

# Nuclear Free Local Authorities **RADIOACTIVE WASTE POLICY**

## **Briefing No. 31 – Submarine Dismantling Project**

Prepared for NFLA member authorities, February 2012

### Ministry of Defence Submarine Dismantling Project Consultation NFLA Overview and Model Response

#### **1. Background to Submarine Decommissioning Project and NFLA involvement**

The UK Ministry of Defence (MoD) is consulting on the options for the safe dismantling and storage of its redundant nuclear submarine fleet through its Submarine Dismantling Project (SDP). There will eventually be 27 submarines to deal with as part of this project, some of which are berthed at the Rosyth Dockyard in Fife and the rest are docked at the Devonport Dockyard in Plymouth. The public consultation is open until the 17<sup>th</sup> February and full details of it can be found at its website – <http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/ConsultationsandCommunications/PublicConsultations/ConsultationOnTheSubmarineDismantlingProject.htm>

The Nuclear Free Local Authorities (NFLA) have been heavily involved in this consultation process for over a decade, whether in its earlier guise of the ISOLUS (Interim Storage of Laid-up Submarines) Project or in recent years with the SDP. The NFLA Secretary and the NFLA Chair have attended all the meetings of the SDP Advisory Group, along with NFLA members in Fife Council. In the past two years the NFLA Secretary has also attended sub-groups of the Advisory Group's sub-groups seeking to develop an open and transparent public consultation process and a thorough Strategic Environment Assessment (SEA) to accompany the full consultation document.

The NFLA welcomes the MoD's attempts to genuinely discuss with its stakeholders the complicated issues around the dismantling of redundant nuclear submarines and the storage of intermediate level radioactive waste. The NFLA has been able to positively contribute to this debate and provide the MOD with sensible feedback to encourage an open and transparent public consultation.

The NFLA Secretary, the NFLA Scotland Policy Advisor and NFLA member and officer representatives also attended the MoD's national and local stakeholder events on the public consultation and also welcomed the opportunity to discuss these matters with both MoD staff and other interested stakeholders.

This briefing provides NFLA members with a background to the key issues around the dismantling and storage of redundant nuclear submarines and provides a model response to the consultation questions. The draft NFLA response was endorsed at the NFLA Steering Committee of the 27<sup>th</sup> January in Manchester. NFLA members are encouraged to endorse the NFLA response and send in individual local authority responses. The NFLA Secretariat has provided support and advice to its member authority Fife Council in order for it to discuss and approve its own response to the consultation.

Completed electronic responses should be emailed to: [DESSMIS-SDP@mod.uk](mailto:DESSMIS-SDP@mod.uk)  
Postal responses should be sent to: Submarine Dismantling Project, Defence Equipment & Supplies Agency, FREEPOST RSKJ-KRAH-YZRJ, C/o Green Issues Communications Ltd, 30-31 Friar Street, Reading, RG1 1DX.

This briefing has been developed by the NFLA Scotland Policy Advisor, Pete Roche in conjunction with the NFLA Secretary, Sean Morris.

## 2. Model response – Background to NFLA’s views

As with civil nuclear waste, the use of nuclear-powered submarines has left the UK with a dangerous and unwelcome legacy as a result of unwise decisions made in the past. The Nuclear Submarine Forum – a network of 16 independent local groups from all parts of the UK, with an interest in the Ministry of Defence's (MoD) nuclear powered submarine programme – has called for no further vessels to be built and for those currently in service to be rapidly decommissioned.<sup>1</sup> The NFLA would support this call.

However, the radioactive waste already created will have to be managed whether we like it or not. The waste in question is 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 which are still in service, making a total of 27.

