



Mission Progress Report

Published November 2022

*Cleaning up the UK's earliest nuclear sites,
caring for people and the environment*

Foreword



David Peattie
NDA Group Chief Executive

THE MISSION

Our mission is to clean up the UK's early nuclear sites safely, securely and cost effectively with care for people and the environment.

THE MISSION PROGRESS REPORT

The Mission Progress Report aligns with our Strategy (4th edition) published in 2021. The document continues to demonstrate our approach to reporting progress against the mission, focusing on the four driving themes outlined in our strategy that are common across all sites and that help us to measure our achievements.

The NDA has been trusted by Government with a funding settlement that recognises the important work that we do and allows further progress to be made against our clean-up mission.

The safety of our people and sites continues to be our highest priority. Despite another challenging year responding to changing restrictions, we put the right measures and protections in place that have enabled our operational teams to remain focused on hazard reduction.

Decommissioning activity across the NDA group has significantly increased again this year, following the unprecedented impact of the pandemic in the previous 12 months, as we safely manage our nuclear inventory and reduce the risks associated with it. Over the duration of our mission (120+ years) more strategic outcomes will be achieved with the closure of the reprocessing facilities and the building of new modern treatment and storage facilities to manage nuclear material and waste, ultimately working towards the final disposal of nuclear inventory and the release of land for other economic uses.

We have an increasingly important role to support the UK Government's goals for green energy and achieving carbon net zero by 2050. The increasing priority placed on sustainability and achieving carbon net zero means it is important that the mission is not only delivered but also delivered in the right way.

David Peattie
NDA Group Chief Executive

HOW TO READ THIS REPORT

This report is structured to illustrate the progress against the strategic objectives outlined in our strategy.

In the first two pages you'll see a very high-level summary of what the mission is and how far we have progressed since 2005.

Each of the four themes has an overview page to explain our objectives and the steps we need to take. Each step (or 'strategic outcome') shows the estimated inventory that has to be managed and what capability there is to deliver it.

We continue to build a more accurate picture of work that's still to be completed across our sites. As the data range matures over the next 120+ years, along with the reduction of uncertainty of the inventory, progression in the lifecycle and strategy development, it may well be subject to change. The figures contained within this report are correct up to 31 March 2022 from NDA group data sources and delivery programmes.

On 23 June 2021 the NDA, UK Government and EDF Energy entered into new decommissioning arrangements for seven Advanced Gas-cooled Reactor (AGR) stations. Government has directed the NDA to take on the future ownership of the stations after defueling for decommissioning. The work will be undertaken by the NDA subsidiary Magnox Ltd. We will incorporate each of these stations into the report at the appropriate time.

Excluded from this report are critical enablers, liquid and gaseous discharges, non-NDA liabilities and non-radioactive waste elements of our strategy.

Our strategic approach and themes

We use five strategic themes to describe all the activities needed to deliver the NDA's mission.

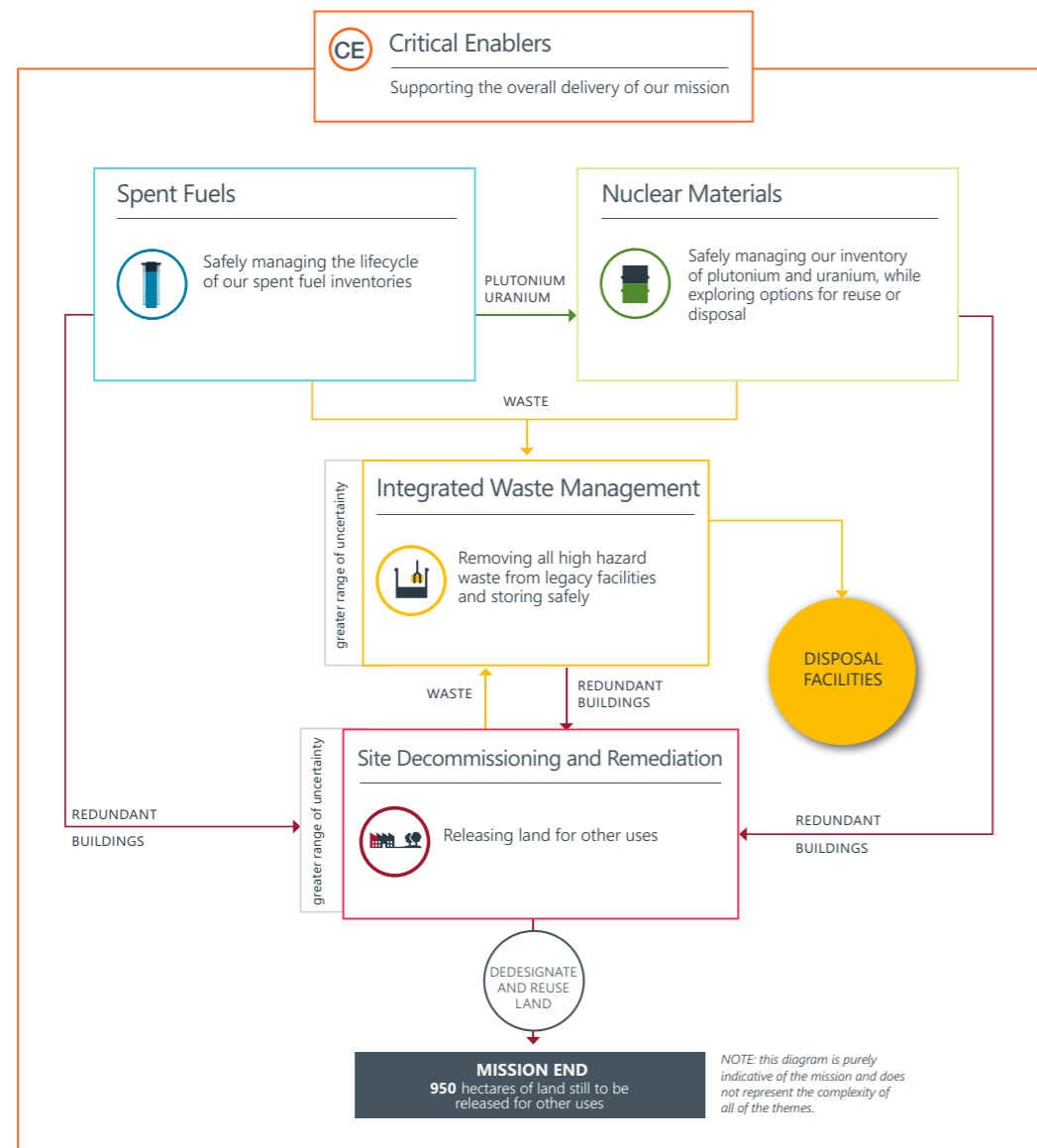
The first four strategic themes, Spent Fuels, Nuclear Materials, Integrated Waste Management and Site Decommissioning and Remediation relate directly to our clean-up and decommissioning and are known as **driving themes**. All data in this report relates to those four themes.

