



CUMBRIA MINERALS AND WASTE DEVELOPMENT FRAMEWORK

CORE STRATEGY CHAPTER 8 – RADIOACTIVE WASTES

**POST SUBMISSION CHANGES AS DISCUSSED AT THE HEARING IN
PUBLIC 11 TO 21 NOVEMBER 2008**

(Without track changes)

CHAPTER 8: RADIOACTIVE WASTES

- 8.1** The UK has accumulated a substantial legacy of higher activity radioactive wastes and more radioactive material will become waste over the next century or so as nuclear facilities are decommissioned and cleaned-up. The categories of radioactive waste that are defined in the UK^(xii) are set out in the Glossary.
- 8.2** The Nuclear Decommissioning Authority (NDA) is responsible for planning and delivering the management of the country's radioactive wastes and owns most of the nuclear sites and most of the waste. West Cumbria has, by far, the largest concentration of nuclear facilities in the UK. The Sellafield complex covers an area of approximately four square kilometres and comprises more than two hundred nuclear facilities. Actions over the last thirty years have reduced radiation doses, to even the most exposed groups, to a small fraction of that associated with natural background radiation.^(xiii) This process needs to continue to ensure that nuclear decommissioning and other developments do not prejudice this success. Representations have pointed out that radiation doses to local sea food eaters have increased.

HIGHER ACTIVITY WASTES

Where we are now

- 8.3** Liquid High Level Waste (HLW), mostly from reprocessing, is stored to cool at Sellafield and is then subject to a process of vitrification. Most of the UK's Intermediate Level Waste (ILW) from operational activities, arises at Sellafield, where it is being made passively safe. Small amounts of ILW from other UK licenced sites are also transferred for storage at Sellafield. Future decommissioning of all Nuclear Decommissioning Authority and British Energy sites may give rise to ILW. The destination for this is currently not determined.
- 8.4** The regulators and the NDA require organisations that have responsibilities for radioactive wastes to develop plans for their management. These "Integrated Waste Strategies" (IWSs) have to be prepared in a form and to a level of detail that is suitable for consideration by the regulatory bodies. They have implications for the policies in Local Development Frameworks and Regional Spatial Strategies throughout the country, including the Cumbria MWDF. Any need to review the Core Strategy, as a result of the Integrated Waste Strategies, would be identified in the Minerals and Waste Development Scheme (MWDFS) Annual Monitoring Reports. Consultations were carried out in 2007 by Sellafield Ltd about its IWS.

Where we need to be

- 8.5** The Core Strategy has been prepared during a period when national policy for the long-term management of radioactive wastes has been evolving. The Government has now published White Papers on managing both higher activity and low level radioactive wastes.^{(xiv) (xv)} However, the detailed means of implementing these policies have not yet been determined. Also, the siting process for implementation of geological disposal of higher activity wastes

xii CM2919 - Review of Radioactive Waste Management Policy: Final Conclusions, July 1995

xiii Sellafield Integrated Waste Strategy Consultation July 2007.

xiv Managing Radioactive Waste Safely - A Framework for Implementing Geological Disposal June 2008.

xv Policy for the Long Term Management of Solid Low Level Radioactive Waste in the UK. March 2007

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is in its very early stages and the extent of engagement with this process in Cumbria is not yet known. In these circumstances, the policies in the Core Strategy relating to the management of radioactive wastes can only be regarded as interim policies until the situation becomes clearer. Consequently, the policies will be subject to timely review if they are no longer consistent with, or reflect progress on the detailed implementation of national policy. This will be identified through the Minerals and Waste Development Scheme (MWDS) Annual Monitoring Reports and included in a future MWDS.