It is also worth noting that the new Astute Class submarines currently being brought into service and the next planned class of submarines (known as Successor) are not within the scope of this consultation. The Nuclear Submarine Forum argued that it was irresponsible and unethical to build new submarines before a solution had been found for how to deal with the radioactive waste they would generate. The Committee on Radioactive Waste Management, in its November 2006 report to Government noted that the creation of more waste at new civil nuclear facilities raises “*political and ethical issues*” which are “*quite different from those relating to committed and therefore unavoidable waste*”. The report also highlights the uncertainties surrounding the implementation of geological disposal, implying that because we cannot be certain that a solution to the nuclear waste problem is feasible it would be unethical to create further waste. NFLA will, therefore, continue to press the MoD ***not to order any further nuclear powered submarines.***

Six of the submarines stored afloat at Devonport still contain spent nuclear waste fuel as of course do the 10 submarines still in service. The spent fuel has been removed from the other 11 submarines and transported to Sellafield for storage. The MoD does not appear to have any long-term plans for managing its spent fuel and this consultation does not consider spent submarine reactor fuel. As with spent fuel from civil reactors submarine spent fuel is not yet considered to be a “waste”. The MOD’s Nuclear Liabilities Management Strategy points out that “*irradiated fuel still contains a significant amount of U-235 that could be used in the manufacture of new fuel*”,<sup>2</sup> which implies that reprocessing the spent fuel is still considered to be an option.

Nevertheless submarine reactor compartments with spent fuel removed still contain considerable quantities of radioactivity. There is a general consensus this waste cannot be left in decommissioned submarines stored afloat indefinitely and that the time has come to remove the waste so that it can be stored in passively safe, dry conditions rather than left in the submarines as their condition deteriorates over time.

## 3. Environmental Principles

Questions about nuclear waste management often suggest the answer “we wouldn’t start from here”, so in the view of the Nuclear Free Local Authorities (NFLA) management options should be examined by looking at them from the stand point of a clear set of environmental principles.

The NFLA 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**

<sup>1</sup> [http://www.nuclearsubwaste.net/index.php?option=com\\_content&view=article&id=119&catid=44&Itemid=89](http://www.nuclearsubwaste.net/index.php?option=com_content&view=article&id=119&catid=44&Itemid=89)

<sup>2</sup> Nuclear Liabilities Management Strategy, MoD September 2011 [http://www.mod.uk/nr/rdonlyres/834d560e-84ec-4008-9de6-5fe676887e06/0/nuclear\\_strategy\\_final.pdf](http://www.mod.uk/nr/rdonlyres/834d560e-84ec-4008-9de6-5fe676887e06/0/nuclear_strategy_final.pdf)

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;

It is unfortunate that the Submarine Dismantling Project (SDP) Consultation Document does not include a similar set of environmental principles, with an objective to meet these environmental principles. Dismantling submarines "*in a safe, secure and sustainable manner*" can mean all things to all people. The Consultation Document could have, for example, referred to the Government's "*Statutory Guidance to the Environment Agency concerning the regulation of radioactive discharges into the environment*".<sup>3</sup> This refers to the UK's *Strategy for Radioactive Discharges* which aims to achieve progressive and substantial reductions in radioactive discharges and to achieve human exposure to ionising radiation which is as low as reasonably achievable.

The Guidance also refers to a set of environmental principles which include:

- the use of Best Available Techniques (BAT)<sup>4</sup>;
- the precautionary principle;
- the preferred use of 'concentrate and contain' in the management of radioactive waste over 'dilute and disperse'

#### 4. Nuclear Proliferation

The Highly Enriched Uranium (HEU) used in submarine reactor fuel is a major proliferation concern. UK and U.S. submarine reactor fuel uses uranium enriched to over 90% U-235 – basically weapons grade uranium. If more countries decide to emulate the UK and build nuclear powered submarines, this would spread nuclear weapons capability to these countries. HEU, unlike plutonium, can be used to make simple nuclear explosives, such as the one the U.S. used on Hiroshima. It is essential that HEU is removed from all nuclear reactor fuel cycles as soon as possible.<sup>5</sup>

#### 5. Specific Consultation Document Questions – NFLA model response

**Q1. What are your views on the overall objectives for dismantling submarines that have left service? [chapter 4]**

**Not leaving waste for future generations to deal with.**

Although not listed as an objective, para 4.1.1 Chapter 4 states that the MoD "...believe[s] that developing a solution now, rather than leaving future generations to do so, is the responsible course of action."

