

Submarine Dismantling Project (SDP)

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# Consultation Document on the Site for Interim Storage of Intermediate Level Radioactive Waste

14th November 2014



Ministry  
of Defence





# Contents

## **PART A - Introduction**

- 1. Background 4
- 2. The Submarine Dismantling Project 5

## **PART B - Technical Background**

- 3. RPVs and Containers 9
- 4. Transporting the RPVs 10
- 5. Interim Storage 11
- 6. Regulation 13
- 7. Planning and Permitting Procedures 15
- 8. Strategic Environmental Assessment 17

## **PART C - Site Information**

- 9. The AWE Sites 20
  - Aldermaston 21
  - Burghfield 23
- 10. The NDA Sites 25
  - Chapelcross 26
  - Sellafield 28
- 11. Capenhurst 30
- 12. The Dismantling Sites 32

## **PART D - MOD's Assessment to Date and Plans**

- 13. Site Comparison Studies 34
- 14. Differences Between Sites 37
- 15. Public Consultation Plans 38
- References 41
- Glossary 44
- Key Questions 47

# Ministerial Foreword



**Philip Dunne MP**  
Minister for Defence Equipment  
Support and Technology

As a nation, we take great pride in our nuclear submarine programme: in the vital capability they provide for our Armed Forces, in the advanced technology that keeps them operating safely in some of the world's most hostile environments, and in the engineering skills needed to build and maintain them, with a supply chain that stretches across the United Kingdom. I have been fortunate to have seen our submarines at first hand, and have witnessed the hard work and technical ability of all those involved, which has underpinned the defence of the UK for more than 50 years.

As our submarines reach the end of their Operational Service we need to dispose of them in a way that is safe, secure and environmentally responsible and we have made great strides towards delivering a solution that achieves these objectives.

Following Public Consultation in 2011/12, we made important decisions that took close account of what people told us about how and where to carry out the initial stages of submarine dismantling. We decided that, for each submarine, the defuelled Reactor Pressure Vessel, which is classified as Intermediate Level radioactive Waste, will be removed at either Devonport or Rosyth Dockyard, and then stored in its entirety at a suitable interim storage location.

The feedback we received led to a change in our approach to selecting an interim storage site, where these Reactor Pressure Vessels will be stored until they can be disposed of in the UK's proposed Geological Disposal Facility. This new approach has resulted in us identifying a shortlist of five sites across the UK that the Ministry of Defence and the relevant site owners, have assessed to be both suitable and available. I announced a provisional version of this shortlist at the start of the year and the final version of this shortlist, which I announced in October, includes the same five sites.

Now we would like your views on which of these five sites should be selected. Whether the sites are in your neighbourhood or region, or you have a wider interest

in nuclear, military or environmental matters; whether you have a deep understanding of the technical issues, or you have never come across them before, now is the time to share your views. The opinions of members of the public are important to us, and we will take all opinions offered into account in the assessment process. We value the comments of those who have something to say about the Submarine Dismantling Project and all of them will be considered as part of our decision-making process. After consultation we will issue a report informing you of the findings and after we have selected a site, we will explain how we made that decision and how we took the comments we received into account.

This Public Consultation document gives you information about the project and presents detail on each of the storage locations, discussing their advantages and disadvantages and highlighting some issues that need to be addressed. It is these issues, along with your own knowledge and concerns, on which we would like your views.

If you have questions about a particular aspect or are interested in more technical information, there are a range of other supporting documents available, including factsheets for each site and on key themes such as safety or planning. We have tried to cater for all needs with the Public Consultation, and feedback can be given either in writing, by email or post. We are also holding exhibitions and workshops close to all five sites, plus two national workshops, where you will be able to ask questions or make comments face to face.

I should like to make it clear that within this document we have not expressed a preference for any of the five sites. All at this stage are considered to be viable options, and there are factors for and against each one. Your views will help us understand and assess those factors, and will help us to make the right decision. Whatever your current level of knowledge and experience in this area, your views will be welcomed and we look forward to receiving your comments.



# The Submarine Dismantling Project

The Submarine Dismantling Project (SDP) is the MOD's programme to deliver a safe, secure and environmentally responsible solution for dismantling 27 defuelled submarines. This involves recycling the bulk of the submarine and safely disposing of the remainder. The submarine's Reactor Pressure Vessel (RPV) contains Intermediate Level radioactive Waste (ILW). After the RPV has been removed in its entirety, it must be stored for an interim period until it can be processed and sent to a proposed Geological Disposal Facility (GDF) some time after 2040.

This public consultation will help us decide where the interim RPV storage site should be.

There is also a statutory requirement to consult on the Strategic Environmental Assessment (SEA) Environmental Report as it applies to the shortlist of sites.

## What questions are we asking?

We are gathering views on three main topic areas:

- the Strategic Environmental Assessment;
- the process and criteria being used to compare the shortlisted storage sites;
- the shortlisted sites and the differences between them.

Our assessment of the merits of the different sites is at a relatively early stage and information gathered during this public consultation will feed into our decision-making process.

To give people the information they need to respond, we have published this Consultation Document and its supporting reports (including the SEA Environmental Report) and organised a programme of local and national events.

## What we are not consulting on?

We are not consulting on:

- decisions that have already been taken, for example how and where the submarines will be dismantled; or
- other aspects of dismantling and waste management; there are already established practices for recycling materials and managing hazardous wastes and other types of radioactive wastes.

## How can people participate?

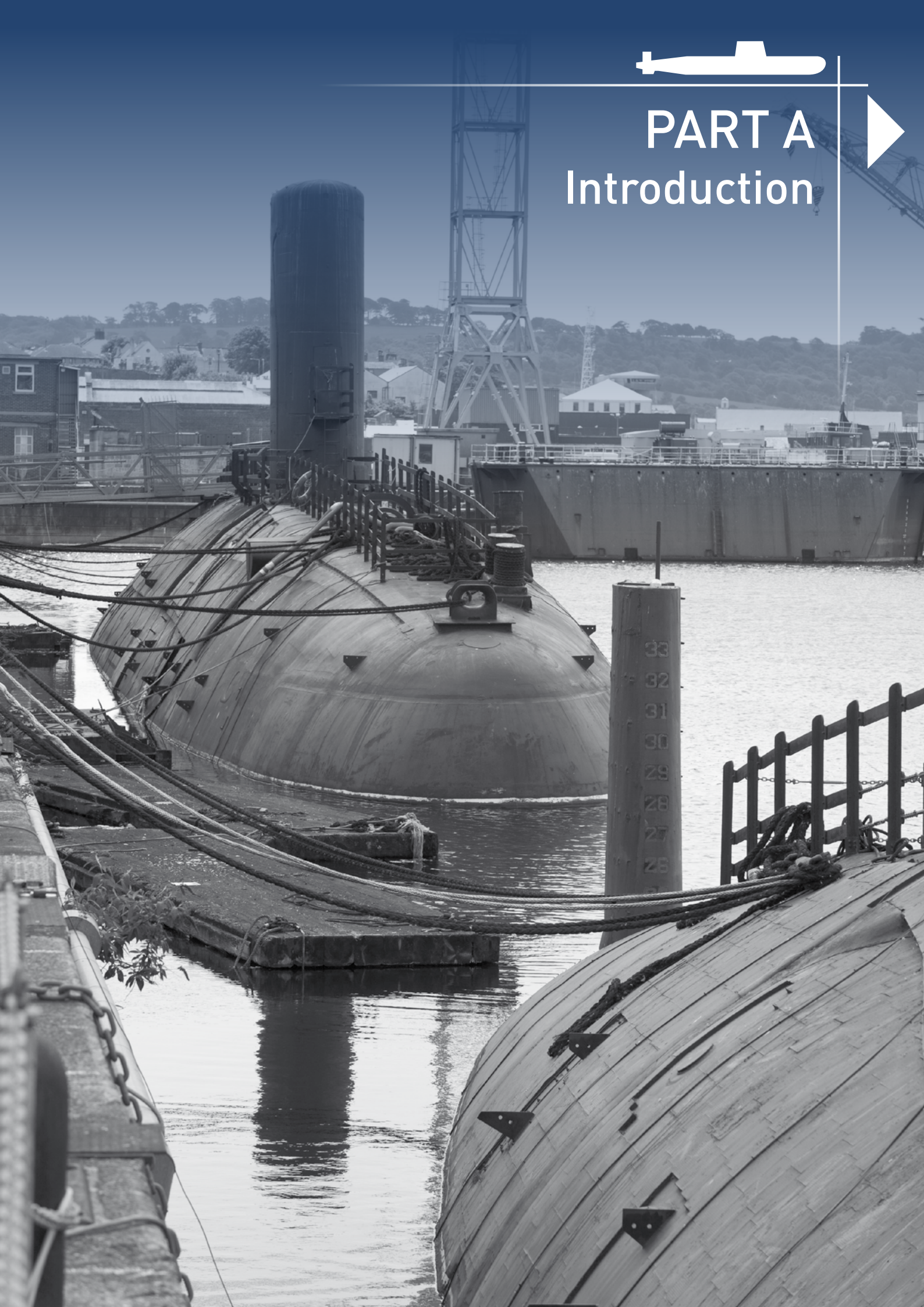
Individuals and organisations can respond to this consultation, using the questions at the back as a guide if they wish. We would encourage people to attend one of the exhibitions at the shortlisted sites or take part in one of the local or national workshops.

Information on the public consultation events and sources of information is given in Chapter 15 and on our web pages. Contact details are on the back cover.



# PART A

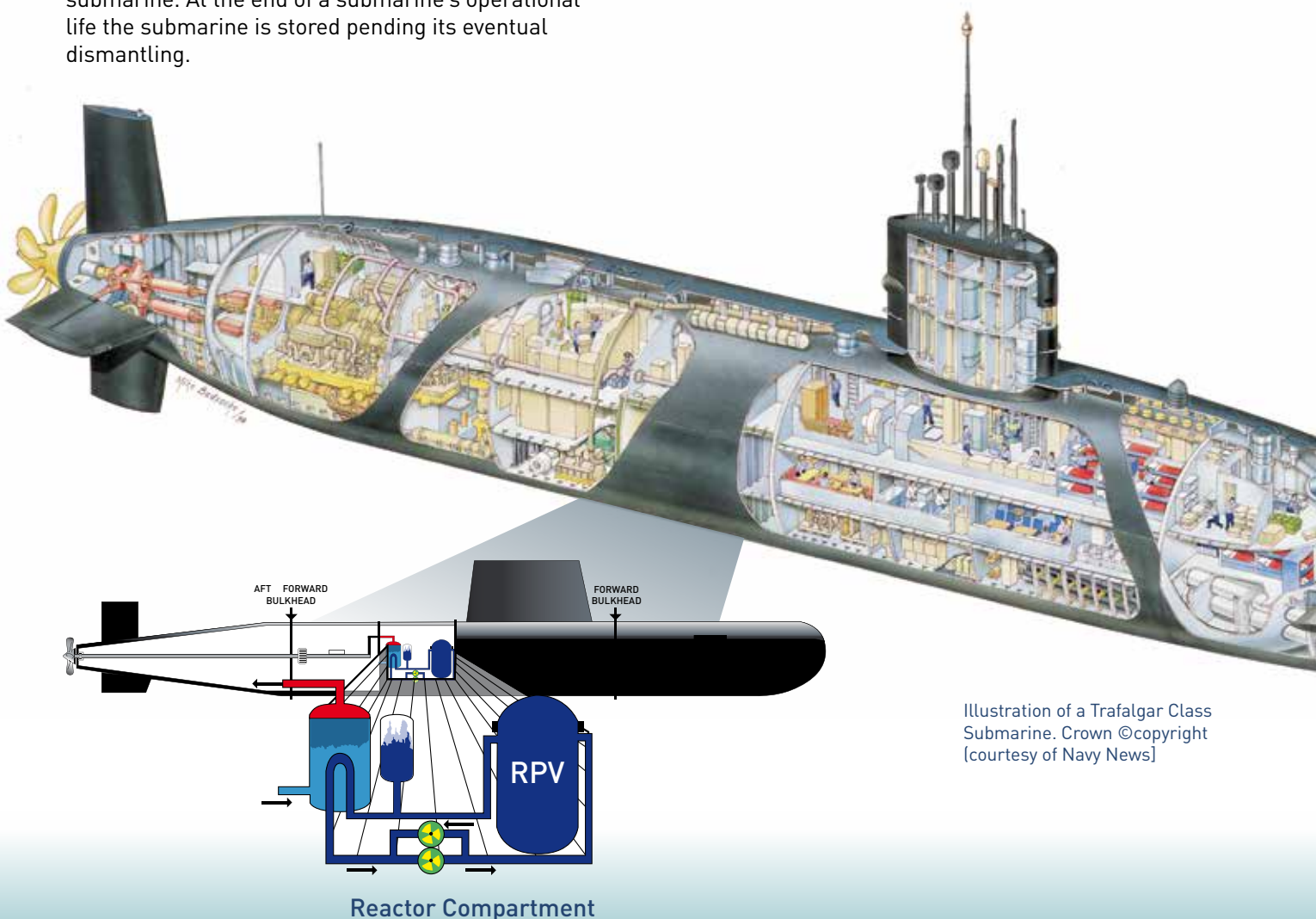
## Introduction



# 1. Background

## Nuclear Submarines

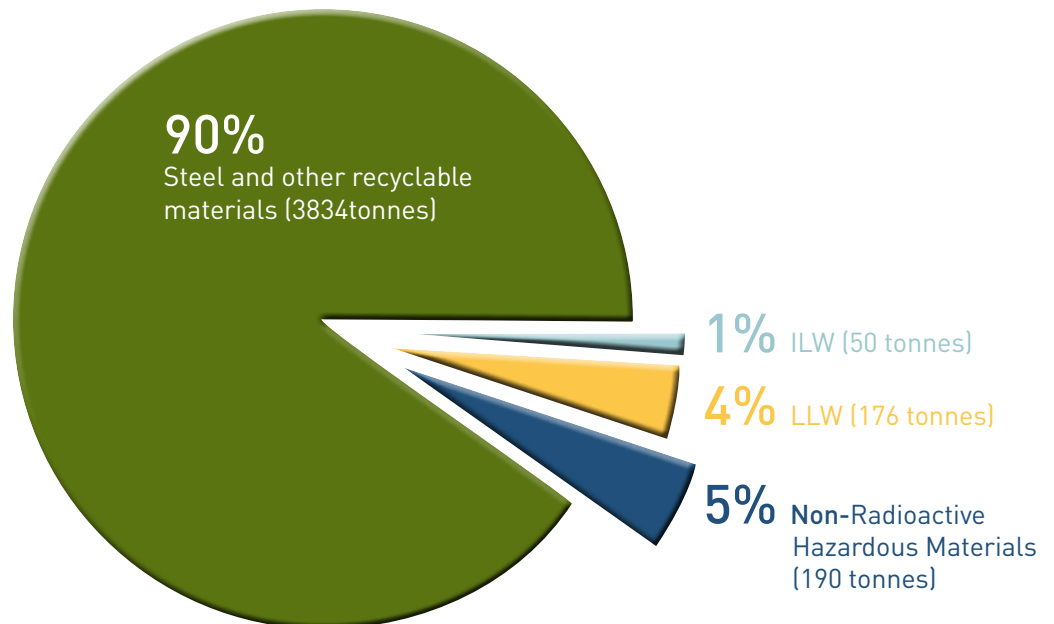
1. A nuclear submarine is one that is powered by nuclear energy. All Royal Navy submarines are nuclear powered. Unlike the diesel engines of conventionally-powered submarines, nuclear reactors produce their power without using air. This means that the submarines do not need to surface frequently and they can travel continuously underwater for thousands of miles. This is a significant advantage to a submarine, whose primary purpose is to operate undetected beneath the surface of the sea.
2. The nuclear energy that powers Royal Navy submarines is created by a Pressurised Water Reactor (PWR). The main feature of a PWR is the Reactor Pressure Vessel (RPV), which is housed within a Reactor Compartment in the central section of the submarine as shown below. The purpose of the RPV is to contain the nuclear fuel and to enable nuclear fission to generate heat which then powers the submarine. At the end of a submarine's operational life the submarine is stored pending its eventual dismantling.
3. After the reactor plant has been defuelled it can be removed from the submarine. The RPV, in particular, will need to be stored before it can eventually be disposed of to a Geological Disposal Facility (GDF) along with other waste from the nuclear industry. This is known as interim storage and is explained in Chapter 5. The purpose of this Public Consultation is to help determine where the interim RPV storage site should be located.



