

**CUMBRIA COUNTY COUNCIL**

**APPEAL**

by

**UNITED KINGDOM NIREX LIMITED**

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## 8. FINAL CONCLUSIONS

*These conclusions summarise and draw together the preliminary conclusions from each chapter of my report. The references for the individual conclusions are given in those chapters. This synopsis generally follows the structure of the report, but in some places material on a particular point has been collated from a number of chapters. My final conclusions are given on the matters which I regard as the main considerations in determining the appeal.*

### Main Considerations

8.1 I regard the main considerations in determining the appeal as:-

- (1) the legal and political framework within which the appeal should be decided;
- (2) the relevant provisions of the adopted and emerging development plans for the area;
- (3) the degrees of adverse visual, socio-economic, traffic and other environmental effects likely to result from the proposed development and any associated development, and the extent to which such effects would involve conflict with the development plan or national planning policy;
- (4) the suitability of the appeal site for the development;
- (5) the degree of scientific and technical benefits likely to be obtained from the development, to be weighed against the likely adverse effects, as required by the development plan and national planning policy; and
- (6) the nature and form of the conditions which should be attached to the planning permission for the development, if granted.

### Legal and Political Framework

8.2 The Rock Characterisation Facility (RCF) would be in the form of a deep mine, and there would be no radioactive waste in it. Therefore no authorisation for the disposal of such waste would be required, and the site would not need to be licensed as a nuclear installation. If the RCF were to be followed by a deep waste repository on the site, the law would need to be changed by a statutory instrument for the repository to be required to obtain a nuclear installation licence. It has been submitted that the present law would not require the repository's operator to obtain a waste disposal authorisation either, because the producers of the waste would already have appropriate authorisations. My opinion is that it cannot be

assumed that this would be so, and it is clear that this is not the situation which the Government envisages.

8.3 A more important aspect of this point for me is that no potential regulator of the repository has a formal standing for the time being in relation to the overall repository project. Although the predecessor body responsible for authorisation has been shadowing some of Nirex's work, that has been as informal preparation for the anticipated application for authorisation. A suggestion for a formal working agreement between Nirex and the regulator was under discussion at the time of the appeal inquiry, but the arrangement had not been made by the close of the inquiry. This situation, of the repository project being well under way without any formal involvement of the regulator, is not one which is contemplated by the various international guidelines as I understand them.

8.4 It is against this background that there is a need to resolve the first set of legal issues between Nirex on the one hand and the Irish Government, a joint committee of local authorities and several other parties on the other hand. In my opinion, the work on the repository project is much too advanced for Nirex to be able to claim that the potential repository is merely hypothetical, and that it should be ignored for the purposes of the present appeal apart from reviewing the choice of location. Nirex has been working on the Sellafield repository project for several years: the function of the RCF would be to appraise the suitability of a particular volume of rock as the place for the repository: and parts of the RCF could well be used for repository construction. The connection between the RCF and the repository is direct and obvious, and so cannot simply be set aside in the rest of the appeal determination process. Nirex itself has referred to the connection in some of its other evidence.

8.5 This close association means to me that the potential impact of the repository can be relevant to the determination of this appeal, so long as a judgement on such impact can be informed and measured, and not merely speculative. The most appropriate words to describe this relevance in terms of environmental assessment law, in my opinion, are that some of the repository's impact would comprise indirect effects of the RCF development, either as an obvious consequence of a successful RCF or in combination with some of the impact of the RCF itself. Any doubts about this are resolved by referring to the European concept of the project. The RCF development would not be a project on its own because it would be crucially dependent on the development of a cluster of boreholes on the same site which has already been permitted. Thus the immediate project is the appeal development plus the boreholes. But, equally obviously, this project is just one of a series of Sellafield projects, the next in line of which could well be the repository construction project - and all under the umbrella of the overall repository project. The fact that the whole enterprise could abort does not negate the inter-connections, in my opinion.

8.6 Since the function of the RCF would be to appraise the potential location of a repository, it follows that any alternative sites which have been considered for the repository are alternative sites for the RCF too. There is also a clear public advantage in characterising the rock of the potential location for the national repository. On the other hand, there are plainly some substantial environmental objections to this RCF development. The skills and

other resources required to carry out investigations of this nature must mean that there will only ever be a few RCFs at the most in the UK. Crucially, it is obvious that the appeal site is not uniquely suitable for a repository, and that a variety of potential locations could be chosen depending on the importance attached to different factors. Cumulatively, these propositions make an overwhelming case for examining the merits of alternative sites, in this instance.

