



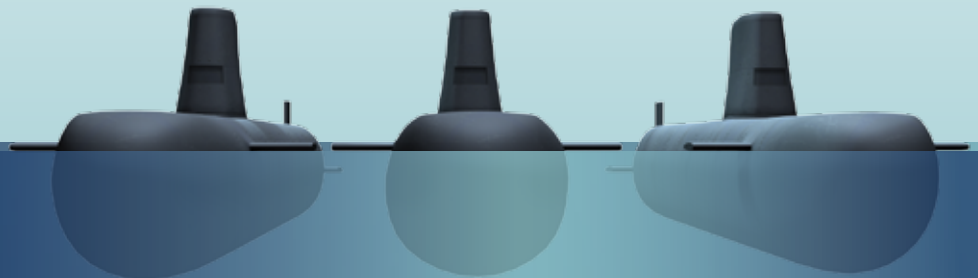
Ministry
of Defence



Submarine Dismantling Project (SDP)

MOD's Response to Consultation

March 2013





Submarine Dismantling Project (SDP)



Philip Dunne MP
Minister for Defence Equipment, Support and Technology

Decisions on how we deal with the radioactive waste from our nuclear submarines are not easy, but they are important. Everyone who took part in the Submarine Dismantling Consultation, whether they read the Consultation Document, visited a local exhibition, or contributed to a national workshop, will have understood this, and will now, I hope, have a greater understanding of the issues we face in dealing with this waste.

It is right that we recognise the invaluable contribution our submarines and our submariners have made to the security of the UK, but we also recognise that radioactive waste is one of the consequences of a nuclear submarine programme. This consequence is one that we accept, one that we can and will deal with, and one that we are committed to dealing with in a safe and environmentally sound manner.

I am pleased that so many people from across the nation and in the areas around Devonport and Rosyth in particular, took the opportunity to take part in the consultation process. Over 1,200 people attended consultation events, and the Submarine Dismantling Project (SDP) team has considered the comments people made during these events, as well as processing comments from over 400 written responses across the full range of consultation questions.

It is clear that there is a great deal of interest in the SDP, and that the majority of these comments were the result of people having taken the time to think carefully about our proposals and about the questions that we posed. I should like to offer my thanks to everyone who submitted comments, whether in person during an event or in writing, for contributing to this project.

Every comment has been logged and tracked to ensure that it has been properly considered and, where the comment has been accepted, action taken to address it. This has led to changes across various aspects of our options analysis, which is now considered to be robust and mature. As a result, we have decided that the project is ready to move forward to the next stage of activity.

During this next stage we will carry out a selection process for the site to be used for interim storage of Intermediate Level Waste (ILW) and we will dismantle a single submarine at Rosyth as a demonstration of the dismantling approach. This selection process will involve further consultation with local communities before any decisions are made, and we currently expect this to take place during 2014. We will, of course, make announcements about this consultation closer to the time.



Executive Summary

In October 2011 the Ministry of Defence (MOD) launched a public consultation on the strategic options for dismantling redundant nuclear submarines.

The Submarine Dismantling Consultation ran for 16 weeks from 28 October 2011 to 17 February 2012, seeking the views of local people in the areas around candidate sites for submarine dismantling as well as the wider public and stakeholders nationally, on three key questions.

- How should the radioactive material be removed from the submarines?
- Where should the radioactive material be removed from the submarines?
- Which type of site should be used to store the ILW awaiting disposal?

The consultation also sought views on the environmental effects of submarine dismantling as set out in MOD's Strategic Environmental Assessment (SEA).

Every comment was registered and considered by the project team, using a structured process which was developed with input from members of the project's independent Advisory Group. A Post Consultation Report was issued in July 2012 documenting the consultation process and providing a summary of the responses received.

The MOD then revisited its analysis of the strategic options for submarine dismantling. New expert workshops were run to consider comments on specific topics within both the quantitative and the qualitative assessments.

The MOD has now reached a conclusion on each of the three key questions and this report, alongside the SEA Post-Adoption Report, has been issued in parallel with the MOD's announcement of its decisions, in order to explain how the comments made during consultation have been taken into account.

Having taken account of the comments received during consultation, the MOD's revised position on how and where radioactive waste is removed, and the types of site at which it is stored is as follows:

- The approach to removing the radioactive material from the submarines will be to remove and store the Reactor Pressure Vessels intact prior to disposal in the planned Geological Disposal Facility. This position has not changed and the arguments for this option have, on balance, been supported by the responses to the consultation.

- Radioactive waste will be removed from submarines in-situ at both Devonport and Rosyth dockyards. This position has not changed and the arguments for dual-site dismantling have been strengthened by the responses to the consultation.
- The proposed approach to selecting a site for storage of ILW has been revised. The MOD has chosen not to limit the site-specific selection process to one type of site. The revised process will consider all potential storage sites on an equal basis, irrespective of type.

On the SEA, MOD's position is that the findings set out in the Environmental Report remain valid in the light of consultation. The adopted approach does not have any significant environmental effects, except in the waste category where the overall effect (including new waste streams and dealing with the legacy of laid-up submarines) was found to be positive.

Two other significant decisions that have been taken since consultation are as follows:

- 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 optimised. Priority will be given to clearing the seven submarines currently at Rosyth, but this does not preclude the potential for parallel work in Devonport.
- The opportunity to undertake early removal of Low Level radioactive Waste (LLW) from the submarines will be explored. This opportunity could help to reduce technical and industrial risks and speed up final clearance of submarines from the dockyards once an ILW storage solution is agreed.

The MOD's revised position has been influenced by the significant changes made to the options analysis as a result of the comments received in consultation. In particular, the MOD has accepted and applied the following in relation to SDP, which will also be considered in future decision making on the project:

- Changes have been made to the definitions and scales of safety and environmental criteria in the option comparison methodology, to clarify how the assessment of cost and operational effectiveness are applied in comparison of the options.



- Stakeholder perspectives have been incorporated into the option analysis process, through the use of alternative weightings in the sensitivity analysis.
- When more detailed information on environmental discharges is available, it should be made publicly available in a timely manner. This should include summary information that can be readily understood.
- The importance of on-going communication and engagement with stakeholders outside of consultation periods is accepted and will be strengthened, where appropriate, for the next stage.
- The implications of delays or changes to the Geological Disposal Facility programme have been more explicitly and comprehensively taken into account.

MOD notes the comments that communities around selected sites are likely to seek additional benefits as part of any planning consent process. These would need to be raised, at site or programme level, in the context of a specific planning application.

Similarly, MOD notes the comments that communities may also seek wider benefits (for example, through strategic partnerships). These would be outside the scope of the SDP and would need to be raised as part of discussions on the wider context of MOD or other activities at a given site.

There were comments that have not been accepted because the MOD believes they are based on misunderstandings or because it does not accept the conclusions that have been drawn. For instance:

- MOD believes some of the criticism of its comparative analysis of safety and environmental

impacts is based on a misunderstanding of the information provided, which has been interpreted as meaning that 'compliance with limits' did not encompass full commitment to the 'ALARP' or 'ALARA' regulatory requirements¹ (which it does).

- MOD recognises the potential value of regional or broad-scope socio-economic assessments but believes that in practice, local authorities will do this to inform their positions; only they have the remit, information and skills to do so at this stage. MOD will, however, participate on request; sharing whatever information it has and providing any socio-economic submissions required as part of planning consent processes.
- Arguments made in favour of using a new Greenfield or Brownfield site for dismantling, or named sites which MOD has previously ruled out, are not sufficiently persuasive to justify reconsidering them as options. The ILW Storage Site shortlist has yet to be developed, but MOD would only consider Greenfield or Brownfield sites if no suitable existing nuclear site could be found.
- Submarine defuelling remains outside the SDP's scope and as it is a prerequisite to all dismantling options it did not act as a significant discriminator between them.

In the next phase of work, the project will be seeking regulatory approvals for the demonstration of initial dismantling activities at Rosyth Dockyard. It will also take forward a process for shortlisting and subsequently selecting an ILW storage site, which will be informed by an updated SEA and consultation with local communities.

¹ As Low As Reasonably Practicable / As Low As Reasonably Achievable.



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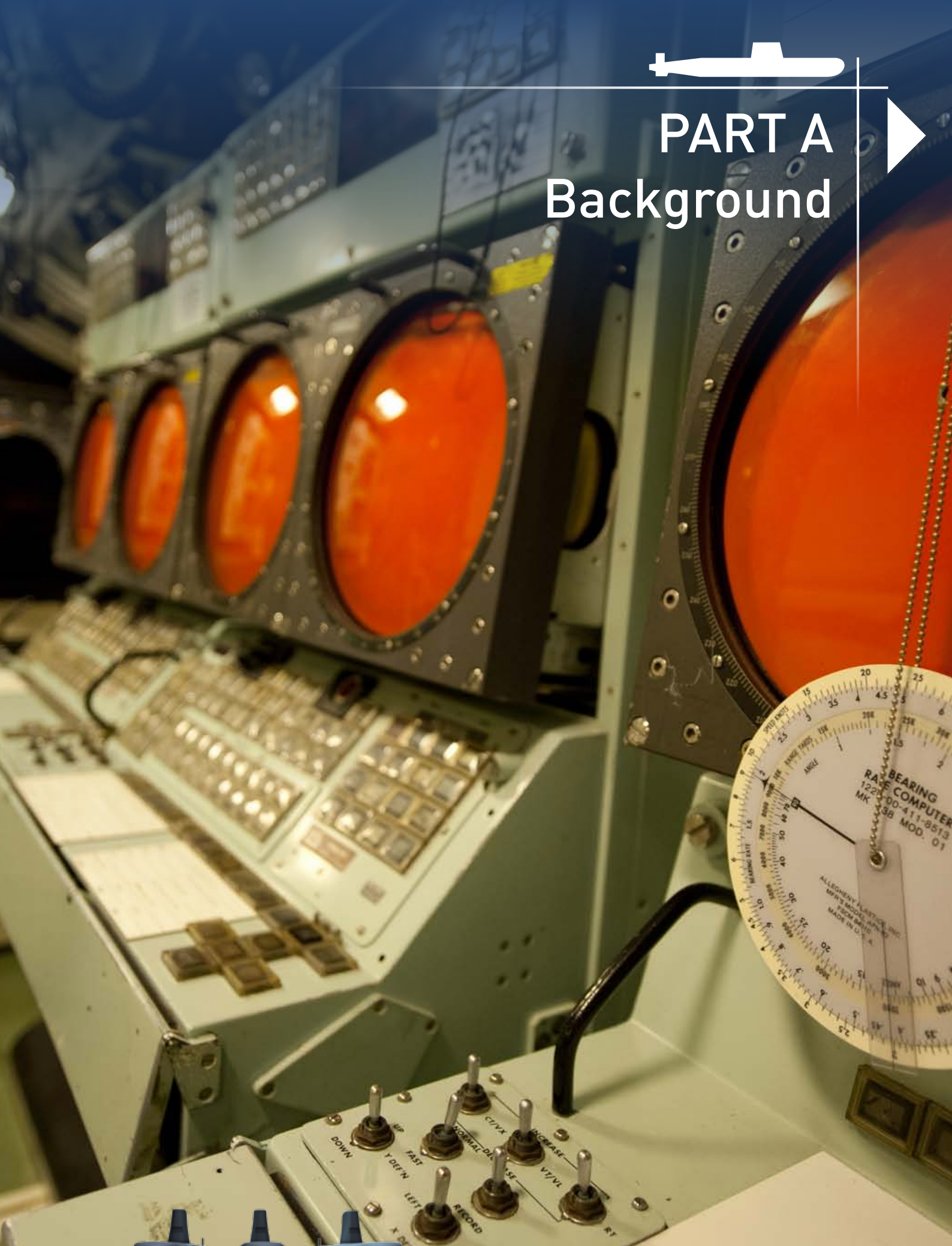
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PART A Background



1. Introduction

1.1 Background

1.1.1. The aim of the Submarine Dismantling Project (SDP) is to deliver a safe, secure, environmentally responsible and cost-effective solution for dismantling 27 of the UK's defuelled nuclear powered submarines after they have left service with the Royal Navy.

1.1.2. The Ministry of Defence (MOD) recognises that there is keen interest in the project from the public and local communities and that the public should have confidence in the solution chosen. For this reason it held a public consultation to hear the public's views on the key decisions that need to be taken.

1.1.3. The Submarine Dismantling Consultation (SDC) ran for 16 weeks from 28 October 2011 to 17 February 2012, seeking the views of local people in the areas around candidate sites for submarine dismantling, the wider public, and national level stakeholders on three key questions.

- How should the radioactive material be removed from the submarines?
- Where should the radioactive material be removed from the submarines?
- Which type of site should be used to store the Intermediate Level Waste (ILW) awaiting disposal?

1.1.4. The consultation also sought views on the environmental effects of submarine dismantling as set out in MOD's Strategic Environmental Assessment (SEA) which has informed MOD's overall assessment of the different options.