## 2. The Submarine Dismantling Project

### Dismantling

4. The Submarine Dismantling Project (SDP) is the MOD's programme to deliver a safe, secure and environmentally responsible programme for dismantling 27 defuelled submarines.
5. After many years in service, nuclear submarines eventually reach the end of their operational life and are taken out of service. The used nuclear fuel from the RPV is removed and the submarines are then prepared for safe storage afloat pending dismantling.
6. Currently, 12 submarines are stored afloat at Devonport (including some awaiting defuelling) and 7 at Rosyth. The remainder are still in active service.
7. Afloat storage is safe but it is not a long-term solution and UK Government policy is that decommissioning and disposal operations should be started as soon as practicable.
8. The SDP will dismantle the submarines, recycle the bulk of the material arising and safely dispose of the remainder. The pie chart shows the approximate amount of different materials and wastes resulting from a dismantled submarine after it is defuelled. These include steel and other metals, hazardous waste (such as asbestos) and radioactive waste.
9. The radioactive waste includes Low Level Waste (LLW) such as contaminated pipework and the RPVs which include both LLW and the more radioactive Intermediate Level Waste (ILW).
10. There are disposal routes available for LLW from the submarines and there are companies who can recycle some of the waste once it has been decontaminated. However, there will be no disposal route available for the ILW until a proposed GDF is available sometime after 2040.



Estimated Material Quantities for a Trafalgar Class dismantled submarine.



# Decisions Already Made

11. The decisions about where and how the submarines should be dismantled have already been the subject of a major programme of technical and financial assessments and three major public consultations have been completed. As a result, it has been decided that:
  - initial dismantling will take place at both Devonport and Rosyth Dockyards; and
  - the RPVs will be removed whole for interim storage.
12. The first submarine, which will be used to demonstrate the process, will be dismantled at Rosyth. The current intention is that the remaining submarines will then be dismantled at a rate of about one per year.
13. Initial dismantling of the submarines will be a staged process:
  - LLW and other radioactive material outside the RPV will be removed as a first step. The removed material will be sent for disposal via existing routes.
  - The RPV will be removed from the submarine and placed in a secure container for onwards transport to the RPV storage site.
14. The submarine hull and remaining contents will then be taken to a UK ship-breaking facility for final dismantling and recycling.

# Choosing a Storage Site

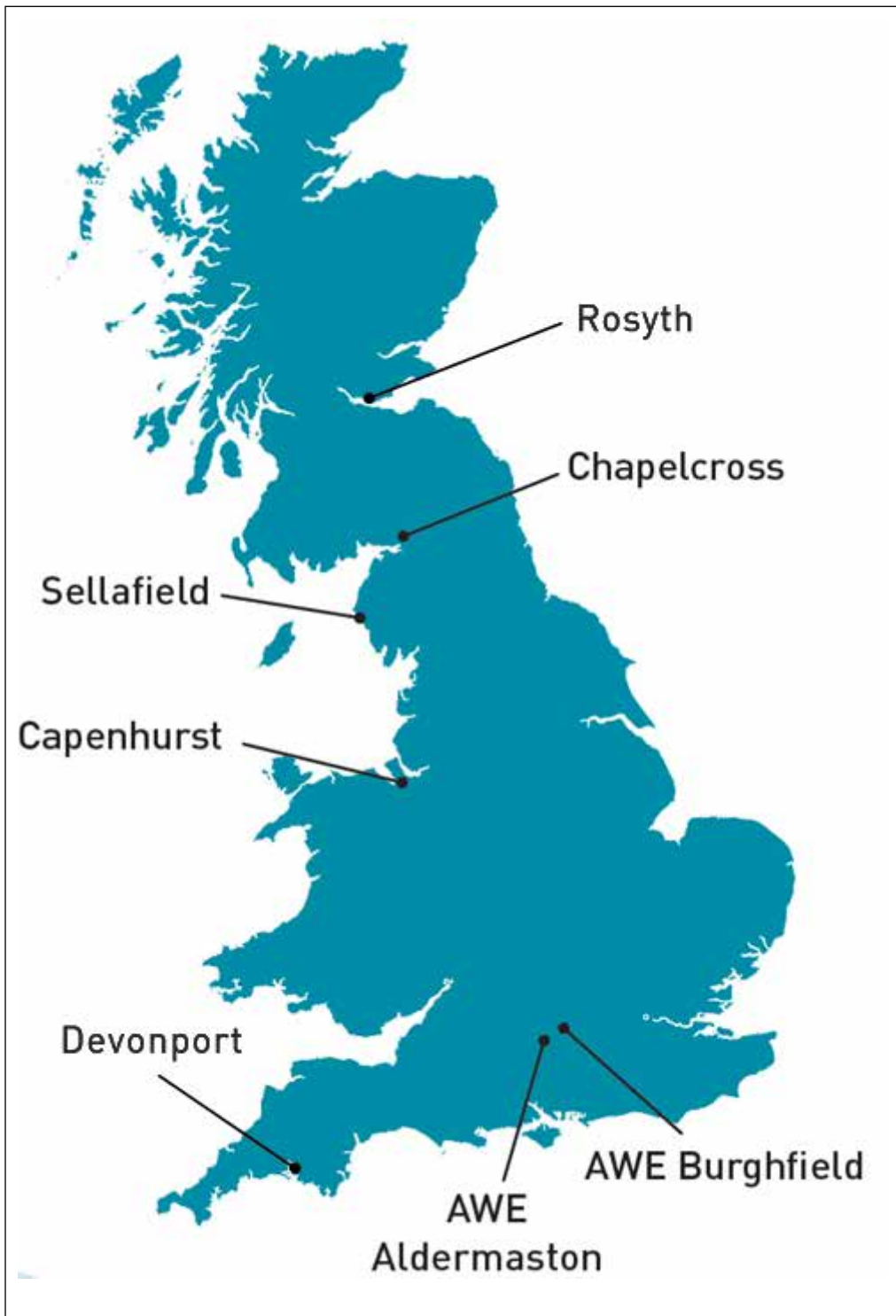
15. The site for the interim storage of the RPVs now needs to be chosen. The SDP has systematically assessed all the existing nuclear sites owned by MOD, the Government’s Nuclear Decommissioning Authority (NDA) and the private sector across the UK. The result is five shortlisted sites which are potentially both suitable for building a store and available within the project timescales.

<b>AWE Aldermaston in Berkshire</b>	<b>Chapelcross in Dumfriesshire</b>
<b>AWE Burghfield in Berkshire</b>	<b>Sellafield in Cumbria</b>
<b>Capenhurst in Cheshire</b>	

Note: full details and web links are given in references for all the MOD reports shown in italics in this document.

16. In early 2014 the SDP held a six week period of discussion with people from potentially involved communities, and others, to allow them to comment on the shortlist and plans for comparing potential storage sites – including the scope of the Strategic Environmental Assessment (SEA) and plans for public consultation. The *Response to Pre-Engagement* report summarises the many useful comments made.
17. Data collection and assessment of the shortlisted sites has now started, looking at: operational effectiveness; health, safety and environmental impacts; whole life investment costs; and other factors of particular interest to stakeholders and the MOD. A detailed SEA has been undertaken for the storage sites and the *Environmental Report* published. Some of the factors that will need to be considered are listed in Chapters 8 (SEA) and 14 (Differences Between Sites).
18. Analysis so far suggests that a single purpose-built store on one site will be the most cost-effective solution and the project is proceeding on this basis. However, the MOD will consider an alternative, such as sharing a new or existing store or the use of two sites, if evidence emerges which shows it to be a better option.
19. After this Public Consultation, a Post Consultation Report will be published summarising the consultation process and the comments made. The site assessment work will then be completed, taking into account the comments received, and a recommended site identified. The logic will be set out in a business case before a decision is made by the MOD.
20. After approval, probably during 2016, the chosen location will be announced and the MOD will publish its Response to Consultation and SEA Post Adoption reports. These will summarise the results of the assessments, set out how the decision was made and explain how comments have been taken into account. The SDP project team will offer briefings to the local authorities for the selected site, the local community and other stakeholders on the next steps.
21. Once the necessary consents and permits have been received, construction and commissioning is expected to take about two years. The current schedule suggests the first RPV will be sent to the storage site early in the next decade but the MOD will continue to look for opportunities to accelerate the programme.
22. This shortlisting and assessment process fulfils the MOD’s commitment that all existing nuclear sites in the UK would be considered as potential RPV storage sites and no decision would be made before the results of the current Public Consultation had been taken into account.

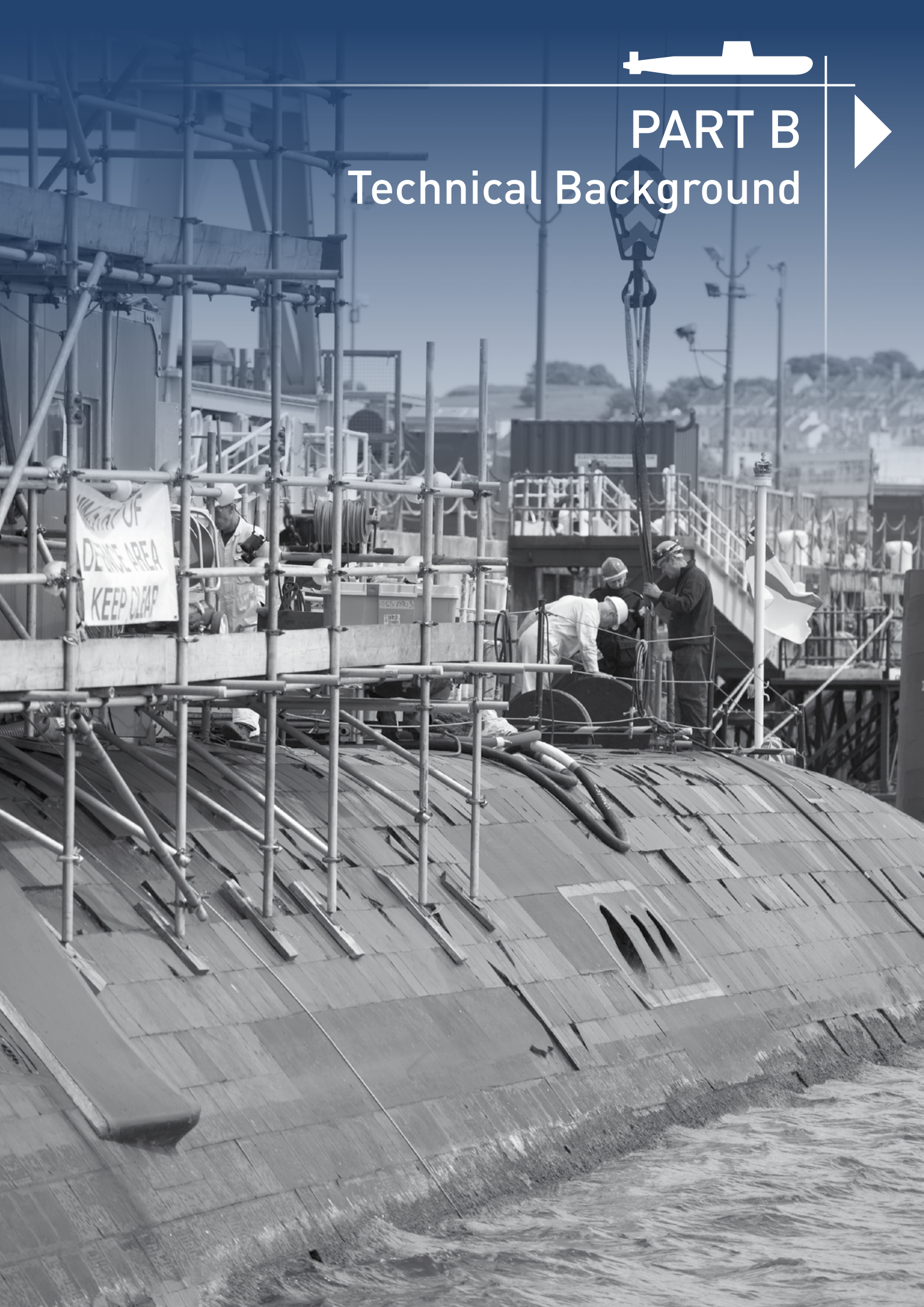






# PART B

## Technical Background



# 3. RPVs and Containers

## The Reactor Pressure Vessel

23. The Reactor Pressure Vessel consists of a main RPV body and the RPV head which is bolted to it. It contains a number of internal steel components, including the core barrel which holds the fuel. High pressure, high temperature water circulates through the RPV and then through what is known as the primary circuit. The water transfers the heat generated by the nuclear fission reaction in the fuel to the steam generators where steam is raised for conversion to propulsion and electrical power.



