Submission to Scotland's Higher Activity Radioactive Waste Policy Consultation 2010.

Response from Nuclear Waste Advisory Associates

April 2010

1.0 Executive Summary

1.1 The Scottish Government wishes to extend its policy on radioactive waste management to include near-surface disposal as well as near site near-surface storage, with disposal taking priority. The reasons for this change of policy are unclear.

1.2 The Consultation Documents should have included more information on the nature of the wastes being considered, and particularly on which wastes are considered suitable for near surface disposal and the justification for such categorisation in terms of activity and radionuclide content of the waste.

1.3 The Consultation Documents would have also benefited from an explanation from the Environment Agencies about why they added certain types of long-lived intermediate-level waste to the list of wastes suitable for near-surface disposal, after consultation.

1.4 30% of the waste inventory, by volume, intended to go into the Geological Disposal Facility (GDF) is currently expected to be graphite, and 30% of the Carbon-14 inventory and 75% of the Chlorine-36 inventory will be added as a result of graphite.

1.5 Carbon-14 has a half life of 5,730 years. Methane and carbon dioxide will be produced in bulk in a GDF by the various mechanisms involved in the decomposition of organic materials in the wastes. The extent to which the methane and carbon dioxide is radioactive will depend largely on how much irradiated graphite is present. If the Carbon-14 fails to remain lodged in the cement backfill, and escapes from the GDF as methane gas (CH_4) the facility could breach its risk limits in as little as 40 years. [1]

1.6 Chlorine-36 has a half-life of 301,000 years. Preliminary research from France suggests that migration of Chlorine-36 could also be a problem.

1.7 Wigner Energy in the graphite – stored energy which can be released spontaneously under normal conditions - can also cause problems in a disposal facility.

1.8 It is not clear how near-surface disposal can mitigate against these problems; in fact they may be made worse because there is less rock for radionuclides to be transported through before they reach the biosphere.

1.9 Many of the uncertainties involving deep geological disposal of radioactive waste also apply to near-surface disposal. Scotland's HAW should, therefore, be kept in monitorable and retrievable facilities for the foreseeable future, as is required under the existing policy.

2.0 Introduction

2.1 Nuclear Waste Advisory Associates (NWAA) is an independent group with a collective experience in nuclear issues of well over 200 years. We aim to provide information and advice on the risks posed by radioactive waste, and support to decision makers, stakeholders and communities involved in its management. Our membership includes former members of the Committee on Radioactive Waste Management (CoRWM(i)) and several members who worked for environmental organisations during the Public Inquiry into Nirex's proposal to begin excavation work at their proposed deep disposal site in Cumbria.[2]

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[1] See the NWAA Issues Register for a list of outstanding scientific issues relating to the production of a robust safety case for the Deep Geological Disposal of radioactive waste. http://www.nuclearwasteadvisory.co.uk/uploads/66526652NWAA%20ISSUES%20REGISTER%20COMMENTARY%20letterhead.doc

[2] See http://www.nuclearwasteadvisory.co.uk/default.asp

2.2 The Scottish Government policy, since June 2007, has been to support the long-term management of higher activity radioactive wastes arising in Scotland using long-term near-surface, near-site storage facilities so that waste is monitorable and retrievable and the need for transporting it over long distances is minimal. This was announced at the same time as rejecting plans to develop a deep geological disposal facility for this type of waste which are now being progressed, slowly, in England and Wales.

2.3 The Scottish Government now wants to extend this Policy to include near surface, near site disposal.[3] Indeed, the Environment Report suggests that **disposal will take priority over storage**.[4] However, NWAA's view is that the consultation documents fail to explain the reasoning behind this U-turn. In writing this submission, we have drawn on information which helps to unpick some of the issues raised by this policy change. In our view this information should have been included in the consultation documents.