1.1.5. The Consultation Document (CD), SEA Environmental Report and supporting information can be viewed from the consultation web page².

1.1.6. Every comment was registered and considered by the project team, using a structured process which was developed with input from members of the project's independent Advisory Group. A Post Consultation Report (PCR) was issued in July 2012 documenting the consultation process and providing a summary of the responses received. This is also available from the project's consultation web page.

1.1.7. The MOD then revisited its analysis of the strategic options for submarine dismantling. New workshops were run for MOD and other experts, during which both the quantitative and qualitative analysis were reviewed to take account of comments on specific topics. The comments received had a significant impact during this process, and resulted in various changes. These are detailed in the sections that follow and summarised in Section 12.

1.1.8. SDP will now proceed to the next phase of the project culminating in the dismantling of a submarine at Rosyth, as a demonstration of the process, with the Reactor Pressure Vessel (RPV) being removed and stored as a single item. The completion of this demonstration, however, is subject to a storage solution being agreed for ILW (ie. the necessary planning approvals for a store).



² <https://www.gov.uk/government/consultations/consultation-on-the-submarine-dismantling-project>



1.2. This Report

1.2.1. This report explains in detail how the comments made during consultation have been taken into account in the decisions which have been announced.

1.2.2. It is organised into two parts:

- The remainder of Part A updates the outline programme described in the Consultation Document, summarises the progress made since then, and sets out the next steps for the project (including further consultation).
- For each topic area, Part B then briefly summarises comments made during the SDC and explains how they have been taken into account, including how they have influenced different aspects of the project. Cross-references to key MOD documents are included at the end of each section.

1.2.3. The final section in Part B comprises a summary of what has changed in the MOD's position as a result of consultation, which other arguments have been accepted, and which have not been accepted (for example, because the MOD believes they are based on misunderstandings or because it does not accept the logic of the conclusions drawn).

1.2.4. Annexes at the back of this report include a list of references and further information, a list of abbreviations used and a glossary of terms.

1.2.5. It would not be practicable to provide specific feedback in this document on every individual comment received during the consultation process. This Report therefore focuses on the comments that were judged to be the most significant, represented widely held views, or merited particular attention for some other reason.



2. Project Update

2.1. Selection of Dismantling Approach and Sites

- 2.1.1. The three options considered for the dismantling approach were: separation and storage of Reactor Compartments (RCs); removal and storage of RPVs; and removal of RPVs and size reduction for storage as packaged waste (PW). Of these the MOD has selected, subject to successful demonstration and regulatory approvals, the option for removal and storage of RPVs.
- 2.1.2. The three options considered for where to remove radioactive waste from the submarines were: Devonport Dockyard; Rosyth Dockyard; and a combination of both sites. Of these the MOD has selected, subject to successful demonstration and regulatory approvals, a combination of both sites. 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 optimised. Priority will be given to clearing the seven submarines currently at Rosyth, but this does not preclude the potential for parallel work in Devonport.
- 2.1.3. No 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.

- 2.1.4. In the meantime, the project will proceed with detailed design of the dismantling process and apply for the regulatory approvals required for the demonstration of dismantling activities at Rosyth.

2.2. Selection of ILW Storage Site

- 2.2.1. The SDC and the project's assessment did not consider specific storage sites, but the project explored whether a decision could be made about the type of site. This involved comparing, at a generic level, the benefits and disadvantages of existing nuclear sites owned by the MOD, Nuclear Decommissioning Authority (NDA) and industry, and of storage sites remote from or local to the dismantling site(s).
- 2.2.2. There appeared to be potential advantages in using an existing store on an NDA site but joint MOD/NDA studies had not reached a conclusion by the time consultation started. So the way forward proposed in the CD was to complete these studies, make a recommendation on the type of site, and then conduct a further round of assessment and consultation to choose between specific sites of this type.
- 2.2.3. These MOD/NDA studies were in due course completed but it still did not prove possible to discriminate sufficiently between the different types of site, without considering specific sites. The MOD has therefore concluded that site ownership and co-location with dismantling site(s) are not criteria that could be used generically to exclude sites from the shortlist.
- 2.2.4. This is consistent with a number of consultation responses which argued that the project must consider all potential ILW storage sites, including NDA sites, on a 'level playing field'.
- 2.2.5. The MOD has accepted this feedback and has revised the forthcoming site selection process accordingly. The revised process will screen all existing nuclear sites, irrespective of ownership or co-location with dismantling site(s), in order to determine a shortlist. This shortlist will then be taken forward for detailed assessment, including update of the SEA. Local stakeholders will continue to be engaged throughout the selection process and there will be public consultation before the storage site is selected.



2.3. Demonstration of initial dismantling activities

- 2.3.1. Once the ILW storage site has been selected and regulatory and planning approvals obtained, the demonstration of ILW removal from the first submarine may proceed.
- 2.3.2. This first 'demonstration' submarine will be dismantled at Rosyth using the same processes intended for the remaining submarines, although it is likely that dismantling of the first submarine will take longer than subsequent vessels. The project will then pause to assess the lessons that need to be learned for the remaining submarines and to improve the understanding of cost, before contracts are placed for the dismantling of the remaining submarines or for the development of any longer term facilities.
- 2.3.3. This demonstration will also confirm the rigorous safety and security procedures which will be followed in the design and operation of the dismantling facilities and processes, and validate radiological dose and discharge projections.

2.4. Opportunity for early removal of Low Level Waste (LLW)

- 2.4.1. Whilst removal of ILW cannot proceed until there is an agreed storage solution (ie. the necessary planning approvals for a store), LLW already has established disposal routes and so could – with the necessary regulatory approvals – be removed in conjunction with planned submarine maintenance. The ILW would remain in-situ in the RC and the submarine would be returned to afloat storage until a later date when there was an agreed ILW storage solution.
- 2.4.2. The project will explore this opportunity further as, by building capability more gradually (first LLW and then ILW removal), it could help to reduce technical and industrial risks and speed up the final clearance of submarines from the dockyards. This might significantly reduce the long-term cost of overheads at Rosyth. (See section 5.3 for further information).

2.5. Long-term dismantling programme

- 2.5.1. There will be a hold point after the completion of the demonstration activities (ie. removal of all radioactive waste from a submarine at Rosyth) while the project determines the optimum rate and order for dismantling of the remaining submarines at Rosyth and Devonport.
- 2.5.2. The project will also need to determine the requirements and develop the business case for any longer term facilities and commercial arrangements before proceeding with dismantling of the remaining submarines.

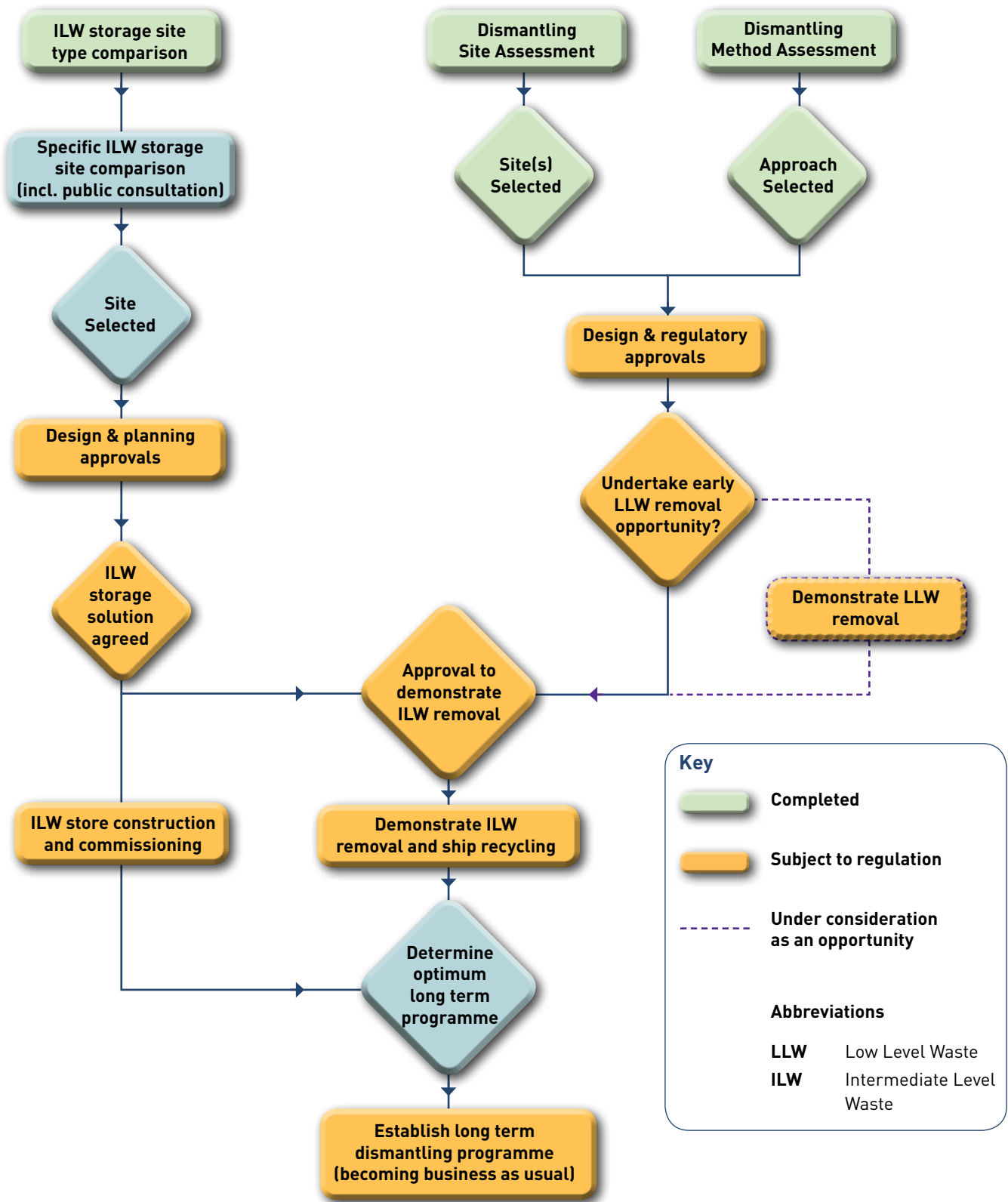
2.6. Next steps

- 2.6.1. Figure 1 (next page) shows the logic for the project's future activities and decision making including the development of an ILW storage solution and the demonstration of initial dismantling activities.
- 2.6.2. In the next phase of work, the project will be seeking regulatory approvals for the demonstration of initial dismantling activities. This will include applications, expected later in 2013, to amend radioactive waste disposal and discharge authorisations for Rosyth Dockyard and for approval under the Environmental Impact Assessment for Decommissioning Regulations (EIADR³). A decision on whether to proceed with the opportunity for the early removal of LLW will be taken prior to the formal EIADR application and would be reflected in that application. This will be made available for public comment by Office for Nuclear Regulation (ONR).
- 2.6.3. The project will also undertake comparison of specific candidate ILW storage sites, initially by preparing a provisional shortlist (and underpinning rationale) which will be revised and finalised after seeking the views of both Statutory Bodies and local stakeholders at the shortlisted sites. This shortlist will then be taken forward for more detailed comparison, informed by the SEA and public consultation, before selecting a specific site at which to seek planning and regulatory consents.

³ Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations – see glossary



Figure 1 - SDP Future Activities & Decision Making





PART B: Consultation Feedback



3. Aims & Objectives

3.1. Position Prior to Consultation [CD Section 4.3]

- 3.1.1. SDP's Aims and Objectives were set out in the Consultation Document (CD). The purpose is to dismantle 27 defuelled submarines, including all 17 currently stored afloat and a further 10 yet to leave service (up to and including the Vanguard class). Some of the specific requirements that the project had to satisfy were set out in CD Para 4.3.3.
- 3.1.2. The CD stated that dismantling of the new Astute class, currently being brought into service, and the next planned class of submarine (the successor to the Vanguard class) will be subject to future decisions and is not within the scope of the SDP. Nevertheless, the project is required where possible to retain the flexibility to be able to extend facilities in the future should a decision be taken to accommodate further classes.

3.2. Summary of Comments [PCR Section 7]

- 3.2.1. Most respondents supported the aim of dismantling out-of-service submarines as soon as practicable. For some, it was important to avoid leaving the problem for future generations to deal with. Others were more concerned with removing the submarines from the dockyards and processing the waste into a stable form, on safety and environmental grounds.
- 3.2.2. Some believed, however, that long term afloat storage of the submarines should continue at the dockyards until an ILW disposal route was available, or at least agreed with a high degree of confidence.
- 3.2.3. A smaller number argued more generally that the MOD should stop building new submarines, either indefinitely or until a safe and secure method of dismantling and storing and disposing of the radioactive waste is proven.
- 3.2.4. Some people suggested additional objectives that the project should adopt, such as achieving public confidence.