The fifth theme describes the important activities needed to support the delivery of our mission and

is known as **critical enablers**. The diagram below demonstrates how they interplay.

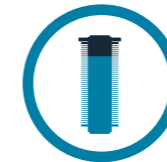
Currently, the most urgent task is dealing with sites' highest hazard materials: spent fuel, nuclear materials and highly-radioactive wastes.

Once the inventory has been made safe, the redundant nuclear facilities can be dismantled and demolished.



Our four driving themes

Spent Fuels



Our strategy defines our approach to managing the diverse range of spent fuels for which we are responsible, which are divided into Magnox, Oxide and Exotic. Once spent fuel is removed from a reactor, it is stored in a pond or dry store until it can be dispatched to Sellafield.

Reprocessing extracts materials (plutonium and uranium) that could potentially be re-used and also generates highly radioactive wastes, or fission products.

The NDA's strategy is to bring the reprocessing programme to an end. The Thermal Oxide Reprocessing Plant (THORP) has already closed and the Magnox reprocessing plant will follow. All remaining spent fuel will be safely stored until a permanent solution for disposal is available.

Our spent fuel work is separated into 15 strategic outcomes that we must deliver, see p4. For more detail on our spent fuels strategy see NDA Strategy 2021, p46-57.

Nuclear Materials



Our strategy defines our approach to dealing with the inventory of uranium and plutonium currently stored on some of our sites. These nuclear materials are by-products from different phases of the fuel cycle, either manufacturing or reprocessing. All nuclear materials must be managed safely and securely, by either converting them into new fuel or immobilising and storing them until a permanent UK disposal facility is available.

All of our plutonium is stored at Sellafield. Our uranium is located at a number of our sites and we are continuing to consolidate it at sites which we consider are best suited to its management.

Our nuclear materials work is separated into 10 strategic outcomes that we must deliver, outlined on page 4. For more detail on our nuclear materials strategy see NDA Strategy 2021, p58-67.

Integrated Waste Management



Our strategy considers how we manage all forms of waste arising from operating and decommissioning our sites, including waste retrieved from legacy facilities. Managing the large quantities of radioactive waste from electricity generation, research, the early defence programme and decommissioning is one of the NDA's biggest challenges. Some of this radioactive waste is in a raw (untreated) form, some has been treated and is being interim stored and, in the case of low level

waste, some has already been permanently disposed of. Retrieving, treating and interim storing the radioactive waste from Sellafield's four legacy ponds and silo facilities is the NDA's highest priority.

Our integrated waste management work is separated into 14 strategic outcomes that we must deliver, outlined on page 4. For more detail on our IWM strategy see NDA Strategy 2021, p68-85.

Site Decommissioning and Remediation



Our strategy defines our approach to decommissioning redundant facilities and managing land quality in order that each site can be released for its next planned use.

After the buildings on our sites have been decommissioned, decontaminated and dismantled, the land will be cleaned up to allow it to be released for other uses. At that point, its ownership would transfer to the new user of the land.

The NDA is currently assessing alternatives for the final stages of decommissioning that could lead to earlier release of land, continued employment and opportunities to reuse the land.

Our site decommissioning and remediation work is separated into eight strategic outcomes that we must deliver, outlined on page 4. For more detail on our SDR strategy see NDA Strategy 2021, p26-45.