Whilst this superficially sounds like a laudable objective NFLA believes it is necessary to recognise that there may, in fact, be no such thing as a "solution" to many nuclear waste problems and that, for example, burying nuclear waste in a deep geological repository could simply be removing

<sup>3</sup> See

[http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/dischargesofradioactivity/1\\_20091202160019\\_e\\_@@\\_guidanceearadioactivedischarges.pdf](http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/nuclear/radioactivity/dischargesofradioactivity/1_20091202160019_e_@@_guidanceearadioactivedischarges.pdf)

<sup>4</sup> BAT has replaced Best Practicable Means (BPM) and Best Practicable Environmental Options (BPEO) in England and Wales. Scotland and Northern Ireland still use BPM and BPEO.

<sup>5</sup> See Von Hippel, F. A Comprehensive Approach to Elimination of Highly-Enriched-Uranium From All Nuclear-Reactor Fuel Cycles, Science and Global Security 12:137-164, 2004

[http://www.princeton.edu/sgs/publications/sgs/pdf/12-3\\_von%20Hippel\\_SGS\\_137-164.pdf](http://www.princeton.edu/sgs/publications/sgs/pdf/12-3_von%20Hippel_SGS_137-164.pdf)

choices from future generations rather than removing the problem for them. It would be better to bequeath future generations a well managed surface or near surface store than a leaking geological repository which they can do nothing about.

One of the objectives listed is that the 27 nuclear submarines should be dismantled by 2050. It is not clear why this date has been chosen.

### a) Scottish Policy

Although the Scottish Government's nuclear waste management policy does **not** apply to waste from dismantled submarines<sup>6</sup>, it might have been sensible for the consultation document to address the fact that this policy is to manage nuclear waste in near surface facilities.<sup>7</sup>

NFLA note that the MoD Nuclear Liabilities Management Strategy states that: "...the Strategy requires some MOD nuclear liabilities to be disposed of to a geological facility, or managed in line with Scottish Government policy on higher activity waste where applicable". Clarification is required.

### b) Waste Hierarchy

On the Waste Management Hierarchy, as NFLA told the Scottish Government in March 2010, the organisation has difficulty with its application to nuclear waste management. An important principle of radiological protection is the ALARA (as low as reasonably achievable) 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.<sup>8</sup>

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 to '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.

Rosyth dockyard has permission from SEPA to transport contaminated metal waste to a processing facility in Sweden, near Nyköping, also operated by Studsvik.<sup>9</sup> 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 had no idea about discharges to water.<sup>10</sup>

The MoD needs to clarify what it means when it says that "*up to 90% of the materials from the dismantled submarine will be recyclable ...*" Does this include contaminated metals which will need to be decontaminated before recycling for example. Logically the answer to this question would be more likely to be "yes" with the Reactor Pressure Vessel (RPV) Removal option, than with the Reactor Compartment (RC) Separation option.

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<sup>6</sup> See <http://www.scotland.gov.uk/Resource/Doc/338695/0111419.pdf> Para 2.02.06 states that the policy does not apply to waste from the decommissioning and dismantling of redundant nuclear submarines including those berthed at the former Defence Establishment at Rosyth.

<sup>7</sup> <http://www.scotland.gov.uk/Resource/Doc/338695/0111419.pdf> (para 02.08.05)

<sup>8</sup> [http://www.nuclearpolicy.info/docs/radwaste/NFLA\\_RWB\\_23\\_Scottish\\_Policy\\_response.pdf](http://www.nuclearpolicy.info/docs/radwaste/NFLA_RWB_23_Scottish_Policy_response.pdf)

<sup>9</sup> KIMO Minutes 20<sup>th</sup> 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, 15<sup>th</sup> June 2008.