3.3. Commentary

Aims and Objectives

- 3.3.1. The vast majority of respondents supported the general project aims and thought them sensible. Some stated that their support was conditional (for instance, on the condition that safety must not be compromised by a desire to reduce costs).
- 3.3.2. Others rejected the aims because, when followed through, they led to an unacceptable conclusion in their view - for instance dismantling in an urban location. Their concerns are discussed in later sections of this report covering dismantling and ILW storage site selection.
- 3.3.3. Some additional objectives suggested during consultation, including those associated with public confidence and communication, were considered to be important. However, the MOD judged these to be project benefits or factors that will enable the project to run more smoothly rather than being objectives in themselves. In particular, the MOD's view is that public confidence has always been included as a formal project requirement, but it should flow from making and communicating the right decisions in the right manner and should not be pursued independently.
- 3.3.4. These suggestions have therefore been taken into account in relevant project documents and plans. They have also led to the inclusion of specific additional factors in the qualitative Other Contributory Factors (OCF) analysis directly related to public confidence. They have not, however, led to amendment of the project objectives.
- 3.3.5. A wide variety of other comments were made under this Aims and Objectives topic. Those dealing with project start date, provisions for future classes of submarine, and defuelling of submarines prior to transfer to the SDP are discussed below. Comments relating to wider Government policy topics (for example, the construction of new submarines) are outside the SDP's remit, but they have not been ignored (see Section 11).



Project Start Date

- 3.3.6. Some respondents felt that the next steps were too slow and that the process of making a decision and beginning dismantling should be accelerated. Most of these were concerned that further consultation would draw the process out, increasing the duration of risk from afloat submarines and driving up costs. Some urged the MOD not to allow the project to be delayed by 'ongoing and irresolvable debate'.
- 3.3.7. The MOD agrees that an earlier start would have benefits and continues to look for opportunities to make faster progress. However, it also believes that any attempt to rush decision making, consultation, or the planning process would be inappropriate and counter-productive. Afloat submarines will therefore continue to be maintained in a safe condition until they can be dismantled as part of a programme based on robust decision making.
- 3.3.8. Some others, however, took the view that the merits of a delayed start were not properly explored in the MOD's analysis and that (for instance) a decision should be deferred until a decision has been made on the location of the planned Geological Disposal Facility (GDF).

- 3.3.9. Further work has now been undertaken to assess whether the afloat storage constraints and operational implications are as significant as assumed. They confirm the existing assumptions, that the cost and operational impact of increasing numbers of stored submarines convincingly outweigh any benefits from further delay. MOD's view is that any potential delays to the GDF programme would not strengthen the case for delaying the start of the project, as they would reinforce the importance of secure interim storage.
- 3.3.10. Participants in favour of both prompt and delayed starts put forward 'inter-generational equity' arguments. On consideration, these also seemed relevant to deciding between dismantling options, so the OCF analysis was strengthened in this area to complement existing assessments of policy compliance. This approach will be continued into future decision making.

Dismantling Arrangements for Future Submarines

- 3.3.11. Dismantling of future classes of submarine is outside the scope of the SDP, although (as stated above) the project is required where possible to retain the flexibility to extend facilities in the future should a decision be taken to accommodate future classes of submarine.





3.3.12. A wide range of people commented on this approach. Some agreed (for pragmatic or ethical reasons) that future classes should be excluded. Others argued that on the contrary they should be definitively included, on the grounds of efficient decision making, taking responsibility, or because it seemed disingenuous to exclude them.

3.3.13. The MOD understands these arguments but has decided not to extend the project scope. The main reason is that there is no need to make a commitment decades in advance when national policies, strategies and the facilities and technology available may be different. Also, a major change to the SDP scope might compromise the analysis to date and change the funding arrangements, both of which would delay the project. It might also undermine MOD's public undertakings about the number of submarines within the scope of SDP.

3.3.14. The MOD nevertheless acknowledges that it must ensure a 'holistic' approach is being taken to the problem; detailed development work will be scoped accordingly.

Defuelling

3.3.15. Submarines will be defuelled before being passed across to the SDP for dismantling. However, there was a significant amount of comment and concern about the refuelling and defuelling of submarines at Devonport, which for some was inextricably linked to dismantling and should therefore have been considered alongside the SDP.

3.3.16. The SEA included assessment of cumulative impacts and its baseline therefore included other current and planned nuclear activities,

but the MOD's position remains that defuelling has to remain outside the scope of the SDP. It is a separate and pre-established activity, and upgraded defuelling facilities at Devonport are already being built as part of the Future Nuclear Facilities programme. It would therefore be neither feasible nor beneficial to bring defuelling within the scope of the project.

3.3.17. It should also be noted that the MOD does not plan to carry out refuelling of nuclear submarines in the long-term as a 'long life' reactor core has been introduced that will last for a submarine's entire service life.

3.4. Updated Approach [Operational Analysis Support Paper (OASP) Section 2.3]

3.4.1. It remains possible that the SDP Aims and Objectives could be amended in the future, but at present they are judged to be valid and appropriate and neither they nor the more detailed requirements derived from them have been changed.

3.5. References and Further Information

3.5.1. The main references for this topic in the Submarine Dismantling Consultation materials, Post Consultation Report and updated Operational Analysis Support Paper (OASP) are as follows.

- Consultation Document, Section 4
- Post Consultation Report, Section 7
- OASP, Sections 2 and 3

4. Approach to Analysis

4.1. Position Prior to Consultation [CD Section 6]

- 4.1.1. The MOD's overall approach to the option assessment process was set out in the Consultation Document as follows:
- A whole life cost (WLC) model was developed to provide estimates of the costs of each of the integrated options throughout the life of the project. These were then assessed in an Investment Appraisal (IA) which brings together the results of the cost model and applies a consistent set of accounting principles to provide a comprehensive assessment of the financial performance of each integrated option.
 - For those factors that could not be assessed in terms of cost, the MOD assessed the 'operational effectiveness' of the options (i.e. how well they met the project's requirements) using Multi Criteria Decision Analysis (MCDA). The MCDA method involved three workshops where experts across a range of relevant subjects were asked to agree the factors, weight the significance of each factor and then score each integrated option against each factor.
 - A separate OCF analysis addressed the significance of non-quantifiable factors and factors associated with deliverability but outside the scope of the project's formal 'benefits map'. At the time of the consultation, OCF that may have a bearing on the project options had been identified, but a more comprehensive and conclusive assessment of OCF awaited responses from public consultation.

4.2. Summary of Comments [PCR Section 14]

- 4.2.1. The way in which the MOD conducted its analysis was generally accepted as thorough, but there were a range of comments about details and suggestions about how it could be improved -

including changes to OCF and IA methodologies, future decision making, and more work on key project risks.

4.3. Commentary

- 4.3.1. Many participants made general points about the importance of engaging potentially affected communities in the analysis and decision making process. MOD agrees with this principle and will be emphasising it during the design of future public and stakeholder engagement (PSE).
- 4.3.2. There were also two specific suggestions about the option assessment methodology:
- The MOD should change the way ILW storage sites are to be compared, such that they are not first screened by type of site.
 - Use of alternative weighting profiles to reflect differences in stakeholder perceptions.
- 4.3.3. These suggestions were both accepted by the MOD and are discussed in more detail below, followed by a response to other comments on the project's approach to analysis.

ILW Site Screening

- 4.3.4. As noted in Section 2, in a significant change from the MOD's proposals at the start of public consultation all credible sites will now be considered on an equal basis without prior screening by site type. The starting point for shortlisting will be all UK nuclear licensed and authorised sites. Section 7 includes a more detailed discussion of this change and its implications.

Alternative MCDA Weighting Profiles and Additional Topics

- 4.3.5. A key comment was that further analysis of the options should directly involve a wider range of stakeholders. Testing whether different perspectives altered the results was recommended to ensure the robustness of the conclusions. Detailed comments were also made on the weightings given to certain factors.

⁴ Multi Criteria Decision Analysis (MCDA) – see glossary.



- 4.3.6. In fact, a small number of experts from outside the MOD had also taken part in the workshops and took part as appropriate in the MCDA weighting exercise. However, to help understand how differing perspectives might alter the outcome of the analysis, an additional short workshop was held at which the stakeholders within the project's independent Advisory Group (including members from industry, Non-Governmental Organisations, and local authority bodies) were invited to provide their own perspectives on the relative importance of the criteria within the MCDA.
- 4.3.7. Their weightings were subsequently used during sensitivity testing for the post-consultation analysis, which showed that realistic changes in the scores of different factors and changes to weightings suggested by Advisory Group Members do not change the conclusions; although they may reduce the differences between options, they do not lead to alternative options being preferred.
- 4.3.8. This workshop was necessarily limited because it was a relatively late addition to the process, but it made a positive contribution to the sensitivity analysis and demonstrated the value and practicality of involving stakeholders in this way.
- As Low As Reasonably Practicable (ALARP) in the Option Analysis**
- 4.3.9. Some respondents argued that ensuring that discharges of radioactive material into the environment are below statutory discharge limits was not, in itself, an adequate objective. However, this is not MOD's intention. There are legal requirements to keep risks ALARP and exposures As Low As Reasonably Achievable (ALARA), so simple compliance with statutory dose and discharge limits would never be sufficient. This was reflected in the MOD's analysis, but it could have been made clearer in the consultation material.
- 4.3.10. Other detailed design work is yet to be done for the dismantling facilities, but the cost estimates within the IA are based on benchmarks and analysis for facilities that have been through the ALARP process. It is therefore assumed that no extra investment is required to make them ALARP, although this would need to be confirmed during the design process.
- 4.3.11. Detailed comments on the methodology were addressed in the post-consultation analysis where it was practicable to do so, including several related to the MCDA treatment of radiological dose to workers and of environmental discharges.
- 4.3.12. In response, the MOD has modified the way the MCDA took account of worker dose and environmental discharges. Although all options being considered were assumed to have been through the ALARP process, the MCDA now more clearly considers whether that would result in different outcomes. This means that, although the options which are being compared might all be ALARP, they may lead to different worker doses or environmental discharges because what is reasonably practicable to do in order to achieve further reductions may vary between options.
- 4.3.13. In practice, changing these criteria did not affect the decision. This is because the differences in safety and environmental performance are very small, which reflects the fact that all options would be required to meet the stringent standards and optimisation requirements that have been set. Applying different weighting sets or even removing the criteria altogether made no significant difference to the outcome.
- OCF Methodology**
- 4.3.14. The consultation materials provided information on the proposed methodology and scope but detailed OCF analysis had not yet been carried out because the consultation responses were expected to be a fundamental source of information for the analysis.
- 4.3.15. Participants generally welcomed the idea of a structured approach to OCF. Specific, helpful comments about how it should be done were also received and additional OCFs were suggested to cover perceived shortcomings in the treatment of topics outside the MCDA scope e.g. broader socio-economic impact.
- 4.3.16. Most of these comments have been addressed through inclusion of additional factors in the OCF analysis. Changes included:
- Consistency with policy frameworks was given increased emphasis, particularly Scottish Government policy on higher activity radioactive waste.
 - Interactions with other local projects were explored through assessment of cumulative impacts in the SEA, but new OCFs were added to consider whether the SDP might affect the likelihood of desirable local projects progressing or interfere with their effectiveness in some way (or vice versa).

- Two factors have been added to the OCF analysis covering interactions with the GDF and with other radioactive waste initiatives. The analysis addressed the fact that the SDP has the potential to adversely affect these projects and to be adversely affected by them.
- More emphasis was put on understanding any differences between the options and the implications for the host community should there be any disruption to project funding.
- The OCF framework was changed to eliminate the possibility of commercial benefits to potential contractors being perceived as a driver in the MOD's decision making.

4.3.17. A further comprehensive review will be carried out before the ILW storage site option assessment, which will incorporate process advice from the project Advisory Group.

Investment Appraisal

4.3.18. The relative costs of the options were referenced because to publish cost estimates would risk compromising the MOD's future commercial negotiations and undermine its ability to get the best value for money. A few respondents to the consultation wanted to see more information on the breakdown of costs, but the MOD view remains that the need to protect the commercial interests of the project outweighs the relatively small benefit from releasing cost information at this time.

4.3.19. Some respondents pointed out areas where there may be particular uncertainty which could impact on cost estimates. Significant strengthening of the analysis has since been carried out and the MOD is satisfied that all the issues raised are now properly addressed in the project's cost modelling.

4.4. Updated Approach

4.4.1. Since consultation, the SDP cost model has been updated and extended substantially. The MCDA has been reviewed and updated, including further expert workshops. In response to suggestions about ways to include stakeholders more closely, it proved possible to involve stakeholders, representing a variety of perspectives, in post-consultation sensitivity testing.

4.4.2. Stakeholders will again be invited to contribute to the post-consultation analysis for the ILW Storage Site, in which case the use of alternative weighting profiles will be formalised and integrated into the process. More generally, SDP will look for additional opportunities for invited contributions to other strands within the analysis, particularly on OCF.

4.4.3. The most significant change following public consultation is that the SDP will not now discount any potential ILW storage sites on the basis of site type. Sites will be re-screened and considered on an equal basis.