8.7 The law, in my opinion, requires these alternatives to be examined by the state sooner rather than later, so that they must be looked at now if that is practicable, instead of waiting for the inquiry into the construction of the repository. Nor is it a matter to be deferred until it can be considered by the regulators, because national policy as I understand it is for the locations of potentially polluting developments to be reviewed by the planning authorities, and not the pollution control authorities.

8.8 It is practicable to compare alternative sites in this case, since Nirex has already done this some years ago, albeit that with the passage of time a review of the comparison is gradually becoming more difficult. The planning authority has already exercised its right to require more information from Nirex about this site selection exercise. It has been dissatisfied with the amount of information supplied in response, but has eventually formed the view that planning permission should be refused in any event. Now that the application is subject to appeal, my opinion is that it is necessary to enforce the authority's reasonable requirement, and not grant permission before outline environmental profiles of the short-listed alternative sites have undergone a public consultation process. Although this procedure would raise some alarm around the alternative sites, this is overridden by the advantage of locating the repository, with its exceptionally long-term potential impact, in a well chosen place.

8.9 It also appears that a locational criterion required to comply with the UK's international obligations has not been applied in the site selection exercise. A repository near the sea would put the marine environment at greater risk of radioactive pollution than an inland site, for instance by means of a groundwater flux from the repository as is predicted by Nirex in this case. In my opinion, the special legal protection of the sea and the modern precautionary principle combine to require both an exceptional justification for locating a repository near the sea and an assessment of potential effects on the marine environment.

8.10 An incidental point on the legal adequacy of the environmental information supplied so far is that it does not cover the environmental effects of abnormal incidents at the RCF.

#### **Relevant Provisions of Development Plan**

8.11 The adopted Cumbria and Lake District Joint Structure Plan 1991-2006 applies to the appeal site and is up to date. Its strategic framework policies relate to, amongst other things, the protection of Cumbria's scenic beauty and natural resources from inappropriate development; the protection and enhancement of the essential qualities of the Lake District National Park; the regeneration of the economy of West Cumbria; the improvement of inter-urban communications; and steering the growth of tourism.

8.12 The bulk of the Structure Plan's policies are concerned with either managing the environment or guiding development. The key one for the purposes of the RCF development is Policy 54, applying to major developments which are more national than local in character and have significant environmental effects. This Policy prescribes 4 criteria: the sum of benefits to clearly outweigh any harm or risks; to cause the least practicable harm; to minimise adverse impacts; and not to harm interests of national or greater conservation importance unless the value of the benefits outweighs the value of the interests.

8.13 In my judgement, the first criterion plainly requires a wide-ranging balancing exercise, which cannot be confined to the local environmental impact of the development nor to particular tests or formulae for evaluating benefits, so as to purport to exclude the planning authority's discretion under PPG 23 or consideration of alternative sites. The second and third criteria are of particular interest when examining mitigation measures and proposed conditions. The fourth criterion is agreed to cover any effects of the RCF development on the Lake District National Park, despite the site's location just outside the National Park.

8.14 Policy 57 is another major projects policy which would apply if the development were concerned with the reprocessing, storage or final disposal of radioactive waste. From reviewing the gestation of this policy, I am sure that it is not intended to apply to the RCF: and I consider that it would be unnecessary and confusing to take it into account now even though it would apply to the repository construction project.

8.15 Other relevant Structure Plan policies of substantial importance are Policy 11, which seeks to protect the characteristics and landscape qualities of the National Park, particularly its undeveloped open countryside and the character of land identified on its Conservation Map; Policy 13, which seeks to protect the ordinary, undeveloped open countryside from development not required to meet local infrastructure needs; and Policy 25, which aims for all new development to enhance the visual quality of the existing environment. Although the RCF development as specifically described would last for a maximum of 13 years, these policies do not expressly exempt temporary developments from their constraints. Also, in my view, the appeal site is plainly in undeveloped open countryside, as is the nearest land in the National Park.