A Reactor Pressure Vessel (RPV)

24. RPVs are made of forged steel tens of centimetres thick. Depending on the type, a defuelled RPV is typically around three metres in diameter and four metres high and weighs between 50 and 80 tonnes.

25. Before the submarine dismantling process starts, all of the nuclear fuel will be removed, leaving the core barrel in place, and the primary circuit will be drained. However, as the RPV has been exposed to neutron radiation during service, it will have become radioactive itself ('activated'). This radioactivity is concentrated in the internal components which would be classified as ILW.

26. Radiation levels at the outside of the RPV are very much lower. However, because the RPVs will be stored whole - as agreed following the previous public consultation - the entire RPV will be treated as ILW for the purposes of storage.

## The RPV Container

27. The RPV will be dried and the RPV head, which is LLW, will be removed and disposed of through established LLW waste routes. A simple replacement head will be fitted using the existing bolting system. The RPV itself will then be removed from the submarine and placed into a bespoke container which protects it and provides shielding. The current intention is that the RPV container will be suitable for both transport and interim storage.

28. The container is currently being designed and is likely to be constructed from a robust thick walled steel vessel with internal shock-absorption and external impact protection. The RPV and container together will weigh approximately 90 tonnes for the reactor types from the earlier submarines and 135 tonnes for the later, larger, reactor type. Due to the weight, special handling fittings will be required on the container.

29. More information on the RPVs, the container and transport arrangements is provided in the ***Supporting Information Document on RPVs and RPV Store***.



RPV is lifted out of submarine



The RPV is loaded into Container



The Container is lifted onto transport trailer



## 4. Transporting the RPVs

### Safe Transport of Radioactive Material

30. The UK nuclear submarine programme has more than 50 years' experience of transporting radioactive materials safely by road, rail and sea. There have been no incidents that have released, or come close to releasing, radioactive material into the environment.
31. Radioactive waste transport is subject to strict controls to protect people, property and the environment. The Defence Nuclear Safety Regulator (DNSR) regulates the transport of MOD radioactive material. Both DNSR and the Office for Nuclear Regulation (ONR), which regulates civil radioactive waste transport, apply regulations based on standards developed by the International Atomic Energy Agency.
32. The requirements for notification of proposed movements are set out in the relevant regulations. Arrangements will be in place to provide 24-hour expert assistance to the emergency services in the unlikely event of an incident. The relevant authorities, including both MOD and civil safety and environmental regulators, would automatically be notified as part of the response.

### Transport

33. Up to three RPVs may be moved to the store in the first year that it is open. The rate after that is likely to be about one a year (based on dismantling the submarines at Rosyth and then those at Devonport).
34. The MOD will have responsibility for moving the RPVs to the storage site. SDP's assessments suggest that road transport has clear advantages over rail and sea alternatives and the SEA has been conducted on that basis. Formal confirmation will be required once the container design is agreed.
35. The RPV and container will be very heavy so transporting them will require a long-wheelbase heavy transport vehicle which spreads the load over a large number of axles. It will be longer than a typical HGV but for most RPVs it is expected to be only a little wider. The RPV and container will be moved under the 'Abnormal and Indivisible Load' Regulations and will be escorted but no main road or motorway lane closures are expected. There are more than 150,000 escorted movements every year and items of comparable size and/or weight are regularly moved on British roads.
36. Main routes between the two dismantling sites and the shortlisted storage sites would largely follow the motorways and trunk route network. The details of potential local access routes are covered in the individual site chapters. They will be confirmed for the selected site in consultation with local authorities and any potential local disruption to traffic will be assessed.



Example of vehicle suitable for RPV transport

# 5. Interim Storage

## National Radioactive Waste Management Policies

37. The Department of Energy and Climate Change (DECC) is responsible for the UK Government's policy for managing higher activity radioactive waste in the long-term through geological disposal<sup>1</sup>. The wastes that will be disposed of in a GDF include ILW such as the RPVs.
38. The development of a GDF will be a major infrastructure project of national significance. The process of deciding on the appropriate location will take several years and construction will take several years more. Until a GDF is available, all nuclear operators - including the MOD - therefore have to make arrangements for safe interim storage of ILW arising from ongoing operations and decommissioning.
39. For planning purposes, the assumption is that the RPVs will be removed from the RPV store and taken to a GDF sometime after 2040 but the timescales for a GDF are provisional and it will take several years to move all the waste into one. Government guidance is therefore that interim ILW waste stores, including the RPV store, should be designed to last at least 100 years.
40. The indicative nature of the timescales for implementing a GDF is also taken into account in the SDP's plans. The MOD currently assumes that a GDF will be available by the time future submarines, outside the SDP's scope, are decommissioned. However, should this not be the case, the MOD would have a number of options to consider, including short term afloat storage and (subject to any further planning requirements) use of any spare capacity in the store.
41. The Scottish Government is not a sponsor of the programme for implementing geological disposal. Its policy is that the long-term management of higher activity radioactive waste should be in near-surface facilities, located as close as possible to the sites where the waste is produced. However, Defence is a UK Government responsibility and the Scottish Government Higher Activity Waste Policy Statement<sup>2</sup> recognises that it does not apply to "waste arising ... from the decommissioning and dismantling of redundant nuclear submarines including those berthed at the former Defence Establishment at Rosyth".

42. The MOD's plans therefore assume that the RPVs will be disposed of in a GDF as per current UK policy irrespective of whether they originate from the submarines currently laid up at Devonport or Rosyth or whether the RPV store is on a site in England or one in Scotland.

## SDP Approach

43. The RPV store will be designed to last at least 100 years if required to do so and to be easily refurbished within that timeframe. The RPVs and containers already provide a significant degree of shielding from radiation. This distinguishes them from many other types of packaged ILW where the interim storage facilities need thick walls to keep radiation levels external to the store low. The RPV store could be of steel-framed construction with only limited additional internal shielding, in which case its main function would be to provide a weatherproof, secure environment.
44. The RPV store will comply with the 'Joint Guidance'<sup>3</sup> issued by ONR and the Environment Agencies on the management of higher activity radioactive waste. The store will also be designed and operated in line with the Industry Guidance on the Interim Storage of Packaged Higher Activity Waste<sup>4</sup>. Permission will be required from the regulators prior to use of the store and the regulators would also be consulted during consideration of the planning application.

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<sup>1</sup> Implementing Geological Disposal. DECC, July 2014. Available from [www.gov.uk/government/publications/implementing-geological-disposal](http://www.gov.uk/government/publications/implementing-geological-disposal)

<sup>2</sup> Scottish Government Higher Activity Waste Policy. Scottish Government, January 2011. Available from [www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/16293/higheractivitywastepolicy/hawpolicy2011](http://www.scotland.gov.uk/Topics/Environment/waste-and-pollution/Waste-1/16293/higheractivitywastepolicy/hawpolicy2011)

<sup>3</sup> Available from [www.onr.org.uk/wastemanage.htm](http://www.onr.org.uk/wastemanage.htm).

<sup>4</sup> Available from [www.nda.gov.uk/wp-content/uploads/2012/11/Industry-Guidance-Interim-Storage-of-Higher-Activity-Waste-Packages-Extended-Summary-November-2012.pdf](http://www.nda.gov.uk/wp-content/uploads/2012/11/Industry-Guidance-Interim-Storage-of-Higher-Activity-Waste-Packages-Extended-Summary-November-2012.pdf)





Note that for clarity, local shielding around the containers is not shown. More information is given in the **Supporting Information Document on RPVs and RPV store**.

45. Interim stores comparable to that proposed for the RPVs have been constructed or designed for nuclear sites around the country. Civil and MOD ILW is already being packaged and placed into them. The safety and environmental performance and the cost of the RPV store can therefore be estimated with greater confidence. Communities can get a general impression of what a future ILW store might look like from existing stores. The picture shows the store on the NDA Berkeley site.

49. The RPV store must be large enough to take the 27 RPVs in their containers side by side with space for inspection, access and local shielding. The Baseline Concept building has a floor area of approximately 47m x 44m (around 2000m<sup>2</sup>, perhaps a third of the area of a football pitch). A typical store height might be 20m to accommodate lifting operations.

46. Whatever the design, it is predicted that local members of the public will experience no measurable radiation dose from the store.

50. At the end of the interim storage period, the current assumption is that the RPVs will be sent for size-reduction. The existing container may not be suitable for onwards transport by this time so a repackaging capability would be added when needed. An additional 50% is included in the total facility footprint for this purpose and to give some operational flexibility. This results in an overall facility footprint of about 3100 m<sup>2</sup>.

## Design and Operations

## Future Size Reduction

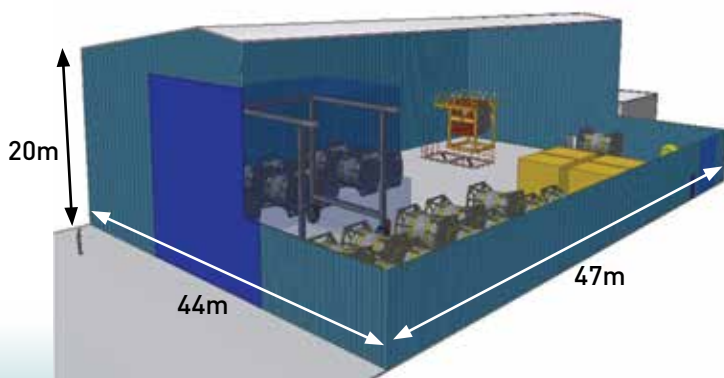
47. The site operator will be responsible for monitoring and acceptance of the containers when they are transferred into interim storage. Thereafter, a routine inspection regime will be required. There is currently no requirement for the RPVs to be removed from their containers whilst in interim storage. The RPVs and their containers will withstand external hazards such as fire and flooding without any release of radioactivity.

51. Size-reduction would involve dismantling and/or cutting up the RPVs into smaller pieces in a shielded facility before they can be sent to a GDF. After size-reduction, any parts which may be LLW would be segregated for separate disposal.

48. An outline, illustrative design for an RPV store - the store 'Baseline Concept' - has been developed by the project team to assist initial costing. An illustration is included here to show how a store might be arranged. However, it is not intended to constrain or prevent site operators from developing alternative proposals and the RPV store design and dimensions may differ significantly from it or existing stores.

52. Size-reduction would not take place until sometime after 2040. There will by then be other wastes from MOD and civil decommissioning activities that need to be size-reduced so a national facility might be available by this time which the MOD could use. The SDP cannot, therefore, make any assumptions about the location of any RPV size-reduction at this time.

53. Specifically, it is not assumed that size-reduction will be on the same site as the RPV store and therefore the ability to do it at the storage site has not been a factor in the SDP's analysis. Since the location of the size-reduction facility and GDF are not known, associated transport distances cannot yet be taken into account either.



## Direct Disposal Opportunity

54. The project's plans currently assume size-reduction will have to be carried out at the end of the interim storage period. However, the project team is also discussing with the responsible authorities whether it may be possible to send some of the RPVs to a GDF without size-reduction. Size-reduction is a safe process but it is expensive and would require precautions to prevent the release of radioactive material. The SDP will monitor developments and send the RPVs to a GDF without size-reduction if it proves more practical and cost-effective to do so.

# 6. Regulation

## Introduction

55. All aspects of submarine dismantling will comply with the same standards of health, safety and environmental protection as civil nuclear operations. The SDP will demonstrate that it meets those standards in the same way as other industries are required to do.
56. The MOD will ensure that the work of designing the RPV store, overseeing its construction, and storing the RPVs in sealed containers will be carried out by experienced nuclear sector organisations. The MOD will retain ownership of the RPVs and the MOD will demonstrate to the regulators, in line with statutory requirements, that the RPVs will be managed in a way that protects the public and the environment.
57. Nuclear Site Licensees bear the prime responsibility for safety and environmental protection on their premises. Licensees must have suitable management arrangements and produce safety cases for operations on their sites, including those involving radioactive waste, which consider safety, waste management and environmental protection. The adequacy of their management processes and safety cases is subject to inspection and approval by the regulators.
58. For national security reasons, the details of site security arrangements for nuclear sites are not made public. However, some information on security assurance is provided later in this Chapter.

## Regulators

59. The **Office for Nuclear Regulation (ONR)** is responsible for regulating the health and safety of workers on Nuclear Licensed Sites and protecting the public. It ensures they are protected from radiation by making certain that the Site Licensees have effective control of health, safety, radioactive waste management and security on their sites. It principally enforces compliance with the Health and Safety at Work etc Act 1974 and the Nuclear Installations Act 1965 (although other statutes and regulations also apply). ONR will regulate the storage of RPVs through conditions attached to the Nuclear Site Licence.
60. The ONR conducts independent inspections of the sites it regulates, including unannounced inspections if appropriate. ONR inspectors write reports following visits to sites and summaries are published and presented to the relevant site stakeholder group. The ONR has wide ranging powers which it would use if it believed current nuclear activities were not being managed safely or proper provisions were not being made for future management of wastes.
61. There are SDP shortlisted sites in both England and Scotland. The **Environment Agency** and the **Scottish Environment Protection Agency (SEPA)** (collectively referred to as '**the environment agencies**') have a statutory duty to protect and improve the environment. These responsibilities include regulating discharges and disposals of radioactive waste under the Radioactive Substances Act 1993 (RSA93) (in Scotland) and the Environmental Permitting Regulations 2010 (EPR2010) (in England and Wales). The environment agencies grant Permits and Authorisations to sites disposing of solid, liquid and gaseous radioactive waste. These limit the amount of radioactivity which can be released from a site and ensure it is done in an environmentally acceptable manner.
62. Permit and Authorisation conditions require that the site operator has adequate management processes. The environment agencies have rights of access and scrutiny and powers to take enforcement action where required. They ensure that disposals, discharges or off-site transfer of radioactive waste are in accordance with the conditions and limitations prescribed in the RSA93 Authorisation or EPR2010 Permit. They advise the ONR on the long-term disposability of conditioned waste and ensure that waste is managed in a sustainable way, taking into account long-term environmental considerations.
63. As a further safeguard, the environment agencies monitor radioactivity in food and the environment, and they assess the impact of authorised discharges on the public, flora and fauna. With the Food Standards Agency, they manage sampling and analysis of air, rain and drinking water sources for radioactivity. The results of these surveys, which can detect contamination down to very low levels, are published in the Radioactivity in Food and the Environment (RIFE) reports, which are publicly available online<sup>5</sup>.

<sup>5</sup> See [www.food.gov.uk/science/research/radiologicalresearch/radiosurv/rife/](http://www.food.gov.uk/science/research/radiologicalresearch/radiosurv/rife/) . Full reports available from [http://sepa.org.uk/radioactive\\_substances/publications/rife\\_reports.aspx](http://sepa.org.uk/radioactive_substances/publications/rife_reports.aspx) .