PROGRESS OF STRATEGIC OUTCOMES - UP TO MARCH 2022

Spent Fuels

SPENT MAGNOX FUEL	2022
1 All sites defueled	100%
2 All legacy Magnox fuel retrieved	25%
3 All Magnox fuel reprocessing completed	96%
4 All remaining Magnox fuel in interim storage	25%
5 All remaining Magnox fuel disposed	0%
SPENT OXIDE FUEL	
6 All EDFE oxide fuel received	60%
7 All legacy oxide fuel retrieved	100%
8 All oxide fuel reprocessing completed	100%
9 All remaining oxide fuel in interim storage	56%
10 All remaining oxide fuel disposed	0%
SPENT EXOTIC FUEL	
11 All exotic fuel defueled	73%
12 All exotic fuel consolidated	62%
13 All exotic fuel reprocessing completed	93%
14 All remaining exotic fuel in interim storage	84%
15 All remaining exotic fuel disposed	0%

Nuclear Materials

PLUTONIUM	2022
16 All plutonium produced	97%
17 All plutonium consolidated	100%
18 A: All plutonium repacked in long-term storage B: All cans not suitable for extended storage repackaged	0% 35%
19 All plutonium in interim storage	0%
20 All plutonium reused or disposed	0%
URANIUM	
21 All uranium produced	94%
22 All uranium consolidated	80%
23 All uranium treated	4%
24 All uranium in interim storage	61%
25 All uranium reused or disposed	3%

Integrated Waste Management

LOW LEVEL WASTE	2022
26 All LLW produced	7%
27 All LLW treated - to enable diversion or reuse	9%
28 All waste suitable for disposal in NDA facilities	15%
29 All waste suitable for permitted landfill disposed	4%
INTERMEDIATE LEVEL WASTE	
30 All ILW produced	33%
31 All legacy waste retrieved	9%
32 All ILW treated	10%
33 All ILW in interim storage	15%
34 All ILW disposed	0%
HIGH LEVEL WASTE	
35 All HLW produced	71%
36 All HLW treated	74%
37 All HLW waste in interim storage	83%
38 All overseas HLW exported	11%
39 All HLW disposed	0%

Site Decommissioning and Remediation

OPERATIONAL AND PLANNED	2022
40 All planned new buildings operational	TBD
41 All buildings primary function completed	38%
DECOMMISSIONING AND DEMOLITION	
42 All buildings decommissioned	21%
43 All buildings demolished or reused	19%
SITES	
44 All land delicensed or relicensed	9%
45 All land in End State - all planned physical work complete	43%
46 All land demonstrated as suitable for reuse	9%
47 All land de-designated or reused	9%

950 hectares of land still to be released for other uses



Spent Fuels

Spent Magnox Fuel		Spent Oxide Fuel		Spent Exotic Fuel	
Opening stock	2,810 te	Opening stock	3,150 te	Opening stock	197 te
Defueling	4,100 te	Receiving	5,290 te	Defueling	33 te
Legacy	500 te	Total	8,440 te	Total	230 te
Total	7,410 te				

OBJECTIVE

To ensure safe, secure and cost-effective lifecycle management of our spent fuels - *Strategy 2021, p46*

WHAT ARE SPENT FUELS?

Fuel from a nuclear reactor is 'spent' once it has been used to generate electricity.

HOW ARE THE FUELS MANAGED?

Spent fuels are consolidated at Sellafield for management. Some spent fuels are reprocessed into uranium and plutonium, potentially for re-use, leaving some residual waste. Once reprocessing ends, remaining spent fuel will be stored for future disposal.

WHAT HAS HAPPENED SINCE 2005?

The Magnox reactors are now all defuelled and most fuel has been reprocessed. THORP completed reprocessing operations of oxide fuels in 2019.

WHAT HAS TO HAPPEN NEXT?

No more oxide fuels will be reprocessed. Sellafield continues to receive oxide fuel under commercial contracts with EDF Energy. The Magnox reprocessing plant, which is Sellafield's last reprocessing facility will finish reprocessing Magnox fuel in July 2022 with plant washout continuing until March 2023. All remaining spent fuel will be placed in interim storage pending a decision whether to classify it as waste for disposal.



STRATEGIC OUTCOMES - steps to achieving our mission

	Progress up to 2022	End date	Completed	Mission End
SPENT MAGNOX FUEL				
1 All sites defueled	100%	2020	COMPLETED	REUSED/DISPOSAL
2 All legacy Magnox fuel retrieved	25%	2039		
3 All Magnox fuel reprocessing completed	96%	2022		
4 All remaining Magnox fuel in interim storage	25%	2042		
5 All remaining Magnox fuel disposed	0%	2125		
SPENT OXIDE FUEL				
6 All EDFE oxide fuel received	60%	2035		REUSED/DISPOSAL
7 All legacy fuel retrieved	100%	2016	COMPLETED	
8 All oxide fuel reprocessing completed	100%	2019	COMPLETED	
9 All remaining oxide fuel in interim storage	56%	2035		
10 All remaining oxide fuel disposed	0%	2125		
SPENT EXOTIC FUEL				
11 All exotic fuel defueled	73%	2024		REUSED/DISPOSAL
12 All exotic fuel consolidated*	62%	2028		
13 All exotic fuel reprocessing completed	93%	2022		
14 All remaining exotic fuel in interim storage	84%	2028		
15 All remaining exotic fuel disposed	0%	2125		