3.0 What types of waste are being considered?

3.1 Spent fuel from nuclear reactors operating in Scotland is not officially classified as radioactive waste, so the policy does not cover the management of spent fuel. There is no High Level Waste (HLW) in Scotland. Waste that had been classified as HLW at Dounreay is now considered to have cooled down sufficiently to be reclassified as Intermediate Level Waste (ILW). In the Scottish context Higher Activity Waste, therefore, includes ILW and some types of Low Level Waste (LLW) which are not suitable for disposal in existing LLW facilities.[5]

3.2 NWAA generally agrees with the point made by CoRWM that the consultation documents would have benefited from having more information on the nature of the waste being produced in Scotland, and, in particular, which types of waste are being considered for near surface disposal.[6]

3.3 The "suitability" of radioactive waste for disposal in near surface facilities is set out in the document entitled: "Near-surface disposal facilities on land for solid radioactive waste - Guidance on Requirements for Authorisation" (Near Surface GRA) [7] which states:

"Types of solid radioactive waste that might be suitable for disposal in near-surface facilities include very low level waste (VLLW), low level waste (LLW), and shorter-lived or ***less radiotoxic*** *intermediate level waste (ILW). We do not envisage that near surface facilities would be suitable for the disposal of high level waste (HLW), spent nuclear fuel or nuclear materials such as plutonium."* [Emphasis added]

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[3] Scotland's Higher Activity Radioactive Waste Policy Consultation 2010 (The Consultation Document) (CD) para 1.01.02 p6
http://www.scotland.gov.uk/Resource/Doc/298914/0093253.pdf

[4] Environmental Report 2010 (ER) p8.
http://www.scotland.gov.uk/Resource/Doc/298929/0093254.pdf

[5] CD paras 2.01.02 and 2.01.05

[6] CoRWM's Draft Response to the Scottish Government Consultation on Scotland's Higher Activity Radioactive Waste. CoRWM doc 2795 Draft 3 16th March 2010
http://www.corwm.org.uk/Pages/Plenary%20Meetings/2795%20%20Draft%203%20SG%20HAW%20Consultation%20Response.pdf

[7] Near surface disposal facilities on land for solid radioactive wastes: Guidance on Requirements for Authorisation, EA, SEPA, NIEA, February 2009. Para 3.4.1 page 8
http://www.sepa.org.uk/radioactive_substances/radioactive_waste/idoc.ashx?docid=4a1c64c2-5599-4e94-86d1-cb99cb62683c&version=-1

It has been confirmed to NWAA that the phrase "less radiotoxic" ILW in this context refers to certain types of longer-lived ILW. This should have been made clear in the consultation documents – and the reasons for this assumption.

3.4 The Near Surface GRA was produced by all the UK Environment Agencies, so it applies to England and Wales as well as Scotland. The equivalent paragraph in the Near Surface GRA consultation document, launched in May 2008, did not list "less radiotoxic" ILW as being suitable for near surface disposal.[8]

3.5 According to the Environment Agencies' Response to Consultation Comments,[9] it was representations from Energy Solutions and BAe Systems which persuaded the Agencies to add in the additional type of waste. Energy Solutions[10] said:

"*…it may be possible to make an acceptable environmental safety case for the near surface disposal of certain types of long-lived ILW. Whilst we consider that it is unlikely that certain forms of long-lived ILW would be suitable for near surface disposal (e.g. those containing significant quantities of long-lived alpha-emitters), it may be relatively straightforward to make a case for the near surface disposal of other types of long-lived ILW …. Indeed, there is considerable interest currently in near surface disposal as a long-term management option for reactor graphite*."

3.6 The Environment Agencies should have given a full explanation as to why they accepted these representations from Energy Solutions. In addition, the Scottish Consultation documents should have made clear which types of Scottish waste fit into the category of "less radiotoxic" longer-lived ILW.

3.7 Part of the explanation for changing the Near Surface GRA appears to be because, according to CoRWM:[11]

"*…bulk graphite would occupy a great deal of space in a GDF. It is therefore important to explore treatment options that would reduce the volume of graphite for geological disposal*."