<http://www.robedwards.com/2008/06/protest-over-plan-to-send-nuclear-waste-to-sweden.html>

<sup>10</sup> Emissions Inspection Report on Studsvik, 2<sup>nd</sup> November 2009 (In Swedish)

**Q2. What are your views on the options for how the radioactive materials could be removed from the submarine? Do you think any significant options have been left out? [chapter 6]**

**a) Timing**

Current plans are for a nuclear waste dump to be ready to accept 'legacy' nuclear waste in 2040. Emplacement of legacy high level waste and spent fuel would begin in 2075 and emplacement of spent fuel from new reactors would begin in 2130.<sup>11</sup> The Minister of State for Energy has asked the Radioactive Waste Management Division of the Nuclear Decommissioning Authority to speed up this timetable,<sup>12</sup> but it is not yet clear whether emplacement of waste before 2040 is going to be feasible, although some of the other dates can probably be brought forward according to the NDA.

The 2010 Radioactive Waste Inventory has estimated the quantity of waste produced up to 2100 assuming a continuing nuclear-powered submarine programme.<sup>13</sup> So there is no reason to rush into the disposal of waste from decommissioned submarines if it is assumed that this waste will continue to arise until at least 2100. Waiting for, say, another hundred years before deciding whether or not to cut up the reactor compartments would give time for further radioactive decay to take place.

**b) Looking at the options based on environmental principles**

Based on the environmental principles discussed above any plan which involves diluting and dispersing radioactive waste should be rejected in favour of a policy of concentration and containment.

Although the SEA claims that both worker doses and planned discharges are predicted to remain within currently permitted limits for the RPV Removal option, it fails to make a comparison with the RC removal option or argue that it meets the ALARA principle. The fact that discharges of radioactivity into the environment are expected to remain within currently permitted limits is beside the point. Applying the environmental principles outlined in the Government's Statutory Guidance to the Environment Agency would suggest that the Best Available Technique (and applying the precautionary principle) would be the technique which involves least discharges into the environment.

This argues for the Reactor Compartment Separation Option.

**Q3. What are your views on the candidate sites for where the radioactive waste is removed from the submarines? Do you think any significant options have been left out? [chapter 6]**

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. This is known as the Proximity Principle. The Scottish Government says the Proximity Principle should be applied to define the location of facilities in order to minimise potential risk and reduce any potential environmental impacts. This should not outweigh other considerations including safety, technical feasibility of specific locations and ability of communities and environments to accommodate developments without experiencing significant negative effects.<sup>14</sup>

This would argue for storing at Rosyth and Devonport in monitorable retrievable stores the reactor compartments from the decommissioned submarines currently stored afloat at Rosyth unless there

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<sup>11</sup> National Policy Statement for Nuclear Power Generation, DECC 2011 EN-6. Volume 2 para B3.2 <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1943-nps-nuclear-power-annex-volll.pdf>

<sup>12</sup> i-Nuclear.com 10<sup>th</sup> Jan 2012 <http://www.i-nuclear.com/2012/01/10/uk-could-speed-up-nuclear-waste-disposal/> Geological Disposal: Review of Options for Accelerating Implementation, NDA, December 2011 <http://www.nda.gov.uk/documents/upload/Geological-Disposal-Review-of-options-for-accelerating-implementation-of-the-Geological-Disposal-programme-December-2011.pdf>

<sup>13</sup> See <http://www.nda.gov.uk/ukinventory/documents/Reports/upload/2010-UK-Radioactive-Waste-Inventory-Summary-of-the-2010-Inventory.pdf> page 7

<sup>14</sup> <http://www.scotland.gov.uk/Resource/Doc/338695/0111419.pdf> para 3.03.10

are specific local conditions which affect the ability of the community living close by to accommodate the compartments.

**Q4. What are your views on the options for which type of site is used to store the intermediate level waste from submarine dismantling? Do you think any significant options have been left out? [chapter 6]**

As mentioned above, the Proximity Principle would argue for what the consultation document calls the “dual site” option. This means that no further dismantling would take place at Rosyth once the seven submarines currently stored afloat there have been dismantled. It is assumed that the ten submarines which remain in service would be dismantled at Devonport, which is the port where they are currently re-fuelled.

The hazards associated with transporting submarines which have been stored afloat for a number of years are not examined in the consultation document, although it does say that this “*would involve additional safety measures and regulation*”

Transferring the submarines currently stored afloat at Rosyth to Devonport or vice versa fails to meet the Proximity Principle. NFLA would certainly agree that transporting decommissioned submarines should be ruled out.