*irradiated fuel only



Spent Fuels

To ensure safe, secure and cost-effective lifecycle management of our spent fuels.
Strategy 2021, p46

Spent Magnox Fuel	
Opening stock	2,810 te
Defueling	4,100 te
Legacy	500 te
Total	7,410 te

SPENT MAGNOX FUEL - To ensure safe, secure and cost-effective lifecycle management of spent Magnox fuels. *Strategy 2021, p52.*

Opening stock 2005

2,810te

Inventory

Capability

Strategic Outcome

In 2022, work continues to retrieve high hazard fuel from Sellafield, complete reprocessing and safely store the spent fuel on an interim basis.

STRATEGIC DECISIONS

Outputs

Defueling	Legacy fuel retrieval	Reprocessing	Interim storage	Reuse/Disposal	
(te)	(te)	(te)	(te)	(te)	
4,100 defueled 0 still to defuel 4,100 total	130 retrieved 370 still to retrieve 500 total	6,620 reprocessed 290 still to reprocess 6,910 total	130 current inventory 370 still to store 500 estimated total	0 volume disposed 500 still to be disposed 500 estimated total	<p>Plutonium Uranium →</p> <p>Waste →</p> <p>Redundant Buildings →</p>
100% COMPLETE	25% COMPLETE	96% COMPLETE	25% COMPLETE	0% COMPLETE	
All 26 reactors on 11 sites have been defueled	First Generation Magnox Storage Pond (FGMSP) and Pile Fuel Storage Pond (PFSP) - Sellafield	Magnox reprocessing plants - Sellafield	Fuel Handling Plant (FHP) - Sellafield Interim Storage Facility - Sellafield	NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF) and Conditioning Plant	
1 All sites defueled by 2020	2 All legacy Magnox fuel retrieved by 2039	3 All Magnox fuel reprocessing completed in 2022	4 All remaining Magnox fuel in interim storage by 2042	5 All remaining Magnox fuel disposed of by 2125	
<p>All of the Magnox power stations are now defueled. This strategic outcome is now complete.</p>	<p>Spent fuel arriving at Sellafield was originally stored in the First Generation Magnox Storage Pond (FGMSP) before transfer for reprocessing. FGMSP is one of the estate's most hazardous facilities. Some fuel was also contained in the Pile Fuel Storage Pond (PFSP). The majority of the fuel will be retrieved by 2029, with the remaining material being retrieved by 2039.</p>	<p>Final completion date for reprocessing Magnox Fuel is now set at July 2022 after which the reprocessing plant will be prepared for post operational clean out in 2023.</p>	<p>There are some degraded fuels either still in, or which have been recovered from the legacy ponds, FGMSP and PFSP. As much of this material is heavily degraded it is not suitable for reprocessing in our existing facilities. To reduce the risk of managing these fuels some of it has been transferred to the more modern pond, FHP for interim storage. The remainder will be recovered and interim stored in purpose-built containers by 2039 (the outcome to SO2), prior to final disposal. The same approach will be taken with Magnox fuel remaining at the end of reprocessing operations. We expect to update this estimated total following the completion of reprocessing.</p>	<p>Remaining fuel will need to be stored and conditioned prior to transferring to a final disposal solution. Strategic options for this remaining fuel are being developed within a spent fuel consolidation programme.</p>	



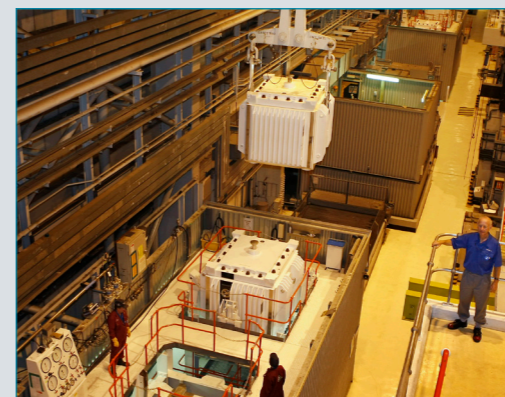
Defueling activity at one of the Magnox stations



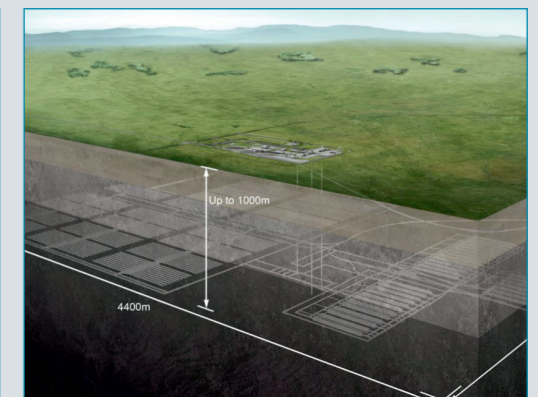
Pile Fuel Storage Pond - Sellafield



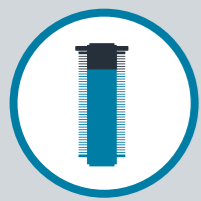
Magnox Reprocessing Plant - Sellafield



Fuel Handling Plant - Sellafield



Artist's impression of a Geological Disposal Facility



Spent Fuels

To ensure safe, secure and cost-effective lifecycle management of spent fuels.
Strategy 2021, p46