64. The **Defence Nuclear Safety Regulator (DNSR)** is the regulator for the packaging and transport of MOD radioactive materials, including the RPV containers and transport to the RPV store. DNSR works closely with the ONR to ensure that the transport of MOD radioactive wastes meets the same high standards of safety and environmental protection as civil waste transport. ILW transport containers have to be designed to the same international standard whichever nuclear regulator has authority. If the same container is used for storage (as the SDP currently intends), then the ONR will also be involved through approval of the store safety case.

## Store Security

65. The RPV store will be a secure facility. Unauthorised access will not be permitted and the security arrangements will be subject to regulation by the relevant safety and security authorities.
66. In addition to measures put in place to ensure the security of radioactive material, the sites will need to meet the requirements for protecting information under the Government's Security Policy Framework. All nuclear sites and any radioactive waste stores within them are designed and operated to strict standards set out by the ONR Civil Nuclear Security Programme and the defence equivalent. Security measures are checked at the design stage and inspectors ensure that standards are maintained after that.
67. In this context, the RPVs in their containers are low risk. They are so heavy that they could not realistically be moved by intruders and because they are robust, thick steel vessels sabotage is also considered difficult. The security arrangements for the shortlisted sites will be reviewed in detail by the Civil Nuclear Security team and the MOD's security specialists as appropriate but the current indications are that all shortlisted sites will meet the standards necessary for the storage of the RPVs.
68. The transport of RPVs will always be escorted and will follow existing MOD policies for the transport of both radioactive and classified assets. Proposed arrangements will be agreed with civil and military security teams in line with their different responsibilities.





# 7. Planning and Permitting Procedures

## Planning Process

69. The basic structure of the planning systems is similar in Scotland and England. They are both 'plan-led' which means that decisions are made in line with formal development plans setting out national and local planning policy, unless there are 'material considerations' that justify going against the plan. However, there are differences in the detail and in how the two systems work which are explained below. More information is given in the **Supporting Information Document on Planning and Permitting**.

### Planning Application

70. Following a decision by the MOD on the storage site, a planning application for the proposed RPV store and supporting information will be prepared by the store operator and submitted to the Local Planning Authority. The relevant authorities for each of the shortlisted sites are:

- AWE Aldermaston - West Berkshire Council (unitary authority).<sup>6</sup>
- AWE Burghfield - West Berkshire Council (unitary authority).
- Capenhurst - Cheshire West and Chester Council (unitary authority).
- Chapelcross - Dumfries and Galloway Council (unitary authority).
- Sellafield - Cumbria County Council.<sup>7</sup>

71. The planning application will detail the proposed development including the function, size, shape, elevations and supporting infrastructure.

72. The planning application will be accompanied by an Environmental Statement under the Environmental Impact Assessment (EIA) Regulations. Where alternative options have been considered, the Environmental Statement will include an outline of the main alternatives and an indication of the reasons for the choice made. The public will be able to view and comment on the planning application and the Environmental Statement.

### Consultation

73. The Local Planning Authority has an obligation to circulate the planning application to a wide range of organisations including Statutory Consultees. The Statutory Consultees will depend on the location of the site and are determined by specific legislative and policy requirements and guidance which differs between Scotland and England.

74. The Local Planning Authorities in Scotland and England will also notify local bodies such as Community Councils or Parish Councils and raise general public awareness through measures such as advertisements, notices and online information.

### Determining a Decision

75. Once a planning application has been validated, the local Planning Authority is required to make a decision on the proposal within statutory time limits unless a longer period is agreed in writing with the applicant. The statutory time limit for 'determination' of a planning application for the proposed RPV store is 16 weeks as it will be subject to EIA.

76. After the consultation period, the Planning Officer will consider a range of information including: the responses to consultation; the information in the Environmental Statement; the adequacy of the information provided; and any other relevant information. The Planning Officer will then prepare a report with a recommendation to the Planning Committee.

77. The Planning Committee – which comprises elected members of the council – will take into account the Planning Officer's report and will make the final decision to approve or refuse the application based on 'material planning considerations' and set any planning conditions. The Local Planning Authority is obliged to inform the public of the Planning Committee's decision and the main reasons for that decision. This is normally done in the same way for all applications, through regular channels such as the council's website.

<sup>6</sup> For the AWE sites, the planning application would be prepared by AWE but formally submitted by the Secretary of State for Defence.

<sup>7</sup> If Sellafield is the chosen site, Cumbria County Council will be the determining authority for the planning application but Copeland Borough Council will be involved in the planning process under existing arrangements.



## Call-in and Appeal

78. Both Scottish Ministers and the Secretary of State have a general power to 'call-in' planning applications for their own determination. Applications can be called in at any time during the planning application process up to the point at which the Local Planning Authority actually makes the decision. Scottish Ministers and the Secretary of State have the authority to consider a called-in application through a public inquiry, informal hearing or through written submissions.
79. If the application is refused, the applicant can appeal against the decision to the relevant authority:
- In Scotland planning appeals can be decided by 'reporters' from the Scottish Government Directorate for Planning and Environmental Appeals, although the Scottish Government can 'recall' an appeal for determination.
  - A similar process applies in England where the majority of planning appeals are decided by an Inspector from the Planning Inspectorate but the Secretary of State has the power to 'recover' an appeal for determination.

## Permits and Licences

80. As well as securing planning permission, the RPV store will be subject to a number of other regulatory processes:
- All the provisionally short listed sites are Nuclear Licensed Sites under the Nuclear Installations Act (1965) regulated by the ONR. This means that in addition to securing planning permission for the proposed interim storage facility, any necessary regulatory consent will have to be received from the ONR before the facility can be built, commissioned or operated.
  - Nuclear Site Licensees also require an environmental permit in England or authorisation in Scotland for any discharges or disposal of radioactive waste.
81. No discharges are expected but whichever site is chosen will nevertheless have to formally consider whether there needs to be any variation to the permitted or authorised limits.
82. The ONR and the environment agencies co-operate in exercising their respective functions and will also be fully consulted as part of the planning application process.



## 8. Strategic Environmental Assessment

### Purpose

83. Strategic Environmental Assessment is the process through which significant environmental effects can be assessed at a programme level and information presented on alternatives. There is also a statutory requirement for certain designated public authorities (in local and central government and regulating authorities) and the public to be consulted on the SEA Environmental Report and they must be given an opportunity to express their opinion. The results of the SEA will be a major input to site comparison studies and have been published for comment alongside this Consultation Document.
84. The SDP's SEA aims to:
- identify and assess the potentially significant environmental effects of the options;
  - enable the public to comment on the potential impacts and suggest improvements and monitoring measures; and
  - ensure that the potential effects are properly considered throughout project planning and before major decisions are made.

### Scope

85. The categories of potential effect covered by the SEA are shown below. The **Strategic Environmental Assessment Non-Technical Summary** includes a summary table with more information and the full definitions are in the Environmental Report.

Radiological Discharges / Exposures	Climate Change and Energy Use
Biodiversity and Nature Conservation	Coastal Change and Flood Risk
Population	Material Assets (Transport)
Health and Wellbeing	Material Assets (Waste Management)
Noise and Vibration	Land Use and Materials
Geology and Soils	Cultural Heritage
Water	Landscape and Townscape
Air	

### Potential Environmental Impacts

86. Most of the SEA conclusions regarding the potential impact of an RPV store apply to all the shortlisted sites. These are summarised below. SEA issues that are specific to individual sites are summarised later in the relevant site chapter.
87. On all sites, there would be minor negative effects from greenhouse gases and energy use for all stages of the project lifecycle though construction, use and eventual decommissioning.
88. Minor adverse temporary effects are anticipated during construction and decommissioning:
- There is potential for temporary disturbance of habitats and/or wildlife.
  - Despite mitigation, there will be some noise and vibration.
  - Minor changes to local roads may be required but they are expected to be of minor significance.
  - There is some potential for mobilising historic contaminants, depending on the site.
  - There may be a temporary visual impact from tall plant (e.g. cranes) and traffic (particularly HGVs).
  - There may be minor negative effects on waste generation and the capacity of waste management facilities during construction and demolition.



89. No significant effects are anticipated in the following areas:

- Minimal or no radiological discharges are currently anticipated. This, together with strict regulation, means there are no likely significant effects on local health and well-being.
- There are no land use change issues.

#### **Socio-Economic impacts**

90. Based on the SEA results, the MOD expects the SDP store to have minimal socio-economic impact - either positive or negative - on the local economy or the community around the chosen site. No significant impacts are anticipated in the SEA on the number and types of local jobs available.

91. The project team recognises that this is an important part of the process to participants in the Public Consultation, so a separate Topic Summary<sup>8</sup> summarises the MOD's understanding of the planning position and clarifies who would pay for any necessary infrastructure improvements.

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<sup>8</sup> SDP Topic Summary: Community Benefits.



# PART C

## Site Information



## 9. The AWE Sites

92. The Atomic Weapons Establishment provides and maintains the warheads for the UK's nuclear deterrent, Trident. AWE is contracted to the MOD through a government-owned / contractor-operated arrangement. While the sites and facilities remain in MOD ownership, their management and day-to-day operations are contracted to a private company, AWE Management Limited (AWE ML).
93. AWE ML is a consortium of three equal partners: Serco Group Plc; the Lockheed Martin Corporation; and Jacobs Engineering Group. AWE ML has delegated responsibility to AWE Plc to deliver the contract. AWE Plc employs the workforce, and maintains the nuclear site operating licences and discharge authorisations. Its directors have total responsibility for the day-to-day management and operations of the AWE programme.
94. The MOD is the customer but also holds a 'special share' in AWE Plc. It monitors AWE Plc's operations and performance and, along with regulators and legislative bodies, assures safety and security standards.
95. AWE has two major sites, Aldermaston and Burghfield, both in Berkshire and both on the RPV storage site shortlist:
- AWE Aldermaston provides advanced research, design and manufacturing facilities.
  - AWE Burghfield is responsible for the final assembly and maintenance of the warheads while in service, as well as their decommissioning.



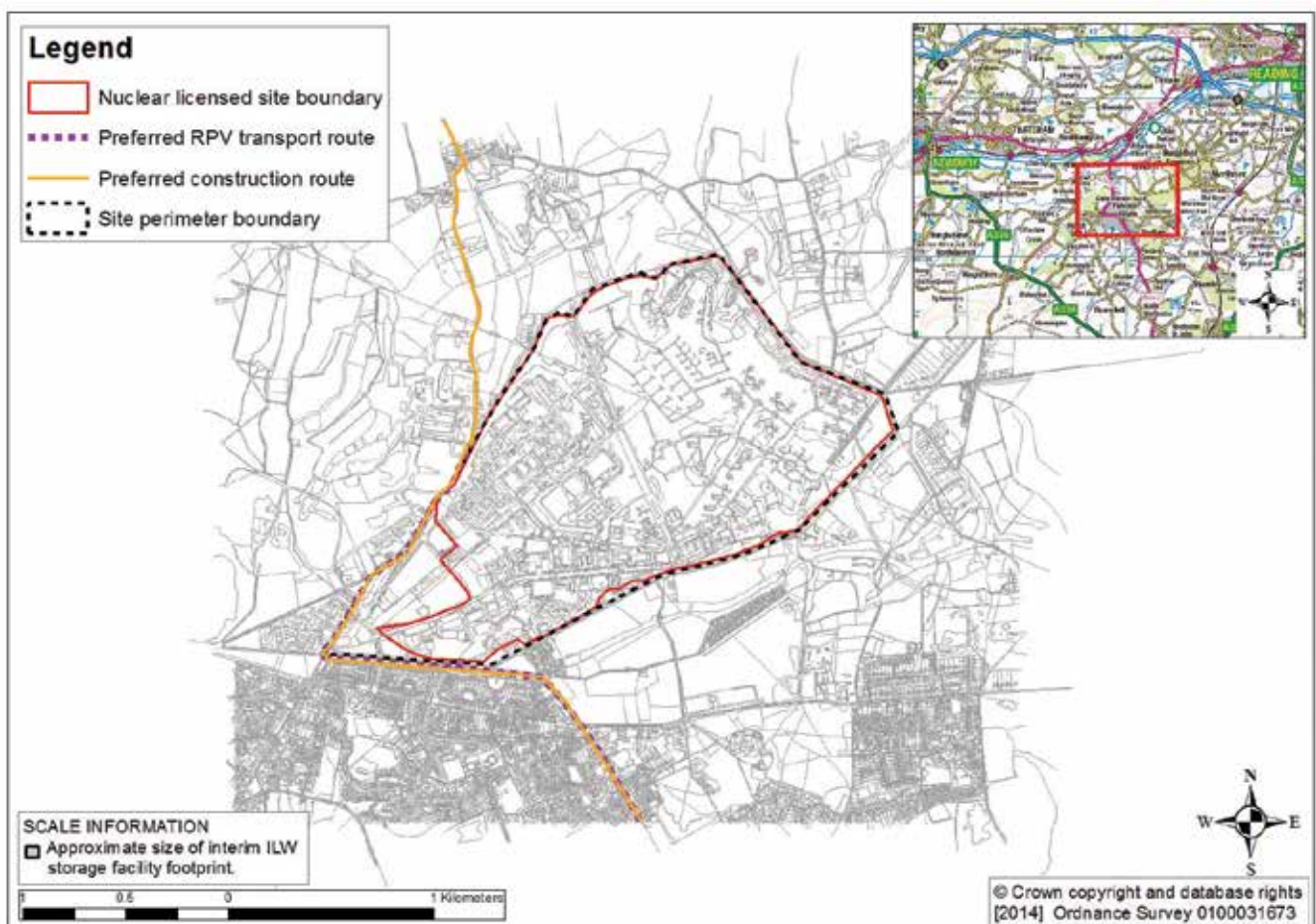
Aerial view of AWE Aldermaston

## Site Overview

96. AWE Aldermaston is situated near to the southern boundary of West Berkshire and neighbours the town of Tadley in Hampshire to the south. The site extends to 285 hectares, the majority of which is nuclear licensed.
97. AWE has confirmed that an RPV store could be accommodated within the existing Aldermaston Nuclear Licensed Site.
98. The site map below shows the site boundary. The marker by the scale shows the approximate maximum size of an interim RPV storage facility (3,150m<sup>2</sup>). A location will be determined in due course should Aldermaston be selected as the storage site.

## Site Programme and Radioactive Waste Storage

99. The AWE Site Development Context Plan<sup>9</sup> includes 10-year Illustrative Site Development Framework Plans for Aldermaston. The plan identifies the longer term land use development plan for this site.
100. AWE Aldermaston is the current focus for the management and storage of ILW and other higher activity waste arising from MOD's strategic weapons programme so there are radioactive waste storage facilities in operation on the site. AWE is proposing an increase in ILW storage capacity through to 2060.
101. AWE Aldermaston receives any radioactive waste arising on the Burghfield site for consignment and/or storage.



