

Nuclear Free Local Authorities **RADIOACTIVE WASTE POLICY**

Briefing Number 23 – Scottish waste policy

Prepared for NFLA Scotland member authorities, 8th March 2010

SCOTLAND'S HIGHER ACTIVITY RADIOACTIVE WASTE POLICY CONSULTATION 2010 – NFLA BRIEFING AND SUGGESTED RESPONSE TO CONSULTATION QUESTIONS

NB. This is an updated and more comprehensive version of Radioactive Waste Briefing No.22 to help NFLA member authorities respond to the consultation. Section 9 gives suggested responses to the consultation from the NFLA which you are encouraged to use, and will form the basis of the NFLA's official submission to the consultation. NFLA members are also encouraged to attend the SCCORS meeting on the consultation on March 12th at COSLA HQ, Edinburgh – further details can be provided by the NFLA Secretariat using the details below.

1. Introduction

The Scottish Government is consulting on a '*Detailed Statement of Policy for Scotland's Higher Activity Radioactive Waste*'. The Scottish Government says the policy is needed to allow waste owners and producers plan for now and the longer term. The vast majority of the waste is the result of nuclear power generation or research.

There are three documents:

(1) Scotland's Higher Activity Radioactive Waste Policy Consultation 2010
(The Consultation Document) (CD)

<http://www.scotland.gov.uk/Resource/Doc/298914/0093253.pdf>

(2) Environmental Report 2010 (ER)

<http://www.scotland.gov.uk/Resource/Doc/298929/0093254.pdf>

(3) Supplementary Information 2010 (SI)

<http://www.scotland.gov.uk/Resource/Doc/298942/0093255.pdf>

Consultation responses need to be submitted by **Friday 9th April 2010** and should be sent to:

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2. Proposed Policy Changes

- 2.1 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.
- 2.2 The Scottish Government now wants to extend this Policy to include near surface, near site **disposal**. (CD para 1.01.02 p6) Furthermore the documents make clear that **disposal will take priority over storage**. (ER p8)
- 2.3 Disposal is defined as no “intent to retrieve”. (i.e. not the usual dictionary definition of disposal which is “to get rid of” which is, of course, in the context of the bio & geospheres is impossible). (CD p26) Retrievability is to be built in as a policy requirement for near surface disposal, but the Environment Report says “...*this could mean that disposal facilities can still be backfilled and sealed.*” (ER para 4.06) So it is unclear how ‘retrievable’ the waste will be. It might involve months of digging with a JCB to retrieve the waste or a short drive with a fork-lift truck.
- 2.4 The other main change which the proposals introduce is, rather than sticking to the ‘proximity principle’ and dealing with all the waste near the site where it is produced to avoid the need to transport it over long distances, the new policy would allow waste to be transported – even outside of the UK – for treatment. (CD para 6.07.06 p65)

3. What waste does the Scottish Policy cover?

- 3.1 According to the definitions used in the UK, there is no High Level Waste (HLW) in Scotland. Spent fuel from nuclear reactors operating in Scotland is not officially classified as radioactive waste – “*because of the potential value to the owners of plutonium and uranium derived from reprocessing spent nuclear fuel*” (1). Spent fuel from Scottish nuclear reactors is transported to Sellafield in Cumbria for reprocessing - a chemical separation process to remove plutonium and unused uranium leaving high level liquid waste. So the policy does not cover the reprocessing of spent fuel – a process which has been opposed by many local authorities, particularly those which suffer from radioactive contamination as a result of liquid discharges from Sellafield. (CD para 4.03.02)
- 3.2 Waste which resulted from the now closed reprocessing facilities at Dounreay, was, until recently, classified as HLW, but this waste has now cooled down sufficiently to allow it to be reclassified as Intermediate Level Waste. (CD para 2.01.05).
- 3.3 The consultation document does not take up an earlier suggestion from the Nuclear Legacy Advisory Forum (NuLEAF) (a local authority body in England and Wales) that consideration is given to repatriating HLW stored at Sellafield, which originated in Scotland, once it has been solidified into glass blocks (vitrified). The implication is that the HLW at Sellafield that arises from the reprocessing of spent fuel from reactors in Scotland will be stored at Sellafield pending disposal to a Geological Disposal Facility (GDF). (2)
- 3.4 The policy doesn’t cover waste from the decommissioning and dismantling of nuclear submarines either. (CD para 2.01.04)
- 3.5 The term Higher Activity Waste (HAW) in the Scottish context refers to Intermediate Level Waste, plus some types of Low Level Waste (LLW) which are not suitable for existing LLW disposal facilities. The ILW falls into one of two categories: short-lived ILW, which can be reclassified as LLW after about 300 years because much of the radioactivity has decayed, and long-lived ILW which will remain radioactive for much longer than 300 years. Of course even LLW still presents a hazard to the health of nearby communities and requires careful management.