4.4.4. A detailed OCF post-consultation analysis was carried out across all the OCF topics (which are described in Section 12 of the PCR).

4.4.5. Further improvements to all three analysis strands (IA, OE and OCF) arising from external comments and MOD experience on the project to date will be built into the next stage of analysis, covering ILW storage site selection.

4.5. References and Further Information

4.5.1. The main references for this topic in the Submarine Dismantling Consultation materials, Post Consultation Report and updated OASP are as follows.

- Consultation Document, Section 4
- Post Consultation Report, Section 14
- OASP, Section 1

4.5.2. The following additional sources of information may also be of interest.

- OASP, Section 5 (MCDA)
- OASP, Section 6 (IA)
- OASP, Section 8 (OCF)



5. Removing the Radioactive Waste

5.1. Position Prior to Consultation [CD 6.3, 8.3 and 8.4]

5.1.1. The MOD's proposals for how waste is removed from submarines were set out in the Consultation Document and were as follows.

- The proposed option for removing the radioactive waste from the submarines was Reactor Pressure Vessel (RPV) removal and storage. This was favoured over the Packaged Waste (PW) option because it preserved the potential opportunity to dispose of whole RPVs in the GDF and because of the lower cost of the size reduction facility.
- The assessment found that the Reactor Compartment (RC) separation option, while similar in cost to the other options, was less effective in meeting the requirements of the project.
- The 'do minimum' option (continued afloat storage) would leave decommissioning issues to future generations, would not comply with UK policy on decommissioning, and would restrict naval operations. It is also the most expensive of all the options.

5.1.2. The Consultation Document noted that the following activities might change this position:

- A joint assessment was in progress with the NDA, to clarify the costs and benefits of using its facilities to store PW and also to investigate the feasibility of storing RPVs in an NDA facility.
- If it proved possible to dispose of whole RPVs in the GDF without the need for size reduction, there would be significant cost savings.

5.2. Summary of Comments [PCR 8]

5.2.1. For most respondents, safety was of primary importance in deciding between the options for how to remove the radioactive materials from the submarines, although many saw a need to take other considerations into account such as the size of the package to be stored.

5.2.2. Arguments were put forward by respondents in favour of all three options:

- Arguments in favour of separating and keeping the RC focused on the minimisation of safety risk and discharges. The downside was the size of the store and the difficulty of moving an RC.
- Arguments for the PW option stressed that it could be done promptly using proven methods; worker doses were still low and PW was the most flexible waste form for storage.
- Those looking for a compromise that did not involve cutting into the RPV but still gained the benefit of radioactive decay favoured removing the RPV and storing it intact.

5.3. Commentary

Afloat Storage

5.3.1. Most people appeared to agree with the MOD that submarines stored afloat require active maintenance to keep them in a safe and secure condition, which is inherently more of a risk than something which is passively safe in an ILW store. They agreed that dismantling would be preferable, even if they differed on which option should be chosen.

5.3.2. However, a small number of respondents seemed to perceive the risk from long term afloat storage ('Do Minimum') to be less than the risks from dismantling plus ILW storage. In this case, it was usually not made clear whether or not they were concerned that the 'Do Minimum' option still left the situation unresolved.

Safety and Environmental Information for Dismantling Options

5.3.3. The MOD's position remains that:

- Routine worker doses and environmental discharges can be effectively monitored at source, and managed to ensure that any impacts on personnel or the wider environment would be very small. The risk from both routine discharges and accidents would also be very small.

- None of the options has any significant advantage on safety or discharge grounds, though the RC option did have some environmental impacts that were greater e.g. related to size of store. Sensitivity analysis shows that the MCDA conclusions are robust for a very wide range of weightings on safety and environmental impact factors.
- The RPV option offers comparable levels of safety and environmental protection to the other options; it also allows more time for natural radioactive decay to occur whilst having lower costs and offering more flexibility.

5.3.4. These arguments were accepted by many participants but others did not think there was enough information available to demonstrate to their satisfaction that this was the case. The MOD had already published data which it believed supported these arguments, although it was perhaps not as easy for people to locate on the project website as it could have been.

5.3.5. Consultation respondents who did not accept, or were not fully aware of, the information available (including the regulatory requirement for ALARP/ALARA) were more likely to assess the options on the basis that the degree of 'intrusion' into the reactor should be a major factor in decision making. They tended to prefer the RC option or - if they also took into account the problems of moving and storing RCs - the RPV option.

5.3.6. A summary of current information on radiological doses and discharges as well as some information on planned future studies has now been made available as an Annex to the SEA Post Adoption Report. Further, detailed, information will be made public as part of the process of seeking regulatory approval for dismantling to take place.

5.3.7. Work on the first submarine will produce valuable worker dose and environmental discharge data and the MOD accepts the suggestion that the relevant data from this phase should also be made public. Regulators will be monitoring the situation and will continue to carry out independent checks on levels of radioactivity in the environment.

Accident Risks

5.3.8. Comments on accident risks were predominantly made in the context of proximity to local populations during dismantling and storage, and are therefore covered in Sections 6 and 7.

Inter-Generational Equity

5.3.9. 'Fairness to future generations' arguments, often referred to as Inter-Generational Equity, played a part in discriminating between options. In line with comments about the scope of the post-consultation OCF analysis, the MOD gave detailed consideration to this topic and broader issues of fairness associated with the technical approach to dismantling.

5.3.10. It concluded that the analysis discriminated against the RC option because:

- The negative impact of leaving all the RC dismantling and waste retrieval to future generations outweighed any negative impact from closing off some future choices.
- Although a few participants preferred the RC option because it maintains waste in a highly visible form, more were concerned that the footprint and visibility of an RC storage facility.
- RPVs and PW can be moved relatively easily, whereas RCs can only be moved with difficulty and at significant cost. The RPV and PW options therefore appear more likely to engender community confidence that other potential ILW storage sites will be considered, and that unexpected events will not result in the waste remaining on site beyond the planned date.

Project Risk

5.3.11. Stakeholders arguing in favour of the Packaged Waste option (in particular) suggested there should be more emphasis on the risks of delaying size reduction and the advantages from prompt size reduction. MOD believes analysis carried out since consultation has actually strengthened the case for delayed size reduction.

5.3.12. However, it has looked again at opportunities for early removal of LLW and Very Low Level Waste (VLLW) as part of the RPV option (see 'Staged Removal of Low Level Waste' below). This also has the potential to reduce the uncertainties regarding contamination in areas of the submarine other than the RC, an issue highlighted by some stakeholders.



Removal of ILW

- 5.3.13. Some comments suggested that the opportunity to start dismantling work on the first submarine in advance agreement on the ILW storage site had not been properly explored. Removal of ILW in advance of agreement would not be possible because it is a key regulatory principle that radioactive waste, of any particular type, should not be removed until it has an agreed management route (involving treatment, storage and disposal solutions) leading to final disposal. Furthermore it would clearly be contrary to assurances that MOD has given to potential host communities at the initial dismantling sites.
- 5.3.14. Prior to and during the SDC, stakeholders frequently sought assurances that the candidate initial dismantling sites (Devonport and Rosyth) would not become the sites for ILW storage 'by default', which might be the case if waste was kept there before an ILW storage solution was agreed. A number of assurances were given that no submarines will be dismantled until an ILW storage solution has been agreed and shown to be deliverable. This remains the MOD position.

Early Removal of LLW

- 5.3.15. The MOD does, however, acknowledge that some of its statements in consultation have not made a clear distinction between the position in respect of storage of ILW and disposal of LLW.
- 5.3.16. Whereas there is no management route for the ILW until the store is available, there is an established management route for LLW which is already being used to dispose of LLW from routine submarine maintenance at Devonport. Such waste could therefore be removed from submarines at an earlier stage than ILW, subject to regulatory agreement, and disposed of to existing LLW disposal facilities without accumulation at the dismantling sites.
- 5.3.17. Prior to the SDC, the MOD had assumed that LLW and ILW would be removed together in a single stage of initial dismantling; a two stage approach had not been considered as no benefits were apparent. Since then, discussions with the NDA and Department of Energy & Climate Change (DECC) and the analysis of consultation responses have led the MOD to conclude that the process of site selection may take longer than previously estimated, particularly given the decision to include all types of sites in this process not just one type of site. The time needed to obtain planning consent for ILW storage may also take longer than estimated.

- 5.3.18. The overall effect is that dismantling of submarines could be delayed. This would affect both Devonport and Rosyth, but the impact at Rosyth would be of particular significance as the MOD would need to fund several years of additional overheads. There would also be a risk from the loss of specialist skills at Rosyth if there was an extended period of very limited submarine-related activity.
- 5.3.19. This would be counter to both the MOD's interests and the desire, expressed by many local people, for early clearance of submarines. The project has therefore looked at what might be done to reduce the impact of a longer time period to provide an ILW storage solution. It found that there is scope for removing LLW as a preparatory step in conjunction with routine maintenance work on the submarines. ILW would remain in situ within the RC and, after LLW removal, the submarines would be re-sealed and put back into afloat storage. The final clearance of the submarines, once an ILW storage solution is available, might then be undertaken more quickly so that the cost of additional overheads at Rosyth is reduced. Additionally, building capability more gradually (first removing LLW and then ILW) might help to maintain and develop the specialist skills required at Rosyth, and also reduce technical risks such as the final radiological clearance of the submarine.
- 5.3.20. This staged approach to dismantling is an opportunity that is currently being considered by the project, and no decision has yet been taken to adopt it. Whether it is taken forward will depend on the conclusions of on-going work to assess its cost effectiveness as well as the outcome of discussions with regulators.
- 5.3.21. The MOD has brought forward procurement of some facilities – particularly a new crane at Rosyth – that will be required whether or not the staged approach is adopted. This is because the staged approach would require the facilities sooner, and delaying the procurement would mean that the staged approach could not be adopted even if the MOD wanted to do so.

'Direct Disposal' Opportunity

- 5.3.22. The Consultation Document raised the possibility of disposing of RPs into the GDF without size reduction, although the NDA's current plans did not allow for it. A number of detailed comments were made on this topic, all of which have been fed into on-going discussions with the NDA. Because the GDF design is at a relatively early stage, no conclusion is expected in the near

⁷ LLW is sent to the UK LLW Repository near Drigg in Cumbria.

future and it is not possible to predict what the final conclusion will be.

- 5.3.23. MOD notes the comments expressing a desire for local community involvement in decision making about what is placed in the GDF and how it operates. These are not matters that the MOD can address, so these comments have been passed to the NDA and DECC.

Alternative and Overseas Approaches

- 5.3.24. Alternative ways of delivering the three options were suggested. These will all be considered at the detailed planning stage and suggestions will be taken up where they offer an advantage. Examples include alternative docking arrangements, use of robotics, and specific LLW management techniques.
- 5.3.25. Comments on overseas practice and opportunities have been noted but the project's view is that the different approaches are driven by differences in the national context rather than there being one 'best' method. For example, the USA and Russia have greater scope for very long term storage of whole RCs in areas that are accessible but remote from centres of population. They also have different economies of scale due to the larger number of submarines being dismantled.
- 5.3.26. It remains the MOD's position, that all stages of submarine dismantling and ILW storage must take place in the UK for both policy and security reasons.

Commercial Strategy

- 5.3.27. There were some comments on the MOD's approach to contracting and the suitability of individual contractors. Some suggested alternative strategies that might, for instance, avoid reliance on a single contractor. As required by the nuclear site licensing regime, the MOD will have to contract the nuclear licence holder to carry out the work but it will consider these comments as it develops its commercial strategy, to ensure value for money and effective control of the project.

5.4. Updated Analysis and Recommendations [OASP 9.1]

- 5.4.1. The MOD's updated analysis, which took account of comments for and against the proposed options, is in a revised OASP which summarises the key information and arguments to support a

decision. The main changes that have resulted are as follows:

- The IA now clearly concludes that the RPV technical option is significantly more economic than the alternative options. Even following sensitivity analysis on the most significant costs (such as the cost of handling and transporting of RCs), this outcome remains the same.
- Cost analysis shows that the best RC technical option is 33% more expensive compared to the cheapest option and the PW technical option is 22% more expensive.
- There would be significant cost savings to the project and other benefits should the opportunity for whole RPV disposal to the GDF be adopted.
- It has been concluded through joint studies with the NDA that interim storage of whole RPVs at one or more NDA sites is a realistic option.
- Detailed analysis has confirmed that the environmental and health and safety impacts of each of the options – including worker dose and environmental discharges – are small and do not vary much between options. They do not therefore act as significant differentiators between the options.
- The 'do minimum' option has been confirmed as not being a viable option.

- 5.4.2. The option of RPV removal and storage has therefore been selected as MOD's intended option.

5.5. References and Further Information

- 5.5.1. The main references for this topic in the Submarine Dismantling Consultation materials, Post Consultation Report and updated OASP are as follows.

- Consultation Document, Section 6
- Post Consultation Report, Section 8
- OASP, Sections 6 to 8

- 5.5.2. Other references for this topic made available in conjunction with this report are as follows.