8.16 There are other relevant policies in the Structure Plan. Policy 16 relates to woodland tree planting, and Policy 17 to nature conservation. Policy 21 applies to emissions, noise, vibration and risks of accident; Policy 22 to sewage or other effluent discharges; and Policy 24 to flooding. Important archaeological sites, features and settings are normally protected by Policy 26. By virtue of Policy 36, development will not normally be permitted where there is insufficient capacity in the service or transport infrastructure. Policy 60 concerns the effects of waste disposal sites, and is relevant because most of the spoil from this mine would be disposed of on-site; whilst Policy 62 is for the imposition of strict restoration conditions. Finally, Policy 63 includes the A595(T), which runs alongside the site, in a key route for long distance inter-urban road transport, albeit there is no specific improvement scheme for the local length of the trunk road; whereas Policy 70 is for large bulk flows and dangerous materials to be transported by rail wherever possible.

8.17 The adopted Mid Copeland Local Plan also applies to the appeal site, but it is becoming out of date, with some land use policies not in conformity with the new Structure Plan. Policy 6I, for development in rural areas to have regard to traditional design and local materials, is still extant but is, in my view, intended to apply to residential development. Other relevant policies remaining in force are Policy 6J, which seeks to protect the character of listed buildings; Policy 6Q, which relates to the substantial retention of existing trees and woodland; and Policy 6R, for the protection of important archaeological remains.

8.18 There are 7 relevant policies retained for development control purposes from the 1988 Structure Plan, pending the adoption of new local plans. But they do not seem to differ significantly from the policies in the emerging local plans in their approach to any interest of acknowledged importance.

8.19 The Inspector's report into objections to the deposited Copeland Local Plan, which applies to the site, had been received by the close of the appeal inquiry. Further progress will have been made by now towards adopting the Plan, and some policies will have been re-numbered. However, these conclusions can, of course, only refer to the deposited policies as recommended for modification by the Inspector.

8.20 The appeal site is outside any town or village development limits defined by the Copeland Local Plan. The closest village with defined limits is in fact Gosforth to the south-east, but that settlement is just inside the National Park, and so its limits are defined by the deposited Lake District National Park Local Plan. Policy DEV 1 of the Copeland Local Plan is for development outside defined limits not normally to be permitted unless the proposals accord with other policies. The appropriate other policy for the appeal proposals is ENV 33, which is to support the RCF so long as 6 criteria are satisfied.

8.21 The first criterion is for the need to be justified by reference to the national radioactive waste management strategy, bearing in mind the Borough Council's fundamental requirement that safety is paramount. The second criterion requires specific justification of further investigations of the suitability of the site for a repository; whilst the third stipulates that the RCF fits into the overall research programme and contributes to the safety case to be put in due course to the regulators. The fourth criterion requires an acceptable non-nuclear environmental impact. The next criterion is a cross-reference to Policy IMP 1, which in turn sets out in some detail the Borough Council's expectations of agreements under Section 106 of the Principal Act, in circumstances where such agreements would be appropriate. The final criterion is for eventual restoration to agriculture subject to any repository safety requirements.

8.22 Policy DEV 3 sets out 8 design principles, normally expecting a high quality of building design and layout, in order to respect the character of the surroundings and help contribute to a strong sense of place. In pursuance of the Council's commitment to sustainable development, Policy DEV 4 is to have regard to the long-term effects of development proposals on the Borough's environmental, social and economic resources.

8.23 Amongst the Local Plan's transportation policies, TSP 5 requires satisfactory standards of access; TSP 6 normally requires significant traffic generators to have direct access to an appropriate standard of road; TSP 7 is for the needs of pedestrians, disabled people, cyclists and emergency vehicles to be taken into account in design and layout; TSP 8 requires compliance with parking standards; and TSP 13 is to support the transfer of freight traffic to the railway. Policies SVC 1, 5 and 6 deal respectively with effluent water quality and quantity, land drainage, and underground services.

8.24 Policies ENV 1 to 5 relate to nature conservation interests. Policy ENV 1 protects sites of international importance, and Policy ENV 2 those of national importance. Policy ENV 4 is for sound reasons to be shown if locally important sites, or the continuity and integrity of some defined landscape features, would be adversely affected by development; whilst Policy ENV 5 will not permit development which would have an adverse effect upon the conservation interest of any site supporting species protected by law.

