

Nuclear Free Local Authorities

RADIOACTIVE WASTE POLICY



Briefing No.44 – Submarine dismantling: the next steps

Prepared for NFLA member authorities, October 2013

Submarine Dismantling – Intermediate Level Waste Storage

i. Overview of briefing

This briefing has been developed following a direct request from the NFLA Scotland Forum at its most recent business meeting. It has been developed by the NFLA Scotland Policy Advisor and provides a background to the Ministry of Defence's (MOD) process for the dismantling of redundant nuclear powered submarines, and the next steps forward with it. The NFLA has been closely involved in this process for over a decade. The NFLA Secretary is a member of the MOD's Submarine Advisory Project (SDP) Advisory Group and its sub-group which is advising the MOD of the next steps forward with public consultation and engagement.

The NFLA Secretary has signed a non-disclosure agreement with the MOD to be a member of the sub-group and thus engage in a deliberative manner with MOD staff as they develop discussion papers for the future public consultation and engagement process for this project. This report is therefore generic in nature and aimed at informing member authorities of the next steps with the dismantling process – a consideration of site selection for the storage of intermediate level radioactive waste.

NFLA members should disseminate this report to senior environmental health officers, waste management officers, environmental policy officers and planning officers in their authority.

1. Introduction

The Ministry of Defence will soon announce a shortlist of sites for the storage of Intermediate Level Waste (ILW) from nuclear-powered submarines. These sites are likely to be a combination of MOD owned, Nuclear Decommissioning Authority (NDA) owned and private contractor sites. All potentially affected local authorities will be invited to a pre-engagement workshop early in 2014 and this will be followed by a public consultation.

2. Background

In 2011 the Ministry of Defence consulted on its Submarine Dismantling Project (SDP). (1) The consultation considered options for dealing with the waste inside 17 of the Royal Navy's out-of-service nuclear powered submarines which are afloat in storage – ten at Devonport and seven at Rosyth dockyards – and a further 10 submarines still in service, making a total of 27. The new Astute Class submarines currently being brought into service and the next planned class of submarines (known as Successor) were not within the scope of the consultation.

The spent fuel has already been removed from at least 11 of the decommissioned submarines and transported to Sellafield for storage, and will be removed from the

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remaining 16 before dismantling takes place. The consultation did not consider spent submarine reactor fuel. As with spent fuel from civil reactors it is not yet considered to be a “waste”. (2) However the Government is now proposing to produce a revised Baseline Inventory of waste which would be disposed of in a Deep Geological Facility which will include this spent fuel, as well as ILW and LLW (low level waste) not suitable for disposal in a low level waste repository. (3) Since the Scottish Higher Active Waste Policy does not cover “*waste arising from the operational nuclear submarine bases on the Clyde and from the decommissioning and dismantling of redundant submarines including those berthed at ... Rosyth*”, or spent fuel, (4) this new baseline inventory will also cover Scotland.

The 2011 Consultation put forward three possible options for removing radioactive waste from the submarines:

- Separating and storing the whole reactor compartment, which weighs around 700 tonnes.
- Remove and store the Reactor Pressure Vessel (RPV), which weighs around 50-80 tonnes. Any remaining ILW (in pipework connected to the RPV for example) would then be packaged in a shielded container that is suitable for transport and storage;
- The RPV and other radioactive waste would be removed but then immediately size-reduced and packaged into boxes for storage.

In its response to the 2011 Consultation the NFLA argued that, although the MoD claimed that both worker doses and planned discharges of radioactivity into the environment were predicted to “remain within currently permitted limits”, it was clear that the two RPV Removal options failed to meet the ALARA (As Low as Reasonably Achievable) principle. The fact that discharges of radioactivity into the environment are expected to occur at all when there is a technique available which involves minimal discharges into the environment – namely the Reactor Compartment (RC) Separation Option – means that RPV removal options should be ruled out on the grounds that they are not the Best Available Technique and do not apply the precautionary principle. The NFLA concluded that by applying a series of environmental principles to the problem of what to do with decommissioned submarines the option of storing the intact reactor compartments above ground at the sites where the submarines are currently either stored afloat or defueled appears to be the best option.

