based aspects of Cumbria's economic activity.
2. Creating a phased communication programme that appreciates that there are a number of key milestones in a project of this nature.
3. Using a broad range of communication channels to get closer to key audiences.

Such a strategy should be initiated by the DMBs and existing agencies and taken forward forthwith, in order to be in a position to progress to implementation at the time that a decision about participation is taken, should such a decision to participate be forthcoming.

Advice
If the DMBs proceed to Stage 4, we advise that:

Regarding brand protection:
- A CSP should monitor whether there is any impact on the area's brand during Stage 4, and in parallel deliver the brand protection strategy that has been agreed.
- Before the end of Stage 4, the DMBs should take a definitive view with the NDA on how public education should be delivered and specifically if, how and when facilities such as a visitor centre should be established.

Regarding property value protection:
- A CSP should consider developing a property value protection (PVP) plan with the Government to protect against potential property value changes if and when specific sites start to be identified in the process.

Impacts – Long-term direction and economic sustainability

Opinions on long-term direction
Our opinion is that the development of a GDF appears broadly compatible with the economic aspirations of West Cumbria, although all members recognise the desire for diversification of the economy. Also, we recognise the need to understand the implications of a GDF in the long term on the different components of the local economy, such as industry, agriculture and tourism.

Opinions on economic sustainability
The Community Benefits Principles (see Chapter 12) provide the basis for future discussions between community representatives and the Government about how long-term sustainable employment and appropriate diversification could be achieved.

Advice
If the DMBs proceed to Stage 4, we advise that:

In relation to long-term direction:
- They consider commissioning a long-term economic visioning exercise during Stage 4, integrating with the economic impact assessments that will be conducted (see below).

In relation to economic sustainability:
- A CSP should conduct a full economic impact analysis during Stage 4, to look at the short to medium-term impacts. This should be conducted for each potential site area, and in each case should integrate impacts locally, countywide and beyond. Note that this economic impact assessment may be linked to the longer-term economic visioning exercise mentioned in previous advice. The longer-term visioning exercise would focus on the less certain impacts over a longer timescale. It might be appropriate to deliver both together as a single piece of work.
- A CSP should independently review the NDA's assessments of impacts that it will conduct as part of its environmental assessment process.
- A training programme should be put in place to enable the West Cumbria workforce to compete for jobs arising from the process.

Community benefits package

Opinions
We have agreed a set of principles with the Government as the basis for any future negotiations. This gives us a certain amount of confidence that an acceptable community benefits package could be negotiated. However, we cannot be certain what specific package the Government might agree to this far in advance and, therefore, whether the amount and type of these benefits would match the expectations of local people. We also recognise that there is widespread scepticism that future governments would follow-through with agreements.

Advice
If the DMBs proceed to Stage 4, then we advise that:

- A CSP and the DMBs should base their negotiations with the Government about benefits on the Community Benefit Principles agreed by this Partnership and the Minister of Energy.
- A CSP should agree an 'outline community benefits package' for each potential siting area being considered. Each outline package should set out possible governance arrangements, investments, scale and distribution of benefits. Government agreement

to these should be secured before the end of Stage 4, to avoid a mismatch in understanding prior to expensive site investigations in Stage 5.
- A CSP should include agreement on a satisfactory community benefits package as one of the criteria for a post-borehole right of withdrawal. These criteria should be agreed with the Government before the end of Stage 4.
- A CSP should consider how and when to make agreements on benefits binding upon the Government.
- We recognise that a final decision on a GDF is at least 15 years away. However, we believe the final decision to accept a GDF should only be made if the community is convinced that the Government – and future governments that follow – will honour commitments on community benefits.

The Stage 4 and 5 process

Opinions

Our opinion is that the process and arrangements for Stages 4 and 5 described in Chapter 13 provide a good basis for more detailed discussions and agreement should a decision be taken to proceed into Stage 4. However, we are not yet fully confident that all parties agree on what a CSP should look like and how it should operate to ensure an appropriate balance between attributes such as independence, operational effectiveness, political relevance and fairness in decision making. We felt it was inappropriate to set out precise organisational arrangements before a site search had started, but this has perhaps inevitably left doubts about exactly how it would work.

Advice

If the DMBs proceed to Stage 4 then we advise that:

- Any CSP should be established and operated in line with all of the guidance set out in Chapter 13.
- The very first challenge will be to negotiate an acceptable set of organisational arrangements amongst community representatives.

Public and stakeholder views

Opinions

We believe that all the results of our PSE work – polling and consultations – should be viewed as equally important and considered together by the DMBs. We consider that the results of the Ipsos MORI survey provide important quantitative information on the public's

views about participation in the MRWS process. Our three rounds of public consultation have provided valuable qualitative views from stakeholders and the public about the information we assembled and the initial opinions we expressed. In the light of these views we have made significant changes to our opinions and advice (as summarised in paragraphs 14.11 to 14.13 of Chapter 14).

Overall most Partnership members are satisfied that the opinions and advice given in this report reflect the public and stakeholder views we have received. However some members feel this is not the case on some topics and this has been noted in the relevant chapters, Chapters 8 and 13.

Advice

Our experience in using Indicator 1 (broad support) is that it has usefully focused our attention on the credibility of our opinions in the light of public and stakeholder views. However, it cannot serve as a quantitative indicator that is objectively either 'met' or 'not met' as it provides no threshold against which to measure. If the DMBs proceed to Stage 4 we therefore advise that any CSP is not over prescriptive in the way in which it gauges credible support. We suggest that a CSP should do the following:

- Use public and stakeholder engagement to gather evidence about concerns, learn about reasons for opposition or support, and help inform the CSP's views. In particular it is of paramount importance that any CSP continues to try to understand public and stakeholder concerns and address them clearly and transparently.
- Develop a robust quantitative indicator against which to measure the level of public and stakeholder support in a statistically significant way.

Taking forward the Partnership's work

Advice

We advise that, if a CSP comes into existence (i.e. if there is a decision to participate in Stage 4 of the MRWS process), it should consider the benefits of continuing to use the existing database, branding, communication mechanisms, website, and social media platforms that this Partnership has developed. Much time and effort could be saved, and continuity of communication would be gained. We do not envisage the transfer of such assets to a future CSP being legally problematic, but of course this would need to be confirmed in the light of the specific organisational arrangements put in place. Within the legal constraints relevant at the time, we give permission for a future CSP to use these assets in connection with the MRWS process.