ESTIMATED LIFETIME INVENTORY - SINCE 2005

Spent Oxide Fuel	
Opening stock	3,150 te
Receiving	5,010 te
Total	8,160 te

SPENT OXIDE FUEL - To ensure safe, secure and cost-effective lifecycle management of spent oxide fuels. *Strategy 2021, p50.*

Opening stock 2005

In 2022, we continue to receive fuel from EDF Energy sites. Reprocessing is now complete and we safely store the remaining spent fuel on an interim basis.

STRATEGIC DECISIONS

Outputs

3,150te

Receipts (te)

2,990	2,020	5,010
received	still to be received	total

60% COMPLETE

THORP Receipt and Storage Pond - Sellafield

6 All EDF oxide fuel received by 2035

The NDA is committed, through commercial contracts, to receiving and managing spent fuel (including 3,150te opening stock) from EDFE's 7 AGR power stations in England and Scotland. The last of these power stations is due to close in the early 2030's, however EDFE has declared its intention to run them for as long as possible, providing it is safe and economic to continue. This provides a major source of income for the NDA.

Legacy fuel retrieval (te)

3	0	3
retrieved	still to retrieve	total

100% COMPLETE

Pile Fuel Storage Pond (PFSP) - Sellafield

7 All legacy fuel retrieved in 2016

Early spent oxide fuel was consigned to the PFSP and has all been removed for storage in more modern facilities.

Reprocessing (te)

3,610	0	3,610
reprocessed	still to reprocess	total

100% COMPLETE

THORP Reprocessing Plant - Sellafield

8 All oxide fuel reprocessing completed in 2019

The NDA, after studying options over a number of years, concluded in 2012 that THORP should close following completion of the current contracts. To ensure this remains the most viable and cost-effective option, the NDA has identified how to provide sufficient capacity at THORP to store all remaining fuel that is not reprocessed. This total included the opening stock of 3,150te.

Interim storage (te)

2,530	2,020	4,550
current inventory	still to store	estimated total

56% COMPLETE

THORP Receipt and Storage Pond - Sellafield

9 All remaining oxide fuel in interim storage by 2035

Our strategy is to consolidate all spent AGR fuel from the EDF AGR stations in a single pond in the THORP facility at the Sellafield site, and interim store all oxide fuels pending a future decision on whether to classify the fuel as waste for disposal in a GDF.

Reuse/Disposal (te)

0	4,550	4,550
volume disposed	still to be disposed	estimated total

0% COMPLETE

NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF) and Conditioning Plant

10 All remaining oxide fuel disposed of by 2125

Remaining fuel will need to be conditioned prior to transferring to a final disposal solution. Strategic options are currently being developed for the final management of this fuel.

Plutonium Uranium →

Waste →

Redundant Buildings →

Inventory

Capability

Strategic Outcome



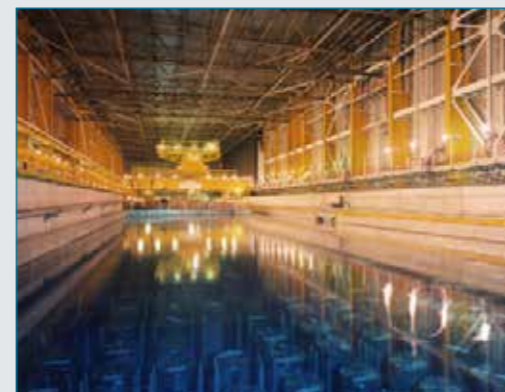
Hinkley Point A and the EDF owned (B) station



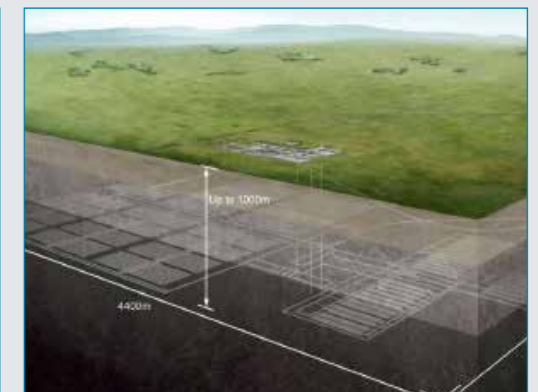
Shearing operations - Sellafield



THORP - Sellafield



THORP Receipt and Storage Pond - Sellafield



Artist's impression of a Geological Disposal Facility



Spent Fuels

To ensure safe, secure and cost-effective lifecycle management of spent fuels.
Strategy 2021, p46

Spent Exotic Fuel	
Opening stock	197 te
Defueling	33 te
Total	230 te

SPENT EXOTIC FUEL - To ensure safe, secure and cost-effective lifecycle management of spent exotic fuels. *Strategy 2021, p54.*

Opening stock 2005

197te

Inventory

Capability

Strategic Outcome

In 2022, work continues to defuel the Dounreay Fast Reactor, consolidate exotic fuel at Sellafield and complete reprocessing.