8.25 A number of the Copeland Local Plan's other environmental policies are also relevant. Policy ENV 11 gives conditional support to new tree planting, and Policy ENV 13 normally requires landscaping schemes. Policy ENV 14 protects existing rights of way, whilst Policy ENV 15 seeks to protect watercourses and avoid flooding. Policy ENV 23 is to support proposals for the disposal of inert waste, effectively so long as their environmental impact is acceptable. Policies ENV 26, 29, 49 and 50 relate respectively to aerial discharges, noise and the settings of listed buildings and Scheduled Ancient Monuments. Policies ENV 51 and 52 effectively elaborate on the archaeological aspects of Structure Plan Policy 26, in line with PPG 16.

8.26 Although not part of the development plan, the Conservation Map in the National Park Plan delineates some mountain, moor and heath in the foothills to the north-east and south-east, and some coast to the south, of the appeal site. A larger area of the Park to the east of the site is defined by the deposited National Park Local Plan as part of the Park's Quieter Areas, the character and appearance of which are normally to be protected by Policy NE5 from disturbance by development.

8.27 A consultation draft of the Cumbria Minerals and Waste Local Plan has been published. Policy 43 of the draft supports minerals exploration provided that there are no significant adverse effects on local communities or the environment: and Policy 51 permits inert waste landfills next to major projects provided that there are net benefits compared with disposal at existing landfill sites.

### **Degrees of Adverse Environmental Effects and Extent of Conflict with Policies**

8.28 Although the landscape of the appeal site does not have a special quality, its importance is increased to some extent by its sheer proximity to the National Park. Also the site does contain some woodland and a small valley which are attractive in themselves. In the much broader perspective of the sweep down from the Lake District's fells across the coastal strip to the Irish Sea, the opencast coal zone to the north and the Sellafield Works to the north-west are much larger than the RCF would be: but that does not mean that the RCF

and associated development would be trivial by comparison. The mine-head up to 30 m high, on a platform of 4 ha within an operational area of 38 ha, would inevitably have a substantial visual impact, even on this well-wooded and undulating countryside.

8.29 The industrial air of the access to the appeal site has already harmed the countryside on either side of the trunk road there, and the screen planting beside the road is obscuring a public view seawards from this edge of the National Park. Little attempt has been made to design the RCF structures to be in keeping with the local vernacular tradition, with the result that they would look palpably out of place; and their impact would be accentuated somewhat by artificial lighting and security fencing. The interesting little valley would be spoilt by the platform works. Whilst I accept that both shafts which Nirex wishes to sink would be required for the effective implementation of its project, the extensive offices and car parking proposed on site are open to criticism. Although the spoil disposal area would be tucked away from the trunk road, it would be in an otherwise pleasant spot visible from a drive in public use. The design would not minimise environmental impacts despite the good quality of its landscaping, nor would it meet high standards of design, both contrary to Structure Plan Policies 13 and 25.

8.30 The overall development would not remain subordinate to the landscape, but would look incongruous, in my judgement. Also, it would cause visual harm to its setting. Although areas identified on the Conservation Map would be marginally affected at most, the RCF would visually intrude into parts of the National Park which are being identified for special protection of their quiet enjoyment. There would be a similar intrusion into a stretch of undeveloped open countryside in the Park, to the protection and enhancement of which particular regard is to be paid. Moreover, the development would be seen as a distinct, modern protrusion in views of the rising ground of the Park from towards the coast to the south-west. Both the Park's appearance and its local character, as spelt out in Structure Plan Policies 2, 5 and 11, and other Plans, would thereby be harmed, notwithstanding that the site is outside the Park and that Sellafield Works is not far away.

8.31 Although the settings of the nearest listed building and Scheduled Ancient Monument would not be affected, nor the Hadrian's Wall Military Zone, nevertheless the breaches of the various Structure Plan policies bring the proposals into conflict in turn with the last 3 criteria of the key Policy 54. It would have been practicable to cause less visual harm and impact, in my judgement, by making the ancillary development smaller in the first place and by preparing a better external design of the structures. Whilst I would rate the visual harm to the National Park as moderate, that plus the harm to the ordinary countryside do now have to be outweighed by more significant benefits under the first criterion of the Policy.