Appendix 1

Explanation of technical words and phrases

Aquifer: A layer of water-bearing rock from which groundwater can be usefully extracted.

Authorisation conditions: When granting authorisations, these are limitations and conditions applied by the regulators in order to protect people and the environment from the hazards posed by radioactive wastes.

British Geological Survey (BGS): The BGS provides expert services and impartial advice in all areas of geoscience.

Committee on Radioactive Waste Management (CoRWM): An independent committee originally set up by government to look at the options for managing the UK's higher activity radioactive waste. Now it scrutinises the plans for implementing geological disposal.

Community benefits package: A set of benefits provided by the Government to an area in which a repository is sited, including those over and above any direct benefits to the area from the construction and operation of a repository.

Community Benefits Principles: A set of principles developed by the Partnership by which community benefits would be discussed, agreed and potentially administered, if the siting process begins. The Government has agreed the Partnership's principles as a basis for negotiation in the next stage of the process.

Community siting partnership (CSP): A partnership of local community interests that would work with the NDA and with other relevant interested parties in future stages of the MRWS process, to ensure that questions and concerns of potential host communities and wider local interests are addressed and resolved as far as reasonably practicable, and to advise the decision-making bodies at each stage of the process.

Criterion / Criteria: A series of tests developed by the Partnership for each area of its Work Programme.

Cultural norms: The behavioural expectations and cues within a particular society or group.

Decision about participation: The process of each of the decision-making bodies making a formal decision about whether or not to proceed to Stage 4 of the MRWS process.

Decision-making bodies (DMBs): The local government decision-making authority/ies for any potential host community/ies. In this case Allerdale Borough Council, Copeland Borough Council and Cumbria County Council as the decision-making bodies, have the responsibility of making the formal decision on whether to continue to the next stage of the MRWS process or not.

Decision to participate: A decision to proceed to Stage 4 of the MRWS process.

Decision to withdraw: A decision not to proceed to Stage 4 of the MRWS process.

Department of Energy and Climate Change (DECC): The UK Government department responsible for national policy on radioactive waste.

Desk-based study: A process of looking at available facts and figures without carrying out any new practical investigations.

Environment Agency: The regulator responsible for the enforcement of environmental protection legislation in England and Wales. Its activities include regulating disposal of radioactive wastes from licensed nuclear sites and other premises using radioactive substances by granting permits.

Environmental Impact Assessment (EIA): An assessment of the possible positive or negative impacts that a proposed project may have on the environment, together consisting of the natural, social and economic aspects.

Ethics: Moral principles that govern a person's or group's behaviour.

Footprint: The area covered by a specific building or development.

Generic design concept: An illustrative design for geological disposal for a specific geology.

Geological disposal facility (GDF): An engineered, underground facility where the UK's higher activity radioactive waste will be permanently disposed of. A GDF is often referred to as a **repository**.

Generic Disposal System Safety Case (gDSSC): An integrated suite of safety documents produced by the NDA covering the transport and disposal of the UK's higher activity radioactive wastes. It is not specific to a particular site and presents methods, evidence and

arguments concerning the safety of the transport of wastes to a GDF, construction, operation and closure of a facility, and environmental safety in the long term after the facility has been sealed and closed.

Geological Disposal Implementation Board (GDIB): A board chaired by the Minister of Energy, to provide oversight of the MRWS programme.

Higher activity radioactive waste: This is the most radioactive kind of waste. Some of it remains hazardous for many thousands of years. Put simply, it is a combination of nuclear materials and other materials, such as fuel packaging and equipment, that have been contaminated with significant amounts of radioactivity.

Host community: The Government defines host community as the community in which any facility will be built. The host community would be a small geographically defined area, for example a town or village, and would include the population of that area and the owner of the land.

Indicators of Credibility: These are criteria about public and stakeholder views that the Partnership has decided should be met to be satisfied that there is public support for continuing with the process.

Infrastructure Planning Commission (IPC): The independent body that examines applications for nationally significant infrastructure projects.

Inventory: The type and amount of radioactive waste that would be placed and managed in a repository.

Inventory Principles: A set of principles developed by the Partnership that set out the commitments needed from the Government about how inventory issues will be handled if a decision to enter the siting process is taken. In particular, they address how the inventory would be agreed and potentially changed during the process of siting and constructing a repository.

Localism Act: An act of parliament containing key measures that underpin the decentralisation of power from central to local government and local organisations. The Act makes provision for: functions and procedures of local government; town and country planning; the Community Infrastructure levy; and the authorisation of nationally significant infrastructure projects.

Major Infrastructure Planning Unit (MIPU): The name that was initially proposed for the body that will operate the development consent process for nationally significant infrastructure projects such as offshore wind farms and nuclear power stations. It is now proposed that it will be known as the **National Infrastructure Directorate (NID)**.

Managing Radioactive Waste Safely (MRWS): The name of the Government process to find a permanent site for the geological disposal of the country's higher activity radioactive waste.

Multi-barrier approach: A combination of engineered barriers (packaging, vaults and backfill/refilling of earth or other materials) and a natural barrier (the rock) working together to ensure the necessary levels of safety for a repository.

National Infrastructure Directorate (NID): The proposed new name for the body which will operate the development consent process for nationally significant infrastructure projects such as offshore wind farms and nuclear power stations. This replaces the IPC and supersedes the proposed new name MIPU.

Nationally significant infrastructure project (NSIP): A large-scale infrastructure project, for example the construction or extension of a generating station, the installation of an electric line above ground, a development relating to underground gas storage facilities, and so on.

Nirex: The former Nuclear Industry Radioactive Waste Executive which was previously responsible for managing the country's radioactive waste. It was formed by the nuclear industry, then owned by the Government and merged with the NDA RWMD.

Nuclear Decommissioning Authority (NDA): The UK Government body responsible for ensuring the clean-up of civil nuclear sites and for implementing the Government's policy on the long-term management of radioactive waste.

Office for Nuclear Regulation (ONR): An agency of the Health and Safety Executive (the regulator responsible for protecting people against risks to health or safety arising out of work activities). Established on 1st April 2011, the ONR regulates nuclear safety and security, and regulates the safety of radioactive material transport by road, rail and sea.

Opinion survey: A poll of public opinion from a sample or sub-set of a particular group or population. Opinion surveys are used to gauge public opinion without having to survey every member of a group or population (in this case everyone in West Cumbria).

Potential host community: An area in which a facility could be built (see also **host community**).

Potential site area: A combination of a possible surface site area and a large volume of host rock for the underground facilities of a repository.