STRATEGIC DECISIONS

Outputs

Plutonium Uranium

Waste

Redundant Buildings

Defueling (te)	Consolidation (irradiated) (te)	Reprocessing (te)	Interim storage (te)	Reuse/Disposal (te)																														
<table border="1"> <tr> <td>24</td> <td>9</td> <td>33</td> </tr> <tr> <td>defueled</td> <td>still to defuel</td> <td>total</td> </tr> </table> <p>73% COMPLETE</p> <p>Dounreay Fast Reactor (DFR)</p> <p>11 All exotic fuel defueled by 2024</p> <p>A number of very early experimental reactors tested novel kinds of fuel, producing spent fuel with distinctive characteristics. There is a much smaller quantity of these diverse, non-standard types compared to oxide and Magnox fuels, and they are collectively known as Spent Exotic Fuels. Only one reactor still contains exotic fuel - the Dounreay Fast Reactor (DFR).</p>	24	9	33	defueled	still to defuel	total	<table border="1"> <tr> <td>34</td> <td>22</td> <td>56</td> </tr> <tr> <td>consolidated</td> <td>still to consolidate</td> <td>total</td> </tr> </table> <p>62% COMPLETE</p> <p>Consolidated stocks at Sellafield</p> <p>12 All exotic fuel consolidated by 2028</p> <p>Spent Exotic fuel (irradiated) is being consolidated at Sellafield. A variety of spent exotic fuel was already at Sellafield in 2005 from earlier consolidation activities and historic overseas reprocessing contracts.</p>	34	22	56	consolidated	still to consolidate	total	<table border="1"> <tr> <td>85</td> <td>6</td> <td>91</td> </tr> <tr> <td>reprocessed</td> <td>still to reprocess</td> <td>total</td> </tr> </table> <p>93% COMPLETE</p> <p>THORP and Magnox reprocessing plants - Sellafield</p> <p>13 All exotic fuel reprocessing completed by 2022</p> <p>The majority of Spent Exotic fuel has already been reprocessed at Sellafield's THORP and Magnox reprocessing plants. The strategy for DFR fuel, which is being consolidated at Sellafield, is to reprocess as much as is practicable before the Magnox reprocessing plant ceases operations in July 2022. This objective is now complete. The Remaining DFR fuel at Dounreay will be consolidated at Sellafield as part of the overall spent fuel consolidation programme.</p>	85	6	91	reprocessed	still to reprocess	total	<table border="1"> <tr> <td>117</td> <td>22</td> <td>139</td> </tr> <tr> <td>current inventory</td> <td>still to store</td> <td>estimated total</td> </tr> </table> <p>84% COMPLETE</p> <p>THORP Receipt and Storage Pond - Sellafield</p> <p>14 All remaining exotic fuel in interim storage by 2028</p> <p>A variety of exotic fuels will remain in interim storage at Sellafield when reprocessing operations cease. They will remain in storage whilst options for management of this fuel are developed.</p>	117	22	139	current inventory	still to store	estimated total	<table border="1"> <tr> <td>0</td> <td>139</td> <td>139</td> </tr> <tr> <td>volume disposed</td> <td>still to be managed</td> <td>estimated total</td> </tr> </table> <p>0% COMPLETE</p> <p>NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF) and Conditioning Plant</p> <p>15 All remaining exotic fuel disposed of by 2125</p> <p>Remaining fuel will need to be conditioned prior to transferring to a final disposal solution. Strategic options are currently being developed for the final management of this fuel.</p>	0	139	139	volume disposed	still to be managed	estimated total
24	9	33																																
defueled	still to defuel	total																																
34	22	56																																
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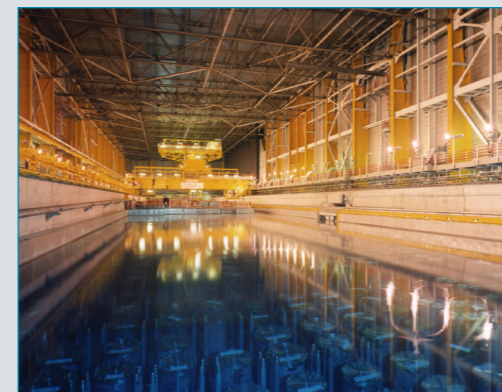
Dounreay Fast Reactor