8.32 There are corresponding breaches of the Copeland Local Plan. The visual impact would be unacceptable, in conflict with the fourth criterion of Policy ENV 33; and the utilitarian and rootless type of external design is at odds with the principles of Policy DEV 3. Moreover, although Nirex has compared the RCF's visual impact favourably with that of the local boreholes, the latter are really part of the same project and so actually exacerbate the adverse visual effects. Looking further ahead, the permanent platform site of the preferred repository design concept on the appeal site would seemingly be less obtrusive and

more sympathetically designed; but there are outstanding points about the visual impacts of any service road from Sellafield and of use of the RCF shafts for repository construction purposes.

8.33 Turning to socio-economic effects, there would be some modest employment and economic benefits from the RCF development, and significantly higher ones from the repository's construction and operation. However, it is now very evident that West Cumbria is too dependent on the nuclear industry, and so it would be an economic detriment, in my view, to significantly consolidate the nuclear industry by establishing the repository near Sellafield. Also, despite relative familiarity with the industry, there is a substantial degree of local apprehension, mainly about health and safety in relation to radioactive waste, which affects residential amenity. Similarly, there could be noteworthy effects on tourism, fisheries and inward investment in business.

8.34 Although these perceptions are connected to the proposed repository, Nirex concurs that they are relevant at this stage. Indeed, some research evidence suggests that the impact is greater during such an anticipatory phase. The point that the effects are largely indirect ones of the RCF does mean, however, that a planning obligation to mitigate them might not be appropriate. Nirex has not offered any such obligation, albeit that it could, in my judgement, have taken formal steps towards a joint venture and trust fund, which would considerably mitigate the social and economic effects of the RCF. As it is, there are socio-economic benefits and detriments to be weighed up under the first criterion of Policy 54, and in the meantime there is some conflict with Local Plan Policy DEV 4.

8.35 The present access to the site is a temporary one, and it is time to settle the principle of its permanent retention, especially because the RCF project would be far too fragmented to be viably served by rail. On the other hand, the feasibility of a service road from the Sellafield Works to the appeal site has not been ruled out to my satisfaction, and so there is a national policy objection to retaining the access onto the A595(T), since that is part of a key long distance route identified by the development plan, and also a primary route onto which direct access should be avoided so far as practicable.

8.36 Looking at the particular circumstances to see whether an exception can be made from national policy, the trunk road's carriageway would have the physical capacity to carry the RCF project's vehicular traffic. That traffic should not in itself increase hazards for pedestrians and cyclists on the main road. However, this is the only public road from Gosforth towards the north-west, and is at present unsuitable for pedestrians and cyclists. I consider that utilising any spare capacity for the project's traffic would preclude making conditions better for them. Also every additional access increases the risks of accidents and obstruction, and this length of road is a vital vehicular link. Moreover, its safety record leaves no room for complacency.

8.37 Therefore my view is that no exception should be made to policy, and that the appeal proposals' infrastructure does not include a satisfactory access, contrary to Structure Plan Policy 36 and Local Plan Policy TSP 6. This would entail in turn another breach of the fourth criterion of Policy ENV 33. I have also noted that the layout of the RCF development

would fail to provide for pedestrians and cyclists, whilst making apparently excessive provision for car parking, contrary to PPG 13 and Local Plan Policies TSP 7 and DEV 3. There would thus be further conflict too with the second and third criteria of the key Structure Plan Policy 54. On the other hand, I cannot agree with the powerful local feeling that the whole length of trunk road carriageway from Gosforth to the next village needs immediate improvement, as distinct from a segregated footway/cycleway and specific safety measures.

8.38 As to other environmental effects, the site's quiet rural setting does mean that lower than normal noise limits should be imposed, despite Nirex's resistance, because in my judgement the RCF's essential work could be continuous whilst complying with such limits. The vibration effects from rock blasting should not cause disturbance, subject to the usual precautions and controls.

8.39 Although the proposed landscaping and restoration should enhance the general nature conservation value of the area in due course, I consider that Nirex and the authorities have made a serious error of judgement over disturbing the local badger clan, which is particularly important because it seems to be the last surviving clan in the locality. The spoil disposal operations would take place on most of the clan's principal feeding ground. The mitigation measures which have been considered and proposed do not go far enough and are untried. This would amount to a serious interference by a waste disposal operation with the core habitat of a protected species, contrary to Structure Plan Policy 60 and Local Plan Policies ENV 5 and 23, in my view. Thus there is yet more environmental detriment to take into account under the key Policies 54 and ENV 33.