4. Which waste does the Scottish Government expect to be disposed of in near-surface facilities?

- 4.1 This policy does not cover LLW, but it is worth noting that the National Planning Framework (3) states that a low level waste disposal facility, in addition to one at Dounreay, will be needed in the South of Scotland for radioactive waste.
- 4.2 The radioactive waste covered by these policy proposals is shown in graphic form in Figure 3 on page 16 of the CD. And Table 1 of the Supplementary Information (p33) gives the estimated volumes of each type of radioactive waste.
- 4.3 Around 25% of the waste in question is considered to be unsuitable for near-surface disposal, and would need to be stored until there are further technological developments. (ER para 3.22). These wastes include plutonium contaminated materials, and raffinates – both the result of reprocessing at Dounreay and sludges. (4)
- 4.4 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. Only about 17% (before packaging) of the ILW is short-lived – the rest is long-lived. For example 80% of the graphite, after packaging, is long-lived ILW.
- 4.5 In 2008 the UK Environment Agencies held a consultation about Guidance for Near-Surface Disposal. The consultation document only listed short-lived ILW (along with lower level wastes) as being suitable for near surface disposal. (5) However, after representations from Energy Solutions, the company which is decommissioning Hunterston A and Chapelcross on behalf of the Nuclear Decommissioning Authority (NDA), this was changed. (6) Energy Solutions said it might be possible to make an acceptable environmental safety case for certain types of long-lived intermediate level waste (ILW) in a near-surface facility. In particular it mentioned graphite, and said the company has been looking at near surface disposal of reactor graphite from decommissioned reactors at the Magnox reactor sites. (7) Energy Solutions asked for the guidance to be changed to include this type of waste, so it was revised to indicate that, as well as shorter-lived ILW, “*less radiotoxic*” ILW could be suitable for near-surface facilities, provided an acceptable environmental safety case can be made.
- 4.6 The NDA is reported to be researching ways of treating graphite to remove some of the contamination (Carbon-14 and Chlorine-36), but this work is at an early stage, and may, of course involve increasing discharges of radioactivity to the environment during the treatment process. The NDA is known to be looking at alternative disposal routes for reactor decommissioning waste. (9)

5. As Low As Reasonably Achievable (ALARA) or the Waste Hierarchy?

- 5.1 An important principle of radiological protection is the ALARA principle. This means that all reasonable steps should be taken to protect people from radiation, even when emissions are below the legal limits. Factors such as cost can be taken into account.
- 5.2 The Consultation Document says the policy will explicitly require waste producers and owners to apply the Waste Hierarchy. (CD para 4.01.03 page 32) This appears to be designed to encourage the treatment or decontamination of waste, particularly metal, so that it can be recycled.
- 5.3 The proposed policy would also allow waste to be exported to other countries for treatment, which appears to breach the ‘proximity principle’ that we should manage radioactive waste as close to the site of production as possible to avoid transporting it over long distances.
- 5.4 The use of the waste hierarchy tends to be used to promote ‘recycling’ i.e. converting used materials into new products. Unfortunately, in the context of radioactive waste – contaminated and activated metals – it is rarely possible to recycle all of the material. Radioactive contamination needs to be removed from the waste before the remaining material can be used in new products. This raises the likelihood of a conflict between the