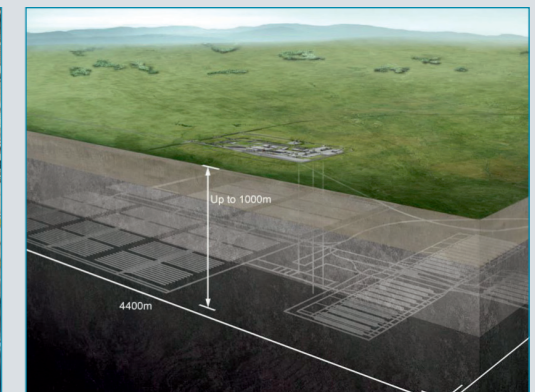
Transporting exotic fuel to Sellafield



Magnox Reprocessing Plant - Sellafield



THORP Receipt and Storage Pond - Sellafield



Artist's impression of a Geological Disposal Facility



Nuclear Materials

ESTIMATED LIFETIME INVENTORY - 2005 TO MISSION END

Plutonium		Uranics	
Opening stock	104 te	Opening stock	63,000 te
Produced	38 te	Produced	7,000 te
Total	142 te	Total	70,000 te

OBJECTIVE

To ensure safe, secure and cost-effective lifecycle management of our nuclear materials - *Strategy 2021, p58*

WHAT ARE NUCLEAR MATERIALS?

The NDA owns an inventory of plutonium and uranium. Known collectively as 'nuclear materials', all are by-products from different phases of the fuel cycle, including the reprocessing of spent fuel.

HOW ARE THE MATERIALS MANAGED?

All nuclear materials are stored safely and securely under stringent management arrangements, in accordance with the requirements of the International Atomic Energy Agency (IAEA), as well as UK law, which are overseen by the independent Office for Nuclear Regulation (ONR) which is responsible for regulating safety and security across the UK.

WHAT HAS HAPPENED SINCE 2005?

The NDA is working with UK government and suppliers on options to put plutonium beyond reach. The NDA has largely completed uranium production and consolidation.

WHAT HAS TO HAPPEN NEXT?

All nuclear materials will be either converted into new fuel for nuclear reactors or immobilised and stored until a permanent UK disposal facility is developed. Consolidation of plutonium is now complete. Consolidation of uranium remains ongoing. Some uranium must be treated and repackaged for interim storage, while Sellafield's plutonium inventory will be repackaged. Plutonium will be repackaged in a form suitable for long term storage. Plutonium repackaging is taking place in two stages. Those cans which are the highest priority for repackaging are being dealt with now as part of a first phase using existing plant. This is taking place prior to the construction of a new facility which will enable repackaging of a large number of cans. The government will reach a decision on possible re-use or disposal of plutonium following completion of the technical studies.



STRATEGIC OUTCOMES - steps to achieving our mission

	Progress up to 2022	End date	Completed	Mission End
PLUTONIUM				
16 All Plutonium produced	97%	2023		REUSED/DISPOSAL
17 All Plutonium consolidated	100%	2019	COMPLETED	
18 A: All plutonium repacked in long term storage	0%	2060		
B: All cans not suitable for extended storage repackaged	35%	2060		
19 All Plutonium in interim storage	0%	2060		
20 All Plutonium reused or disposed	0%	2120		
URANIUM				
21 All Uranium produced	94%	2023		REUSED/DISPOSAL
22 All Uranium consolidated	80%	2025		
23 All Uranium treated	4%	2055		
24 All Uranium in interim storage	61%	2055		
25 All Uranium reused or disposed	3%	2120		



Nuclear Materials

To ensure safe, secure and cost-effective lifecycle management of our nuclear materials.
Strategy 2021, p58

ESTIMATED LIFETIME INVENTORY - 2005 TO MISSION END

Plutonium		
Opening stock	104 te	
Produced	38 te	
Total	142 te	

PLUTONIUM

- To ensure the safe and secure management of separated plutonium held by the NDA and to work with the UK government to develop a long-term solution.
Strategy 2021, p60

Opening stock 2005

In 2022, work continues to provide the capability and capacity to treat and store plutonium at Sellafield.

STRATEGIC DECISIONS

Outputs

104te

Inventory

Capability

Strategic Outcome

Quantities produced (te)

	37	1	38
quantity produced	still to be produced	total	

97% COMPLETE

Magnox and THORP reprocessing - Sellafield

16 All plutonium produced by 2023

When the NDA was established, 104 tonnes of plutonium had already been produced from reprocessing. Plutonium production will complete following Post Operational Clean Out (POCO) of the Magnox reprocessing facilities with a final inventory of 141 tonnes.

Consolidation (te)

	2	0	2
consolidated	still to consolidate	total	

100% COMPLETE

Consolidated stocks at Sellafield

17 All plutonium consolidated by 2019

The NDA took the decision to consolidate all plutonium in new storage at Sellafield and this consolidation is now complete. The plutonium inventory will however need repacking into long-term storage containers.

Repacking (te)

	0	141	141
repacked	still to repack	total	

18A 0% COMPLETE

18B 35% COMPLETE

2	4	6
repacked	still to repack	total

NO FACILITY CURRENTLY EXISTS
SPRS Re-treatment plant (SRP) currently in design phase - Sellafield

18 A: All plutonium repacked in long-term storage by 2060
B: All cans not suitable for extended storage repackaged by 2060

Our aim is to gradually transfer all plutonium into the most modern facilities over the next few decades. To ensure that the plutonium packages can be safely stored in SPRS, they will be repackaged (18A) and, where appropriate, some plutonium will be treated to stabilise it for long-term storage. A major new facility, SRP, is being constructed, to repackage materials to support this strategy. This facility will repackage and, where appropriate, retreat all of the plutonium packages.