In fact, the NDA estimates that, by volume, 30% of the repository could be taken up by graphite.[12] (Of course this depends on the size of the repository, which must be uncertain due to new reactor construction plans in England and Wales). Clearly, near surface disposal of graphite could save the NDA and British Energy a lot of money.

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[8] Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Draft for Public Consultation, 15th May 2008. Para 3.4.1
http://www.sepa.org.uk/about_us/consultations/closed_consultations/idoc.ashx?docid=3c8a6bfd-fe51-4752-a943-96404b07e759&version=-1

[9] Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Responses to Consultation Comments, March 2009 page 15 **http://www.ni-environment.gov.uk/ns_responses_16-3-09_clean5.pdf**

[10] Energy Solutions Response to the Near Surface Disposal Consultation, dated 28th August 2008.

[11] "CoRWM report to Government - on National Research and Development for Interim Storage and Geological Disposal of Higher Activity Radioactive Wastes and Management of Nuclear Materials" Report 2543, October 2009. Para 6.4
http://www.corwm.org.uk/Pages/Current%20Publications/2543%20CoRWM%20Report%20on%20RD%20Final%2030%20October%202009.pdf

[12] Graphite waste treatment and disposal options, Presentation by Neil Smart, NDA, October 2006
http://www.hse.gov.uk/aboutus/meetings/iacs/nusac/031006/presentation2.pdf

3.8 The Managing Radioactive Waste Safely White Paper, which the Scottish Government rejected, also said there may be some types of waste – for example, the graphite cores from Magnox nuclear reactors – where alternatives to geological disposal might be considered.[13]

3.9 Around 25% of Scottish Higher Activity Waste (HAW) is considered to be unsuitable for near-surface disposal, and would need to be stored until there are further technological developments.[14] These wastes include plutonium contaminated materials, and raffinates – both the result of reprocessing at Dounreay - and sludges.[15] In fact, CoRWM says 98% of the ILW at Dounreay is not suitable for near surface disposal, but no explanation about why is given.[16] It would have been helpful if the consultation documents had included more information about the proposed (and postponed) ILW store at Dounreay, including its capacity.[17]

3.10 The remaining 75% of the ILW inventory is essentially graphite and metals. These are the materials which might be considered for near-surface disposal under the proposed policy. But it is not possible to tell from Table 1 in the Supplementary Information how much of the ILW inventory is long-lived, although it can be seen that 80% of the graphite, after packaging, is long-lived ILW.[18]

3.11 According to CoRWM, only about 17% (before packaging) of the ILW is short-lived; 83% is long-lived. The three main forms of long-lived ILW are irradiated core graphite (49%), activated metals (16%), and contaminated metals (12%). Dounreay raffinates make up 12% of the inventory. [19]

3.12 An earlier assumption by the Scottish Government that the bulk of Scottish ILW is short-lived, and would be able to be reclassified as LLW after 300 years, has been shown to be incorrect by the NDA. [20] Even then, not all of the 17% of ILW which is short-lived would be suitable for near-surface disposal.

3.13 So, the Scottish Government proposals include plans for near-surface disposal facilities which would mostly accept long-lived ILW, much of which would be radioactive graphite.

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[13] Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal. DEFRA, BERR and the devoloved administrations for Wales and Northern Ireland, June 2008. http://www.decc.gov.uk/Media/viewfile.ashx?FilePath=What we do\UK energy supply\Energy mix\Nuclear\radioactivity\1_20091006124600_e_@@_mwrswhitepaper.pdf&filetype=4

[14] ER para 3.22.

