Briefing Note

Why the current siting process for a geological disposal facility is very different to Nirex's approach in earlier decades

> What was wrong with Nirex's approach in the 1980s and 90s?

Nirex started by considering which geological areas in the UK could potentially be used to site a Geological Disposal Facility (GDF). It identified an initial 'long-list' of 537 possible sites within these areas and eventually whittled this down to a 'short-list' of 12 sites. The short-listed sites were then assessed against a range of criteria. This led Nirex to recommend that it should carry out geological investigations around Dounreay and Sellafield.

This attempt to site a GDF ended with a refusal in 1997 from the Secretary of State to allow the construction of an underground Rock Characterisation Facility (RCF) close to the Sellafield site.

In 2005, Nirex carried out a review of what was wrong with its earlier approach[1]. The main findings were that:

- Although Nirex undertook a national consultation on 'The Way Forward'[2] in 1987, the subsequent siting process was not transparent and failed to address issues important to stakeholders.
- 'The Way Forward' identified areas of the UK that might be suitable, but large areas of geology ('basement under sedimentary cover') that became an important focus during the siting process were not shown.
- Although the process of narrowing down sites had several identifiable stages these were not visible to any but those directly involved in the process.
- The process was not documented properly as it progressed.
- Nirex did not properly define what area was covered by a 'site', which led many stakeholders to take the view that Nirex had added new sites at late stages of the process.
- Consultation did not take place at specific sites. Local communities were not aware of the evaluations carried out in their locality.
- The potential host community's role in the process was never clearly defined and their importance never explicitly acknowledged.

> Why was permission to build the RCF near Sellafield refused?

The Secretary of State's reasons for refusal were:

- the proposed development did not accord with all the policies of local development plans
- poor design, layout and arrangements for access to the proposed facility
- adverse impact on visual amenity, a protected species and the natural beauty of the National Park
- scientific uncertainties and technical deficiencies in Nirex's proposals
- concerns about the selection of the site and the scope and adequacy of the environmental statement[3].

> What did the Inquiry Inspector say about the scientific uncertainties and technical deficiencies associated with the site near Sellafield?

The Inquiry Inspector concluded in 1996[4] that:

- Nirex had insufficient understanding of the groundwater conditions
- there were not enough boreholes in the right places to check for water flow across faults in the rock
- the conceptual model at the core of Nirex's modelling could not account for some basic processes of the hydrogeology
- there was a strong need for more three-dimensional computer modelling
- there were great uncertainties in the emerging safety assessment, for example, on the movement of

1. Nirex, 'Review of 1987-1991 Site Selection', June 2005 (www.nda.gov.uk/documents/old-sites/upload/site_selection.pdf).
2. Nirex, 'The Way Forward – a Discussion Document', November 1987.
3. P C Styche, Secretary of State's decision letter on the Nirex Appeal, 17 March 1997.
4. C S McDonald, Cumbria County Council – Appeal by UK Nirex Ltd, 21 November 1996.

radioactivity to the water-bearing sedimentary layers and the surface.

The Inspector's overriding conclusion was that the RCF proposal was "seriously premature". Although emphasising that there were strong indications that the site was not suitable, the Inspector stated that his assessment did not completely rule out the possibility that the site could be suitable for a GDF.

> What advances in understanding have taken place?

A number of important advances have been made in the last two decades:

- improved surveying methods (for example, 3-dimensional seismic surveying)
- major advances in computing and modelling technology (for example, in the amount of data that can be handled and in 3-dimensional modelling)
- an improved understanding of geological processes and their role in containing radioactivity.

The Nuclear Decommissioning Authority therefore expects a more comprehensive scientific analysis of potential geology to be carried out in the future than in the past.

> What are the key features of the current process?

In sharp contrast to Nirex's approach in earlier decades, the key features of the current process include commitments to:

- openness and transparency
- early and effective stakeholder engagement
- a volunteer process, with rights of withdrawal up to the time of construction of a GDF
- working in partnership with local communities
- engagement and community benefit packages[5].

Should a decision to participate be taken, the geological suitability of any candidate site would need to be thoroughly examined at later stages in the process.

At this stage, the Government believes that the area near Sellafield that was considered previously by Nirex should not be treated any differently from the rest of West Cumbria.

5. Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal, Government White Paper, June 2008, Chapter 6.