Principles for Community Involvement: A set of principles developed by the Partnership that recommend how the different levels of community should be engaged in decision making if West Cumbria enters the siting process for a repository.

Property value protection (PVP) plans: These are schemes underwritten by the Government whereby homeowners are recompensed if there is a demonstrable drop in the value of their property when they sell it.

Public and stakeholder engagement (PSE): The Partnership's programme for discussing its work with the public, stakeholders and stakeholder organisations i.e. any individual or organisation who has an interest in the MRWS process.

Radioactive Waste Management Directorate (RWMD): The directorate of the NDA responsible for developing and implementing geological disposal.

Referendum: Putting a question directly to the vote of the whole electorate.

Repository: See **geological disposal facility (GDF)** above.

Retrievability: The ability in principle to recover waste or entire waste packages once they have been emplaced in a repository.

Retrievability Scale: A scale developed by the Nuclear Energy Agency to illustrate the degree and type of effort that is needed to retrieve waste before and after it is placed in a repository.

Reversibility: The ability in principle to reverse or reconsider decisions taken during the progressive implementation of a disposal system.

Right of withdrawal: This means that the decision-making bodies are able to pull out of the process at any time before construction is ready to start. This decision would be made on behalf of communities and in close collaboration with wider community representatives.

Safety case: A structured argument or body of evidence that is intended to demonstrate that a system is safe. It also provides evidence to show **how** claims of safety are met.

Schedule of Impacts: A table drawn up by the Partnership that identifies specific impacts of a potential repository and when the developer (the NDA) will assess them. The purpose of

the table is to satisfy the Partnership that the NDA a) recognises all the important impacts and b) has plans in place to fully assess them before development.

Spent fuel: Nuclear fuel that has been removed from a reactor.

Spent fuel encapsulation plant: A facility to package used fuel from nuclear power stations in preparation for disposal.

Stakeholder organisations: Organisations that represent people with a clear or specific interest in the MRWS process.

Strategic Environmental Assessment (SEA): A system of incorporating environmental considerations into policies, plans, and programmes, by assessing their potential social, economic and environmental impacts.

UK Radioactive Waste Inventory (UKRWI): A public record of information produced by DECC and the NDA on the sources, quantities and properties of radioactive wastes that existed in the UK at a particular date and were projected to arise after that date.

Undiscounted: An approach to costing where no allowance is made for the reduced value of future expenditure compared with immediate expenditure.

Voluntarism: An approach where a community expresses willingness to participate in the search for a site for a potential repository, and perhaps ultimately host a facility.

Waste hierarchy: Introduced into UK waste management policy in the 1990s, the hierarchy states that only if waste cannot be prevented, reused, recycled, reclaimed or recovered should it be disposed of into the environment, and this should be undertaken in a controlled and authorised manner.

West Cumbria MRWS Partnership (the Partnership): An advisory body set up to make recommendations to Allerdale Borough, Copeland Borough and Cumbria County Councils on whether they should participate in the Government's process for siting a GDF, without commitment to eventually having a facility in West Cumbria.

Wider local interests: Communities outside the host community that have an interest in the development of a facility in the host community e.g. the next village, a neighbouring district or a community on the local transport routes to the host community.

Appendix 2

Documents published by the Partnership

Partnership documents	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
01. Meeting Report 17 March 2009									•
02. Partnership Terms of Reference									•
03. Meeting Report 14 May 2009									•
04. Risks Paper									•
05. Steering Group Minutes 28 May 2009									•
06. Partnership Meetings – Public Observer Sheet									•
07. Criteria for a Decision Whether to Participate 12 August 2009									•
08. Funding Stakeholders Policy 28 October 2009									•
09. Meeting Report 14 July 2009									•
10. PSE Sub-Group Meeting Note 17 July 2009								•	
11. Indicative PSE Plan 21 July 2009								•	
12. Steering Group Minutes 29 July 2009									•
13.1. Partnership Work Programme									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
14. Document Policy 17 August 2009									•
15.2. PSE2 Plan								•	
15.3. PSE3 Plan								•	
16. Steering Group Minutes 11 August 2009									•
17. PSE Sub-Group Meeting Note 10 August 2009								•	
18. Using the Existing Cumbria-wide Citizens' Panel 10 September 2009								•	
19. Holding a Series of Community Meetings in PSE1 10 September 2009								•	
20. Meeting Report 4 September 2009									•
21. PSE Sub-Group Meeting Note 9 September 2009								•	
22. Steering Group Minutes 16 September 2009									•
23. Presentation Teams for Neighbourhood Forums Exhibition – PSE1 29 September 2009								•	
24. British Geological Survey Peer Review : Author – DECC		•							
25. Invitation Letter and Agenda for Stakeholder Organisation Workshop – PSE1 12 October 2009								•	
26. List of Invitees to Stakeholder Organisation Workshop – PSE1								•	
27. Summary Note on Potential Impacts of Implementing Geological Disposal 7 October 2009 : Author – NDA					•				
28. Meeting Report 14 October 2009									•
29. Generic Design Concepts – How Will They Evolve? 14 October 2009 : Author – NDA			•						

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
30. Five Clarifications for the West Cumbria MRWS Partnership 14 October 2009 : Author – NDA			•						
31. Summary Note on International Benefits Packages 14 October 2009 : Author – NDA						•			
32. PSE Sub-Group Meeting Note 29 October 2009								•	
33. Steering Group Minutes 28 October 2009									•
34. E-Bulletin 1 – November 2009								•	
35. Information Leaflet – November 2009								•	
36.1. Regulators' Roles and Processes in the Implementation of MRWS : Author – Regulators				•					
37. Addressing Retrievability in Design : Author – NDA			•						
38. Stakeholder Organisation Workshop Report – PSE1 21 December 2009								•	
39. PSE1 Reporting Plan 9 December 2009								•	
40. Steering Group Minutes 9 December 2009									•
41. Contact Note from Presentation to St Benedicts High School 15 December 2009								•	
42. PSE Sub-Group Meeting Note 16 December 2009								•	
43. E-Bulletin 2 – January 2010								•	
44. Invitation to Under-Represented Groups 7 January 2010								•	
45.1. NEA Retrievability Scale Leaflet November 2011 : Author – NEA			•						