[15] Note of Meeting with Scottish Government, 20th May 2009, CoRWM doc 2621 **http://www.corwm.org.uk/Pages/Other%20Meetings/2621%20-%20Scottish%20Government%20HAW%20Policy%20Note%2020%20May%20Final.pdf**

[16] CoRWM's Draft Response to the Scottish Government Consultation on Scotland's Higher Activity Radioactive Waste. CoRWM doc 2795 Draft 3 16th March 2010 http://www.corwm.org.uk/Pages/Plenary%20Meetings/2795%20%20Draft%203%20SG%20HAW%20Consultation%20Response.pdf

[17] The Dounreay website does not include any information about the sstore's capacity. We have asked Dounreay SRL for this information, but it has not been forthcoming. http://www.dounreay.com/waste/radioactive-waste/intermediate-level-waste/new-treatment-plant

[18] Supplementary Information 2010 (SI) Table 1 page 33 **http://www.scotland.gov.uk/Resource/Doc/298942/0093255.pdf**

[19] Note of Meeting with Scottish Government, 20th May 2009, CoRWM doc 2621 http://www.corwm.org.uk/Pages/Other%20Meetings/2621%20-%20Scottish%20Government%20HAW%20Policy%20Note%2020%20May%20Final.pdf

[20] Note of Meeting with Scottish Government, 23rd April 2009, CoRWM doc 2620 http://www.corwm.org.uk/Pages/Other%20Meetings/2620%20-%20Scottish%20Government%20HAW%20Policy%20April%2023%20final.pdf

4.0 Radioactive Graphite

4.1 Unfortunately, the Consultation documents contain no references to specific activities of waste or to constituent radionuclide concentrations.

4.2 However, it can be seen by consulting the NDA Radioactive Waste Inventory, that the principal radionuclides contained in long-lived waste graphite are Carbon-14 (C-14) which has a half-life of 5,730 years, and chlorine-36 (Cl-36) which has a half-life of 301,000 years.

4.3 CoRWM says that apart from its large volume, (graphite represents around 30% of the volume of waste intended to go into the GDF) a key concern with graphite waste is that:

"*…it contains significant quantities of the potentially mobile and relatively long-lived radionuclides carbon-14 and chlorine-36*."

Preliminary information from France indicates that the potential migration of chlorine-36 has led to a recommendation that graphite is disposed of at depths greater than 100 metres.[21] In fact France is reported to be planning a special waste site to accommodate graphite.[22]

4.4 A March 2006 EPRI study[23] concluded that:

"*…the presence of isotopes such as C-14 and Cl-36 in graphite could significantly complicate the safety case for a waste site if graphite was disposed there. This is because the isotopes concerned are chemically labile* [unstable] *and difficult to confine over long periods of time*".

4.5 The Environment Agency's November 2005 review[24] of Nirex's deep disposal plans[25] identified a number of 'viability threatening issues'. In particular, it expressed concern about Carbon-14. Nirex was assuming that the Carbon-14 would be held underground for a very long time into the future – as they had predicted that this carbon (in the form of 'carbon dioxide') would react with the cement in the disposal facility. However the EA stated:

"*In our view, more confidence is needed that complete reaction of carbon dioxide will occur in cracked backfill or that the gas pathway would not lead to unacceptable consequences were this not to be the case*". (Part 6, page 10).

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[21] "CoRWM report to Government - on National Research and Development for Interim Storage and Geological Disposal of Higher Activity Radioactive Wastes and Management of Nuclear Materials" Report 2543, October 2009. Paras A.9 and A.10 **http://www.corwm.org.uk/Pages/Current%20Publications/2543%20CoRWM%20Report%20on%20RD%20Final%2030%20October%202009.pdf**

[22] Decontamination and Decommissioning: Let's Get On With It. Nuclear Engineering International, 13th November 2009
http://www.neimagazine.com/story.asp?storyCode=2054750

[23] Graphite Decommissioning: Options for graphite treatment, recycling or disposal, including a discussion of safety related issues, EPRI, March 2006. p 11-2
http://mydocs.epri.com/docs/public/000000000001013091.pdf

[24] Review of Nirex Report: 'The Viability of a Phased Geological Repository Concept for the Long term Management of the UK's Radioactive Waste' Version 3.1 NWAT/Nirex/05/003 November 2005