**Q5. What are your views about the methods used to compare dismantling and storage options, in particular the factors considered to assess their suitability/effectiveness/performance? [chapter 6]**

It is not clear from Figures 9 and 10 what weighting has been given to each of these factors. The Operational Analysis Supporting Paper gives these details. It is clear that the process has prioritised cost effectiveness over meeting environmental objectives.<sup>15</sup>

For the Multi Criteria Decision Analysis a set of 20 criteria were used. These included:

- Worker doses during dismantling transport and storage.
- Potential for unplanned radiation release, including during transport.
- Minimising radiation discharges to the environment.
- Minimising radiation discharges to protect the public.

These criteria were given a combined weighting of 18.8%. Worker doses during dismantling, transport and storage are weighted at zero because this is dealt with as part of the investment appraisal to be consistent with the NDA's way of doing things. This would appear to particularly skew the results towards options involving cutting into the Reactor Compartments rather than leaving them intact.

On the other hand 5 criteria which make up the “Reduction in Impact to Government and MOD” group are given a combined weighting of 25.2%. Two of the criteria in this category are Compliance with UK Policy and Strategy on Radioactive Waste Management (4.1%) and Compliance with UK Decommissioning Policy (5.3%). These two criteria in particular appear to skew the whole process making it impossible for options, such as those involving RC separation, which would do well in an analysis based on environmental principles, to score well.

The Operational Analysis Supporting Paper makes clear there is little difference in the weighted scores ascribed to options for the Environmental and Health & Safety criteria. The Impact on Maritime Enterprise is the criterion which has the single greatest impact. The Group of criteria which has the greatest impact is the Operational Factors Group which includes the Impact on Maritime Enterprise. The Policy Group has the second greatest impact.

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<sup>15</sup> [http://www.mod.uk/NR/rdonlyres/24DBD289-2F7F-470F-9DCC-A8A3BB287EEC/0/20111021SDP\\_OperAnalysisSupportingPaperOASpv1\\_0aWEBU.pdf](http://www.mod.uk/NR/rdonlyres/24DBD289-2F7F-470F-9DCC-A8A3BB287EEC/0/20111021SDP_OperAnalysisSupportingPaperOASpv1_0aWEBU.pdf)  
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One criteria – impact on Maritime Enterprise – meant that storing all 27 Reactor Compartments at Rosyth received a low score, because the footprint of the RC interim store would be comparatively very large (ca.11,600 m<sup>2</sup>) and locating such a store at Rosyth would have an adverse effect on the ability to decommission or re-develop Rosyth, which in turn could have a negative impact on the maritime enterprise.

The Environmental and Health and Safety criteria appear to have scored low because all options are expected to be able to meet legal minimum requirements. In the NFLA view this is beside the point. The chosen management option should be required to use the Best Available Techniques and they should generate discharges and doses which are As Low As Reasonably Achievable. Nowhere in the Operational Analysis are RC Separation and RPV Removal Options compared from this standpoint.

NFLA agree with comments made by NuLeaf that suggest the MOD should not have relied exclusively on expert groups to undertake the subjective and value laden task of criteria weighting, when there are a number of precedents in other nuclear related projects for involving stakeholders to generate different criteria weighting sets.

**Q6. Do you think we have captured all the potential advantages and disadvantages of the options and if not which others would you propose? [chapter 7]**

Only one disadvantage is given for the RPV Removal and Storage option. MoD needs to give much more information about the implications of cutting into the reactor compartment in order to remove the reactor pressure vessel. The SEA Non-Technical Summary suggests that the following should be added: Risk of accidentally discharging radioactive contaminants marginally higher than for RC separation.

Although the SEA claims that both worker doses and planned discharges are predicted to remain within limits for the RPV Removal option, it fails to make a comparison with the RC removal option or argue that it meets the ALARA principle.

**Q7. Are there any other significant issues or factors you think we have overlooked? [chapter 7]**

A more complete assessment would compare discharges and worker doses for the three options by listing likely radio-isotopes released with estimates of the level of radioactivity. A draft application for a radioactive discharge authorisation would have been one possible way to present the information. It is impossible to properly compare the three options from the point of view of the environmental principles mentioned above without this information. It is not sufficient to argue that discharges will remain within authorised limits – the chosen process also needs to meet the ALARA principle.