- SEA Post Adoption Report



6. Dismantling Location

6.1 Position Prior to Consultation [CD 6.4, 8.5 and 8.6]

6.1.1. The MOD's proposals set out in the Consultation Document were as follows.

- The options for the location of initial dismantling activities were: Devonport Dockyard; Rosyth Dockyard; or a combination of both ('dual-site').
- MOD's assessment found that the option to use only Rosyth Dockyard was the least attractive in terms of cost and effectiveness because it would require 20 submarines to be transported from Devonport and, in the longer term, there would be no other submarine or nuclear work to share overheads.
- Dismantling only at Devonport is a stronger option, but not as strong as dual-site dismantling.
- The MOD's proposal was therefore to undertake initial dismantling at both Devonport and Rosyth Dockyards, which offers better opportunities to optimise the rate and order of dismantling and avoids transporting submarines between dockyards.

6.2. Summary of Comments [PCR 9]

6.2.1. Dual-site dismantling was seen by some as a pragmatic solution to the question of where to carry out dismantling activities as it removes the need to transport entire submarines. Others supported it as a compromise which shared the benefits and adverse impacts between the communities that currently store the submarines.

6.2.2. There was significant concern among some local residents about the prospect of carrying out dismantling in a city location or any populated area. There were concerns about both health effects and socio-economic impacts. Some suggested that any option should be accompanied by significant benefits for the community in return for hosting the work.

6.3. Commentary

6.3.1. Most of the comments related to the relative costs of dual-site and single-site options. The updated analysis confirms that there is a small cost advantage for a dual site dismantling option as it avoids the costs of transporting submarines, although this is offset to some degree by the need for dismantling facilities at both sites.

6.3.2. Some comments argued that one or other site had particular advantages or disadvantages and some thought neither site suitable. The MOD has reviewed its analysis in light of these comments but its conclusion remains that both sites are suitable in terms of costs, operational effectiveness, and safety/environmental grounds.

6.3.3. Many of the suggested advantages had already been factored into the pre-consultation analysis but new OCF were added after consultation, including coverage of fairness; socio-economics; political and policy frameworks (including Scottish Government positions on radioactive waste disposal); and 'other local projects'. This OCF analysis made a significant contribution to the decision, reinforcing the arguments for a dual-site approach.

Order of Dismantling

6.3.4. The first submarine to be dismantled will be at Rosyth but there was some confusion amongst participants as to whether 'dual site' necessarily meant that dismantling would subsequently be carried out in series or in parallel at Devonport and Rosyth.

6.3.5. Whilst the project's current analysis suggests that it may be more costly to progress dismantling in parallel rather than in series, the project recognises the need to progress work expeditiously at both sites. It will continue to refine its understanding of the costs and benefits involved before decisions are taken, at a later stage, to proceed either in parallel or in series.

6.3.6. The first submarine will be dismantled at Rosyth as a demonstration of the process. The rate and order of dismantling at both Rosyth and Devonport will then be optimised. Priority will be given to clearing the seven submarines currently at Rosyth, but as already noted this does not preclude the possibility of parallel work in Devonport.

Accident Risk

- 6.3.7. Many consultation responses suggested that an urban location for dismantling was inappropriate on the grounds of the radiological risk to the community from accidents and/or external perceptions of such a risk. Respondents from Devonport seem generally to have considered theirs to be more of an urban location, but respondents from Rosyth emphasised its proximity to local communities and to Edinburgh.
- 6.3.8. MOD understands that a significant number of participants have genuine concerns about potential health and accident risks, and recognises that this concern must be taken seriously in all aspects of the SDP.
- 6.3.9. Whilst more detailed safety cases have yet to be developed for specific designs, no plausible scenario has been identified by the MOD or any other party, that results in a meaningful threat to public health from dismantling a defuelled submarine. Given the very low levels of risk and very small differences between dismantling approaches or dismantling sites, the MOD's judgment is that accident risks and risk perception do not discriminate between them.

Submarine Transport

- 6.3.10. Some people considered that the costs and risks incurred in transporting the submarines and doing the dismantling at a new facility elsewhere were preferable to dismantling them in situ. MOD's view is that although such transport can be managed safely, the costs and risks involved make it less preferable than dismantling in situ. Most people agreed that such transport was undesirable, but sometimes for a slightly different reason that they doubted whether it could be managed safely at all.

Ship Recycling

- 6.3.11. After the radioactive materials have been removed, the rest of the hull will be transported to a commercial UK ship recycling facility. These activities will be handled and completed in line with normal MOD processes for disposing of ex-Royal Navy ships, so they were not part of the SDC and only outline information was provided.
- 6.3.12. No existing UK ship recycling facility has any possibility of satisfying the initial dismantling site screening criteria, primarily because they have

neither the facilities, skills, or licence to remove radioactive waste.

6.4. Updated Analysis and Recommendations [OASP 6 to 8]

- 6.4.1. The updated IA and MCDA show that the Rosyth-only option is worse than the dual-site and Devonport-only options, but still do not clearly separate these two. Their costs are broadly comparable, their impacts on the environment and communities are comparable, and they both meet the operational requirements.
- 6.4.2. The SEA notes that Devonport is the more sensitive location from an environmental point of view, but the impacts are not generally significant unless dredging were required to transport hulls following RC removal (if that had been the chosen option).
- 6.4.3. Detailed studies since the consultation have confirmed that there are operational and programme advantages to the MOD from the dual-site option, due in large part to the increased flexibility it offers.
- 6.4.4. The OCF analysis, which is based on the comments during consultation, strengthens the case further; perceptions of public risk, inter-generational equity and fairness, and 'local political positions' all favour dual-site dismantling over Devonport-only dismantling. This has therefore been selected as the MOD's intended option, subject to the successful demonstration of the dismantling process.

6.5. References and Further Information

- 6.5.1. The main references for this topic in the Submarine Dismantling Consultation materials, Post Consultation Report and updated OASP are as follows.
- Consultation Document, Section 6
 - Post Consultation Report, Section 9
 - OASP, Sections 6 to 8
- 6.5.2. The following additional sources of information may also be of interest.
- SDP Site Criteria and Screening Paper



7. Intermediate Level Waste Storage

7.1. Position Prior to Consultation [CD 6.5, 8.7 and 8.8]

- 7.1.1. The MOD's proposals for ILW Storage were set out in the Consultation Document as follows.
- Three types of existing nuclear sites were assessed: those owned by MOD, by industry, and by the NDA. In order to take transport of waste into account, these were also assessed relative to the proposed initial dismantling sites as to whether they were 'remote' or at the 'point of waste generation' (POWG).
 - For RPV or PW options there was little difference on cost and performance grounds between remote and point of waste generation sites, or between MOD and commercial sites. Remote storage of RCs was found to be uneconomic due to the high cost of transport and handling and was not considered further.
 - There appeared to be potential advantages in using a store on an existing NDA site, but joint MOD/NDA studies had not reached a conclusion by the time consultation started so the proposed way forward in the CD was to complete them, make a decision about the preferred type of site, and then conduct a further round of assessment and consultation to choose a specific site of that type.

7.2. Summary of Comments [PCR 10]

- 7.2.1. The case for the MOD continuing discussions with the NDA was supported by some on the basis that building new stores should be avoided if possible. Others saw a stronger case for using an MOD site, on the basis that the MOD should be responsible and accountable for its own waste until disposal. There was little comment on the principles of using a site owned by a commercial company, although some people suggested there may be a lack of trust in any organisation motivated by profit.
- 7.2.2. Many comments about storing ILW at the dismantling sites were related to concerns about conducting dismantling work there. However, there was additional concern that, because the site selection process for storage sites had been

deferred until after the decisions on dismantling approach and location, the dismantling sites would end up storing the waste.

- 7.2.3. There was widespread agreement that further stakeholder engagement would be required on this issue.

7.3. Commentary

Dismantling and ILW Storage Locations

- 7.3.1. For some, the fact that specific sites had not been identified at this stage undermined their ability to come to a view on the other questions.
- 7.3.2. For a significant number of people, the location of initial dismantling and ILW storage were so closely linked that they objected to a local dismantling facility on the grounds that they could also be left with the storage of the ILW arising. Two different but related arguments were put forward for this position: either once the dismantling site was fixed, economic or other arguments would result in an active decision to site the waste store there, or that some or all of the waste would somehow end up remaining there 'by default'.
- 7.3.3. As discussed in more detail below, analysis to date has not shown any one type of storage site to have a significant advantage over other types. 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.

- 7.3.4. Dismantling sites will be considered alongside other options as potential ILW storage sites but there is no default position, either for selecting them or ruling them out.

Accident Risk

- 7.3.5. Only limited information on potential ILW storage and transport accident scenarios was included in the 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.

Point of Waste Generation Option

- 7.3.6. Strong support was expressed for the MOD's commitment that retrieval of ILW would not start until the ILW storage arrangements have been agreed, reducing the risk of a dismantling location being left with the ILW by default (see Phased Removal of ILW Waste in Section 6).
- 7.3.7. Although many respondents acknowledged that storage at POWG has attractions in respect of the 'proximity principle'⁸ and minimising waste movement, a significant number think that ILW storage could have a detrimental effect on their community. These respondents tended to favour a remote storage site rather than an 'urban' POWG one.
- 7.3.8. Some suggested reassessing the possibility that the wastes could be stored at a new Greenfield or Brownfield site. Others noted that this assessment had already been done and repetition risked unnecessary cost and delay.
- 7.3.9. MOD's position remains that new Greenfield or Brownfield sites for either dismantling or ILW storage have not been discounted, but there would be significantly increased project costs and extended timescales to deliver the project plus significant environmental consequences. The resources to investigate these options further would be disproportionate given how unattractive they are, unless the possibilities of using an existing licensed or authorised site are exhausted.

NDA Option

- 7.3.10. The comments on the NDA option and the associated risks and benefits were generally consistent with the MOD's own published assessment, so are not expanded on here. They will, however, be reviewed again during the next stage of analysis.
- 7.3.11. Most respondents from areas close to potential dismantling sites supported the NDA option, but the MOD has also had to take into account that the views of other communities around potential NDA or MOD storage sites have not yet been sought so directly. The balance of opinion may be different when they are.
- 7.3.12. The NDA will play a major role in the next stage of analysis and consultation if any of its sites are shortlisted, and would engage alongside the MOD with the relevant local authorities.

MOD or Commercial Site Option

- 7.3.13. The consultation was not targeted at the areas around potential MOD or Commercial storage sites remote from the dismantling sites, so conclusions cannot be drawn from the relatively few comments on these options. Many of the comments on the NDA option would, though, equally apply to any proposed MOD or Commercial site. The MOD would for instance have to engage with relevant local authorities alongside the owner of a commercial site.

Future Screening Process

- 7.3.14. The SDC and associated assessment did not consider specific storage sites. Instead, the MOD explored the possibility that a decision could be made about the type of site by comparing the generic balance between the benefits and the disadvantages for existing nuclear sites owned by the NDA vs those owned by the MOD and commercial organisations, and also for a storage site remote from vs local to a dismantling site.
- 7.3.15. At the time of the public consultation, there was evidence of potential advantages in using an existing store on an existing NDA site but joint MOD/NDA studies had not reached a conclusion. The proposed way forward was to complete this work, make a recommendation on the type of site, and then conduct a further round of assessment and consultation to choose a specific site of this type.
- 7.3.16. These MOD/NDA studies have now been completed. However, although each type of site has advantages and disadvantages, it has not proven possible to discriminate sufficiently between them on cost or performance grounds. The MOD has therefore concluded that that site ownership and being local to a dismantling site were not criteria that could reasonably be used to exclude potential sites from more detailed consideration.
- 7.3.17. This is consistent with feedback from key stakeholders, that SDP's post-business case analysis must consider all potential ILW storage sites, including NDA sites, on a 'level playing field'. Other Government Departments have agreed that this would be the most robust approach in demonstrating a rational and transparent site selection process.

⁸ The Proximity Principle is generally interpreted in radioactive waste contexts as meaning that the waste should be dealt with as close as possible to the site where it is produced. This means that long-term radioactive waste management facilities should be as near to those sites as practicable so that the need to transport the waste over long distances is minimal. It is a factor in decisions that needs to be balanced against other principles and factors.



7.3.18. In a change from the MOD's proposals at the start of public consultation, individual sites will now be shortlisted and assessed on an equal basis without prior screening by site type.

7.3.19. The detail of the screening process is being developed with input from the SDP Advisory Group, and the criteria, initial analysis and provisional shortlist will be published before the shortlist is finalised and detailed option comparison started.

7.3.20. Participants' suggestions will be taken into account by the MOD when drawing up the generic shortlisting criteria. They will also be incorporated into suggested criteria that site owners may choose to take into account when they make their own assessments about whether their sites should be included in the shortlisting process.

7.3.21. MOD agrees that site assessments must take into account the particular circumstances of each site as well as associated transport implications. Proposals will need to show that the national and local benefits have been systematically weighed against any negative impacts.