8.40 Whilst there is a nationally important habitat of European-protected natterjack toads at risk down the course of the local beck from the appeal site, I accept that the unusual arrangements that have eventually been made between Nirex, English Nature and the Environment Agency to protect the core habitat of the toads from effluent from the development should suffice. But I note that there is an unresolved dispute between Nirex and the Environment Agency over the control of the ingress of underground water into the RCF. A very careful evaluation by Nirex has satisfied me that the part of a recorded Monument which has already been affected by landscape planting very probably does not constitute archaeological remains at all, and that the requisite degree of evaluation of the rest of the Monument has been carried out.

8.41 Other points raised in relation to agriculture, groundwater derogation, air quality, rights of way, recreation and the proposed explosives store I regard as either relatively minor or having been met. However, cumulatively they do confirm the general sense that the appeal development would be out of place.

### **Suitability of Site**

8.42 Although the general international and national criteria for the location of a deep waste repository are merely indicative guidance, 2 overriding principles can be derived from them. One is that the location should be in a region of low hydraulic gradients, so that there should

be slow-moving and long groundwater pathways: and the other is that the geology and hydrogeology of the site and its district should be readily characterisable and predictable. Whilst there has been a shift of focus in the guidance from the properties of the host rock to the wider hydrogeological setting, the requisite features of potentially suitable environments which were identified for Nirex in 1986 complied with both the general principles and the shift in focus. But there now appears to be a fundamental difficulty with some of the choices, in that there was then a preference for maritime locations due to the huge dilution offered by the sea, and yet the reverse preference is suggested by international law, to avoid marine pollution.

8.43 A type of geological environment which eventually scored consistently well in Nirex's site selection exercise, and is favoured by Cumbria, is termed "basement rock under sedimentary cover" (BUSC). This seemingly could offer a range of inland locations. Nirex appears to misunderstand the concept, by claiming that the appeal site is within such an environment, whereas the area has never been so designated by its geological consultants. It seems that Nirex takes the concept too literally, rather than looking for the particular features which led to the environment being identified, such as a minimum scale of hydrogeological system, and a mix of layers in the sedimentary cover to act as a barrier to upward groundwater flow from the basement rock.

8.44 Nevertheless Nirex is right to point out that the ultimate test is whether the preferred host rock has the potential to pass the regulator's safety requirements, regardless of its guideline classification. Also Cumbria and Greenpeace seem to have misunderstood national policy on the safety standards for repositories. There is no risk limit or constraint specified as an upper bound for determining the post-closure safety acceptability of a disposal facility, but there is a risk target as a lower bound beyond which it is not necessary to go. On the other hand, Nirex has failed to appreciate that Cumbria as the planning authority is entitled to its own view about the acceptability of the risk, so long as it does not seek to substitute its own detailed risk assessment for that of the regulators. Cumbria in turn has given no indication of supporting site selection criteria based on existing radiation levels, as suggested in some of the representations.

8.45 However, Cumbria's basic point is that the staged site selection process undertaken by Nirex in 1988-9 was detailed but flawed, and in essence I agree with Cumbria. Although I concur with the exclusion from the initial area of search of designations of national conservation importance, it was in my view premature and excessive to exclude also whole local authority districts on the ground of population density, and tracts of land which might have to be compulsorily acquired. In the later stages of the process, the crucial point is that safety was not treated as the most important discriminative factor. This role was given instead to the costs to be borne by the generations which would utilise the repository, and yet that is contrary to the principle of sustainability, in my judgement. Another fundamental difficulty is that the expert team and the Nirex Board, who should have interacted smoothly in the late stages of site selection, actually used different critical criteria in their final choices - geology for the one and local support for the other.

8.46 I consider that there were 3 crucial discontinuities in what should have been a methodical process. The first was the late introduction of an alternative Sellafield site which was not particularly promising according to the original criteria, and so probably would have been eliminated earlier if it had been included at the start. The second was the inconsistency between the team and the Board, which resulted in this lately introduced site and the doubtful Dounreay being kept in play whilst others with better safety potential were discarded. The third was the subsequent dropping of the alternative Sellafield site when it was realised after all that it is not suitable, and its substitution by the appeal site which, although nearby, had not been through the process at all.