- 8.6** The County Council has supported the findings of the Committee on Radioactive Waste Management (CoRWM), that higher activity wastes should be dealt with by geological disposal. However, the Council considers that this should be phased ie keeps open the option of retrievability for as long as is practicable. The principle of such disposal is to place waste in an engineered containment facility, deep inside a suitable rock formation, to ensure that no significant quantity of radioactivity ever reaches the surface. It is anticipated that underground vaults and tunnels would be at depths somewhere between 200 and 1000 metres, depending on geology.
- 8.7** Other countries have already made progress towards implementing geological disposal and it should be possible to benefit from their experience. The Waste Isolation Pilot Plant (WIPP) in New Mexico, USA, is the only geological disposal facility that is known to be operational; it is used for the disposal of ILW. No geological disposal facility for HLW or spent fuel has yet been built and operated.
- 8.8** Disposal would be preceded by safe and secure interim storage until a geological disposal facility can be developed. That storage period could be several decades. The Integrated Waste Strategy for Sellafield includes the Nuclear Decommissioning Authority's assumptions of key dates that the facility will be available by 2040, for Intermediate Level Waste, and 2075 for High Level. Managing Radioactive Waste Safely estimates that it will take until around 2120 for all Intermediate and High Level wastes to be available in packaged form for disposal, following the decommissioning of the existing nuclear plants.
- 8.9** With regard to the size of facility that would be needed, it is estimated that nearly 500,000 cubic metres of packaged wastes, from existing facilities could, possibly, require geological disposal. The inventory of wastes takes the prudent approach that some materials which are not currently classified as wastes, including spent fuel, could, possibly, come to be regarded as waste in the future. Government anticipates that if new nuclear power stations are built, their wastes and spent fuel could be accommodated in the same geological disposal facility(ies). It may be premature to assume this, and such co-disposal could alter the nature of a geological disposal facility repository and extend the timeline for its completion.
- 8.10** The CoRWM proposals related to legacy wastes. The Committee stressed the uncertainties associated with new build and observed that the public assessment of any proposals should consider a range of issues and build on the CoRWM process. It estimates that extensions to the lives of some existing reactors, and a possible "new build" programme of ten new reactors (the size of any new programme has not yet been determined), would increase the total volume of material for disposal by about 8%, but total radioactivity by a factor of nearly three. The NDA advise Government that the 'footprint' (size) of a geological disposal facility is difficult to predict, but that the addition of new build waste to legacy waste could increase the size of a joint facility by around 50%, depending on design and site issues.

8.11 Government has broadly endorsed the CoRWM recommendations but has reserved its views on the detail of implementation. The UK Government and the devolved administrations for Wales and Northern Ireland have consulted ^(xvi) about proposals for :-

- the technical programme and aspects of design and delivery of a geological disposal facility; and
- the process and criteria to be used to decide the siting of that facility, including:

8.12 - development of a volunteerism/partnership approach; and
- the assessment and evaluation of potential disposal sites, including the initial screening-out of areas unlikely to be suitable for geological disposal.

8.13 Government policy on the implementation of the siting process is still evolving, it is difficult, therefore, to include detailed policies in this plan. However, it seems reasonable to assume that the planning system will need to make provision for a staged process, involving:-

1. Facilities for storing vitrified High Level Waste for at least fifty years, until it is judged to have cooled sufficiently for emplacement in a geological disposal facility. Stores could be built with a 100-year lifetime.
2. Facilities, with a proposed service life of 100 years or more, for the interim storage of Intermediate Level Wastes.
3. Site(s) characterisation boreholes.
4. Excavation of shafts and tunnels several hundred metres deep for underground investigations and possibly construction of an underground research laboratory.
5. Subject to satisfactory investigations, construction of surface facilities and an underground geological disposal facility(ies) that would remain open for at least 100 years, or longer if provision is made for waste retrieval.
6. Developing transport links between storage and disposal facilities.
7. Engagement with communities beyond the immediate locality about transport and other issues.
8. Closure and restoration.
9. Monitoring facilities.

8.14 The planning system itself is likely to be changed. In the Planning Bill, which was introduced in November 2007, the Government is proposing that decisions on nationally significant facilities should be taken by an Infrastructure Planning Commission and not by local planning authorities. Whether this arrangement would apply for a geological disposal facility proposal is not yet clear. The County Council consider this type of decision should be taken at the local level given the Government's proposal for a local siting partnership to develop a thorough understanding of a proposal in their area. There are different views about the consenting process for a geological disposal facility .

Policy

8.15 The uncertainties about national policy for managing the higher activity wastes, and about who would make the decision to grant or refuse planning permission for any proposed facilities, have been outlined above. In the light of such uncertainties, it has been necessary to consider the appropriateness of including detailed policies, in this plan, for the staged

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process that is likely to be involved for managing these higher activity wastes. It is likely that further planning applications will be submitted in connection with interim storage of the higher activity wastes at Sellafield. A policy for such proposals is therefore, appropriate and Structure Plan Policy ST4 has been used as the basis for this policy. With regard to community needs, Core Strategy Policy 3 on Community Benefits is also relevant.

Core Strategy Policy 10

HIGH AND INTERMEDIATE LEVEL RADIOACTIVE WASTES STORAGE

Developments involving the interim storage of these wastes at Sellafield will only be permitted where criteria are satisfied relating to :-

- benefit clearly outweighing the detrimental effects;
- compliance with national and international standards and best practice for environment, safety and security, which, if appropriate, are publicly and independently reviewed;
- reasons are explained for rejecting alternative locations and methods that have been considered; and
- that there are no overall adverse impacts on the local economy.