**Q8. What are your views on our proposals, and associated rationale, for:**

**a. how we remove the radioactive waste; [chapter 8]**

The consultation documents do not give enough information to argue the case that RPV Removal is the best option. This currently looks as though it has a higher risk of accidental discharges; higher actual discharges into the environment and a higher worker dose in comparison to the RC Removal option.

**b. where we remove the radioactive waste; [chapter 8] and**

NFLA would certainly agree that transporting 20 decommissioned submarines from Devonport to Rosyth should be ruled out. But very little information is given about the risks associated with transporting decommissioned submarines. Transferring the submarines currently stored afloat at Rosyth to Devonport fails to meet the Proximity Principle.

**c. which type of site will be used to store Intermediate Level radioactive Waste? [chapter 8]**

The suggestion that RPV could be transported to and stored in an NDA storage facility also fails to meet the Proximity Principle. Moving RPVs from Rosyth to, for example, Hunterston or from Devonport to, for example, Hinkley Point, would be likely to generate considerable public disquiet. There will also be questions about why the NDA has spare storage

capacity. Does this mean, for example, that civilian nuclear waste which is currently allocated space in an NDA store will have to be managed by an inferior method? (This was recently considered with the now dropped NDA proposal to build a near surface “disposal” facility at Hunterston in Scotland for graphite waste).

**Q9. Do you have any comments on the next stages of the decision-making process that will follow this consultation? [chapter 9]**

The MoD’s joint assessment with the NDA on using NDA facilities should be released for public consultation.

The MoD should publish draft radioactive discharge authorisations for each of its three options for both Rosyth and Devonport to allow further public comment before making any decisions.

The MoD should convene a meeting of the SDP Advisory Group to assess the main points of the responses to the consultation and the MoD’s planned further actions to take this policy process through to formal decision-making by Ministers.

**Q10. Do you have any comments about how this consultation has been conducted? Did the consultation provide enough information for you to reach views on the key decisions? Did it meet the seven consultation criteria of the Government Code of Practice (outlined at Annex D)?**

As indicated above there is insufficient information about radioactive discharges and insufficient information about the possible risks associated with moving decommissioned submarines.

NFLA would like to see a parallel, open, transparent and thorough public consultation process take place following the discussions MoD is having with the Department of Energy and Climate Change and the NDA over likely nominated sites for intermediate level radioactive waste arising from the dismantling of redundant nuclear submarines.

NFLA welcomes the opportunity that was made to it to take a full involvement in the SDP Advisory Group and sub-groups and encourages this interactive process to continue following this consultation.

**Q11. Do you think that the Environmental Report has captured the significant environmental effects of the SDP options? If not, what effects do you think we have missed, and why?**

See answer to Question 10 above.

**Q12. Is there any other baseline environmental information, relevant to the SEA, that we have not included? If so, please provide details.**

Given that Rosyth and Devonport are unusual for nuclear licensed sites in that they are in the middle of urban areas, for consultation respondents from outside these areas it would have been useful to have more information about the proximity of residential areas, and the location of other buildings such as schools and offices in the vicinity.

**Q13. Do you agree with the proposed arrangements for monitoring significant effects of the SDP options, detailed in the Environmental Report? If not, what measures do you propose?**

Section 7.3 of the Environmental Report gives very little indication of the radiation monitoring measures which will be implemented if any of these proposals go ahead at Rosyth. Simply mentioning the Annual Radiation in Food and Environment (RIFE) Report produced by SEPA and others is inadequate. Given the recent experience with the MoD’s inadequate monitoring at Dalgety Bay in Fife the MoD must say exactly what it is proposing to do; what monitoring will be carried out and who will be responsible for it.