8.47 This cannot justly be described as following a rational procedure, in my judgement. It seems that the process was affected by a strong desire to locate the repository close to Sellafield. Thus my view is that Nirex has failed to make its case on site selection even on its own terms of showing that it followed a rational procedure. Looking at the topic in the wider context which I consider appropriate for a planning authority, it is difficult to see the general public benefit in continuing to concentrate entirely on this site rather than any other. It has not been chosen in an objective and methodical manner, and there are strong indications that there may be a choice of sites in a different part of the earth's crust in the UK with greater potential to meet legal and regulatory requirements.

8.48 Nirex's scientific and technical work since the appeal site was chosen has generally been very impressive. But it does indicate amongst other things that the practical difficulties of the deep disposal option were originally under-estimated by the international consensus, which makes it all the more important to my mind to concentrate on an apparently favourable site. Also I consider that Nirex's emphasis on the relatively novel chemical containment concept in the mixed artificial and natural barrier suggests a lack of confidence in the geosphere. Although international cooperation has provided Nirex with considerable amounts of data on rock properties and responses, none of the experimental sites in other countries is very similar in geological setting to the appeal site.

8.49 All the work and cooperation have not led Nirex to a sufficient understanding yet of the groundwater conditions in and around the appeal site. Another fundamental point is that the area is extensively faulted but there is a considerable amount of speculation as to the influence which any local fault has on groundwater flow. Nirex does not know whether the faults in general or particular increase or reduce or deflect flow, nor does it know where all the faults are. There is a promising feature of the work in that there are indications that the groundwater in the basement rock has been there a very long time, but much more research is required to confirm this, and it would not be a determinatively favourable feature even when confirmed. For the basement rock is volcanic, which makes it inherently variable; and moreover it is very probably within a collapsed caldera, which makes the variability random.

8.50 Nirex does not seem to have fully appreciated these limitations on its understanding of the appeal site, nor the significance of the limitations. Partly in consequence of its undue optimism, it is not planning to take all the steps necessary to put these deficiencies right. This leads to problems in turn with the adequacy of its modelling, in my view. Whilst conceptual and mathematical models have a vital role to play in Nirex's investigations and

preparations for a safety case, the models must be based on a sufficient understanding of the geology and hydrogeology.

8.51 There is no indication that Nirex would have a model of landfill gas migration through the geosphere ready for testing in the RCF. A more fundamental point is that Nirex's regional conceptual model and its derivatives cannot match observed groundwater heads and salinities. This is a failure to account for some basic processes and parameters of the hydrogeological system, and the new model promised to cope with this problem is of completely unknown quality. There are also probably even deeper conditions and processes which have yet to be addressed. Within the basement rock itself, Nirex is still evaluating no fewer than 6 alternative conceptual models of groundwater flow, and typically expressing too much optimism about the results of the evaluation.

8.52 The preliminary safety assessments of the appeal site reflect these difficulties. The last assessment published in 1995 assumes that the artificial chemical barrier would have a very significant retarding effect on release of the longer-lived radionuclides from the repository, and yet the barrier is new and untried and the assumptions in the assessment entail great simplifications and may be non-conservative. Also the assessment predicts zones of discharge to the biosphere even though knowledge about the present groundwater discharges in those locations is inadequate. The results of the main calculations in the assessments which comply with the regulatory target have to be read subject to an appreciation of the uncertainties encompassed in these and similar points. Furthermore the scoping study for agricultural wells reveals and yet understates a potential problem of premature human access to the radionuclide flux. This is a reminder that the appeal site is not in any of the preferred environments: and that far from the sedimentary rocks acting as a barrier to upward flow, Nirex is actually relying on them to dilute and disperse the radioactive plume.

8.53 Whilst this assessment cannot be claimed to completely rule out on its own any promise in the appeal site, it thus directly over-arches great uncertainties which would not be resolved by the RCF, and highlights the vulnerability of the concept of relatively rapid upward transport of the radionuclides, compared with the slow, downward flow of the favoured hydrogeological environments. The indications are, in my judgement, still overwhelmingly that this site is not suitable for the proposed repository, and that investigations should now be moved to one of the more promising sites elsewhere. On this basis, there is really no national or regional benefit to be gained from continuing investigations at this particular site, to be taken into account under the first and fourth criteria of Structure Plan Policy 54. Also, the first two criteria of Local Plan Policy ENV 33 are not satisfied, in that the paramountcy of safety does not justify further establishment of the geology and groundwater flows in the vicinity of the appeal site, nor has it been shown that any further investigations at all of the suitability of the site are justified.