Future Engagement

7.3.22. Several respondents asked for more detail on the MOD's plans for future decision making and consultation activities relating to the selection of an ILW storage site. MOD wanted to learn from the experience of the SDC before making any detailed plans, but recognises that early information is now required on future activities to give communities confidence that there will be effective engagement.

7.3.23. SDP's Public and Stakeholder Engagement (PSE) objectives have been, and will continue to be, to provide local stakeholders and communities with:

- The information they need to understand the project, the options, the decision making process and the MOD's proposals.
- The opportunity and the information they need to engage with the project and inform the MOD's decision making process.

7.3.24. Stakeholder engagement is an on-going activity, but there are three points in the ILW storage site selection process where distinct PSE activities are envisaged:

- PSE 1: Engagement with local authorities and key stakeholders on the site screening process and on the scope of the updated SEA.
- PSE 2: Public consultation on the options for the ILW storage site.
- PSE 3: Additional stakeholder input to the post-consultation option analysis.

7.3.25. As with the dismantling site selection process, there will also be further opportunities for consultation and engagement led by the chosen contractor / site licensee as part of the planning and environmental / health and safety regulatory processes

GDF Interactions

7.3.26. The purpose of SDP's ILW storage facility is to store the ILW from submarines until a disposal route is available. This disposal route for both MOD and civil ILW is being developed through the UK Government's 'Managing Radioactive Waste Safely' (MRWS) programme.

7.3.27. The selection of the approach to disposal or to the siting of disposal facilities is the responsibility of the NDA and DECC. The MOD is required to work on the basis of current Government policy and will be compliant with that policy. The Government position is that the policy recommended by the Government's independent advisory group (CoRWM) - a deep GDF - will be implemented and a site will be chosen through a process based on volunteerism.

7.3.28. The SDP's 'baseline' assumption is that a GDF will be available for its ILW sometime after 2040. The MOD recognises that communities hosting ILW storage facilities must have confidence that they will not be left with stores or wastes in an unsafe condition should provision of a disposal route be delayed. In line with CoRWM's recommendations and Government policy SDP's ILW Storage facility will be designed for a 100 year life, so the SDP is not dependent on a GDF being available by 2040.

7.3.29. Comments were received on this issue from the public and stakeholders. Post-consultation analysis specifically addressed these comments, including interactions with the GDF programme and the consequences of delays assessed both in terms of project financial risk (within the IA) and the implications for communities (within the OCF analysis).

⁹ Committee on Radioactive Waste Management - see glossary

7.3.30. The MOD concluded that its proposals for RPV removal and storage were consistent with comments that it should not make decisions that would finalise the waste form until there is greater certainty about the waste acceptance criteria and delivery of the GDF.

7.3.31. The MOD recognises that the issue of disposal route availability, and the implications of any delays for SDP and communities around potential ILW storage sites, will be a significant issue during the planned storage site consultation.

7.4. Updated Analysis and Recommendations [OASP 6 to 8]

7.4.1. Joint MOD/NDA studies on the potential use of NDA sites have now been completed. 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.

7.4.2. Future comparisons will therefore have to be made at an individual site level. This also reflects the findings of the OCF analysis and stakeholder comments that SDP must consider all potential ILW storage sites, including NDA and commercial sites, on an equal basis.

7.4.3. The siting of ILW storage facilities was the most important topic for many people and valuable comments were made that have contributed to this significant change in strategy.

7.5. References and Further Information

7.5.1. The main references for this topic in the Submarine Dismantling Consultation materials, Post Consultation Report and updated OASP are as follows.

- Consultation Document, Section 6
- Post Consultation Report, Section 10
- OASP, Sections 6 to 8



8. Community Impacts

8.1.1. Previous sections of this report have addressed the way in which comments on the MOD's proposals have been taken into account in formulating the MOD's recommendations. This section is different as it responds to the comments on community impacts which have a wider significance.

8.2. Summary of Comments [PCR 11]

8.2.1. The safety of SDP activities received the most comments, with a particular focus on the location of dismantling and ILW storage sites, as discussed in previous sections. However, four broader types of impact also attracted particular comment:

- Public confidence.
- Local or regional/national perceptions of potential host communities.
- Local employment and economy.
- Benefits to communities around the selected sites.

8.3. Commentary

Public Confidence

8.3.1. Many respondents emphasised the need for the solution to inspire sufficient public confidence. No one suggested any specific measures of confidence that might be applied but some did say that it should be a stated project objective rather than just an assessment criterion (see Section 3).

8.3.2. MOD agrees that public confidence is important for the delivery of whichever option is selected and how the MOD consults and communicates with the public. Regular engagement, the sharing of information and the use of a transparent process help build confidence, and the MOD has sought to do this. The assistance of the SDP Advisory Group has been invaluable in this area, and the MOD remains committed to continuous improvement where it can. Measurements of success that need to be monitored and addressed include:

- The adequacy of information and engagement.
- The level of understanding of the project and any associated risks.

- Independent monitoring of the environment and open, timely reporting of results.
- Independent regulation of safety and environmental impacts.
- Confidence in emergency management arrangements.

8.3.3. These issues are common to all options and have not discriminated between them in any analysis to date, nor are they expected to do so in the future.

8.3.4. A few respondents questioned whether it was possible for any option to gain everyone's confidence, whatever their perspective. The MOD recognises that this is unlikely, but remains committed to building public confidence so far as possible.

8.3.5. MOD has noted the comments made about radioactive contamination that has been found at Dalgety Bay. The MOD acknowledges that public confidence in the SDP is inevitably influenced by perceptions of the MOD as a whole, not just of the SDP, and wherever possible, the SDP shares lessons learned from its experience, and seeks to learn lessons from elsewhere. The situation at Dalgety Bay, however, is wholly unrelated to activities at Rosyth Dockyard, and SDP activities could not lead to a similar situation arising elsewhere because all radioactive wastes would be managed in line with modern standards or care.

Perceptions of the Community

8.3.6. The MOD recognises that local, and wider, perceptions of safety risk can have a significant impact on a community. This is true whether or not those perceptions relate to the actual level of risk. Perceptions therefore need to be taken into account in decision making, provision of information, and communications. As a result of the comments made, the OCF analysis in this area was extended considerably for all the decisions being made.

8.3.7. Concerns were expressed that dismantling site communities might be perceived as 'scrap yards' for hazardous materials. The MOD view is that such a perception would be unfounded, and a prompt start to the dismantling of the submarines currently in afloat storage should, if anything,

reduce the likelihood of such perceptions. The MOD also recognises, however, the need to be proactive in its communications over the nature of the dismantling process to counter any misunderstandings that might arise.

Impacts on Employment and Local Economy

- 8.3.8. Some respondents seemed to have an overly optimistic perception of the likely employment benefits. The project would provide long term work that improves the long term economic viability of the Devonport Dockyard in particular and would have the benefit of filling in gaps in activity. However, the MOD expects that the initial dismantling work will directly sustain between 50 and 100 skilled jobs across the two dismantling sites in the long term (plus shorter term construction jobs and other ancillary jobs) rather than creating large numbers of new jobs.
- 8.3.9. In commenting on dismantling and ILW storage site options, many people suggested that the analysis should include an assessment of indirect socio-economic impacts. The scope of the OCF analysis was increased as a result to include this.
- 8.3.10. Some respondents suggested there would be potential tourism benefits if one of the submarines was converted into a museum. More respondents however, suggested that perceptions of risk from SDP operations, or a more general association with nuclear activities, could have a detrimental impact on, for instance, the tourism and education sectors.
- 8.3.11. MOD recognises the potential value of regional or other wider socio-economic assessments. However, it believes that local authorities are best placed to decide what information they need to develop their positions in advance of a planning application. The MOD will cooperate with local authorities and share any information it has relevant to socio-economic considerations, and in due course will provide any socio-economic submissions formally required as part of the planning consent process.
- 8.3.12. Although consistency with existing local visions for the area has not proved to be a factor that discriminates significantly between the options - economic and operational issues proved more significant - further analysis has been carried out. MOD's analysis remains that ending the storage of laid-up submarines is consistent with the current local vision for Rosyth and with on-going dockyard activities (including nuclear work) at Devonport.

Community Benefits

- 8.3.13. A significant proportion of individual and organisational respondents commented on the need for a net socio-economic benefit to any community around a selected site, taking into account direct and indirect employment from the project, but also any direct or indirect benefits from wider MOD investment. Direct or indirect negative impacts also needed to be assessed and taken into account.
- 8.3.14. A number of local authorities' responses suggested that the MOD should offer additional community benefits to supplement those arising from SDP activities. The planning system allows for the inclusion of local benefits to offset possible detriments, so this issue will be considered at that point. The MOD is not aware of any precedent for additional contributions outside this framework in connection with either nuclear plant dismantling or interim ILW storage.
- 8.3.15. The MOD's view is that wider strategic benefits associated with any nuclear site need to be considered at the site or programme level rather than for individual projects. The SDP team will provide advice and support as needed to any review in this area.

'Nuclear Offset'

- 8.3.16. Some respondents suggested that the principle of 'radiological benefit' (sometimes referred to as 'nuclear offset') should apply, whereby efforts should be made to reduce risks and doses from other nuclear activities in the vicinity, or move them somewhere else, so that the overall burden on the local area was not increased.
- 8.3.17. The MOD recognises the principle, and has considered its implications within the wider OCF analysis of cumulative impact and fairness. A key objective for the project is to reduce the level of long term risk by making the wastes passively safe so they no longer require the active management involved in afloat storage of submarines. Given that the risks and doses associated with dismantling and ILW storage activities are so low and outweighed by the reduction in afloat storage risks, even if the principle were to be applied it would not have any obvious implications for the SDP's decisions.
- 8.3.18. It also remains possible that the process of reducing risks from the SDP to levels that are ALARP may involve the upgrade of existing shared facilities and thus result in wider radiological benefits.



9. Strategic Environmental Assessment ('SEA')

9.1.1. The SEA Environmental Report and a Non-Technical Summary were published alongside the Consultation Document. The Environmental Report contained a number of specific consultation questions related to the SEA process and its findings.

9.1.2. Around 500 comments were received on the SEA. These were assessed as part of the MOD's post-consultation analysis and incorporated into the revised MCDA and OCF assessments, which have been used to arrive at the decisions which have now been made. The consultation feedback will also be used in updating the SEA during the next stage of decision making.

9.1.3. An SEA Post-Adoption Report (PAR) has been produced alongside this Response to Consultation report. The purpose of the PAR is to show how the environmental, health and population effects identified in the Environmental Report, and the consultation feedback received on them, have been taken into account in forming the MOD's decisions. The PAR also highlights those areas in which measures to monitor the environmental effects of submarine dismantling should be developed further.

9.2. Summary of Comments [PCR Section 13]

9.2.1. This section provides a précis of how consultation feedback on the SEA has been considered in the decision making process. Further details can be found in the PAR.

9.2.2. The process that the SEA followed to assess the potentially significant effects of the SDP was largely accepted, as was its conclusion that the proposed approach was not found to have any significant potential environmental effects – though there were a wide range of more minor effects and uncertainties.

9.2.3. The most common concern noted in consultation feedback (especially from the public and non-Statutory organisations) was that there was insufficient data on radioactive discharges into the environment from submarine dismantling, and that, as a result, the effects on local populations may be under-estimated.

9.2.4. Recognising that finer levels of detail could not be known until later stages of design and

planning, the MOD was strongly urged to share further information with the public when it is available.

9.2.5. The proposed monitoring arrangements were of great importance for many and some felt that more proactive measures should be taken to monitor any effects. Statutory bodies also suggested additional sources of information that the MOD might consider.

9.3. Commentary

Comments on the SEA Process:

9.3.1. Questions of SEA scope had already been largely identified and resolved with Statutory Consultees prior to public consultation, with the feedback being taken into account in the preparation of the Environmental Report.

9.3.2. A small number of responses suggested that by only considering the two existing licensed nuclear sites at Devonport and Rosyth (with no new Brownfield sites elsewhere), the SEA had restricted the reasonable alternatives put forward. MOD's judgement remains that all reasonable alternatives were identified and screened using valid criteria as set out in its Site Criteria & Screening Paper.