potential environmental benefits to be gained from metal recycling and some important principles of radiological protection. Firstly it breaches the principle that we should concentrate and contain radioactivity rather than dilute and disperse it throughout the environment. Secondly it breaches the ALARA principle. Any waste or contaminated metal recycling plant will require an authorisation to release radioactivity into the atmosphere, rivers or the marine environment. The contaminated metal recycling plant operated by Studsvik at Lillyhall in Cumbria, for example, releases radioactive caesium-137 and americium-241 into the environment.

5.5 Another question is whether the 'decontaminated' material, still contains residual contamination. If the material is re-used to make a product which then enters the general market place, the general public will be receiving a raised dose of radiation, which could have been avoided. Why is it not possible to 'recycle' the material on site as new packaging for radioactive waste for example?

5.6 Rosyth dockyard has permission from SEPA to transport contaminated metal waste to a processing facility in Sweden, near Nyköping, also operated by Studsvik. (10) A recent inspection report carried out by the Swedish Radiation Protection Authority was highly critical of monitoring carried out by Studsvik. It said the company lacked a co-ordinated approach to measuring aerial emissions, and it has no idea about discharges to water. (11)

6. How deep is near surface?

6.1 The proposed policy allows for storage or disposal down to "several tens of metres". This could mean up to 100 metres or 320 feet below the surface. A disposal facility might even be constructed under the seabed, but accessed from shore. (ER Figure 8, p52) Such a design could well provoke international opposition.

7. How near is near site?

7.1 Near site has not been fully defined. (ER p9) It is proposed to apply the Proximity Principle and to optimise the transportation of waste. But there is no requirement to store or dispose of waste on or near the nuclear site where the waste was created. The Policy would allow waste to be moved to the nearest suitable facility, or from one nuclear site to another.

8. Socio-economic Effects

The Environment Report acknowledges that significant effects could arise from "perceptions of hazard and risk" (ER para 6.04 p79) but does it not address the socio-economic impacts of siting different types of facility, including blight. This is a major omission of the Environment Report.

9. NFLA Scotland's suggested Response to Questions

The Nuclear Free Local Authorities Steering Committee agreed a set of clear environmental principles which should be used for the management of nuclear waste in October 2004 at its Annual General Meeting in Hull. These are:

- * the idea that radioactive waste can be "disposed" or be rejected in favour of radioactive waste management
- * any process or activity that involves new or additional radioactive discharges into the environment be opposed, as this is potentially harmful to the human and natural environment
- * the policy of 'dilute and disperse' as a form of radioactive waste management (i.e. discharges into the sea or atmosphere) be rejected in favour of a policy of 'concentrate and contain' (i.e. store safely on-site)
- * the principle of waste minimisation be supported
- * the unnecessary transport of radioactive and other hazardous wastes be opposed
- * wastes should ideally be managed on-site where produced (or as near as possible to the site) in a facility that allows monitoring and retrieval of the wastes

- 9.1 Rather surprisingly none of the questions in the Consultation Document asks whether consultees agree with the proposed policy statement. NFLA believe that radioactive waste management policy should follow a clear set of environmental principles such as those set out above. Therefore disposal should not be included as a policy option in the statement because it breaches the environmental principles.
- 9.2 There are two main reasons for opposing the ‘disposal’ of nuclear waste, whether in deep geological facilities or near the surface. Firstly, making a safety case for 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 we could be leaving future generations a leaking nuclear waste dump rather than removing a burden from them. It would be far better to leave them the option of managing the waste the way they see fit.
- 9.3 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 a Government Committee in 2004. (12)

Suggested responses to the questions now follow:

Question CD1. Have we explained what Waste we have in Scotland and how it is managed?