[25] The Viability of a Phased Geological Repository Concept for the Long Term Management of the UK's Radioactive Waste. Nirex Report N/122, November 2005.
http://www.nda.gov.uk/documents/upload/The-viability-of-a-phased-geological-repository-concept-for-the-long-term-management-of-the-UK-s-radioactive-waste-Nirex-Report-N-122-November-2005.pdf

4.6 In February 2006[26] Nirex identified the need to carry out more research on the potential for significant exposures to radiation due the production and release of methane gas from decaying radioactive waste emplaced in a backfilled repository. The possibility was examined that Carbon-14, instead of being lodged in the cement backfill, would be able to escape from the facility as methane gas (CH_4) by travelling quickly upwards through fractures and pores in the overlying rocks until finally reaching the surface environment and entering the food chain. If this were to happen, then the impact on risk according to Nirex could reach a figure as high as *one in a thousand* (i.e. one person in a thousand contracting a fatal cancer, a non-fatal cancer or inherited genetic defect as a result of such exposure as opposed to the target of one in a million). Furthermore, this particularly high risk could occur just *40 years* after the burial facility had been backfilled and closed as opposed to the thousands of years currently predicted to allow decay of the waste products to lower and 'tolerable' levels. It was concluded that if calculations confirmed that methane could indeed act in this manner over such a short period of time, then there may be a need to adjust the site selection criteria.[27]

4.7 Methane and carbon dioxide will be produced in bulk in a Geological Disposal Facility (GDF) by the various mechanisms involved in the decomposition of organic materials in the wastes. The extent to which the methane and carbon dioxide is radioactive will depend on how much carbon-14 is in the waste in the GDF and in what chemical form. This will in turn depend largely on how much irradiated graphite is present and the method of treatment prior to disposal.[28]

4.8 According to Nirex around 30% of the C-14 inventory and 75% of the Cl-36 inventory in the GDF will have originated from graphite waste. [29]

4.9 Graphite also presents the problem of Wigner Energy – stored energy which could potentially be released suddenly under normal conditions. This could also cause problems in the GDF.[30]

4.10 So, clearly there are significant incentives to keep graphite waste out of the GDF. But it is not clear at all from the information available why near-surface disposal is a better alternative, other than to assist in making the safety case for the deep disposal of the remainder of the radioactive waste inventory. Obviously, for a country like Scotland which is not planning a deep geological disposal, this offers no advantage.

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[26] "C-14: How we are addressing the issues" Nirex Technical Note Number: 498808, February 2006.

[27] NWAA Issues Register: Outstanding Scientific Issues Relating to the Production of a Robust Safety Case for the Deep Geological Disposal of radioactive waste. http://www.nuclearwasteadvisory.co.uk/uploads/66526652NWAA%20ISSUES%20REGISTER%20COMMENTARY%20letterhead.doc

[28] "CoRWM report to Government - on National Research and Development for Interim Storage and Geological Disposal of Higher Activity Radioactive Wastes and Management of Nuclear Materials" Report 2543, October 2009. Paras A.64 http://www.corwm.org.uk/Pages/Current%20Publications/2543%20CoRWM%20Report%20on%20RD%20Final%2030%20October%202009.pdf

[29] Graphite Waste Disposal Issues Presentation by David Lever, Nirex, 3rd October 2006. http://www.hse.gov.uk/aboutus/meetings/iacs/nusac/031006/presentation1.pdf

[30] Graphite Decommissioning: Options for graphite treatment, recycling or disposal, including a discussion of safety related issues, EPRI, March 2006. page vi http://mydocs.epri.com/docs/public/000000000001013091.pdf

5.0 Storage and Disposal

5.1 The Consultation Document says "*engagement with stakeholders identified ... the possibility of disposing of some of* [the waste] *in near surface, near site facilities*",[31] but it gives no further explanation as to why this stakeholder view should be cited as being influential in changing the policy from near-surface storage to one with near-surface disposal taking priority.

5.2 The document defines storage as placing waste in a suitable facility with the intent to retrieve it later.[32] Disposal is defined as the emplacement of waste in a disposal facility without the intent to retrieve it later.