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
46. Invitation to FoE, CORE and Greenpeace 14 December 2009								•	
47. Meeting Report 13 January 2010									•
48. PSE Sub-Group Meeting Note 21 January 2010								•	
49. Steering Group Minutes 27 January 2010									•
50. PSE Sub-Group Meeting Note 4 February 2010								•	
51. E-Bulletin 3 – February 2010								•	
52. Steering Group Minutes 11 February 2010									•
53. Specification for Peer Review of British Geological Survey Study		•							
54. Awareness Tracking Survey Report Wave 1, January 2010 : Author – Ipsos MORI								•	
55. Discussion Paper – Impacts of a Geological Disposal Facility					•				
56. Proposed MRWS Site Assessment Methodologies : Author – NDA							•		
57. Regulators' Response to Questions on Roles and Processes : Author – Regulators				•					
58. Meeting Report 23 February 2010									•
59. Residents' Panel Event Report – PSE1 6 February 2010 : Author – Vision Twentyone								•	
60. PSE Sub-Group Meeting Note 24 February 2010								•	
61. PSE1 Report								•	
62. Neighbourhood Forum Report – PSE1								•	
63. Contact Note from Presentation to CoRWM 17 December 2009								•	

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
64. Contact Note from Japanese Cabinet Office Meeting 16 March 2010								•	
65. Steering Group Minutes 10 March 2010									•
66. Citizens' Panel Survey 2009 (see pages 31–34)								•	
67. PSE Sub-Group Meeting Note 6 April 2010								•	
68. Meeting Report 31 March 2010									•
69. Steering Group Minutes 14 April 2010									•
70. Steering Group Minutes 28 April 2010									•
71. Community Benefits Scoping Paper						•			
72. Meeting Report 13 May 2010									•
73. Table of Responses to PSE1								•	
74. Discussion Paper – Credible Support and Decision Making about Participation								•	
75. Discussion Paper – Siting Process & Principles of Involvement for Affected Communities							•		
76. Letter to Jean McSorley and Ruth Balogh 28 May 2010								•	
77. Steering Group Minutes 26 May 2010									•
78. Steering Group Minutes 9 June 2010									•
79. E-Bulletin 4 – June 2010								•	
80. Evaluation Phase 1, June 2010 : Author – Golder Associates									•
81. Briefing Paper – What is a Decision to Participate? : Author – DECC									•
82. Meeting Report 25 June 2010									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
83. Awareness Tracking Survey Report Wave 2, May 2010 : Author – Ipsos MORI								•	
84. Steering Group Minutes 7 July 2010									•
85. Contact Note from Whitehaven Festival 26–27 June 2010								•	
86. Response to Evaluation, Phase 1									•
87. Steering Group Minutes 21 July 2010									•
88.2. Inventory Presentation from the Nuclear Decommissioning Authority Issue 2 November 2010 : Author – NDA	•								
89. Contact Note from Joint Schools Council 5 July 2010								•	
90. Briefing Note – Retrievability			•						•
91. Briefing Note – Why the Siting Process is Different to Nirex							•		•
92. Briefing Note – Why Geological Disposal?									•
93. Meeting Report 5 August 2010									•
94. Inventory Critique by Pete Roche : Author – Pete Roche	•								
95. Community Benefits Sub-Group Report 18 August 2010						•			
96. E-Bulletin 5 – August 2010								•	
97. Principles for Inventory Change	•								
98. Steering Group Minutes 18 August 2010									•
99. Notes from Presentation of BGS Draft Report to Steering Group 18 August 2010		•							

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
100. NGO Involvement Overseas : Author – NDA								•	
101. Contact Note from Cumbria Association of Trades Councils 21 August 2010								•	
102. Steering Group Minutes 1 September 2010									•
103. Contact Note from Lake District National Park Authority Partnership Meeting 7 September 2010								•	
104. Steering Group Minutes 29 September 2010									•
105. Interim E-Bulletin – 14 October 2010								•	
106. Engagement Package Funding May 2012									•
107. Independent Convening Agreement with 3KQ									•
108. Steering Group Minutes 13 October 2010									•
109. Ipsos MORI Technical Note on Surveys								•	
110. Peer Reviewer Report on 1st Draft of BGS Report : Author – Professor Agust Gudmundsson		•							
111. Peer Reviewer Statement on Final BGS Report : Author – Professor Agust Gudmundsson		•							
112. Peer Reviewer Report on 1st Draft of BGS Report : Author – FWS Consultants Ltd		•							
113. Peer Reviewer Statement on Final BGS Report : Author – FWS Consultants Ltd		•							
114. E-Bulletin 6 – 28 October 2010								•	
115. British Geological Survey Report – Non-Technical Summary 28 October 2010 : Author – BGS		•							

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
116. British Geological Survey Report 28 October 2010 : Author – BGS		•							
117. Notes from Community Benefits Sub-Group Meeting 25 October 2010						•			
118. Approach to Final Reporting 10 December 2010									•
119. Meeting Report 28 October 2010									•
120. Report from CoRWM Seminar 22 September 2010		•							
121. Steering Group Minutes 10 November 2010									•
122. Operational Review Proposal									•
123. Report from Geology Seminar 15 November 2010		•							
124. International Learning and Potential Overseas Site Visits December 2010 : Author – NDA					•	•			
125. Steering Group Minutes 24 November 2010									•
126. Notes from CALC and Environment Agency Meeting re Regulatory Resources 16 November 2010 : Author – Environment Agency			•						
127. Meeting Report 10 December 2010									•
128. Contact Note from Dunmail Park Exhibition Stand 27 November 2010								•	
129. Register of Interests Proposal January 2011									•
130. Regulatory Interfaces with the Community January 2011 : Authors – EA, HSE, DfT				•					
131. E-Bulletin 7 – December 2010								•	