When estimated radiation dose to workers were later revealed to be between 0.94 and 1.0 millisieverts per year (mSv/yr) for the two RPV options compared with 0.18mSv/yr for the RC Separation option, this confirmed the NFLA view.¹ (5)

On the other hand, the MOD’s favoured option was to remove the RPVs and store them intact prior to disposal. The MOD published its response to the consultation in March 2013. (6) It had decided to go ahead with its favoured option to remove and store the Reactor Pressure Vessels intact prior to disposal in a theoretical Geological Disposal Facility.

The RPV removal and storage option will still require the 50 – 80 tonne pressure vessel to be cut up into smaller pieces for packaging and disposal eventually, but waiting longer to undertake this process allows for some of the radioactivity to decay before size reduction begins.

¹ These numbers compare with the radiological dose limits to members of the public of 1mSv/yr with doses from any new source not to exceed 0.3mSv. The legal radiation dose set for nuclear workers is 20mSv/yr.
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3. ILW Storage

Radioactive waste will be removed from submarines in-situ at both Devonport and Rosyth dockyards. The ILW will then be stored at a site or sites yet to be decided until a disposal route is available. This disposal route will be the one being developed through the UK Government's 'Managing Radioactive Waste Safely' (MRWS) programme for civilian waste. A deep geological disposal facility is expected to become available to accept waste around 2040 at a site yet to be identified. However, in line with recommendations from the Government's Committee on Radioactive Waste Management (CoRWM) and Government policy an ILW Storage facility will be designed for a 100 year life, so it is not dependent on a GDF being available by 2040.

The first submarine will be dismantled at Rosyth as a demonstration of the radioactive waste removal process. The rate and order of dismantling the remaining submarines, at both Rosyth and Devonport, will then be decided.

The MOD says no Intermediate Level Waste (ILW) will be removed from any submarine until an ILW storage solution is agreed and this will necessitate a further consultative assessment to shortlist and select a suitable site before applying for the necessary planning approvals. Even the demonstration project at Rosyth will not be able to go ahead without an ILW storage solution.

Rosyth and Devonport will not become ILW storage sites "by default", but they do remain potential sites. The MOD has decided that the process of selecting a specific site for the interim storage of ILW should consider all UK nuclear licensed and authorised sites that might be suitable. This will therefore include MOD sites, industry sites and NDA sites on an equal basis. The MOD will carry out further public consultation with relevant local authorities and NGOs as part of this process. However, it has been made clear to the MOD at the Submarine Dismantling Project (SDP) Advisory Group that it would be seen as unfair if Devonport or Rosyth were expected to host the ILW stores as well as carry out the submarine dismantling. (7)

The SDP has been undertaking a comparison of specific candidate ILW storage sites, initially by preparing a provisional shortlist.

4. MOD Assessments

The MOD has proposed looking at three types of existing nuclear sites for ILW storage: those owned by MOD, by industry, and by the NDA. Any assessment would take into account transport of waste. So far the MOD has found little difference on cost and performance grounds when comparing the two dockyards with remote sites or between MOD and commercial sites. Initially there appeared to be potential advantages in using a store on an existing NDA site. (8) But a joint MOD/NDA study on the potential use of NDA sites has now been completed and has shown that each type of site has advantages and disadvantages but it has not proven possible to discriminate sufficiently between them to justify excluding any type from more detailed, site-specific analysis. (9)

The MOD has also accepted the arguments that all potential sites must be compared on an equal basis, against a reviewed set of criteria, and that this must be informed by further stakeholder and local community engagement. (10)

Only limited information on potential ILW storage and transport accident scenarios was included in the 2011 Consultation Document and supporting documents. MOD recognises

that the next stage of decision making will require more comprehensive treatment of these issues and the provision of more information, e.g. on potential consequences.

The MOD recognises that although most respondents from Rosyth and Devonport supported the idea of using ILW stores at NDA sites, the MOD has to take into account the fact that the views of communities around potential NDA or MOD storage sites have not yet been sought.

5. Next Steps

The SDP Advisory Group met on the 30th May 2013 in Edinburgh. A sub-group was established to consider options and potential sites for ILW interim storage. Local government will clearly have to play a major role in any further consultation process regarding the siting of ILW stores.