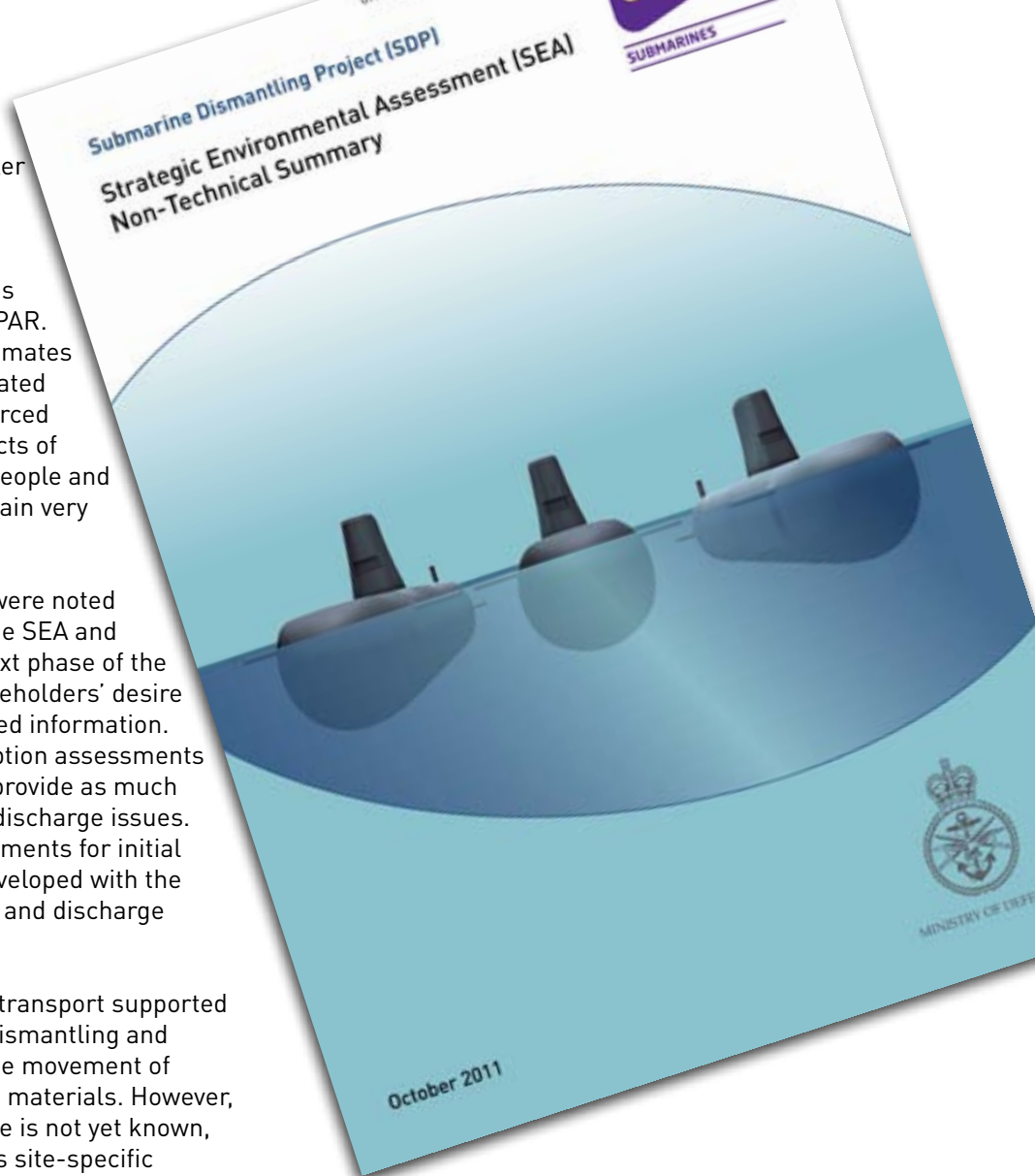
9.3.3. A wide variety of useful comments on the presentation, structure and usability of the SEA were received, and these will be reflected in a future update of the SEA to support ILW storage site selection.

Comments on Environmental Effects and Baseline Information:

9.3.4. Around a third of respondents agreed that the Environmental Report had properly captured all the environmental effects (significant or otherwise).

9.3.5. Of those who did not agree that it had done so, the majority of concerns centred firstly around the visibility of baseline data on background radiation levels and current radioactive discharges, and secondly on the lack of information on likely radioactive discharges, and their effect on workers, local people and the environment.

- 9.3.6. After the SEA had been issued, further data was obtained on estimated worker doses and environmental discharges from an earlier proposal for dismantling a submarine at Rosyth. This is detailed in an Annex to the PAR. Worker and public dose estimates were similar to those estimated in the SEA, and these reinforced the conclusion that the effects of radioactive discharges for people and the environment would remain very low.
- 9.3.7. Environmental discharges were noted as areas of uncertainty in the SEA and MOD recognises that the next phase of the project should address stakeholders' desire for more specific and detailed information. The updated SEA and the option assessments for ILW storage will aim to provide as much information as possible on discharge issues. Further information requirements for initial dismantling sites will be developed with the regulators as part of EIADR and discharge authorisation applications.
- 9.3.8. The generic assessment of transport supported the principles of dual-site dismantling and RPV removal to minimise the movement of submarines and radioactive materials. However, because the ILW storage site is not yet known, it was not possible to assess site-specific transport effects with certainty. As a result, some respondents felt that the SEA down-played the accident and health risks from ILW transport. MOD's judgement remains that this activity can be managed safely, having incorporated both costs and the potential for public concern (as an OCF) into its analysis.
- 9.3.9. Transport issues will be more fully assessed in the SEA for ILW storage, when candidate sites (and hence potential transport routes) are known.
- 9.3.10. Limited availability of data meant that the SEA could not assess the indirect effects of the SDP on social and economic factors beyond direct employment and the cumulative effects this would have with other projects taking place Devonport and Rosyth. The lack of information about possible wider socio-economic effects of the SDP was an area of concern for some



stakeholders. The MOD is satisfied that the scope of the SEA was appropriate, but recognises the importance of socio-economic factors in both the MOD and local authority decision making (see Section 8).

Comments on Avoidance and Mitigation Measures

- 9.3.11. Feedback on this issue was generally limited to the need for local communities to benefit from initial dismantling, and that more detailed avoidance and mitigation would need to be developed as the project develops.

Comments on Monitoring Arrangements

- 9.3.12. Around half of those responding to the question were generally content with current and proposed future monitoring arrangements, but there were a significant number of comments on monitoring arrangements, particularly for discharges.



- 9.3.13. The feedback indicated a clear appetite for more targeted, open, timely (and preferably independent) monitoring to build and maintain trust that dismantling does not pose any additional or unexpected risk to local communities or the environment. The MOD recognises the importance of public confidence in both its own and external monitoring arrangements, and in its ability and commitment to respond if anything unexpected is revealed.
- 9.3.14. MOD recognises the position of those who believe that more detailed monitoring proposals may be needed to support site-level consents to start dismantling. It appears, however, that the extent of existing radiation monitoring around the dockyards and other nuclear sites is not widely appreciated. These regimes include the Environment Agency/ Scottish Environment Protection Agency/ Food Standards Agency's Radioactivity in Food and the Environment ('RIFE') programme, existing Licensee and Regulator discharge monitoring, and Local Authority health surveillance. MOD will therefore consider how best to promote the information on these existing arrangements in future documents and in the local areas. The requirement for any further monitoring measures will be assessed in greater detail as part of the regulatory applications required at the initial dismantling sites.
- 9.3.15. Work on some other suggested long term indicators is more appropriately led by local authorities with support from MOD as appropriate, for instance those related to indirect socio-economic effects.

Comments on the Conclusions of the SEA:

- 9.3.16. Around half of the respondents supported the SEA conclusions. Of those who did not, the biggest concerns were around the risks of initial dismantling and the potential impacts on health, the environment and the local economy.

- 9.3.17. Interactions with other projects on the key decisions being made are generally covered by previous sections of this report. There were, however, some additional points which needed to be considered.
- 9.3.18. Some respondents felt that the conclusions were incomplete because they did not include the environmental issues associated with developing the GDF or contingency plans in case the GDF was not built. The MOD recognises the importance of these issues but this will be the subject of a separate environmental assessments commissioned as part of the GDF programme.
- 9.3.19. The relationship between SDP and submarine defuelling was quite widely commented on, with some suggestion that the SDP SEA should have covered both. In reality, the SEA did consider defuelling insofar as it assessed the effects of the SDP in addition to the baseline environmental effects of operations at Devonport, which include both historic and planned submarine defuelling.

References and Further Information

- 9.3.20. The main references for this topic in the Submarine Dismantling Consultation materials, Post Consultation Report and updated OASP are as follows.
- Post Consultation Report, Section 13
 - SEA Post-Adoption Report
- 9.3.21. The following additional sources of information may also be of interest.
- SDP SEA Environmental Report and Annexes
 - SDP SEA Non-Technical Summary
 - SDP Site Criteria & Screening Paper

10. Next Steps & Future Consultation

10.1 Summary of Comments

- 10.1.1. Section 9 of the Consultation Document described the decision making process subsequent to consultation and the next steps in the selection process for the ILW storage site. Most people seemed to consider them sensible in principle, though there was a wide range of

suggestions on the future conduct of the MOD's post-consultation analysis and subsequent decision making.

- 10.1.2. Many people felt that the consultation had given them an adequate and genuine opportunity to be involved in the decision making process and were satisfied with the information they received.

However, some seemed more sceptical and thought the decisions had probably already been made.

10.1.3. Looking forward to future consultations, the MOD was urged to maintain a transparent approach and continue to engage the public and stakeholders as the project progresses and suggestions were made about ways to do so. A few criticised the efforts made to publicise the consultation events.

10.2. Commentary [PCR 15, 16]

10.2.1. There are legal and Government policy constraints on the project and the scope of the SDP cannot readily be changed. Also, there are formal MOD project management and approval procedures which must be followed. Nevertheless, as this report aims to show, all comments have been carefully considered and have led to significant changes to the MOD's analysis and conclusions.

10.2.2. Comments on the approach to future analysis and the ILW site selection process have already been covered at length in previous sections of this report. The remainder of this commentary therefore focuses on the implications of comments for future consultation rather than on the screening methodology.

Consultation

10.2.3. Feedback on the conduct of the consultation was generally very positive but respondents did raise some concerns. For instance, some suggested that the subject was too technical for the public to comment on meaningfully.

10.2.4. This has not, however, been the SDP team's experience. There were many useful comments from people who clearly had a technical background, and their contribution helped MOD improve the efficiency and effectiveness of its analysis and decision making. However, decisions also need to take account of wider perceptions and more general comments (for instance, on fairness and the distribution of impacts and benefits). So comments from people without a technical background were equally valuable.

10.2.5. The MOD released a wide range of detailed supporting documents intended to provide people with access to information at whatever level of detail they wished. But although some

respondents commended the documentation provided during the consultation as clear and well explained (particularly the CD), others felt that there was too much information and that it was too technical for a layperson to understand.

10.2.6. The MOD accepts that lessons can be learned in this area, so although it will take the same general approach in future consultations, it will look again at the way in which information is organised and labelled to try to make it easier for people to locate. It will also consider ways to make any future consultation questionnaire shorter and simpler.

10.2.7. Some felt that media coverage was 'low key' and that MOD should have done more to raise public awareness of consultation events. Some suggested that direct mailings should have gone to every resident in prospective host communities and surrounding areas.

10.2.8. There are no doubt things which could be improved in the light of experience but the MOD view is that the steps taken to publicise the consultation were generally appropriate and proportionate, and that the consultation was effective. For example, the distribution of newsletters to almost 55,000 homes in the area around the Dockyards is considered to have been appropriate and the significant cost of a wider distribution could not be justified.

10.2.9. Participants made a range of useful specific suggestions for future PSE which are already being addressed in the development of ILW storage site PSE and broader communication plans, including ways to:

- Strengthen pre-engagement with local authorities.
- Deliver a more focussed set of consultation materials and events, in terms of scope and duration.
- Increase stakeholder involvement in post-consultation assessment.

10.2.10. The MOD has incorporated many of these suggestions in its proposed future PSE programme, which it will be sharing initially with the project's independent Advisory Group and subsequently with wider stakeholders for comment.



11. Out of Scope Issues

11.1 Summary of Comments

11.1.1. A number of respondents raised issues on which they felt strongly, but which were outside either the scope of the SDP or do not fall within the responsibility of the MOD. Some comments suggested that these issues were the most important things for MOD to address. For instance, there were comments on:

- Managing the national ILW inventory.
- The safety of defuelling activities.
- The need for a nuclear submarine fleet in the first place.

11.1.2. Others voiced strong opposition to the nuclear deterrent carried by some of the submarines, and pressed for a consultation on the renewal of Trident.

11.2. Commentary [PCR 17]

11.2.1. The MOD recognises that defuelling is a topic of community interest. Comments on this topic which relate to SDP aims and objectives have been discussed in Section 3. However, comments on safety and environmental aspects of defueling are outside the SDP scope and engagement is best continued through the established channels for HMNB Devonport and Devonport Dockyard. The comments received on this topic have been passed on and lessons learned from the SDP will be shared across the Naval Base and the Dockyard where they are relevant.

11.2.2. MOD notes the views of those participants who suggested reasons for or against managing military and civil radioactive wastes separately. This is again a matter of Government policy, but one which will have a bearing on the ILW storage site selection process. It will therefore be addressed during the next stage of analysis and engagement.