Some idea of the chemical composition of the waste streams is necessary to get a proper picture of what is being proposed. Much of the graphite, which represents almost half of the waste being considered, will be contaminated with radioactive carbon-14. This has a half-life of 5,730 years, so it will remain radioactive for 57,000 years.

An explanation of what waste falls into the category of “less-radiotoxic” longer-lived ILW is required. Why was it felt necessary to agree to the suggestion made by Energy Solutions to widen the definition of waste suitable for near-surface disposal to include less radiotoxic longer-lived ILW? There is a big difference between near-surface disposal of short-lived ILW which will decay into LLW after about 300 years, and disposing the 80% of the graphite which is described as long-lived ILW.

NFLA agree with CoRWM which says detail on radioactivity levels would be useful, along with identification of which waste is considered suitable for near surface disposal. CoRWM points out that 98% of the ILW at Dounreay would be unsuitable. (13)

Question CD2 Have we explained why we need to define the terms used in the Policy?

NFLA’s view is that the Scottish Government has largely explained the terms – i.e. ‘Probably’.

More importantly Section 3.02 of the Consultation Document, which is headlined: “*Why has the policy been extended to include disposal?*” doesn’t answer its own question. We agree with CoRWM that this question should have been about the reasons for including disposal. It says “stakeholders” have suggested changing the policy to include disposal, but doesn’t give a satisfactory explanation of the reasoning behind this change. Notes of meetings with the Scottish Government by CoRWM suggest that it was the NDA, British Energy and Magnox Electric (Energy Solutions) which has suggested near surface disposal. (14) This doesn’t inspire confidence in the policy.

An explanation is required of how including disposal as an option meets with the Scottish Minister’s requirement for monitorable and retrievable storage facilities with minimal need for transporting

waste. Does it meet the government's manifesto commitment to "say no to new nuclear dumps"? (15)

Question CD3 Long-term

The NFLA believe the definition provided is confusing. Is it 100 years (CD para 3.03.04) or 300 years (CD para 3.03.05)? Long term storage should also include the possibility of a long-term store with a life of around 300 years. Sellafield Ltd has been investigating the potential of constructing a long-term ILW Store with a potential life of 300 years or more. (16) The concept was developed precisely because of the uncertainties associated with deep geological disposal highlighted in the recommendations to government by CoRWM. (17)

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, NFLA believes the Sellafield Ltd store appears to meet these requirements.

Question CD4 Near Surface?

It was assumed by many, including the NFLA, that when the term "near-surface" was introduced by the June 2007 policy that the intention was to add a little flexibility to the idea of 'above ground storage' to offer more protection against, for example, terrorist attack, without compromising monitorability or retrievability. But the several tens of metres discussed in this consultation challenges the credibility of the definition, and compromises retrievability. It could mean up to 100 metres deep or 320 feet below the surface. A disposal facility might even be constructed under the seabed, but accessed from shore. (ER Figure 8, p52) Such a design could well provoke international opposition.

NFLA would argue that 'near surface' should mean exactly that, i.e. only down to a few metres deep.

Question CD5 Near Site?

It was assumed by many, including the NFLA, that the use of the term 'near-site' in the June 2007 policy, as opposed to the phrase "*at the site of production*" was to allow a little flexibility so that storage facilities could be built adjacent to a licensed nuclear site. Transporting waste from one site to another is likely to arouse opposition from people living along transport routes and even from people living near nuclear sites who are prepared to countenance the storage of waste produced on that site, but not waste imported from elsewhere.

NFLA would argue that 'near existing sites' should mean within very close proximity to the site where the waste was produced.

Question CD6 Storage and CD7 Disposal?