Map from SEA of AWE Aldermaston indicating the nuclear-licensed boundary and potential construction and RPV transport routes

<sup>9</sup> Available from [www.awe.co.uk/Contents/Publication/f0677f7SDCP](http://www.awe.co.uk/Contents/Publication/f0677f7SDCP)



## Potential impacts

102. A detailed assessment of potential impacts for an RPV store on this site is contained in the SEA. SEA issues specific to AWE Aldermaston are summarised below:

- During construction and decommissioning, there could be disturbance of archaeological remains, depending on the siting of the store. No effects are anticipated on the Scheduled Monument (Grim's Bank) within the site.
- During operation, there could be a negative effect on the setting of Aldermaston Court, again depending on the siting of the store.

## Local Transport Routes

103. The West Berkshire Council Freight Strategy requires access to AWE Aldermaston to be either from the M3 J6 and A340 or via the M4 J12, A4 and A340.

104. After the first year, only one RPV transport would typically take place per year. The SEA notes that there is a width restriction over the Kennet and Avon canal and that RPV transport could be routed from the M3 to the site via the A340. However, if Aldermaston is chosen the RPV route would be confirmed in consultation with local authorities.



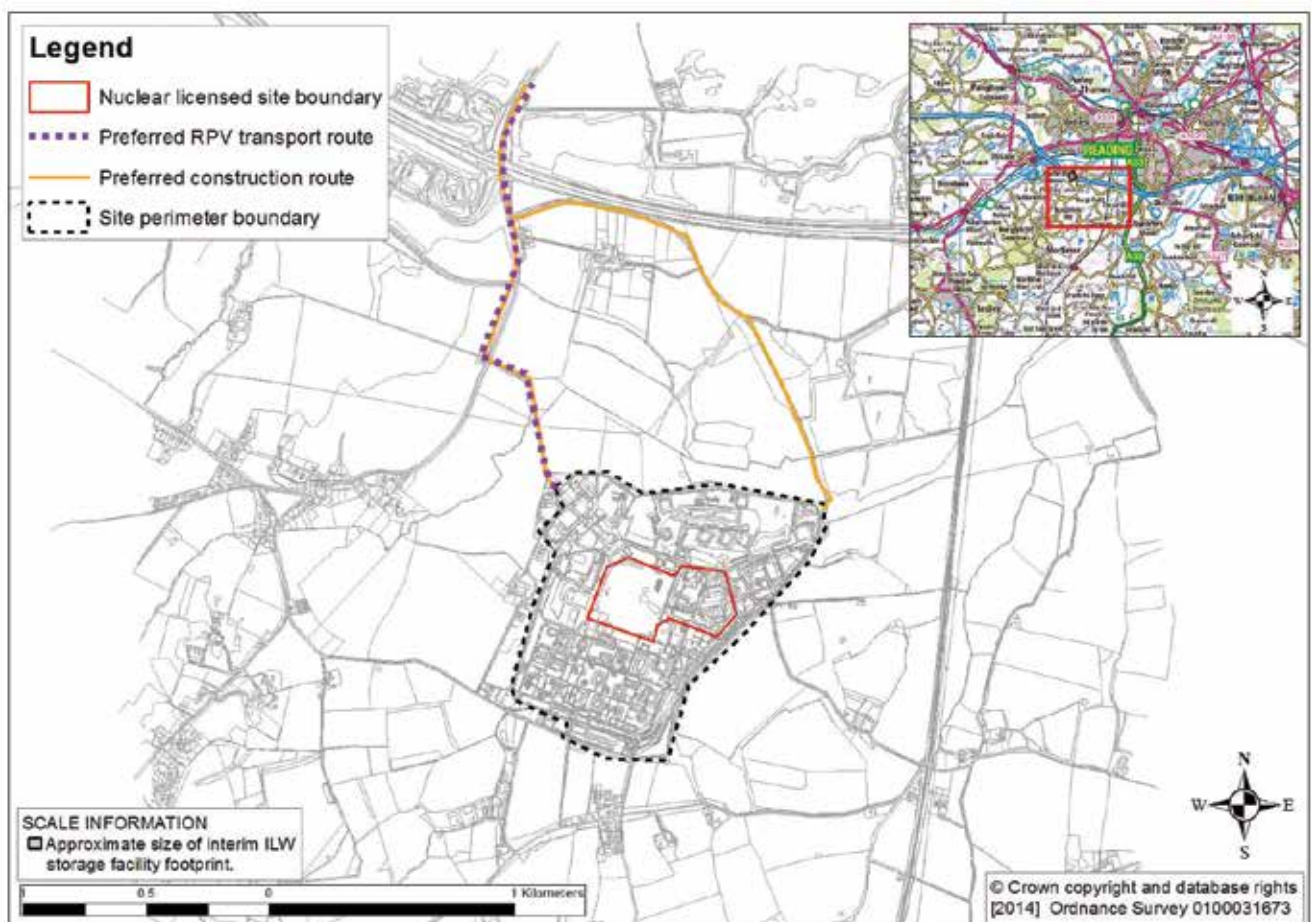


## Site Overview

105. AWE Burghfield is approximately 0.5 km east of Burghfield village in West Berkshire, and about 3 km southwest of Reading. The site covers approximately 89 hectares. Only part of the site is covered by a Nuclear Licence.
106. AWE has confirmed that an RPV store at the site could be accommodated within the existing Burghfield site boundary. It may, however, be necessary to extend the current Nuclear Licensed Site.
107. The site map below shows the site boundary. The marker by the scale shows the approximate maximum size of an interim RPV storage facility (3,150m<sup>2</sup>). A location will be determined in due course should Burghfield be selected as the storage site.

## Site Programme and Radioactive Waste Storage

108. The AWE Site Development Context Plan<sup>10</sup> also identifies the longer term land use development plan for AWE Burghfield.
109. No significant quantities of radioactive wastes are generated at Burghfield and no ILW is stored there. Any waste that is produced is sent to Aldermaston for consignment and/or storage.



Map from SEA of AWE Burghfield indicating the nuclear-licensed boundary and likely construction and RPV transport routes

<sup>10</sup> Available from [www.awe.co.uk/Contents/Publication/f0677f7SDCP](http://www.awe.co.uk/Contents/Publication/f0677f7SDCP)



## Potential impacts

110. A detailed assessment of potential impacts for an RPV store on this site is contained in the SEA. SEA issues specific to Burghfield are summarised below:.

- AWE is currently developing a proposal for a flood alleviation scheme and additional mitigation can be built into the design if necessary. It is therefore anticipated that there will be no significant effect related to flood risk during construction, operation and decommissioning. Future development and climate change may have a minor negative effect.
- There is some slight potential during construction to disturb historic or archaeological remains or affect the setting of Cold War heritage interests.

## Local Transport Routes

111. After the first year, only one RPV transport would typically take place per year. The West Berkshire Council Freight Strategy requires access to AWE Burghfield to be via M4 J12, the A4 and Reading Road to Burghfield Common. Access could then be via AWE Main Gate or Pingewood Gate.



## 10. The NDA Sites

112. The Nuclear Decommissioning Authority (NDA) is responsible for managing the effective and efficient clean-up of the UK's nuclear legacy. This includes the first generation of Magnox power stations (of which Chapelcross is one), various research and fuel facilities, and its largest, most complex site, Sellafield. NDA is the body tasked with implementing Government policy on ILW, and the UK Nuclear LLW strategy. It also provides advice on decommissioning plans for current and planned nuclear power stations.
113. NDA has introduced private sector skills and experience to the decommissioning programme through a series of competitive tender processes. It awards contracts to winning bidders to take ownership of the Site Licence Companies (SLC) in order to improve their performance and delivery. The winning bidders are called Parent Body Organisations (PBO). A PBO owns the shares in the SLC for the period of the contract.
114. The PBO acts as a parent company, providing additional resource and management expertise. The SLCs carry the licence, granted by ONR, to operate the nuclear sites.
115. There are two NDA sites on the SDP shortlist: Chapelcross and Sellafield.
- The SLC for Chapelcross is Magnox Ltd. The company is responsible for the management and operations of ten nuclear sites and one hydroelectric plant in the UK on behalf of the NDA. The PBO is Cavendish Fluor Partnership, a consortium of Cavendish Nuclear Ltd and Fluor Corporation. Cavendish Nuclear is a wholly-owned subsidiary of Babcock International Group plc, which operates the Devonport and Rosyth dockyards and will do the initial dismantling of the SDP submarines.
  - Sellafield Ltd holds the Nuclear Site Licence at Sellafield. It is the company responsible for safely delivering decommissioning, reprocessing and nuclear waste management activities there on behalf of the NDA. The PBO is owned by Nuclear Management Partners, a consortium comprising URS, AMEC and Areva.
116. The SDP team has worked closely with the NDA (as the site owner) and also with the two shortlisted NDA SLCs. The PBOs for these sites are stakeholders in the process but have not been involved in discussions with the SDP.

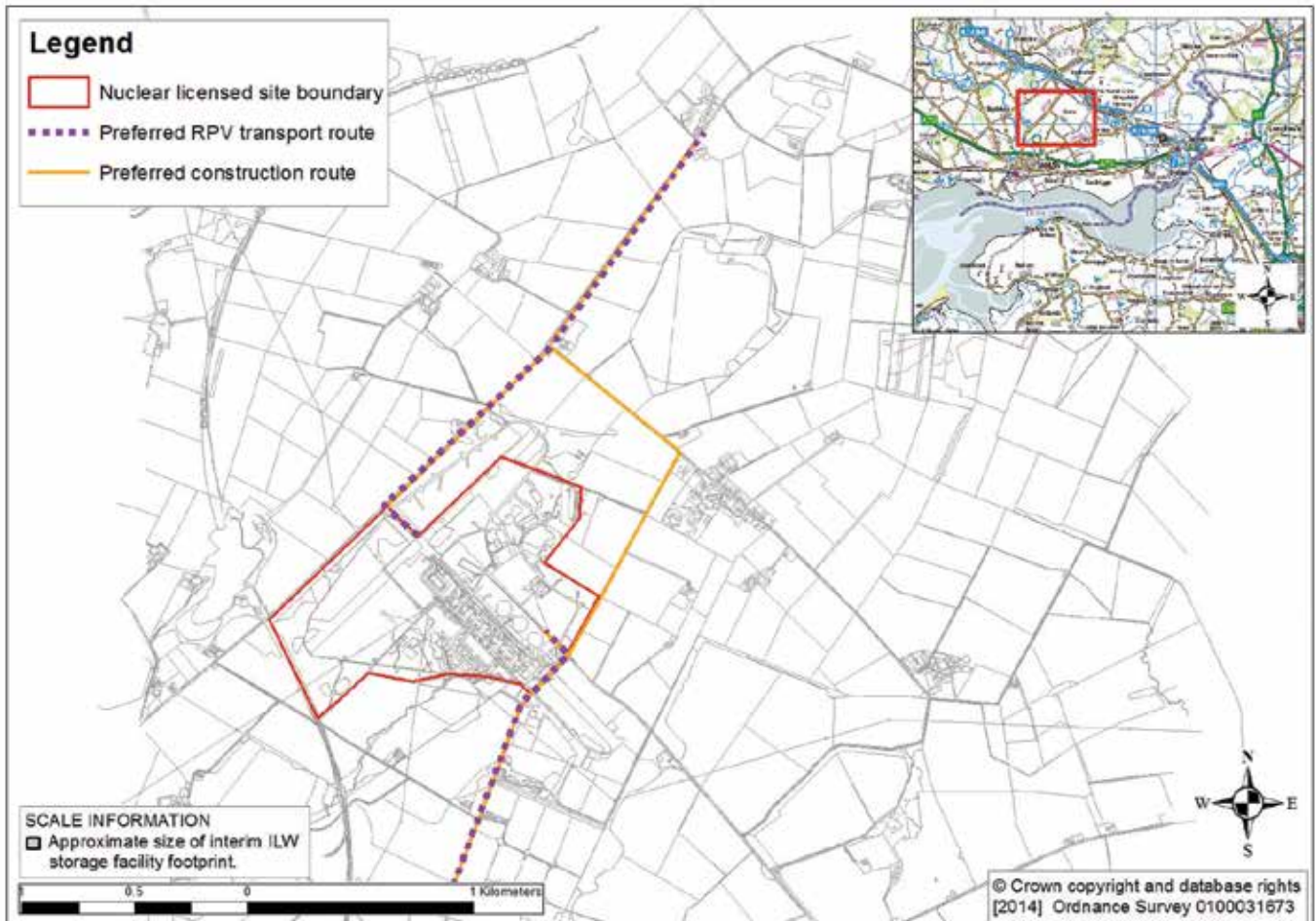


Aerial view of Sellafield



## Site Overview

117. The Chapelcross site is situated close to the village of Creca approximately 2 km north of the town of Annan in Dumfries and Galloway. The location is a rural area which was originally an RAF airfield, converted for use as a Magnox nuclear power station in 1955. The site is approximately 5 km from the northern coast of the Solway Firth. The Nuclear Licensed Site covers approximately 92 hectares.
118. NDA has confirmed that an RPV store at the site could be accommodated within the existing boundary of the Nuclear Licensed Site.
119. The site map below shows the site boundary. The marker by the scale shows the approximate maximum size of an interim RPV storage facility (3,150m<sup>2</sup>). A location will be determined in due course should Chapelcross be selected as the storage site.



Map from SEA of Chapelcross (NDA) indicating the nuclear-licensed boundary and likely construction and RPV transport routes

## Site Programme and Radioactive Waste Storage

120. The NDA has produced a decommissioning strategy for Chapelcross <sup>11</sup>. The cooling towers were demolished in 2007 and the reactors were defuelled in early 2013. Decommissioning of remaining non-reactor facilities is scheduled to start in 2023 and continue until the site enters the full Care and Maintenance phase in 2028. Final Site Clearance is scheduled to commence at the end of the Care and Maintenance phase (2089), with all remaining structures on the site cleared by 2095.
121. As part of the site's Care and Maintenance preparations, all higher activity wastes will be retrieved, processed and placed within a new store for ILW and other higher activity waste due for completion in 2015/16.
122. Although the RPVs would be sent to a GDF, all non SDP higher activity waste originating on the site will thereafter be managed in accordance with the Scottish Government Policy. This states that the long term management of the wastes should be in near-surface facilities located as close as possible to the site where the waste is produced.