Permission will be granted only if :-

- all practicable measures are taken to minimise the adverse effects of development and associated infrastructure; and
- where appropriate, provision is made to meet local community needs;
- acceptable measures are in place for decommissioning and site restoration; and
- arrangements are made for suitable local community involvement during the development, decommissioning and restoration.

8.16 This plan does not propose the development of a geological disposal facility within Cumbria for the higher level wastes. It is not even known if there are areas of the county where the geology is suitable for such a facility, further research is needed on this critical aspect. However, the Government has published the Managing Radioactive Waste Safely White Paper and commenced the siting programme by inviting expressions of interest. A policy is, therefore, included that relates to that programme and to the procedures that will be involved. The Generic Development Control Policies will also be relevant to the consideration of any proposals. It is recognised that considerable amounts of further research are still needed on issues relating to the geological disposal of radioactive wastes. One particular issue that has been raised in representations is how much radioactivity would dissolve underground and where the contaminated water would go.

8.17 More than one planning permission would be needed during the investigations for, and development of, a geological disposal facility. The following policy relates to the stages of developing such a facility, reflects the stages at which the community would have the opportunity to exercise its Right of Withdrawal and also the stages at which approvals would be needed from the Environment Agency and/or the Nuclear Installations Inspectorate. The policy sets out the criteria which would be used to assess proposals at each of the stages when planning applications would need to be submitted. **The policy**

would only come into play if a community in Cumbria volunteered to participate in the process of finding a site, and, if any possible site(s) passed the initial screening out of areas of unsuitable geology.

Core Strategy Policy 11

HIGH AND INTERMEDIATE LEVEL RADIOACTIVE WASTE GEOLOGICAL DISPOSAL

If an area of suitable geology within Cumbria is volunteered for consideration as a possible geological disposal facility, separate planning applications may be expected to be submitted at three stages:-

1. **Proposals for surface based site investigation including boreholes.** At this stage, the planning criteria will be similar to those for exploratory works for other types of development. These relate to the usual environmental impact considerations including traffic, working hours, noise, visual impact, period of operations, water resources and wildlife.
2. **Proposals for underground rock characterisation shafts and tunnels and an underground research laboratory.** Planning considerations at this stage will need to include not just the environmental impacts of the proposed operations themselves, but also the details of a generic design for a geological disposal facility and of its likely impacts. The planning criteria will relate to the inventory of wastes; environmental impacts; benefits clearly outweighing detrimental impacts; compliance with best international standards and best practice for the environment, safety and security; the offset benefits package; impacts on the local economy; and community needs.
3. **Proposals for a disposal facility and transport links, monitoring, site closure and restoration.** At this stage, there will be a reasonable expectation that planning permission will be granted. That is unless new information or material considerations demonstrate otherwise, or there are material differences from the scheme that has been developed over a considerable period of time up to this stage. Planning criteria will relate to the environmental impacts of the proposed construction and operation of the facility; the inventory of wastes to be brought to the facility; to transport matters; arrangements for local community involvement; monitoring and reporting; contingency and emergency planning issues; the offset benefits package; site decommissioning, clean-up and closure proposals; and restoration/afteruse of the site.

- 8.18** A substantial amount of work is being undertaken in conjunction with the other regulators and the Nuclear Decommissioning Authority in connection with geological disposal. Some of this work relates specifically to the permissioning process and may require the policy to be reviewed.

LOW LEVEL WASTE

Where we are now

- 8.19** Much of the UK's Low Level Waste (LLW) is sent to the Nuclear Decommissioning Authority's Repository near Drigg in West Cumbria. Around two thirds of the LLW emplaced in the Repository is from the Sellafield complex. A very small proportion has been from industries and hospitals within the county, including arisings from nuclear submarine

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commissioning at Barrow in Furness. The rest of the waste has been from other nuclear sites and radioactive waste producers throughout the UK. The Integrated Waste Strategies mentioned earlier will set out individual sites' proposals for managing the wastes they produce.

8.20 On the basis of recent consignments the sources of waste are:

Table 8.1 Sources of LLW

Sources of Low Level Waste sent to the Repository near Drigg	
• Sellafield	66%
• MoD Faslane, Aldermaston, Devonport	14%
• Nuclear Power Stations	8%
• Hospitals, universities, oil industry	5%
• Radio isotope manufacturing sites, eg GE Healthcare	4%
• Other sites previously owned by British Nuclear Group	3%

8.21 The UK Offshore Producers Association has commented that LLW arisings from drilling operations are likely to increase. This is because, from the end of 2008, new disposal routes will need to be found for the Naturally Occurring Radioactive Materials (NORM) Scales which are an unavoidable by-product of hydro-carbon production. At present, these are macerated and disposed of in the sea. Information has been provided that these may only be around 36 tonnes/year.