**Q14. Do you agree with the conclusions of the Environmental Report and the recommendations for avoiding, reducing or off-setting significant effects of the SDP options? If not, what do you think should be the key recommendations and why?**

NFLA agrees that indefinite afloat storage is not an acceptable option. However it notes in particular from the Environment Report conclusions<sup>16</sup> that deferring the dismantling of the Reactor Compartments or Reactor Pressure Vessels would allow the radioisotopes to decay naturally over time. A significant reduction could be expected in gamma emissions from the decay in the short-lived isotopes within the RPV, such as Cobalt 60. This in turn would reduce the amount of shielding needed in the size reduction facility. However, the activity of longer lived isotopes such as Iron 55 and Nickel 63 will only fall slightly, so the quantities of ILW would remain largely unaffected for many decades.

The Environment Report states that:

*“...no evidence of likely impact on either the environment or peoples’ health from the planned activities. Current estimates indicate that radiological doses to ‘critical’ group (i.e. those people with the highest feasible exposure) would be significantly less than 0.3% of the statutory limit of 1 mSv per year.” (or 0.003mSv)*

This should be viewed in the context of a target mentioned in the UK strategy for radioactive discharges 2001 – 2020 of achieving a mean dose of no more than 0.02mSv a year as a result of authorised radioactive discharges. This shows there is not as much margin for error as first seems.

The Environment Report notes that the RC Separation Option *“is associated with the lowest radiological dose to workers”*.

It also says *“There are no anticipated effects on the public from radiological discharges as a result of any planned dismantling activities, and the risk of significant discharge into the environment in the event of an accident is considered to be remote.”*

The evidence to support this is thin and unconvincing. Without more details about the scenarios considered and the mitigation measures planned it is difficult to agree with this last conclusion.

The Environment Report argues that the RPV storage option, which defers the majority of the size reduction activities for 30-plus years, presents a number of potential benefits or opportunities:

- the short lived isotope Co60 in the activated steel would have more time to decay naturally, thus reducing the main source of occupational dose to workers;

[This implies that RPV Removal – whether for storage or cutting up – threatens to mobilise Co60 under various possible scenarios in contrast to the RC Separation option.]

- delay may also allow size reduction and segregation technologies to develop, and potentially reduce radiological and non-radiological emissions;
- delay may allow for clarification and direction on the final form of ILW container that would be acceptable to the proposed GDF, which may affect technologies employed and the extent to which size reduction is needed; and
- delay may allow for the increased use of low carbon technologies, reducing the carbon footprint of the dismantling process.

**Q15. Are there any other comments you would like to make?**

In conclusion, NFLA asserts that reference to environmental principles is lacking throughout the consultation document, and is disappointed that this is the case. The weightings used in the MCDA skew the results against those options which are more likely to meet environmental principles.

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<sup>16</sup> Section 7 [http://www.mod.uk/NR/rdonlyres/AF8E23BA-01BB-451F-A505-09AEAB5387AE/0/20111021SDP\\_SEA\\_Reportv1\\_0WEBU.pdf](http://www.mod.uk/NR/rdonlyres/AF8E23BA-01BB-451F-A505-09AEAB5387AE/0/20111021SDP_SEA_Reportv1_0WEBU.pdf)

Rather than providing more complete evidence the consultation argues that all options will be able to keep discharges of radioactivity into the environment and radiation doses to workers within legal limits. This fails to meet the principle of using the Best Available Techniques and keeping doses As Low As Reasonably Achievable.

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.

The NFLA welcomes the MoD's willingness to discuss these matters over recent years. The NFLA was pleased that it has been invited to attend all meetings of the SDP Advisory Group, and that the NFLA Secretary was invited to attend and contribute to sub-groups on the consultation process and the Strategic Environment Assessment. The recent national stakeholder dialogue and local events were also useful events to discuss the key issues in this detailed consultation with MoD staff and other interested organisations. The NFLA hope this spirit of openness will continue with the next steps in this policy process.

The NFLA strongly encourages the MoD to continue with this openness and transparency – in a manner much less in evidence with the way that the MoD is dealing with radioactive contamination issues at Dalgety Bay in Fife – and to actively consider reconvening the SDP Advisory Group to consider the steps forward following consideration of all consultation responses.

Nuclear Free Local Authorities Secretariat  
13<sup>th</sup> February 2012