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
132. Community Drop-in Events Report PSE2 January 2011								•	
133. Newsletter – November 2010								•	
134. Planning Roles and Processes 19 January 2011				•					
135. Steering Group Minutes 5 January 2011									•
136. Contact Report from Retrievability Conference in Reims December 2010 : Author – Fergus McMorrow			•						
137. Report from Stakeholder Organisations Workshop PSE2 13 January 2011								•	
138. Newsletter – January 2011								•	
139. Meeting Report 19 January 2011									•
140. International Review of Community Benefits : Author – Galson Sciences Ltd						•			
141. Ethics Chapter of CoRWM Report : Author – CoRWM									•
142. E-Bulletin 8 – February 2011								•	
143. NDA Briefing Note for Geology Information Seminar : Author – NDA		•							
145. Steering Group Minutes 2 February 2011									•
146. Review of the NDA's Research & Development Programme March 2011 : Author – Professor Stuart Haszeldine			•	•					
147. Regulators' Views on the NDA's Research & Development Programme March 2011 : Author – Regulators			•	•					
148. Steering Group Minutes 16 February 2011									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
149. Notes from Geological Society Meeting 17 February 2011		•							
150.2. Meeting Report 3 March 2011									•
151. E-Bulletin 9 – March 2011								•	
152. Report from Residents' Panel PSE 2 January 2011 : Author – Vision Twentyone								•	
153. Steering Group Minutes 16 March 2011									•
154. Regulators' Comments on NWAA Issues Register and Rock Solid 21 April 2011 : Author – Regulators				•					
155. Steering Group Minutes 31 March 2011									•
156. Report from 'Virtual' Visit to the Waste Isolation Pilot Plant in New Mexico 9 March 2011					•	•			
157.1. PSE2 Report 24 May 2011								•	
158.1. Interim Evaluation Report of the West Cumbria MRWS Partnership March 2011 : Author – Wood Holmes									•
159. NDA's RWMD Issues Process Briefing Note April 2011 : Author – NDA				•					
160. Introduction to the NDA's Generic Disposal System Safety Case December 2010 : Author – NDA				•					
161. Summary Report on the Peer Review of the NDA's DSSC 12 January 2011 : Author – Peer Reviewers				•					
162. CoRWM's View on the Geological Suitability of West Cumbria 16 February 2011 : Author – CoRWM		•							

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
163. Impacts Sub-Group Report July 2011					•				
164. Awareness Tracking Survey Report Wave 3, March 2011 : Author – Ipsos MORI								•	
165.1. Meeting Report 14 April 2011									•
166. Update on 2010 Radioactive Waste Inventory 22 March 2011 : Author – DECC/NDA	•								
167. Further Information on Geology from the NDA June 2011 : Author – NDA		•							
168. Report from Impacts Research into Perceptions of a GDF on West Cumbria 14 April 2011 : Author – GVA					•				
168.1. Appendix to Document 168 (Report from Impacts Research) – Case Studies : Author – GVA					•				
169. Statement on Distance Separation of Above Ground and Underground Facilities 17 June 2011 : Author – NDA		•					•		
170. E-Bulletin 10 – May 2011								•	
171. Preliminary Assessment Report Criterion 6 – Indicators of Credibility 24 May 2011								•	
172. Community Benefits Principles 23 May 2011						•			
173. Steering Group Minutes 17 May 2011									•
174. Discussion Pack Report PSE2 May 2011								•	
175. Comment on Professor David Smythe's Views on Geology 13 May 2011 : Author – FWS Consultants Ltd		•							
176. Meeting Report 24 May 2011									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
177. E-Bulletin 11 – June 2011								•	
178. Letter re Transport Movements 19 May 2011 : Author – NDA					•				
179. Report on Manpower and Skills Requirements May 2011 : Author – NDA			•						
180. Letter sent to Greenpeace, Friends of the Earth and CORE 20 October 2010								•	
181. Letter sent to Partnership by Greenpeace, Friends of the Earth and CORE 28 February 2011								•	
182. Baseline for Measuring Impacts 1 June 2011 : Author – NDA					•				
183. Letter sent to Greenpeace, Friends of the Earth and CORE 17 March 2011								•	
184. Response to Professor Stuart Haszeldine's Review of the NDA's R&D Programme (Document 146) March 2011 : Author – NDA				•					
185. Reply to the NDA's Response to the Review of its R&D Programme (Document 184) 22 May 2011 : Author – Professor Stuart Haszeldine				•					
186. Preliminary Assessment Report Criterion 5 – Siting Process 23 June 2011							•		
187. Preliminary Assessment Report Criterion 4b – Inventory 23 June 2011	•								
188. Letter sent to Greenpeace, Friends of the Earth and CORE 9 June 2011								•	

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
189. Response from DECC to Principles for Inventory Change June 2011 : Author – Charles Hendry, DECC	•								
190. Steering Group Minutes 9 June 2011									•
191. Partnership Accessibility Statement May 2011									•
192. Email Exchange Between CALC and the NDA re Areas Excluded by the BGS Screening January to June 2011		•							
193. File Note from Meeting Between the NDA and the Planning Inspector for the Nirex Inquiry March 2011 : Author – NDA		•							
194. Review of the NDA Information on Geology (Document 167) 24 May 2011 : Author – FWS Consultants Ltd		•							
195. Preliminary Assessment Report Criterion 2 – Geology 23 June 2011		•							
196. Preliminary Assessment Report Criterion 4a – Design and Engineering 23 June 2011			•						
197. Newsletter – Summer 2011								•	
198. Meeting Report 23 June 2011									•
199. Letter sent to Partnership by Greenpeace, Friends of the Earth and CORE 17 June 2011								•	
200. Report from Geology Seminar 20 June 2011		•							
201. Protection of the Marine Environment – Clarification from DECC June 2011 : Author – DECC					•				
202. Letter sent to Greenpeace, Friends of the Earth and CORE 27 June 2011								•	

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
203. Briefing Note on the MoDeRn Project June 2011 : Author – NDA				•					
204. Further Analysis of Longer-term Manpower and Skills Requirements June 2011 : Author – NDA			•						
205. Contact Note from Meeting Regarding Youth Engagement 16 June 2011								•	
206. E-Bulletin 12 – July 2011								•	
207. PSE Sub-Group Meeting Notes 7 June 2011								•	
208. PSE Sub-Group Meeting Notes 24 June 2011								•	
209. Preliminary Assessment Report Criterion 1 – Safety, Security, Environment and Planning 29 July 2011				•					
210. PSE Sub-Group Meeting Notes 5 July 2011								•	
211. Ipsos MORI Response to Michael Baron's Questions July 2011 : Author – Ipsos MORI								•	
212. Preliminary Assessment Report Criterion 3 – Community Benefits and Impacts 29 July 2011					•	•			
213. Steering Group Minutes 21 July 2011									•
214. Contact Note from Exhibition Stands Summer 2011								•	
215. Meeting Report 29 July 2011									•
216. PSE Sub-Group Meeting Notes 27 July 2011								•	
217. Further Information on Research & Development July 2011 : Author – NDA				•					
218. Steering Group Minutes 25 August 2011									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
219. Briefing Note on Environmental Assessments in Stage 4 of the MRWS Process 22 August 2011 : Author – NDA				•	•				
220. PSE Sub-Group Meeting Notes 31 August 2011								•	
221. Letter to DECC Regarding Acceleration of Timescales 6 September 2011									•
222. Meeting Report 20 September 2011									•
223. Steering Group Minutes 9 September 2011									•
224. E-Bulletin 13 – September 2011								•	
225. Legal Advice on Governance of the Partnership Process September 2011 : Author – Wragge & Co. LLP									•
226. PSE Sub-Group Meeting Notes 21 September 2011								•	
227. DECC's Response to the Community Benefits Principles September 2011 : Author – DECC						•			
228. The Partnership's Response to DECC's Consultation on Site Assessment September 2011							•		
229. Equality Impact Assessment September 2011									•
230. Steering Group Minutes 10 October 2011									•
231. Briefing on Property Value Protection October 2011 : Author – Galson Sciences					•				
232. E-Bulletin 14 – October 2011								•	
233. PSE Sub-Group Meeting Notes 13 October 2011								•	