## Potential Impacts

123. No significant SEA issues specific to Chapelcross have been identified.

## Local Transport Routes

124. During both construction and operation, access to the site will be via a series of minor roads which connect to the A75 trunk road, which runs to the south of the site and connects to Junction 22 of the A74(M), and the B722, which connects with the A74(M) at Junction 20. After the first year, only one RPV transport would typically take place per year.

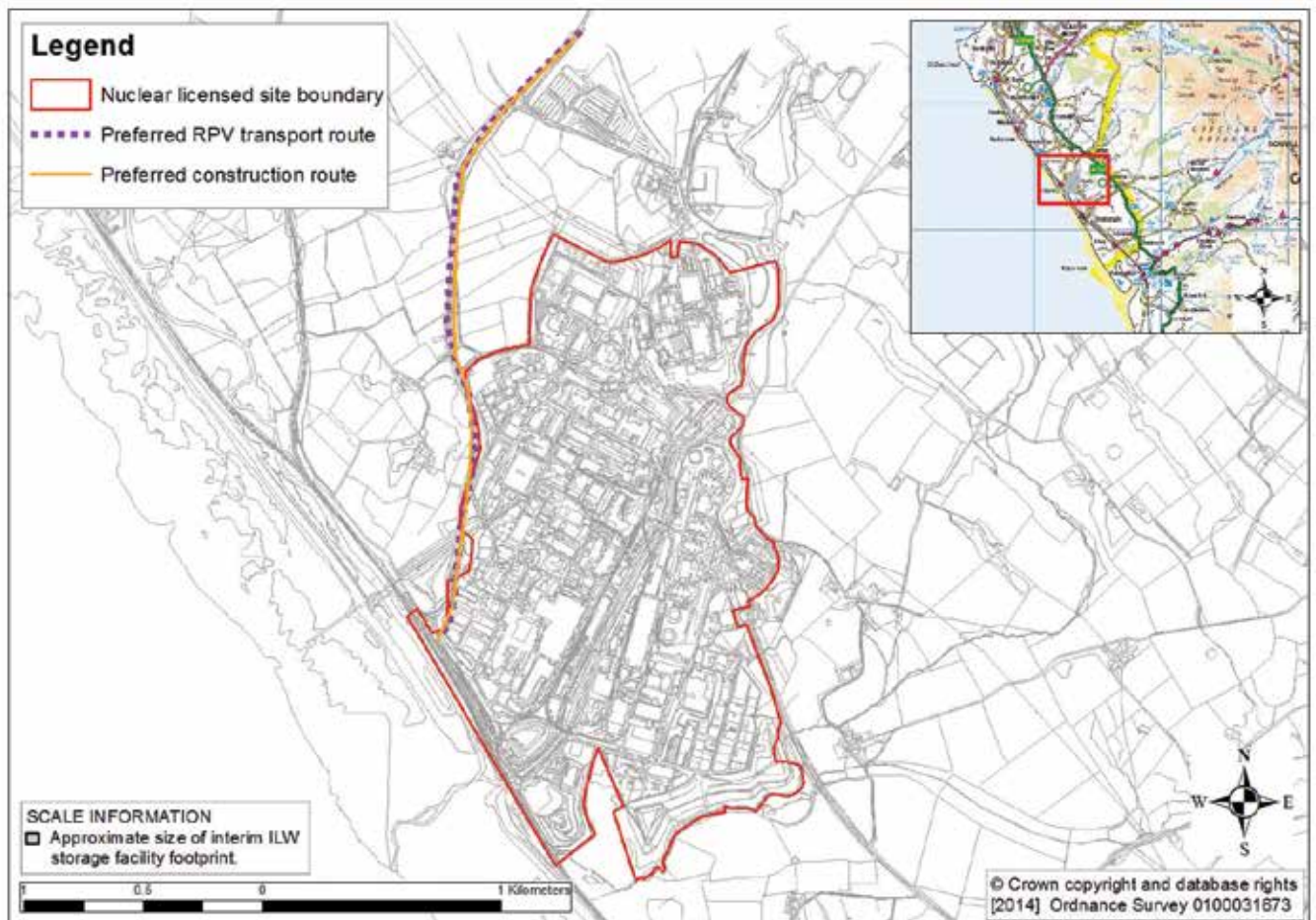
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<sup>11</sup> Available from <http://www.nda.gov.uk/publication/nda-strategy-effective-from-april-2011>



## Site Overview

125. The Sellafield site is situated in Cumbria, on the coast of the Irish Sea, covering approximately 276 hectares. The site was originally constructed in 1942 as Royal Ordnance Factory Sellafield, producing explosives to supply the military during World War II. The site was adapted for nuclear-sector work after the war ended. The site has been owned by the NDA since 2005.
126. NDA has confirmed that an RPV store at the site could be accommodated within the existing boundary of the Nuclear Licensed Site.
127. The site map below shows the site boundary. The marker by the scale shows the approximate maximum size of an interim RPV storage facility (3,150m<sup>2</sup>). A location will be determined in due course should Sellafield be selected as the storage site.



Map from SEA of Sellafield indicating the nuclear-licensed boundary and likely construction and RPV transport routes

## Site Programme and Radioactive Waste Storage

128. The Sellafield site is home to a wide range of interdependent nuclear facilities and operations. These range from hazard and risk reduction to reprocessing and nuclear waste management. The site covers two square miles and over 200 nuclear facilities.
129. The primary mission for the site is the safe acceleration of risk and hazard reduction. This is an extensive piece of work, which stretches out over the next 110 years. It is estimated that the eventual decommissioning of Sellafield will result in the generation of 1,260 m<sup>3</sup> of High Level Waste, 282,000 m<sup>3</sup> of ILW, and 503,000 m<sup>3</sup> of LLW, of which a proportion will be diverted away from the Low Level Waste Repository (LLWR) through the use of decontamination and material recovery techniques.
130. From the 1990s onwards, Sellafield began constructing a comprehensive suite of waste management facilities to treat and dispose of the waste arising from the commercial and decommissioning operations of reprocessing. Further treatment plants and stores will be constructed to enable the safe, effective decommissioning of the Sellafield site.
131. Treated wastes will be stored on the site until a GDF is available in accordance with UK Government Policy.

## Potential Impacts

132. A detailed assessment of potential impacts for an RPV store on this site is contained in the SEA. SEA issues specific to Sellafield are summarised below:
  - Flood risk zones are outside the developed part of the site. Environment Agency policy is to hold the existing defence line. Future assessment may determine that additional flood risk measures are required for Sellafield, but this decision would not be affected by the presence of an RPV store.
  - Despite mitigation, construction and decommissioning traffic vibration and dust may affect historic structures. There would be cumulative effects from other infrastructure projects, including the proposed nuclear power station.

## Local Transport Routes

133. After the first year, only one RPV transport would typically take place per year. During both construction and operation, the transport route is anticipated to be from Junction 40 of the M6, along the A66 and then on to the A595.



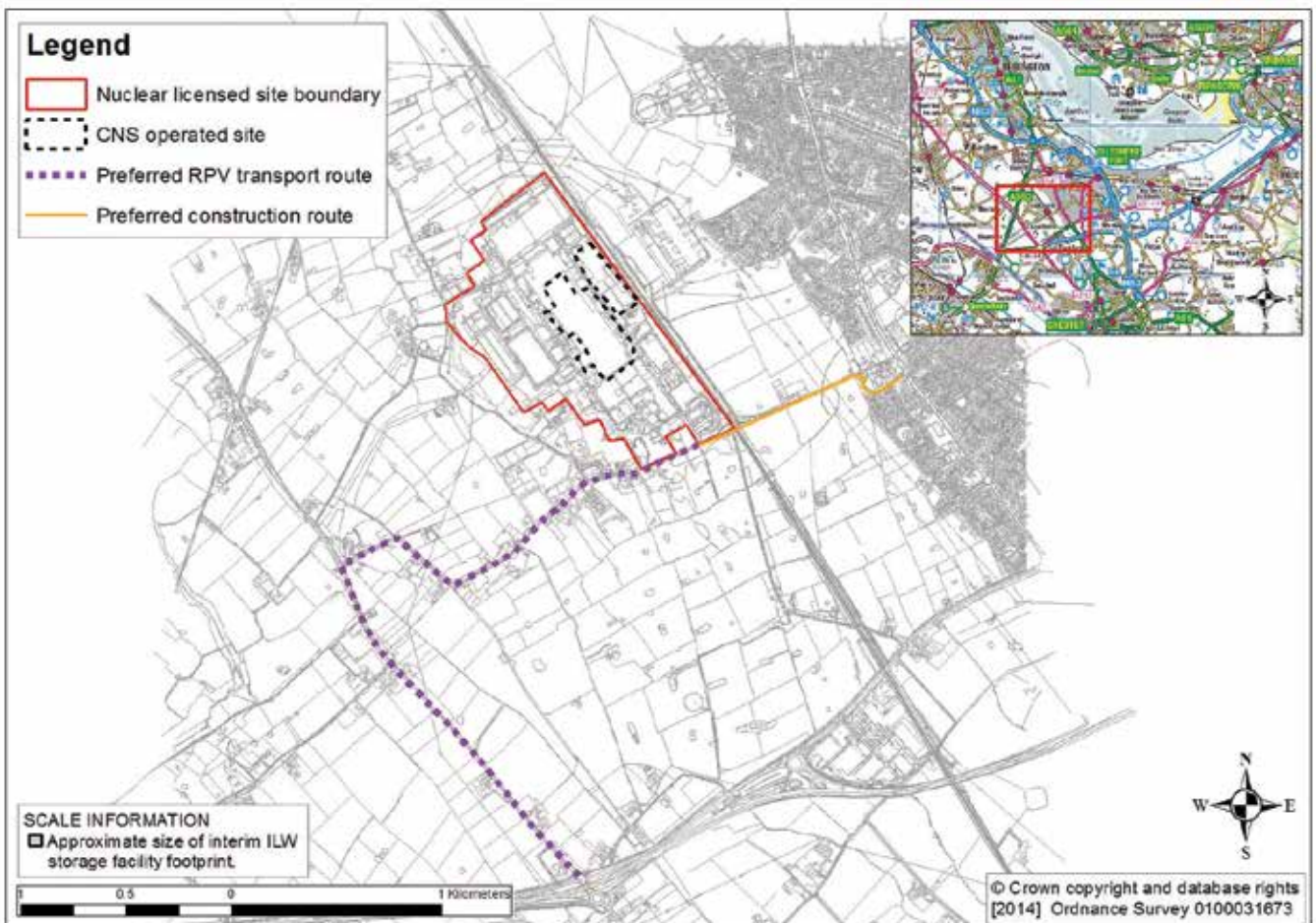
# 11. Capenhurst

## Capenhurst Nuclear Services

- 134. The Capenhurst site was originally developed during World War II as a Royal Ordnance factory. After the war, it was chosen as the location for a uranium enrichment plant. In 1993 it was divided into two Nuclear Licensed Sites. BNFL assumed responsibility for the remaining diffusion plant and what later became URENCO UK assumed responsibility for the centrifuge operations. NDA took over BNFL's nuclear liabilities in 2005.
- 135. More recently, in 2012, the Capenhurst site was re-licensed with URENCO UK Ltd as the single Site Licence Holder. Capenhurst Nuclear Services (CNS), which is a URENCO subsidiary, operates as a tenant on part of the Licensed Site and - amongst other activities - manages uranic materials and site decommissioning activities on behalf of the NDA.

## Site Overview

- 136. Capenhurst neighbours the town of Ellesmere Port in Cheshire, within the Cheshire West and Chester Council boundary. It is approximately 10 km north of the town of Chester and 4 km from the Welsh border.
- 137. CNS has confirmed that an RPV store at the site could be accommodated within the existing Nuclear Licensed Site.
- 138. The site map below shows the site boundary. The marker by the scale shows the approximate maximum size of an interim RPV storage facility (3,150m<sup>2</sup>). A location will be determined in due course should Capenhurst be selected as the storage site.



Map from SEA of Capenhurst (CNS) indicating the nuclear-licensed boundary and likely construction and RPV transport routes





## Site Programme and Radioactive Waste Storage

139. There is a decommissioning strategy in place at Capenhurst that includes both near-term decommissioning activities for facilities owned by NDA and longer-term plans for those operational plants owned and operated by URENCO UK Ltd. The strategy includes the progressive refurbishment, decommissioning and demolition of a range of nuclear facilities and the appropriate treatment and disposal of wastes.
140. Ultimately, the strategy may lead to the eventual de-licensing of land from facilities for an appropriate after-use, such as commercial development. However, the site is expected to remain an operational site for the foreseeable future and a Nuclear Licensed Site for at least 100 years, in accordance with the end state agreement reached through the NDA stakeholder engagement process.
141. CNS takes in NDA's Magnox Depleted Uranium for storage and also stores depleted uranium hexafluoride for NDA. The Tails Management Facility currently under construction will in due course convert these "Hex Tails" to lower hazard uranium oxide for long term storage on site.

## Potential Impacts

142. A detailed assessment of potential impacts for an RPV store on this site is contained in the SEA. SEA issues specific to Capenhurst are summarised below:
  - ILW storage at Capenhurst could have minor negative effects across all phases of implementation. Despite mitigation construction and decommissioning traffic vibration and dust may affect historic structures, although the effect is anticipated to be minor.

## Local Transport Routes

143. The SEA states that the route for construction traffic will be via the A41 and Capenhurst Lane avoiding Dunkirk Lane and Capenhurst Village. CNS notes that the preferred route for the transportation of the RPV is via the A51 and through the village thereby avoiding the Capenhurst bridge. After the first year, only one RPV transport would typically take place per year.



## 12. The Dismantling Sites



144. Seven submarines are currently stored afloat at Rosyth Dockyard (above, with the submarines towards the top left). The remainder are either stored afloat at Devonport Dockyard or will be taken there at the end of their service. The submarines will be dismantled at the dockyards and the RPVs start their journeys to the store from there. The routes they will take through the local area are described in the SEA.
- Although alternatives are available, the route from Rosyth is likely to follow the new Ferry Toll Road directly to the A90/M90.
  - The probable route from Devonport will be from the final packaging site in the Dockyard to Camel's Head Gate. It then follows the St. Budeaux Bypass to the A38 and then the A38 until it reaches the motorway network at Exeter.
145. The onward routes will depend on the site chosen for the RPV store.
146. The two dockyards and, for Devonport, the adjacent MOD naval base were considered for the storage site shortlist. However, as described in the Criteria and Screening Report, they proved to be unavailable or unsuitable and were eliminated from further consideration.
147. The MOD and the dockyards owner, Babcock, will continue to inform the local communities about progress on the RPV store programme because this also determines progress on the SDP.