From a radiological protection point of view it is the monitorability and retrievability of the waste which is important, provided it is in a secure, terrorist resistant facility. But placing waste in a facility where there is no intention to retrieve it (i.e. the consultation document's definition of disposal), is likely to compromise that retrievability.

It is quite possible to envisage a storage facility, which is monitored by CCTV as well as by radiation monitoring equipment and allows any leaking waste to be retrieved quickly by, for example, fork lift truck. If all goes according to plan, it may be that the waste in such a facility (particularly if it is short-lived ILW) never requires removal and after 300 years it could be declared a disposal site.

It appears that the Scottish Government and SEPA are not comfortable with this because such a store would not require a disposal safety case. It would be regulated by the Health and Safety Executive (i.e. Westminster) as a store rather than SEPA (i.e. Holyrood) which regulates disposal.

On the other hand the word 'disposal' has very important negative connotations. The NFLA believes it would be a mistake to go down the disposal route mainly in order to ensure that proposed facilities are required to make a disposal safety case. Waste storage facilities should be required to have the equivalent of a disposal safety case instead.

With the category of waste discussed in this consultation the complication is introduced with the long-lived ILW. NFLA recommend that all longer-lived ILW (even that which is defined as less radiotoxic) is stored with the intention to retrieve at some point in the future.

Question CD8 Do you agree with the definition of monitorable?

The consultation document gives very little information about what is required to meet regulatory requirements as far as monitoring is concerned. The policy appears to not be prescriptive. In the view of the NFLA it would make more sense to give the regulators a little more direction. Obviously radiation monitoring of stores would be required, but in a sense when a leak is picked up this could be too late. Monitoring of package corrosion, water ingress, placement of CCTV cameras etc should all be considered. Monitoring inside the facility is an important difference between storage and disposal.

Question CD9 Do you agree with the definition of retrievable?

Understanding what is meant here is crucial. The section of the consultation document headlined "retrievable" says the Policy will require a developer to consider retrievability, which is defined as the possibility of reversing the action of waste emplacement and recovering the waste. But it makes no attempt to give any indication of how easy or how quickly recovery has to be. It may involve, for example, several years of digging out a cementitious backfill or going into a cavern with a fork-lift truck and picking up the waste package in question.

Para 3.03.23 states that storage is an interim stage in the management of the waste which will require further handling before disposal. NFLA asks why no consideration has been given to the possibility of a storage facility which has made the equivalent of a disposal safety case so that at some point in future it might become a disposal facility with no further handling of the waste.

Question CD10. Do you agree with the definition of the need for transport over long distances is minimal?

NFLA do not believe the case for allowing waste to be transported with the UK or abroad for treatment has been made and the original June 2007 policy should remain in place.

Question CD13 The Waste Hierarchy?

NFLA do not agree with the application of the waste hierarchy in this way. The ALARA principle and the concentrate and contain rather than dilute and disperse principle should take precedence over the recycling of contaminated materials and treatments of materials which result in further unnecessary discharges of radioactivity into the environment. (See Section 5 above)

Question CD14. Do you agree with transport of the Waste for Treatment? (and export of waste CD15)

NFLA's view is 'no' to this question. There has been no consideration given to the health and environmental implication of the secondary waste which will be created by treatment. And as CoRWM says "*sensitivities associated with transport corridors need to be taken into account*". (18)

NFLA do not agree that the proximity principle should be overridden in this way.

Question CD16 Do you agree with the need to develop a Strategy to implement the Policy?

CoRWM points out that by introducing disposal having already rejecting Geological Disposal Facility (GDF) there is a distinct possibility Scotland could dispose of some types of HAW in a

near-surface facility, while in England and Wales the same types of HAW would be disposed of in a GDF.

For the nuclear operators in England and Wales disposing of short and long-lived ILW in near-surface disposal facilities will be much cheaper than disposing of this waste in the GDF. In the NFLA's view, there is a danger that Scotland will become the guinea pig for this type of disposal, and then used as an example of how to do it for south of the border.