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
234. Letter from the NDA Regarding Spoil Quantities 21 October 2011 : Author – NDA					•				
235. Memorandum of Understanding Between the Councils December 2011									•
236. Letter from DECC Regarding Acceleration of Timescales 12 October 2011 : Author – DECC									•
237. Response to Professor Smythe's Further Input on Geology 26 October 2011 : Author – FWS Consultants Ltd		•							
238. Report from Visit to Bure in France October 2011					•	•			
239. Meeting Report 3 November 2011									•
240. Letter from DECC Regarding the Councils' Memorandum of Understanding 7 November 2011 : Author – DECC									•
241. 2010 UK Radioactive Waste Inventory : Author – DECC/NDA	•								
242. Public Consultation Document November 2011 to March 2012								•	
243. Consultation Overview Document November 2011 to March 2012								•	
244. E-Bulletin 15 – December 2011								•	
245. Paper on Expert Review of Opinion Survey Methodology for the Steering Group 24 November 2011								•	
246. Steering Group Minutes 24 November 2011									•
247. Briefing Note – The Partnership's Opinion Survey January 2012								•	•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
248. Invitation to Greenpeace, Friends of the Earth, CORE and Radiation Free Lakeland to Present to the Partnership 1 December 2011								•	
249. Steering Group Minutes 11 January 2012									•
250. E-Bulletin 16 – January 2012								•	
251.1. Opinion Survey – Response to Public Comments March 2012								•	
252. Reporting Plan for PSE3 and the Final Report, and Planning Ahead for Closure of the Partnership March 2012								•	•
253. The Regulators' Review of the NDA's Generic Disposal System Safety Case December 2011 : Author – Environment Agency and Office for Nuclear Regulation				•					
254. The NDA's Response to the Regulators' Review of the Generic Disposal System Safety Case February 2012 : Author – NDA				•					
255. Update on Planning and Economic Development 23 February 2012				•	•				
256. Meeting Report 21 February 2012									•
257. Updated Legal Advice on Governance February 2012 : Author – Wragge & Co. LLP									•
258. Letter to DECC regarding the Partnership's Engagement Package 24 January 2012									•
259. Newsletter – February 2012								•	
260. E-Bulletin 17 – March 2012								•	
261. Letter to DECC regarding the Partnership's Engagement Package 24 February 2012									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
262. Steering Group Minutes 7 February 2012									•
263. Letter from DECC regarding the Partnership's Engagement Package 8 March 2012 : Author – DECC									•
264. PSE Sub-Group Meeting Notes 10 November 2011								•	
265. Letter from DECC regarding the Partnership's Engagement Package 2 April 2012 : Author – DECC									•
266. PSE Sub-Group Meeting Notes 16 March 2012								•	
267. Steering Group Minutes (including discussion with Lead Inspector and Technical Assessor from the Nirex Inquiry) 29 March 2012		•							•
268. Notes from Informal Partnership Workshops 16 and 26 April 2012 (Draft)								•	•
269. Brand Protection Strategy Report : Authors – Sedley Place and The Communication Group					•				
270. PSE Sub-Group Meeting Notes 9 May 2012								•	
271. Steering Group Minutes 11 May 2012									•
272. E-Bulletin 18 – May 2012								•	
273. Presentation by Ipsos MORI on the Opinion Survey to the Partnership 22 May 2012								•	
274. Meeting Report 22 May 2012									•
275. Steering Group Minutes 29 May 2012									•
276. Letter to Shepway District Council 25 May 2012									•
277. Letter from Shepway District Council 29 May 2012									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
278. PSE Sub-Group Meeting Notes 30 May 2012								•	
279. Letter to the Office for Nuclear Regulation 31 May 2012				•					
280. Letter to the Environment Agency 31 May 2012				•					
281. Opinion Survey Report May 2012 : Author – Ipsos MORI								•	
281.1 Data from MRWS Opinion Survey May 2012 : Author – Ipsos MORI								•	
282. Letter from CoRWM regarding Geology 8 June 2012		•							
283. Steering Group Minutes 13 June 2012									•
284. Letter from the Office for Nuclear Regulation 13 June 2012				•					
285. Review of Consultation Submissions on Geology 18 June 2012 : Author – FWS Consultants Ltd		•							
286. NDA Responses to Requests for Clarifications from the Partnership May 2012 : Author – NDA RWMD									•
287. DECC Responses to Actions Commissioned by the Partnership May 2012 : Author – DECC									•
288. PSE3 Report 25 June 2012								•	
289. Draft Final Opinions for Discussion at 25 June Partnership Meeting									•
290. Community Siting Partnership Roles and Tasks in a Possible Stage 4							•		
291. Update on Actions Commissioned by the Partnership at its 22nd May 2012 Meeting									•

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
292. Notes from Meeting with the Geological Society of London 19 June 2012		•							
293. Letter from the Environment Agency 22 June 2012 : Author – Environment Agency				•					
294. Notes from Meeting with the NDA regarding Strategic Environmental Assessment 20 June 2012 : Author – NDA				•					
295. Discussion Note on Codifying Elements of the MRWS Process 20 June 2012 : Author – DECC									•
296. Legal Advice on Making Voluntarism Legally Binding June 2012 : Author - Wragge & Co. LLP									•
297. Decision Making by the Decision-Making Bodies in the MRWS Process in West Cumbria 6 July 2012									•
298. Meeting Report 25 June 2012									•
299. Legal Advice on Voluntarism and the Public Interest June 2012 : Author - Wragge and Co. LLP									•
300. E-Bulletin 19 – July 2012								•	
301. Steering Group Minutes 9 July 2012									•
302. Meeting Report 19 July 2012									•
303. Letter from DECC regarding the Partnership's Community Benefits Principles and Codifying Elements of the MRWS Process 12 July 2012 : Author - DECC						•			•
304. Letter from the Environment Agency 20 July 2012 : Author – Environment Agency		•						•	