8.22 The present facility, Vault 8, is likely to be full by the end of 2008. Temporary planning permission, until the end of 2019, was granted in January 2008 for emplacing wastes in a new Vault 9. This vault was estimated to provide capacity until 2016. However, new methods of managing the waste, greater emphasis on moving waste up the waste hierarchy and more intensive efforts at diverting wastes away from the Repository mean that the permitted capacity is likely to last for a longer period.

Where we need to be

8.23 The Defra policy for the long term management of Low Level Wastes (LLW) was published in March 2007. This states that Government expects the Nuclear Decommissioning Authority to develop and publish a plan for the optimal use of the Low Level Waste Repository near Drigg and to assess the extent to which other Low Level Waste disposal options might be employed. The Defra policy promotes the search for new LLW disposal sites in the UK. The County Council is a member of the National Low Level Waste Strategy Group which will be looking at the options.

8.24 The NDA's strategy and plans, together with the proposals of the operator of the Repository, demonstrate that a very substantial proportion of the wastes that would, in the past, have been consigned to the Repository will be managed elsewhere. In the future it will only be used for those wastes that require management within a multi-barrier containment system. One implication of these initiatives is that less than half of the estimated maximum physical capacity of the Repository site would be likely to be needed

for wastes from Sellafield. Previously it had been understood that an additional Repository would be needed just for those wastes, irrespective of future developments at the existing site.

- 8.25** It seems likely that the recently permitted additional capacity for storing waste at the Repository will last until 2019 or even beyond the plan period. It is possible that proposals for additional capacity may need to be considered towards the end of that period. Other development proposals, not involving additional capacity, are expected to come forward in the next few years associated with the proposed new methods of managing the waste at the Repository. Wastes that do not require multi-barrier containment will continue to arise, including substantial quantities from nuclear decommissioning. The nature of these wastes, their quantities and how much of them will require off-site provision for disposal is not yet clear from the Integrated Waste Strategies. The matter will be kept under review in the MWDS Annual Monitoring Reports.

Policy

- 8.26** Recent practice, where all types of LLW from around the UK were brought to the LLWR near Drigg, is not considered to be sustainable. This is particularly with regard to "waste miles" and the need for communities to take responsibility for their own wastes. That practice has been brought to an end by the NDA. Its strategy for the optimal use of the Repository, in accordance with Government policy, is that it will only be used for those wastes with a higher intrinsic hazard that really have to be managed in this type of engineered facility.
- 8.27** In these circumstances of much reduced projections of waste volumes that would be consigned to the Repository, the County Council accepts that it will continue to be an essential component of the UK's national waste management capability. This accords with national policy and also the aim that West Cumbria should be the centre of excellence for radioactive waste management.
- 8.28** The policy relates to Low Level Waste only, and not to its sub-category of Very Low Level Waste, and provides for the continued role of this Repository, but no other, within Cumbria. The NDA's strategy and plans are, by their nature, aspirational. It is essential that the assessments of the performance of this policy, and the need to review it, take account of performance in achieving the NDA's assumptions regarding moving waste up the waste hierarchy and diverting it away from the Repository. The planning permission for Vault 9 requires that this performance is reported annually to the County Council. The Annual Monitoring Reports will identify any requirement for the policy to be reviewed

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LOW LEVEL RADIOACTIVE WASTE

Provision will be made for the Low Level Repository, near Drigg to continue to fulfil a role as a component of the UK's radioactive waste management capability. Proposals for very long term storage or disposal of waste will have to demonstrate that they are feasible in relation to the long term integrity of the site with regard to sea level rise and coastal erosion. Proposals for additional storage or disposal facilities will have to demonstrate that they are within the site's radiological capacity.

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The acceptance, by the County Council, of a national role for the Repository is on the basis of the NDA's and the site operator's initiatives for reducing the proportions of waste that are consigned to it. The success of those initiatives will be monitored closely, in part through the Council's membership of the national Low Level Waste Strategy Group.

- 8.29** No policy for the Very Low Level Wastes that will arise in Cumbria is included. This is because of the uncertainties relating to their volumes, the way they may need to be managed and what off-site facilities may need to be provided. Any proposals for managing these wastes in the interim, before a review of the Core Strategy, would be considered in the context of the relevant Core Strategy and Generic Development Control Policies. These would include CS Policies 1 and 2 and GDC Policies 1, 2, 3 and 4.