11.2.3. The MOD has also noted the comments on the future of the UK's submarine and nuclear weapons programmes, and on radioactive contamination at Dalgety Bay. While the importance of these issues is acknowledged, the policies and plans in these areas are outside the scope of the SDP. Comments on these issues have therefore been passed to the relevant areas of the MOD for them to take into account as they consider appropriate. Should people wish to take their comments further, correspondence can be sent to the MOD at the following addresses:

MOD Ministerial Correspondence Unit
5th Floor, Zone A
Main Building
Whitehall
London
SW1A 2HB

email: ParliBranch-Treat-Official@mod.uk

web: <https://www.gov.uk/government/organisations/ministry-of-defence>

12. Conclusions

12.1.1. Having taken account of the comments received during consultation, the MOD's revised position on how and where radioactive waste is removed, and the types of site at which it is stored is as follows:

- The approach to removing the radioactive material from the submarines will be to remove and store the RPVs intact prior to disposal in the planned GDF. This position has not changed and the arguments for this option have, on balance, been supported by the responses to the consultation.
- Radioactive waste will be removed from submarines in-situ at both Devonport and Rosyth dockyards. This position has not changed and the arguments for dual-site dismantling have been strengthened by the responses to the consultation.
- The proposed approach to selecting a site for storage of ILW has been revised. The MOD has chosen not to limit the site-specific selection process to one type of site. The revised process will consider all potential storage sites on an equal basis, irrespective of type.

12.1.2. On the SEA, MOD's position is that the findings set out in the Environmental Report remain valid in the light of consultation. The adopted approach does not have any significant environmental effects.

12.1.3. Two other significant decisions that have been taken since consultation are as follows:

- 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 optimised. Priority will be given to clearing the seven submarines currently at Rosyth, but this does not preclude the potential for parallel work in Devonport.
- The opportunity to undertake early removal of LLW from the submarines will be explored. This opportunity could help to reduce technical and industrial risks and

speed up final clearance of submarines from the dockyards once an ILW storage solution is agreed.

12.1.4. The MOD's revised position has been influenced by the significant changes made to the options analysis as a result of the comments received in consultation. In particular, the MOD has accepted and applied the following in relation to SDP, which will also be considered in future decision making on the project:

- Changes have been made to the definitions and scales of safety and environmental criteria in the option comparison methodology, to clarify how the assessment of cost and operational effectiveness are applied in comparison of the options.
- Stakeholder perspectives have been incorporated into the option analysis process, through the use of alternative weightings in the sensitivity analysis.
- When more detailed information on environmental discharges is available, it should be made publicly available in a timely manner. This should include summary information that can be readily understood.
- The importance of on-going communication and engagement with stakeholders outside of consultation periods is accepted and will be strengthened, where appropriate, for the next stage.
- The implications of delays or changes to the GDF programme have been more explicitly and comprehensively taken into account.

12.1.5. MOD notes the comments that communities around selected sites are likely to seek additional benefits as part of any planning consent process. These would need to be raised, at site or programme level, in the context of a specific planning application.

12.1.6. Similarly, MOD notes the comments that communities may also seek wider benefits (for example, through strategic partnerships). These would be outside the scope of the SDP and would need to be raised as part of discussions on the wider context of MOD or other activities at a given site.



12.1.7. There were comments that have not been accepted because the MOD believes they are based on misunderstandings or because it does not accept the conclusions that have been drawn. For instance:

- MOD believes some of the criticism of its comparative analysis of safety and environmental impacts is based on a misunderstanding of the information provided, which has been interpreted as meaning that 'compliance with limits' did not encompass full commitment to the 'ALARP' or 'ALARA' regulatory requirements (which it does).
- MOD recognises the potential value of regional or broad-scope wider socio-economic assessments but believes that in practice, local authorities will do this to inform their positions; only they have the remit, information and skills to do so at this stage. MOD will, however, participate on request and share whatever information it has and will provide any socio-economic submissions required as part of planning consent processes.

- Arguments made in favour of using a new Greenfield or Brownfield site for dismantling, or named sites which MOD has previously ruled out, are not sufficiently persuasive to justify reconsidering them as options. The ILW Storage Site shortlist has yet to be developed, but MOD would only consider Greenfield or Brownfield sites if no suitable existing nuclear site could be found.
- Submarine defuelling remains outside the SDP's scope and as it is a prerequisite to all dismantling options it did not act as a significant discriminator between them.

12.1.8. In the next phase of work, the project will be seeking regulatory approvals for the demonstration of initial dismantling activities at Rosyth Dockyard. It will also take forward a process for shortlisting and then selection of an ILW storage site which will be informed by an updated SEA and consultation with local communities.

Annex A. References and Further Information

Further information on the project and the references below can be found from the SDP consultation web page at:

<https://www.gov.uk/government/consultations/consultation-on-the-submarine-dismantling-project>

- [1] SDP: Consultation Document. October 2011.
- [2] SDP: Post Consultation Report. July 2012.
- [3] SDP: Operational Analysis Support Paper (OASP). The OASP has been updated to reflect the post-consultation analysis results, and is now at Issue 1.0, October 2012.
- [4] SDP: Strategic Environmental Assessment (SEA) Environmental Report. Issue 1.0, October 2011.
- [5] SDP: Strategic Environmental Assessment (SEA) Non-Technical Summary. Issue 1.0, October 2011.
- [6] SDP: Strategic Environmental Assessment (SEA) Post-Adoption Report. Issue 1.0, March 2013).
- [7] SDP: Site Criteria & Screening Paper. Issue 2.1, May 2011

Annex B. Abbreviations

Abbreviation	Meaning
ALARP	As Low as Reasonably Practical
CD	Consultation Document
CoRWM	Committee on Radioactive Waste Management
DE&S	Defence Equipment & Support
DECC	Department of Energy & Climate Change
EA	Environment Agency.
EIADR	Environmental Impact Assessment for Decommissioning Regulations
GDF	Geological Disposal Facility
ILW	Intermediate Level Waste
LLW	Low Level Waste
MCDA	Multi Criteria Decision Making Analysis
MRWS	Managing Radioactive Waste Safely
NDA	Nuclear Decommissioning Authority
OASP	Operational Analysis Support Paper
OCF	Other Contributory Factors
ONR	Office for Nuclear Regulation
PAR	(SEA) Post-Adoption Report
PCR	Post-Consultation Report
POWG	Point of Waste Generation
PSE	Public & Stakeholder Engagement
PW	Packaged Waste
RC	Reactor Compartment
RCR	Response to Consultation Report
RIFE	Radioactivity in Food and the Environment (report)
RPV	Reactor Pressure Vessel
SDC	Submarine Dismantling Consultation
SDP	Submarine Dismantling Project
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
VLLW	Very Low Level Waste
WLC	Whole Life Cost



Annex C. Glossary

As Low As Reasonably Achievable (ALARA)	ALARA is the environmental equivalent of ALARP. It is achieved through application of 'Best Available Technology / Best Practical Means' to minimise discharges. Further information is available from the Environment Agency (EA) and Scottish Environment Protection Agency (SEPA) web site.
As Low As Reasonably Practicable (ALARP)	The ALARP principle is that the residual risk to people shall be as low as reasonably practicable. For a risk to be ALARP it must be possible to demonstrate that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained. Further information is available from the HSE web site.
Authorisation / Authorised site	Authorisations allow specific defence-related nuclear activity to take place. Such 'Authorised' sites or activities are not subject to the Nuclear Installations Act (unlike civil nuclear sites) and so activities are not formally 'Licensed'. Instead, Authorisations are granted by the Defence Nuclear Safety Regulator. Where appropriate to the activity, Authorisation Conditions are equivalent to Licensing Conditions applied to civil nuclear work.
CoRWM	Committee on Radioactive Waste Management: This independent committee provides scrutiny and advice to Government on the long term management of radioactive waste, including storage and disposal. See www.corwm.org.uk for more details.
Defueling	The removal of spent (used) nuclear fuel from the submarine's reactor after it has left service. Submarines will have been defuelled before they become part of SDP and are dismantled.
EIADR	The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations, 1999, as amended. This is a legal instrument that requires the environmental impact of decommissioning nuclear power stations and other nuclear reactors (including those in nuclear submarines) to be considered in detail before consent for the decommissioning work to go ahead can be given.
GDF	Geological Disposal Facility: the UK government's proposed long-term, below-ground facility for disposing of the UK's Higher-Activity Nuclear Waste (HLW and ILW). No site has yet been identified. See http://mrws.decc.gov.uk/en/mrws/cms/home/What_is_geolog/What_is_geolog.aspx for more details.
ILW	Intermediate Level Waste: radioactive waste with a radiological activity above 4 GigaBecquerels (GBq) per tonne of alpha, or 12 GBq/tonne of beta-gamma decay, but which does not generate enough heat to require it to be cooled during storage. By contrast, nuclear fuels are generally much more active, and have to be kept cool. The majority of ILW from submarines is metal within the RPV.
Interim ILW Storage	ILW is stored for an 'interim' period until a disposal route is available. Interim stores are designed for 100 years to provide safe and secure protection for waste packages. There are currently more than twenty such sites in the UK.
Licence / Licensed site	A Nuclear Licence allows specific nuclear activities to take place at a specific site. Such 'Licensed' sites are subject to the Nuclear Installations Act (1965), with licences being granted by the Office for Nuclear Regulation. Nuclear power stations and other civil activities are licensed in this way.
LLW	Low Level Waste: This is defined as radioactive waste that has below 4 Gbq per tonne of alpha activity and below 12 GBq per tonne of beta-gamma activity. It covers a variety of materials which arise principally as lightly contaminated miscellaneous scrap and redundant equipment. LLW is managed in accordance with the UK's LLW Strategy and with disposal to licensed facilities such as the LLW Repository in Cumbria.

MCD	Multi Criteria Decision Analysis methodologies, sometimes quantified sometimes not, are widely used to underpin radioactive waste management decisions. In order to identify a preferred option from a range of alternatives, the benefits and detriments for each approach are evaluated against appropriate performance measures or attributes. Scores against individual attributes may be 'weighted' to reflect the attributes' relative importance or to take account of the fact that some criteria and attributes may differentiate more readily between options than others.
MRWS	Managing Radioactive Waste Safely: the UK Government's approach to managing the nation's radioactive wastes, irrespective of where they come from and their level of activity. The SDP will adhere to this approach.
NDA	Nuclear Decommissioning Authority: The Nuclear Decommissioning Authority (NDA) is a non-departmental public body created through the Energy Act 2004. Its purpose is to deliver the decommissioning and clean-up of the UK's civil nuclear legacy in a safe and cost-effective manner.
Operational Analysis Support Paper (OASP)	In MOD terminology, the OASP is the document which brings together the evidence from the various strands of analysis and stakeholder input and then sets out the reasons for choosing the recommended option.
OCF Analysis	In MOD terminology, the Other Contributory Factors Analysis is the structured assessment of factors outside the scope of the MCD and Investment Appraisal which cannot readily be quantified.
ONR	Office for Nuclear Regulation is responsible for all nuclear sector regulation across the UK. ONR was formed on 1 April 2011 as an agency of the Health and Safety Executive (HSE).
Packaged Waste (PW)	The option for removing the radioactive materials from the submarine whereby the RPV is removed, cut-up and packaged in appropriate containers for transport, interim storage and disposal in the proposed GDF.
Point of Waste Generation (POWG)	In the SDP context, the POWG is the location where radioactive wastes are removed from the submarine. Thus, a POWG interim ILW store would be one located in close proximity to an initial dismantling site.
Public & Stakeholder Engagement (PSE)	SDP follows the CoRWM terminology in this area. It uses 'stakeholder' to mean any person or organisation that has an interest in or is affected by the project. It encompasses consultation but as applied by the MOD it is a more continuous process spread over a longer period of time and emphasises two-way communication.
Reactor Compartment (RC)	Reactor Compartment: This is the central 'slice' of the submarine which contains the nuclear reactor, housed within the RPV, and the primary circuit, which transfers heat to the boiler.
Reactor Pressure Vessel (RPV)	Reactor Pressure Vessel: the self-contained metal chamber inside the RC which contains the nuclear fuel.
Ship Recycling	This is the process whereby the hull of the submarine (which forms the bulk of the vessel) is dismantled. It is very similar to the way in which surface ships are disposed of.
Size Reduction	The term used by the nuclear industry to refer to the process of cutting-up radioactive waste into smaller pieces so that it can be packaged into containers. Size reduction is an established process in the civil nuclear industry.
Strategic Environmental Assessment:	A type of assessment undertaken on certain public plans and programmes, to assess the potential environmental effects that they may have, and to identify ways to avoid or minimise damaging impacts and enhance positive ones. SEA gives the public the opportunity to see what those impacts might mean for them and comment on them before decisions are made, so that they can help shape the approach taken.





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Submarine Dismantling Project (SDP)

MOD's Response to Consultation

All of the documents produced for this Consultation and further background information is available from the project's consultation web page at:

[https://www.gov.uk/government/consultations/
consultation-on-the-submarine-dismantling-project](https://www.gov.uk/government/consultations/consultation-on-the-submarine-dismantling-project)

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