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
305. Lists of Contextual Points Raised in Responses to the Partnership's Formal Consultation								•	
306. The Partnership's Final Report	•	•	•	•	•	•	•	•	•
External documents									
a. Review of Nirex Site Selection Process, 1987–1991									•
b. Inspector's Report from Nirex Enquiry, 1995/96 Enquiry									•
c. Letter Refusing Nirex Planning Permission, 1997									•
d. CoRWM's Recommendations to the Government, 2006									•
e. White Paper on Managing Radioactive Waste Safely, 2008									•
f. Issues Register published by Nuclear Waste Advisory Associates March 2010				•					
g. Rock Solid? A report by Helen Wallace for Greenpeace International				•					
h. Analysis of the Nirex inquiry by Professor David Smythe 1 February 2011		•							
i. CoRWM's view on the geological suitability of West Cumbria 16 February 2011		•							
j. Response from Professor David Smythe to CoRWM re geological unsuitability of Cumbria 12 April 2011		•							
k. Input from Tim McEwen regarding geology May 2011		•							

	Inventory	Geology	Design and engineering	Safety, security, environment and planning	Impacts	Community benefits package	Stages 4 and 5 of the MRWS process	Public and stakeholder views/engagement	Other/general Partnership business
l. Response from CoRWM to Professor David Smythe 1 June 2011		•							
m. Response from Professor David Smythe to FWS Consultants Ltd (Document 175) 16 September 2011		•							
n. Letter from Professor David Smythe regarding the geological unsuitability of the Eskdale granite 6 October 2011		•							
o. Input from Professor David Smythe regarding spoil 11 October 2011		•			•				
p. Response from Professor David Smythe to the NDA regarding spoil 3 November 2011		•			•				
q. Response from Professor David Smythe to FWS Consultants Ltd 7 December 2011		•							
r. An overview of NDA higher activity radioactive waste February 2012	•								
s. Response from Professor David Smythe to the Review of Consultation Submissions on Geology by FWS Consultants Ltd 22 June 2012		•							
t. Response from Professor Haszeldine to the Review of Consultation Submissions by FWS Consultants Ltd 24 June 2012		•							

Appendix 3
Partnership membership

The key representatives of Partnership member organisations as of July 2012 are listed below. Where councillors/elected members are listed, support was usually also provided by officers. Some organisations shared representation on the Partnership between different representatives.

Partnership members

Allerdale Borough Council

- Cllr Alan Smith
- Cllr Tim Heslop
- Cllr Carni McCarron-Holmes
- Cllr Michael Heaslip

Barrow Borough Council

- Cllr Frank Cassidy

Carlisle City Council

- Steven O'Keefe

Churches Together in Cumbria

- Revd Dr Lindsay Gray

Copeland Borough Council

- Cllr Elaine Woodburn
- Cllr Allan Holliday
- Cllr John Kane
- Cllr Yvonne Clarkson

Cumbria Association of Local Councils (CALC)

Allerdale District Association

- Cllr Geoff Smith

Copeland District Association

- Cllr Keith Hitchen

Cumbria Chamber of Commerce

- Robert Johnston

Cumbria County Council

- Cllr Tim Knowles
- Cllr Tony Markley
- Cllr David Southward MBE
- Cllr Gerald Humes

Cumbria Tourism

- Richard Greenwood

Eden District Council

- Cllr Mike Tonkin

GMB/Unite Unions

- Peter Kane

Lake District National Park Authority

- Robert Allison
- Judith Cooke (Member)
- Stephen Ratcliffe

National Farmers Union (NFU)

- Robert Morris-Eyton

Nuclear Legacy Advisory Forum (NuLeAF)

- Stewart Kemp
  (previous representative Fred Barker)

Prospect Union

- Marcus Swift

South Lakeland District Council

- Cllr Clare Feeney-Johnson
- Cllr Ian Mcpherson

Observing members

Committee on Radioactive Waste Management (CoRWM)

- Brian Clark
- Mark Dutton

Department of Energy and Climate Change (DECC)

- Bruce Cairns

Environment Agency

- Gavin Thomson

Isle of Man Government

- Paul McKenna

Nuclear Decommissioning Authority (NDA)

- Dr Elizabeth Atherton
- Alun Ellis

Office for Nuclear Regulation (ONR)

- Mick Bacon

West Cumbria Sites Stakeholders Group

- David Moore

Appendix 4
The Partnership's Work Programme

This appendix provides an overview of the Partnership's full Work Programme (Document 13.1).

	Workstream	What we are looking for	Tasks
1	**Safety, security, environment and planning**		
1a	Criterion: 'Whether the Partnership is satisfied that suitable regulatory and planning processes are in place or being developed to protect residents, workforce and the environment.'	Confidence that necessary regulatory bodies and processes exist or are being developed. Adequate communication links between regulators and the community are present and working. Acceptability of the planning aspects in the early stages of the siting process.	Task 1a(i) – Understand what regulatory bodies are involved, what their roles are and what regulatory processes they have in place or are developing. Task 1a(ii) – Assess the recent and current arrangements for regulatory interfaces with the community. Task 1a(iii) – Understand the context and role of the planning system in the process and any uncertainties associated. Task 1a(iv) – Seek written reassurance from the regulators on the nature of their engagement with a potential Community Siting Partnership (CSP). Task 1a(v) – Ask the NDA and the regulators for commentary on the NWAA submission to the Energy and Climate Change Committee, Issues Register, and 'Rock Solid?' report.

1b	Criterion: 'Whether the Partnership is satisfied that the NDA RWMD has suitable capability and processes in place to protect residents, workforce and the environment.'	Acceptability of the NDA's process for making a safety case. Acceptability of the NDA's research & development (R&D) programme.	Task 1b(i) – Review the NDA's generic Disposal System Safety Case once it has been peer reviewed. Task 1b(ii) – Review and comment on the NDA's R&D plans.