# Part D

# MOD's Assessment to Date and Plans



## 13. Site Comparison Studies

### Assessment Approach

148. The MOD's objectives for the SDP are set out in the project *User Requirements Document*. The site assessment programme, as described in the project's *Approach to Decision Making*, is designed to compare the shortlisted sites using these requirements as a checklist. The requirements fall into four groups:

- The 'whole life' cost of the project is mainly assessed through the Investment Appraisal process.
- Whether each site meets the functional needs of the project is mainly assessed through the Operational Effectiveness analysis.
- Potential environmental impacts that the project must seek to reduce (if negative) or enhance (if positive) are assessed through the SEA and also accounted for in the Operational Effectiveness analysis.
- Other factors affecting the SDP's ability to deliver the project are mainly assessed through the Other Contributory Factors analysis.

149. A summary of some of the areas where differences have been found between sites is included at the end of this chapter but the analysis is at an early stage and it must be stressed that this work is ongoing and there is still scope for new information to affect the results.

150. Much of the information required will come from the site owners but some important factors which may influence MOD's decision lie outside their control, for instance Government and wider MOD positions on national strategic benefit.

### Assurance

151. As for all large MOD projects, the SDP's site assessment work is subject to detailed scrutiny and oversight to give confidence that the conclusions are robust, including scrutiny from MOD specialists independent of the project.

152. Because of the particular nature of the project, independent observers are invited to attend key MOD workshops and proposed strategies and consultation materials are reviewed by an independent stakeholder sub-group. This includes representatives from industry, academia, local government organisations, non-governmental organisations, and technical and regulatory specialists.

### Investment Appraisal

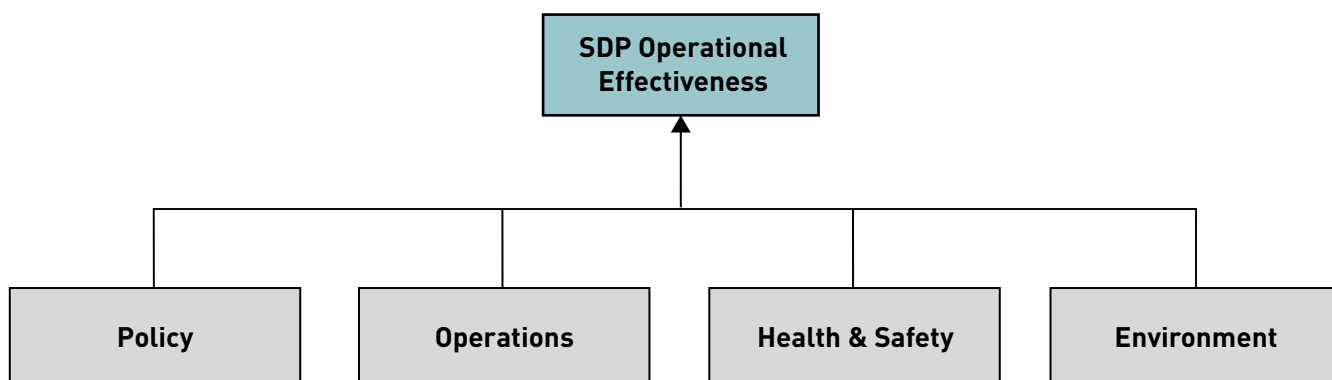
153. The Investment Appraisal compares the options on the basis of what they 'should cost' using order of magnitude estimates obtained and validated through discussion with experts from shortlisted sites and site owners. The assessment covers four main areas:

- The direct costs associated with each shortlisted site, including capital costs (design, construction, commissioning and decommissioning).
- The direct annual operational and maintenance costs (including inspections of store and contents).
- The direct periodic cost of any refurbishment to the RPV store and replacement of systems due to obsolescence.
- Indirect costs on the project associated with choosing the site, including the timing and financial impact of the store commissioning date, and programme and project risks.

154. In principle, the construction of comparable stores to a common requirement on sites operating under comparable regulatory frameworks might be expected to result in comparable direct costs. However, in practice there will be differences due to site characteristics and differences in the store concept being proposed by each site. Indirect costs may vary significantly due to differences in expected programme length and allowances for programme risk.
155. Estimated costs for the different options proposed by the site operators cannot be disclosed because it could compromise the commercial process which will follow.

## Operational Effectiveness

156. The Operational Effectiveness analysis evaluates how well the different site options would meet the MOD's requirements. A Multi-Criteria Decision Analysis (MCDA) approach has been used, as for the previous round of the SDP decision making. The top level criteria are shown below. A more complete criteria map is included in the **Assessment Criteria Overview** report.
157. All the shortlisted sites are existing Nuclear Licensed Sites and generally have similar characteristics. Any store design must have high safety and environmental performance. As expected therefore, early assessments of operational effectiveness do not show much difference between sites.
158. The Operational Effectiveness assessment will be revisited when data collection is complete and the results of Public Consultation are available.



# Other Contributory Factors

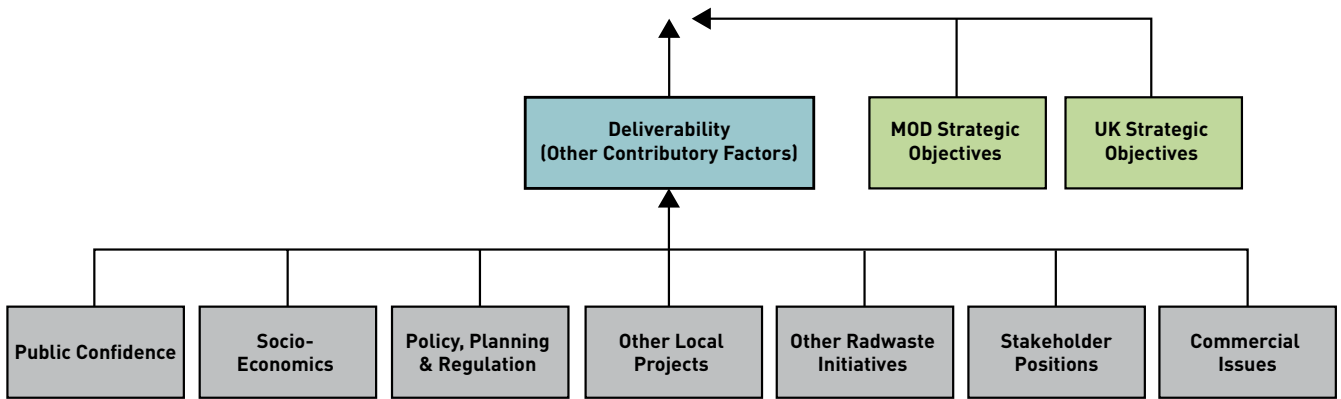
159. In MOD option assessments, Other Contributory Factors (OCF) are factors that:

- are difficult to measure in terms of either operational effectiveness or whole life cost;
- represent the positions of external stakeholders that may be subject to change; or
- depend on insights from Public Consultation.

160. These factors often affect the likelihood of success during the planning, permitting and commercial processes and so may affect project or wider programme deliverability. They are potentially influential in site selection but do not automatically over-rule cost-effectiveness and the more difficult option in OCF terms may still be the right choice.

161. During the period of engagement that followed publication of the site shortlist, individuals and organisations outside the MOD offered useful advice on both the issues of interest to local communities and other factors likely to be relevant to MOD’s decision-making. The results of these discussions are reflected in the criteria used and in the structure and scope of this Public Consultation Document. The top level OCF criteria are shown below. A more complete criteria map is included in the **Assessment Criteria Overview** report.

162. The main OCF analysis can only start once public consultation has ended and the comments have been processed. Public Consultation input will have particular relevance to the OCF linked to public confidence.



## 14. Differences Between Sites

163. The analysis of differences between the shortlisted sites is still at an early stage and this Public Consultation is an important part of the process. The analysis will not be completed until towards the end of 2015 but in the meantime this chapter indicates some areas of potential difference between them. There is nothing to suggest any particular site is favoured at this stage.

### Investment Appraisal, Programme & Risk

164. Many costs are likely to be similar but factors that might result in different overall costs to the SDP include the following:

- Different construction or site preparation requirements, perhaps due to different environmental contexts or hazards.
- Differences in operational costs, overheads, or any other payments to the site owner from the project budget.
- Differences in the level of certainty about costs. Some site owners - CNS and NDA - have recent experience of building broadly comparable stores for example.
- Increased programme duration or risk, perhaps due to resource constraints or potential interactions with other high priority waste management projects. AWE Aldermaston and Sellafield, in particular, already have extensive waste management operations and plans.

### Operational Effectiveness

165. The operational effectiveness of the proposals is not expected to vary by much but there are factors that might result in differences. These include the following.

- Differences between Scottish and English policy and perspectives on radioactive waste management and disposal.
- Potential conflicts or synergies with other MOD radioactive waste or material management programmes. AWE Aldermaston, Capenhurst and Sellafield already store nuclear materials and/or wastes on behalf of the MOD.
- Differences between environmental impacts such as transport distances and the relative simplicity of local access routes. For instance, using AWE Aldermaston or Burghfield will result in the lowest total mileage, across all 27 RPVs, from the dismantling sites to storage but any local impacts would also need to be taken into account.

### Other Contributory Factors and Deliverability

166. OCF studies depend on insights from this Public Consultation and only a limited range of potential issues has been explored to date. However, areas where public and stakeholder perceptions of sites might differ include the following:

- Levels of public confidence in the programme and local management of radioactive wastes.
- The positions of national and local authorities on radioactive waste management generally and the SDP's proposals specifically, including socio-economic benefits or detriments.
- Consistency with planning and regulatory objectives/frameworks. For instance, AWE Burghfield does not currently store radioactive wastes. The Nuclear Site Licence area may also need to be extended.
- Commercial issues, including the SDP's ability to reach a satisfactory commercial agreement with the site owner/operator.



## 15. Public Consultation Plans

### Consultation Plans

167. The SDP has documented its Public and Stakeholder Engagement (PSE) policy and plans in its **Approach to PSE** report. This commits the project to:

- being genuine, as open as possible, fair and inclusive;
- delivering a cost-effective engagement programme that reflects the significance of the issues and the level of interest in the community;
- building on, and sharing, previous experience; and
- complying with regulatory and MOD procedural requirements.

168. There are four main points in the RPV store programme where stakeholders and the wider public have been, or will be, involved:

- Pre-engagement: the first phase comprised six weeks in 2014 of engagement with local authorities and other stakeholders on screening, future engagement plans, and SEA scope.
- Public Consultation: the second phase is the current Public Consultation, to review and comment on the evidence base and preliminary information from site option assessment.

- Post-approval: this phase covers engagement and feedback following approval and announcement of the proposed storage site, probably in 2016.
- Subsequent submission and consideration of a planning application made by the site owner/operator.

169. The main aim of the current Public Consultation is to seek views on the key decisions that need to be made about the storage of the RPVs. The questions at the end of this chapter expand on three topic areas on which the project team are gathering views:

- the Strategic Environmental Assessment;
- the process and criteria being used to compare the shortlisted storage sites;
- the shortlisted sites and the differences between them.

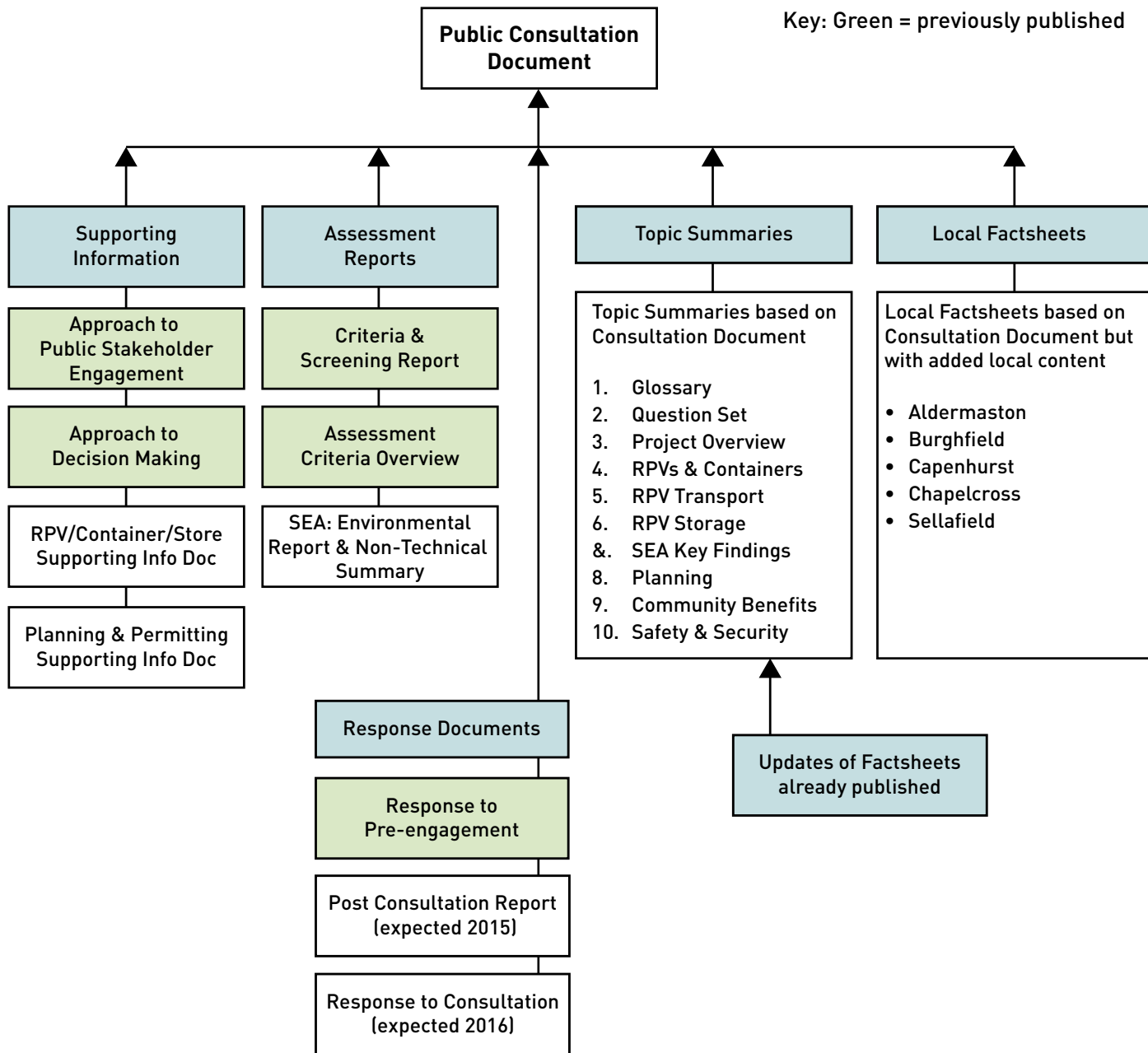
170. To give people the information they need to respond, the MOD has published this Consultation Document and its supporting reports (shown overleaf) and organised a programme of local and national public events. Details of events are given on the project web pages and can also be requested by email or post.