5.3 With the huge uncertainties involved in estimating the risks posed to future generations by any disposal facility, whether deep or near surface, certain standards with regard to retrievability, the degree and period of institutional control, and the level of monitoring should be set with regard to nuclear waste management facilities in order to guard against unforeseen eventualities.

5.4 The Environment Report does explain[33] that "*the concept of retrievability is built into the Policy as a requirement",* i.e. for both storage and disposal, but there is no clarity on the level of retrievability which "… *could mean that disposal facilities can… be backfilled and sealed*" and then it is left up to the regulators to decide when a disposal facility can be closed.

5.5 The June 2007 Scottish Government policy describes deep geological disposal of waste as "*out of sight, out of mind*". Scotland, it said, would support a policy where "*the waste is monitorable and retrievable*". The motivation for this policy is not fully explained, but there are two main reasons for opposing deep disposal. Firstly, making a safety case for deep disposal relies on computer models which purport to show that radionuclides will only leak from the disposal site at a sufficiently slow rate to limit the doses to members of the public living nearby to an acceptably low level. These predictions are far too uncertain. The rate of leakage may turn out to be much faster than expected. If the waste has been irretrievably buried, the problem of radionuclides leaking at a faster rate than expected could not be rectified. This means a GDF could create a leaking nuclear waste dump which represents a significant but unquantifiable burden for future generations rather than removing a burden from them through disposal as was argued by CoRWM in arriving at its disposal recommendation. It would be far better to leave them the option of managing the waste in the way they see fit.

5.6 Recent reports of unexpected 'expansive fracturing' in waste streams containing reactive metal illustrates the importance of allowing the opportunity for retrievability.[34]

5.7 Secondly, even if the predictions turn out to be correct, there is no 'safe' dose of radiation, and there are huge uncertainties involved in deciding what dose members of the public actually receive and what the health impact of those doses might be. The methodology used in deciding the dose of an individual is quite complicated, and is derived using computer models. The cumulative uncertainty in dose estimates could be large as recognised by the Committee Examining Radiation Risks of Internal Emitters (CERRIE) in 2004.[35]

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[31] CD para 3.02.02

[32] CD para 3.03.19

[33] ER para 4.06

[34] "*The longevity of intermediate-level radioactive waste packages for geological disposal: A review*" Author: P K Abraitis (page 15 and page 25) [NWAT Report: NWAT/Nirex/06/003] [August 2008] http://www.environment-agency.gov.uk/static/documents/Business/c.pdf

[35] CERRIE (2004) Report of the Committee Examining the Radiation Risks of Internal Emitters. **http://www.cerrie.org/**

5.8 The recent German 'KiKK' study [KiKK stands for Kinderkrebs in der Umgebung von KernKraftwerken – 'Childhood Cancer in the Vicinity of Nuclear Power Plants] on childhood cancers near nuclear power stations, which reported a 1.6-fold increase in all cancers and a 2.2-fold increase in leukemias among children living within 5 kilometres of all German nuclear power stations, underlines the need to take a precautionary approach to risk assessment. [36]

5.9 But both of these problems could also apply to near surface disposal unless a high level of monitorability and retrievability is built in.