### **Balance of Benefits and Adverse Effects**

8.54 It is necessary finally to consider any generic research benefits from the RCF, and also whether it would actually cause harm to the geosphere. To obtain such benefits, it would be necessary to subject all the work both to independent peer review and to guidance

from the regulator, in my view. The RCF would certainly be essential if the site were promising, to obtain more information for example about geochemistry, conductivity, sorptive capacity, gas migration, colloids and excavation disturbance. But for the RCF to be beneficial, the baselines from which it would start must be clear and comprehensive, and the investigations and experiments must be well focused and designed.

8.55 In order to be sure about the impact of the RCF on its geological setting, and implement it in the least harmful and most effective manner, there is a need to first improve the present detail and interpretation of that setting. There should be more boreholes in or close to the appeal site, and there should be some more years of monitoring trends in the basement rock. Also considerably more laboratory work and modelling development and refinement are required on matters specifically related to the local rock and groundwater before perturbation of the appeal site by the RCF can be justified. Nirex's modelling protocol also need to be generally improved, in my judgement, to recognise the absolute limitations entailed in the quality of input data and the span of human uncertainty and error.

8.56 I consider that Nirex should not be allowed to proceed with the RCF in its current state of inadequate knowledge, for that would make it very difficult for anyone to predict the consequences of Nirex's actions, and result in a confusing outcome. Furthermore, in the eventuality that my conclusion about the suitability of the site is incorrect, to proceed now would cause needless damage and yet very probably could not optimise the repository location. Examination of the details of the RCF programme merely reinforces these apprehensions. The timetable of events is far too optimistic, from starting before baseline conditions are satisfactorily established, through experiments which would still be basic research after crucial decisions had been taken, to restoring the mine without observing the recovery period.

8.57 Therefore I consider that there is no benefit to be obtained on any basis from proceeding with the RCF at present, and indeed it might well harm the potential repository location if it transpires that, contrary to my belief, it is suitable for a repository. The fact that construction of the repository here is precluded on either of the above scenarios has the consequence that its employment and economic benefits cannot be taken into account in the final balancing exercise under the first criterion of Structure Plan Policy 54. My ultimate conclusions are that the modest employment and economic benefits of the RCF itself would by no means outweigh the harm to the appearance and character of the National Park; the encroachment on the open countryside; the detriment to residential amenity and the adverse effects on tourism, fisheries and business investment; the lack of a satisfactory access and of proper provision for pedestrians and cyclists; and the serious interference with the surviving local badger clan. There would thus also be a failure to satisfy the first four criteria of the emerging Local Plan Policy ENV 33.

### **Nature and Form of Conditions**

8.58 My comments on conditions are subject to any further environmental information obtained on the profiles of alternative sites, on the effects of the repository, or on abnormal incidents at the appeal site.

8.59 In relation to the mitigation of environmental effects, I commend the conditions set out in COR/113 subject to the conclusions in my Chapter 7A. Particular consideration needs to be given to the noise controls to be imposed on the permission, having regard to Nirex's reluctance to accept some of them but my finding that it could implement them. Nirex has also expressed reservations about the condition to control ingress of groundwater, but I am clear that on balance this should be imposed.

8.60 As to ensuring scientific and technical benefits, the most practicable solution would be a binding agreement between Nirex and the Environment Agency. The conditions suggested by me in COR/113C, Annex A were as a focus for discussions on alternative control by planning if no agreement is forthcoming. However, I do consider that experience to date shows it would be necessary for some authority to regulate the RCF as it is developed; and so if planning conditions are regarded as inexpedient, this becomes another ground for dismissing the appeal, in my judgement.

8.61 In any event, notwithstanding my comments on deficiencies in the environmental information and on conditions, like the planning authority I consider that the RCF development should not go ahead, for the reasons I have summarised above.

## 9.0 RECOMMENDATION

9.1 I recommend that the appeal be **DISMISSED**.

I have the honour to be

Sir

Your obedient servant

*C.S. McDonald*

C.S McDonald