Public consultation event / activity	Programme
Formal stakeholder and public notification	16 October 2014
Public Consultation on the RPV storage site starts	14 November 2014
Consultation documents released and published online	14 November 2014
'Road Show' events local to each shortlisted site, including workshops	November/December 2014
Follow-up events local to each shortlisted site	January/February 2015
National events in Glasgow and Birmingham	January 2015
Public Consultation ends	20 February 2015



# Published Documents

171. This diagram shows the published information available. Full references for the documents and download links are given in References.



## Submitting Comments

172. You may use the tear-out questionnaire at the back to record your comments. The questionnaire can also be downloaded from the project web pages and copies will be available at all SDP events. Alternatively, you can write to us by post or email. It helps with our analysis if you reference the SDP question numbers but it is not essential. Contact details are on the questionnaire and repeated on the back cover.
173. Please note that the SDP team is not in a position to respond to comments that relate to activities on shortlisted sites or on MOD business which is outside of the scope of this Public Consultation. Any such comments will be passed to the relevant organisation or MOD team.

## How Will Comments be Processed?

174. Comments and questions received during the consultation period will be recorded in a database and passed to the project team for analysis. They will then be fed into the relevant strand of the site assessment process (Investment Appraisal, Operational Effectiveness or Other Contributory Factors). Any comments received after the closing date for the consultation will be considered by the project team if practicable but this cannot be guaranteed.
175. Unless the originator asks for their comments to be confidential, all comments will be posted in batches on the project web pages with people's names removed. Summary reports will be produced from all of the events held and will be published on the web pages subject to agreement from the participants.
176. When the initial analysis of responses is complete - within around three months - the project team will publish a Post-Consultation Report summarising the consultation process and the comments made. Later, once a decision has been announced, a Response to Consultation report and an SEA Post Adoption Report will be published explaining how the Public Consultation influenced the decision and what the next steps will be.
177. The MOD will continue to liaise with local authorities and communities around the selected site and there will be further opportunities for consultation and engagement organised by site teams or local authorities as part of the planning process.

## Other Sources of Information

178. If you cannot find the information you are looking for, you are welcome to contact the project team directly - the address is on the back cover. If the information you require is not yet available, they will explain the reason to you.

## Ongoing Information for Communities

179. The MOD values and supports the activities of nuclear site stakeholder groups and local liaison committees in relation to both new programmes and current facilities. They have an important role, offering constructive challenge on health, safety and environmental issues and programme delivery generally. They are regularly briefed by, and have the opportunity to question, senior site staff and regulators. They also review the information presented from the Radioactivity in Food and the Environment reports (see Chapter 6).
180. Until a decision on the location of the store is made, the SDP's contact with these bodies will continue to focus on consultation topics and the provision of information. Liaison on RPV store planning and construction and subsequent operational matters will become the responsibility of the site owners and operator once a decision has been made.





# References



# References

All the references listed below are available online at:

[www.gov.uk/government/publications/submarine-dismantling-project-interim-storage-of-intermediate-level-radioactive-waste](http://www.gov.uk/government/publications/submarine-dismantling-project-interim-storage-of-intermediate-level-radioactive-waste)

Printed copies (including large print versions) are available on request from the project team. Contact details are on the back cover.

Title	Version	Date
<b>Public Consultation documents</b>		
SDP: Consultation Document on the Site for Interim Storage of Intermediate Level Radioactive Waste <i>Summary of the project, the options being considered, and engagement opportunities (this document).</i>	Issue 1.0	November 2014
SDP: (2014) Strategic Environmental Assessment: Environmental Report <i>Report of potential environmental impacts. Supported by a separate Non-Technical Summary.</i>	Issue 1.0	November 2014
SDP ILW Storage Site Selection; Consultation Supporting Information Document on Planning & Permitting <i>Provides additional detail on the project's approach to planning and permitting.</i>	Issue 1.0	November 2014
SDP ILW Storage Site Selection Consultation; Supporting Information Document on RPVs and RPV Store <i>Provides additional technical detail on the RPV, container and store.</i>	Issue 1.0	November 2014
<b>Reports covering Screening and Pre-engagement</b>		
SDP ILW Storage Site Selection; Criteria and Screening Report <i>Overview of the screening process and the shortlist of sites for detailed assessment.</i>	Issue 2.0	June 2014
Strategic Environmental Assessment Scoping Report <i>Proposed scope of the updated project SEA and subsequent Environmental Report.</i>	Issue 1.0	February 2014
Storage Site Selection: Response to Pre-engagement <i>Summary of comments made during Pre-consultation and feedback to stakeholders on the changes made as a result.</i>	Issue 2.0	June 2014
<b>Additional reports on SDP's approach and assessment process</b>		
SDP ILW Storage Site Selection; Approach to Decision Making <i>Overview of the ILW storage site decision-making process.</i>	Issue 2.1	September 2014
SDP ILW Storage Site Selection; Assessment Criteria Overview <i>Description of the site assessment criteria and methodology.</i>	Issue 3.0	September 2014
SDP ILW Storage Site Selection; Approach to Public & Stakeholder Engagement <i>Overview of the public and stakeholder engagement activities during the ILW storage site selection process.</i>	Issue 2.1	September 2014

Title	Version	Date
<b>Additional Project Reports</b>		
[MOD] Nuclear Liabilities Management Strategy <i>Sets out the high level approaches for managing MOD nuclear liabilities.</i>	n/a	2011
SDP: User Requirements Document <i>High level project statement of the requirements placed on SDP.</i>	Issue 5.2	July 2013
SDP: Benefits Report <i>High level project statement of the benefits expected to accrue to MOD from successful delivery of SDP.</i>	Issue 2.0	July 2013

## Previous Consultation Documents

A wide range of documents has been released over the lifetime of the project, including the key reports listed below. Most are still available online (follow links to 'SDP related publications' for more supporting document):

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

Title	Version	Date
SDP: (SDC) Consultation Document <i>Public Consultation Document supporting the 2011 Submarine Dismantling Consultation.</i>	Issue 1.0	October 2011
SDP: Strategic Environmental Assessment (SEA): Environmental Report <i>Report on potential environmental impacts. Supported by a separate Non-Technical Summary.</i>	Issue 1.0	October 2011
SDP: (SDC) Post Consultation Report <i>Follow up to 2011 Submarine Dismantling Consultation summarising the comments made.</i>	Issue 1.0	July 2012
SDP: (SDC) Response to Consultation <i>Summary of assessment results with an explanation of decision logic and how comments were taken into account.</i>	Issue 1.0	March 2013
SDP: Operational Analysis Supporting Paper (OASP): 2012 update <i>Summary of the results of the option analysis and key elements of the proposed decision logic (the original of this report was redacted for publication).</i>	Issue 1.0	October 2012
SDP: Multi-Criteria Decision Analysis (MCDA) Data Report: 2012 update <i>This document contains the source data for the Operational Effectiveness Multi-Criteria Decision Analysis (MCDA) studies (the original of this report was redacted for publication).</i>	Issue 6.0	January 2013





# Glossary



# Glossary

<b>Afloat Storage</b>	Where submarines that have been taken out of service are held for long term storage in a water-filled basin i.e. a large dock where several vessels can be stored.
<b>AWE</b>	<b>Atomic Weapons Establishment.</b> See <a href="http://www.awe.co.uk">www.awe.co.uk</a>
<b>CNS</b>	<b>Capenhurst Nuclear Services.</b> See <a href="http://www.capenhurstnuclearservices.com">www.capenhurstnuclearservices.com</a>
<b>Defuel</b>	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.
<b>DNSR</b>	<b>Defence Nuclear Safety Regulator:</b> DNSR is a division of the Defence Safety and Environment Authority. See <a href="http://www.gov.uk/government/groups/defence-safety-and-environment-authority">www.gov.uk/government/groups/defence-safety-and-environment-authority</a>
<b>EA</b>	<b>Environment Agency:</b> See <a href="http://www.gov.uk/government/organisations/environment-agency">www.gov.uk/government/organisations/environment-agency</a>
<b>GDF</b>	<b>Geological Disposal Facility:</b> an engineered, underground facility where the UK's higher activity radioactive waste will be permanently disposed of. See <a href="http://www.gov.uk/government/publications/implementing-geological-disposal">www.gov.uk/government/publications/implementing-geological-disposal</a> . Scottish Government policy is not to dispose of ILW to a GDF.
<b>HGV</b>	<b>Heavy Goods Vehicle</b>
<b>ILW</b>	<b>Intermediate Level Waste:</b> Radioactive wastes exceeding the upper activity boundaries for low level waste but which do not need heat to be taken into account in the design of storage or disposal facilities.
<b>Interim Storage</b>	Interim waste storage is not itself a disposal solution, but it provides a temporary, safe and secure environment for waste packages that are awaiting final disposal in a GDF or in line with Scottish Government policy.
<b>Licence / Licensed site</b>	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.
<b>LLW</b>	<b>Low Level Waste:</b> Radioactive wastes not exceeding specified levels of radioactivity. Major components of LLW include building rubble, soil and steel items from the dismantling and demolition of nuclear reactors and other nuclear facilities and the clean-up of nuclear sites.
<b>LLWR</b>	<b>Low Level Waste Repository:</b> The LLWR is the UK's national low level radioactive waste disposal facility, located close to the West Cumbrian coastline. The site is operated by LLW Repository Ltd on behalf of the NDA.
<b>MCDA</b>	<b>Multi-Criteria Decision Analysis:</b> A decision support approach which systematically compares options against a predetermined set of weighted criteria.
<b>NDA</b>	<b>Nuclear Decommissioning Authority:</b> The 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.
<b>OCF</b>	<b>Other Contributory Factor:</b> In the context of MOD option analysis, OCFs are generally qualitative factors not already included in the cost/effectiveness analysis. For SDP, they typically affect the likelihood of success during the planning, permitting and commercial processes. See Chapter 13.
<b>ONR</b>	<b>Office for Nuclear Regulation:</b> See <a href="http://www.onr.org.uk">www.onr.org.uk</a>
<b>PBO</b>	NDA lets contracts to take ownership of the Site Licence Companies (SLC). The winning bidders are called a <b>Parent Body Organisation</b> . A PBO owns the shares in a SLC for the period of the contract. The PBO provides additional resource and management expertise. See <a href="http://www.nda.gov.uk/what-we-do/estate">www.nda.gov.uk/what-we-do/estate</a>



PSE	<b>Public and Stakeholder Engagement</b>
PWR	<b>Pressurised Water Reactor</b>
Radioactive Waste	Any material contaminated by or incorporating radioactivity above certain thresholds defined in legislation, and for which no further use is envisaged, is known as radioactive waste.
RPV	<b>Reactor Pressure Vessel:</b> The metal chamber inside a submarine's Reactor Compartment which contained the nuclear fuel (see Chapter 3).
SDC	<b>Submarine Dismantling Consultation:</b> The previous round of public consultation, which resulted in decisions on how and where to remove RPV's from the submarines.
SDP	<b>Submarine Dismantling Project</b>
SEA	<b>Strategic Environmental Assessment:</b> Assessment undertaken on certain public plans and programmes, to assess potential environmental effects and to identify ways to avoid or minimise damaging impacts and to enhance positive ones. See Chapter 8.
SEPA	<b>Scottish Environment Protection Agency:</b> See <a href="http://www.sepa.org.uk">www.sepa.org.uk</a>
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.
SLC	<b>Site Licence Companies:</b> The SLCs act as NDA's agents to meet the decommissioning mission under the Energy Act 2004. NDA has ownership of the sites and assets and funds the SLCs. SLCs carry the licence granted by ONR to operate the nuclear sites. See <a href="http://www.nda.gov.uk/what-we-do/estate">www.nda.gov.uk/what-we-do/estate</a>



# Key Questions

You can tear this page out and use it to record your comments, or write to us by post or email. It helps with our analysis if you refer to these question numbers in your response but it is not essential. Providing your contact details overleaf is optional. Please read the data protection statement before submitting your comments.

1. Do you have any comments or views on the proposed RPV storage arrangements?

2. Have you any comments on the Strategic Environmental Assessment or the other information we have presented on environmental issues?

3. Do you have any comments or views on transport, regulation or planning issues?

4. What do you think are the main issues that we need to consider with each site?

5. Once a site is chosen, what do you think will be the most important issues for the potentially affected community?

6. What are your views on our approach to deciding between the shortlisted storage sites?

7. Do you have any comments on the stages that will follow this consultation?

8. Do you have any comments about the conduct of this consultation or the information provided?

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



## Your Details (optional)

Your name	
Organisation (if any)	
Which site are you most interested in, if any?	
If you include an address or email here, we will add you to our register and let you know when announcements are made.	

## Where to Send Your Comments

Submarine Dismantling Project  
 FREEPOST RSKJ-KRAH-YZRJ  
 c/o Instinctif Partners Ltd,  
 4th Floor, Dukesbridge Chambers,  
 1 Duke Street,  
 Reading RG1 4SA.  
 Phone 0118 983 9474  
 Email [sdp@instinctif.com](mailto:sdp@instinctif.com)

Are you happy for your comments to be published on our website?

Y	<input type="checkbox"/>
N	<input type="checkbox"/>

### Data protection statement

Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004).

If you want information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

In view of this it will be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on MOD. The MOD will process your personal data in accordance with the DPA and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.



# Submarine Dismantling Project (SDP)

<b>Responses</b> Please respond by letter or by email to the team administering the Public Consultation on behalf of the MOD.	<b>Concerns</b> If you have any concerns about the Public Consultation, or you wish to discuss some other aspect of the project with the SDP team, you can contact them directly.
<b>Submarine Dismantling Project</b> FREEPOST RSKJ-KRAH-YZRJ c/o Instinctif Partners Ltd, 4th Floor, Dukesbridge Chambers, 1 Duke Street, Reading RG1 4SA.  Phone 0118 983 9474 Email <a href="mailto:sdp@instinctif.com">sdp@instinctif.com</a>	<b>Submarine Dismantling Project</b> MOD Abbey Wood Bristol BS34 8JH  Email: <a href="mailto:DESSMIS-SDP@mod.uk">DESSMIS-SDP@mod.uk</a>
<b>Web pages for documents and event details</b> <a href="http://www.gov.uk/government/publications/submarine-dismantling-project-interim-storage-of-intermediate-level-radioactive-waste">www.gov.uk/government/publications/submarine-dismantling-project-interim-storage-of-intermediate-level-radioactive-waste</a>	

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