The NFLA believes that Scottish Government needs to re-focus and develop a strategy to implement its June 2007 policy of near-site, near-surface storage which can set an example to a world which is struggling with the question of what to do with its nuclear waste. At the moment it appears to have been diverted off course by a nuclear industry keen to save money.

Question CD17 Do you agree that the NDA should be responsible for developing the strategy to implement the policy?

The NFLA believes that, once the policy has clearly re-focused on storage, the NDA should develop a strategy. But as CoRWM highlights, a considerable portion of waste is not on NDA land, so Scottish Ministers needs to take control of the process and make sure it is sticking to the June 2007 Policy.

Questions CD20 and CD21. Detailed Policy Statement

The detailed policy statement should not include support for near surface disposal facilities, and it should not include the waste hierarchy and provision for treatment of waste. It should include a clear set of environmental principles as outlined by the NFLA at the beginning of this response.

10. References

- (1) Managing Radioactive Waste Safely: Proposals for developing a policy for managing solid radioactive waste in the UK. DEFRA, DoENI, National Assembly for Wales, Scottish Executive, September 2001. http://www.sepa.org.uk/radioactive_substances/rs_publications/idoc.ashx?docid=3cf671f4-4e74-4307-8eab-3cbb6a08e52b&version=-1
 - (2) NuLeaf Steering Group Paper 27th Jan 2010: Scottish Government Consultation on Higher Activity Wastes. http://www.eastspace.net/nuleaf/documents/2009-01-27_SG_item_8_Addendum_Scottish_Government_Policy.pdf
 - (3) National Planning Framework for Scotland 2, Scottish Government, June 2009, para 172 <http://www.scotland.gov.uk/Resource/Doc/278232/0083591.pdf>
 - (4) 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>
 - (5) 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
 - (6) Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Responses to Consultation, March 2009 page 15 http://www.ni-environment.gov.uk/ns_responses_16-3-09_clean5.pdf
 - (7) Energy Solutions Response to the Near Surface Disposal Consultation, dated 28th August 2008.
 - (8) 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
 - (9) See ref (2)
 - (10) **KIMO Minutes 20th March 2009** <http://www.kimointernational.org/Portals/0/Files/KIMO%20UK/uk0309d.pdf>
- See also Protest over plan to send nuclear waste to Sweden, by Rob Edwards, Sunday Herald, 15th June 2008. <http://www.robedwards.com/2008/06/protest-over-plan-to-send-nuclear-waste-to-sweden.html>
- (11) Emissions Inspection Report on Studsvik, 2nd November 2009 (In Swedish)
 - (12) CERRIE (2004) Report of the Committee Examining the Radiation Risks of Internal Emitters. www.cerrie.org

(13) Issues for CoRWM Plenary Discussion on Scottish Government Higher Activity Waste Policy Consultation Documents, by Andy Sloan, Draft 18th Feb 2010
<http://www.corwm.org.uk/Pages/Plenary%20Meetings/2779%20draft%20%20CoRWM%20SG%20Policy%20Issues%20Paper.pdf>

(14) See ref (4)

(15) The 2007 Holyrood Manifesto said: "No to Nuclear. As a starting point a Scotland led by the SNP will say no to new nuclear – power stations or dumps. An SNP government will make clear that Scotland does not require a new nuclear power station".

<http://www.snp.org/node/13534#attachments>

(16) 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](http://www.lut.ac.uk/departments/cm/research/LTNWM/Above%20ground%20storage%20of%20waste%20-%20Peter%20Wylie%20(BNG).pdf)

(17) Managing our Radioactive Waste Safely: CoRWM's recommendation to Government, July 2006.

<http://www.corwm.org.uk/Pages/Current%20Publications/700%20-%20CoRWM%20July%202006%20Recommendations%20to%20Government.pdf>

(18) as ref (13)