A further sub-group meeting was held in Bristol on 26th September. The NFLA Secretary can confirm that this meeting accelerated moves towards a public consultation on shortlisted sites for ILW storage, as has been recently communicated to all SDP Advisory Group members. All potentially affected local authorities will be invited to a 'pre-engagement' workshop early in 2014. The initial shortlisted sites will be named shortly and are likely to be a combination of MOD owned, NDA owned and private contractor sites.

6. List of NDA Sites

- Berkeley, Gloucestershire,
- Bradwell, Essex,
- Capenhurst, Cheshire,
- Chapelcross, Dumfries and Galloway,
- Dounreay, Caithness,
- Dungeness, Kent,
- Harwell, Oxfordshire
- Hinkley Point, Somerset
- Low Level Waste Repository, Cumbria,
- Oldbury, Gloucestershire,
- Sellafield, Cumbria,
- Sizewell, Suffolk,
- Springfields, Lancashire,
- Trawsfynydd, Gwynedd,
- Winfrith, Dorset,
- Wylfa, Anglesey

See Map <http://www.nda.gov.uk/sites/>

7. Sites owned by EDF Energy not adjacent to NDA sites

- Torness, East Lothian,
- Heysham, Lancashire,
- Hartlepool, Durham.

8. Conclusions and recommendations

The NFLA has welcomed the openness of MOD SDP staff in this consultation process. The NFLA Secretary, along with other representatives from local government, NGOs, academic, regulatory and industry representatives are continuing to advise MOD to

construct stakeholder events and future public consultation which attempt to be fully inclusive, open and transparent. The openness and transparency of MOD staff in this area is in complete contrast to MOD actions with radioactive contamination at Dalgety Bay and other owned or former-owned sites (see NFLA Radioactive Waste Briefing 42 on the NFLA website <http://www.nuclearpolicy.info>).

NFLA members are encouraged to take part in the public stakeholder events that will take place in early 2014. The NFLA Secretariat will be in attendance at some of these events and will also provide a model response for members when the public consultation on ILW site selection takes place later in 2014.

The NFLA Secretariat will also specifically liaise with councillors and council officers in Fife Council, site of the Rosyth facility, to assist it with its own consideration of this process as public engagement recommences early in 2014.

The NFLA Secretariat urges NFLA members to disseminate this report to appropriate council committees and council officers in their authority. Further updates will be provided at NFLA Steering Committee and relevant NFLA Forum business meetings.

References

- (1) Submarine Dismantling Project, Consultation Document, MoD, 28th October 2011
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/35909/sdp_consultation.pdf
- (2) NFLA Briefing No.31 Ministry of Defence Submarine Dismantling Project Consultation NFLA Overview and Model Response. February 2012
http://www.nuclearpolicy.info/docs/radwaste/NFLA_RWB_No_31_SDP.pdf
- (3) NFLA Briefing No.43 Review of the Siting Process for a Geological Disposal Facility – Advice note to NFLA Member Authorities in responding to the Consultation, October 2013.
http://www.nuclearpolicy.info/docs/radwaste/Rad_Waste_Brfg_43_MRWS_Siting_Consultation.pdf
- (4) Scotland's Higher Activity Radioactive Waste Policy 2011, Scottish Government, 2011, para 2.02.06 & 2.03.04
<http://www.scotland.gov.uk/Resource/Doc/338695/0111419.pdf>
- (5) NFLA Briefing No.38. Nuclear Submarine Dismantling Consultation – MOD Response, April 2013
http://www.nuclearpolicy.info/docs/radwaste/NFLA_RWB_38_Submarine_Dismantling_decision.pdf
- (6) MoD's Response to Consultation March 2013
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229356/20130322-MODs_Response_for_web_correct.pdf
- (7) See for example Advisory Group Minutes 20th – 21st June 2012
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246347/20120620_13th_SDP_Advisory_Group_Notes_U.pdf
- (8) MoD's Response to Consultation March 2013 para 7.1.1
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/229356/20130322-MODs_Response_for_web_correct.pdf
- (9) As (8) Para 7.4.1
- (10) As (8) Para 7.3.3