	Workstream	What we are looking for	Tasks
2	**Geology**		
2a	Criterion: 'Whether the Partnership is confident in the integrity of the BGS screening work/ report.'	Acceptable peer review process. Broad stakeholder confidence in the BGS study.	Task 2a(i) – Understand the peer review process and work with the Government to alter the process if required. Task 2a(ii) – Ask DECC to instruct the start of the BGS work. Task 2a(iii) – Commission independent expert review of the BGS study via consultants on advice from the Geological Society. Task 2a(iv) – Implement the output of the expert review process, as required.
2b	Criterion: 'Whether there are sufficient areas remaining in West Cumbria after initial screening to make further progress worthwhile.'	Subjective judgement that the results of the screening leave enough 'possibly suitable' land to make further progress worthwhile.	Task 2b – Assess the BGS report when published.

	Workstream	What we are looking for	Tasks
3	**Community benefits and impacts**		
3a	Criterion: 'Whether the Partnership is confident that an appropriate community benefits package can be developed.'	Acceptable process in place to secure additional benefits – beyond those which derive directly from the construction and operation of the facility.	Task 3a(i) – Understand the Government's perspective on community benefits and what is stated in the White Paper, as well as international experience of other nuclear communities. Task 3a(ii) – Develop with the Government a formal set of cross-party principles by which community benefits would be discussed, agreed and potentially administered, including how benefits might be allocated to different communities. Task 3a(iii) – Understand UK and international experience of community benefits and learning that the Partnership could apply.
3b	Criterion: 'Whether the Partnership is confident that appropriate possibilities exist to assess and manage environmental, social and economic impacts appropriately if they occur.'	Acceptable process is in place to assess any negative impacts and mitigate them.	Task 3b(i) – Understand the likely broad impacts (both positive and negative) of hosting a repository, and how they might be mitigated. Task 3b(ii) – Define a specification for research to assess the likely extent of impacts. Task 3b(iii) – Conduct and monitor research to assess impacts. Task 3b(iv) Consider results of impacts research, and take a view on their acceptability at this stage.

3c	Criterion: 'Whether the Partnership is confident that the possibility of a repository fits appropriately with the overall direction of the relevant community/ies.'	Support for the possibility of a repository in relation to other documented long-term priorities.	Task 3c – Understand the vision for the future of West Cumbria and to what extent a repository may or may not fit into it.
3d	Criterion: 'Whether the Partnership is confident that accepting a GDF at some point in the future, and committing the host area to a nuclear future for many generations to come, is economically advantageous and will contribute to economic sustainability.'	Satisfied that there is sufficient prospect of the development of other job-creating investments complementary to a repository that will provide sustainable employment in the long term.	Task 3d – Assessment of commitment to other new nuclear missions that will support employment, and a clear prospect of major sustainable investments from other sectors that will provide sustainable employment.

	Workstream	What we are looking for	Tasks
4	**Design, engineering and inventory**		
4a	Criterion: 'Whether the Partnership is satisfied that the design concepts being developed are appropriate at this stage.'	Acceptable design concept and flexibility thereof. Reassurance that retrievability is an option, and flexibility to confirm this later.	Task 4a(i) – Examine the generic design concept, and how this translates into a specific design depending on any location ultimately chosen. Task 4a(ii) – Develop a common understanding of the meanings of reversibility/retrievability/ recoverability and the implications associated with them and associated monitorability, as well as how flexible the generic design concept is. Task 4a(iii) – Continue to receive updates from the NDA in order to understand the developing generic design concept, and how this translates into a specific design depending on any location ultimately chosen.
4b	Criterion: 'Whether the Partnership is satisfied with the proposed inventory to be managed in a facility.'	Knowledge of what the inventory could be, and principles that define an acceptable process for how the inventory would be changed, including how the community can influence this.	Task 4b(i) – Develop understanding of the likely inventory range, the process for altering the inventory and how the community might influence it. Task 4b(ii) – Understand the implications of new nuclear build for the inventory and associated requirements for a GDF. To include facility size, footprint, design and length of time it would need to be open.

	Workstream	What we are looking for	Tasks
5	**Siting process**		
5a	Criterion: 'Whether the Partnership is confident that the siting process is sufficiently robust and flexible to meet its needs.'	Acceptable process of moving from 'possibly suitable areas' to specific potential host sites. Acceptable CSP process can be defined. Provision for 'pause points' to allow more work to be undertaken at a potential CSP's request (if a decision to enter the siting process is taken). Acceptable nature of (and limitations to) the right of withdrawal. Acceptable degree of Government commitment to sustain the process.	Task 5a(i) – Understand the site selection process, including how the community can influence it. Task 5a(ii) – Understand, and seek reassurance on, how 'pause points' might be introduced and managed. Task 5a(iii) – Understand what a decision to enter the siting process implies and how the right of withdrawal works, what would need to underpin it, and when it ceases to exist. Task 5a(iv) – Seek reassurance and evidence from the Government on their commitment to the process.

	Workstream	What we are looking for	Tasks
6	**Public and stakeholder views**		
6a	Criterion: 'Whether the Partnership's recommendations are credible given public and stakeholder views.' *(Note: the word 'credibility' here is used to reference the criterion in the MRWS White Paper, para. 6.22.)*	Any recommendation to enter the siting process would require all of the following to indicate credibility: – 'Net support' for entering into the siting process for Allerdale and/or Copeland. – 'Broad support' from the stakeholder organisations in the area, including those that are likely to form a continuing community partnership if a decision to enter the siting process was taken. – Evidence that concerns raised have been, or will be, addressed where appropriate, including explanations as to why not where relevant.	Task 6a(i) – Design and adopt a PSE Plan. Task 6a(ii) – Initiate, monitor and guide PSE1, including consulting on the PSE Plan. Task 6a(iii) – Reflect on output of PSE1, incorporate output and provide feedback to participants. Task 6a(iv) – Design and adopt PSE2. Task 6a(v) – Reflect on output of PSE2, incorporate output and provide feedback to participants. Task 6a(vi) – Design and adopt PSE3. Task 6a(vii) – Monitor and guide PSE3 as required. Task 6a(viii) – Reflect on output of PSE3, incorporate output in final report and provide feedback to participants. Task 6a(ix) – Consider the pros and cons of using different engagement methods to inform a decision about entering the siting process, as well as any ultimate decision to proceed (to include referendums).

	Workstream	What we are looking for	Tasks
7	**Other**		
Supporting activity			Task 7a – Build the capacity of decision-making bodies and other Partnership members. Task 7b – Manage risks in the process.
Ethics		Broad understanding of what the ethical issues are, and reassurance that they can be addressed in the future (as appropriate).	Task 7c – Summarise and briefly review the ethics work completed by CoRWM and identify implications for the MRWS process in West Cumbria.

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