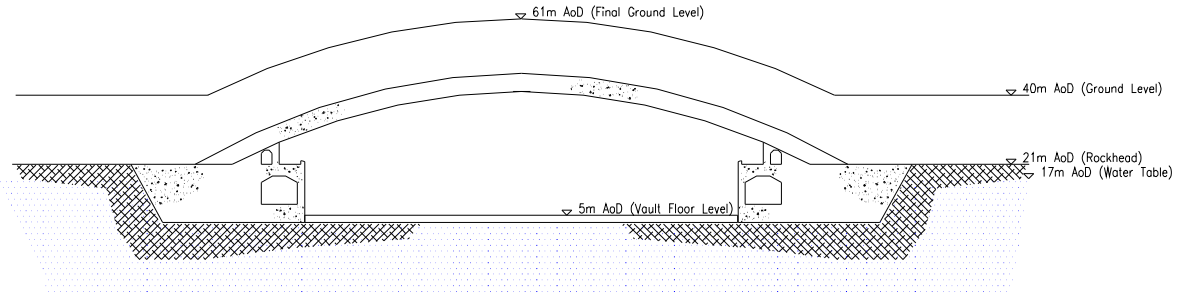
5.10 Scotland's HAW, in particular long-lived ILW, should be kept in monitorable and retrievable facilities for the foreseeable future, as is required under the existing policy. If the regulators would feel more comfortable with the Scottish Government policy by requiring nuclear operators to produce the equivalent of a disposal safety case for certain types of storage facility, then a way for this to be implemented without going down the disposal route should be found. But the policy Scotland should pursue, regardless of regulatory demands, should remain one of above-ground or near-surface storage and it should make the retention of that policy abundantly clear.

6.0 Alternatives to near surface disposal.

6.1 Sellafield Sites Ltd has been investigating the potential of constructing a long-term ILW Store and has confirmed that no fundamental problems would prevent the concept from being realised.[37] The concept was developed precisely because of the uncertainties associated with deep geological disposal highlighted in CoRWM's recommendations. Such a store would be expected to operate over extremely long time scales with a potential life of around 1000 years.

6.2 CoRWM also recommended a programme of interim storage which gives due regard to ensuring security, the longevity of the stores themselves, passivity of waste forms with minimum need for repackaging of the wastes, together with the implications for transport of waste. Although technically challenging the Sellafield Ltd store appears to meet these requirements.

Section of a concept for a very long life store for Sellafield ILW



[36] See Dr Ian Fairlie "*Childhood cancers near German nuclear power stations: the ongoing debate*" 'Medicine, Conflict and Survival' 1st July 2009
http://pdfserve.informaworld.com/202636__914005809.pdf

[37] See page 13 and 14 in Above Ground Storage of Waste, Presentation by Peter Wylie, BNG
http://www.lut.ac.uk/departments/cm/research/LTNWM/Above%20ground%20storage%20of%20waste%20-%20Peter%20Wylie%20(BNG).pdf

7.0 Conclusions

7.1 Much of the waste, under the Scottish Government's proposals, intended to be disposed of in near surface disposal facilities could well be long-lived ILW. Much of the long-lived ILW could be graphite which contains C-14 and Cl-36, both of which are extremely difficult radionuclides to contain over a long period of time.

7.2 Many of NWAA's concerns[38] about the uncertainties of deep geological disposal will also apply to near surface disposal. Given the Scottish Government's policy on deep disposal it should logically take a similar view.

7.3 Finding an alternative solution for graphite waste might assist with the huge difficulties involved in making a safety case for a GDF, but it offers no advantages to a country which is not going down the GDF route. There is a danger the nuclear industry could attempt to use Scotland as a guinea pig to assist it in its efforts to reduce costs by reducing the amount of waste destined for the GDF in England.

7.4 Scotland's HAW, in particular long-lived ILW, should be kept in monitorable and retrievable facilities for the foreseeable future, as is required under the existing policy. If the regulators would feel more comfortable with the Scottish Government policy by requiring nuclear operators to produce the equivalent of a disposal safety case for certain types of storage facility, then a way for this to be implemented without going down the disposal route should be found. But the policy Scotland should pursue, regardless of regulatory demands, should remain one of above-ground or near-surface storage and it should make the retention of that policy abundantly clear.

7.5 The Scottish Government should use its position as a sponsor of CoRWM to ensure that the committee continues to press for research on storage options or, as is required by its recommendation number 5, monitors international developments in alternative long term management options.

[38] See evidence submitted to the House of Commons Energy and Climate Change Committee. The Proposals for national policy statements on energy, Volume II, page 428. http://www.publications.parliament.uk/pa/cm200910/cmselect/cmenergy/231/231ii.pdf