18B: Some older packages are to be repacked in existing plants to ensure their safe management in the short to medium term.

Interim storage (te)

	0	141	141
current inventory	still to store	estimated total	

0% COMPLETE

Product and Residue Stores - Sellafield

19 All plutonium in interim storage by 2060

Following repacking, all containers will be stored in the Sellafield Product and Residue Stores pending a decision on future management. New store capacity in future years will be required to achieve the outcome.

Reuse/Disposal (te)

	1	141	142
volume reused	still to be reused or disposed	estimated total	

0% COMPLETE

NO FACILITY CURRENTLY EXISTS
Geological Disposal Facility (GDF)

20 All plutonium reused or disposed of by 2120

The plutonium reused reflects plutonium that was made into MOX fuel in the Sellafield MOX Plant, before the plant closed in 2011, and returned to overseas customers for use in their Light Water Reactors.

Waste

Redundant Buildings



Magnox Reprocessing Plant



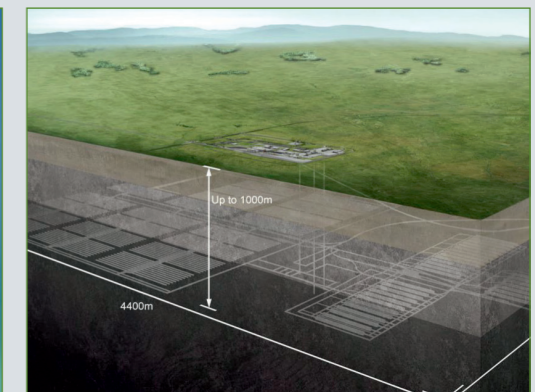
One of the NTS fleet of nuclear transport ships



THORP Product Store - Sellafield



Plutonium containers



Artist's impression of a Geological Disposal Facility



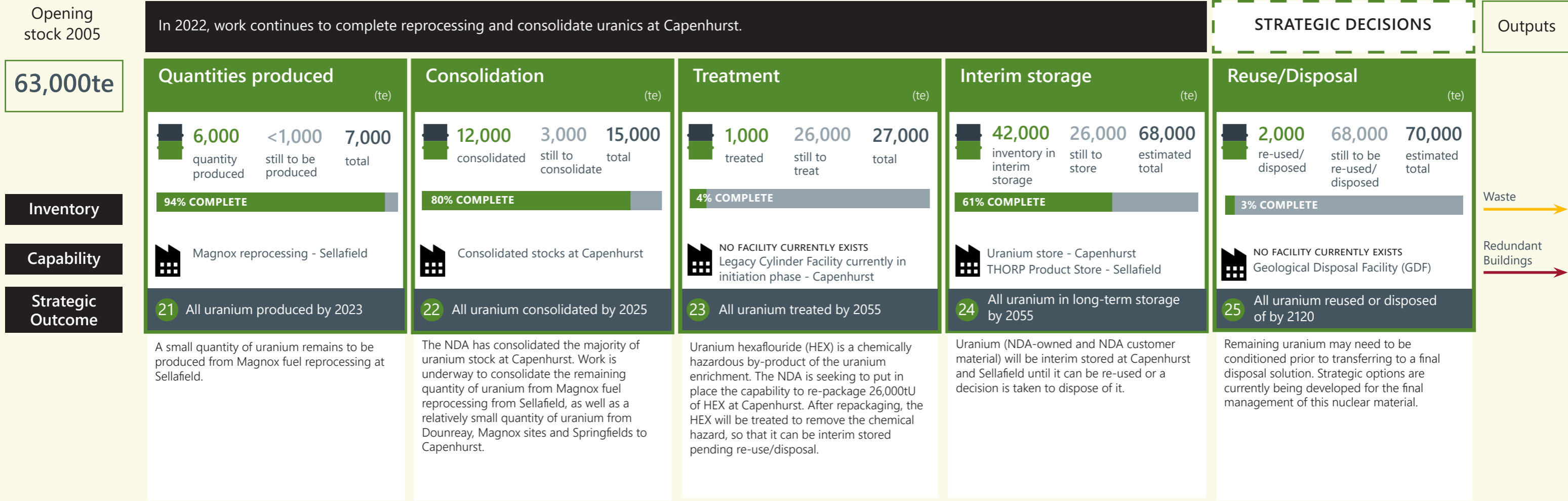
Nuclear Materials

To ensure safe, secure and cost-effective lifecycle management of our nuclear materials.
Strategy 2021, p58

ESTIMATED LIFETIME INVENTORY - 2005 TO MISSION END

Uranium	
Opening stock	63,000 te
Produced	7,000 te
Total	70,000 te

URANIUM - To continue safe and secure storage of our uranium inventory, to support its reuse where cost-effective and to ensure its final disposition. *Strategy 2021, p63*



- Inventory
- Capability
- Strategic Outcome

Please note: The NDA manages uranium on behalf of customers, and this has now been included.



Magnox Reprocessing Plant



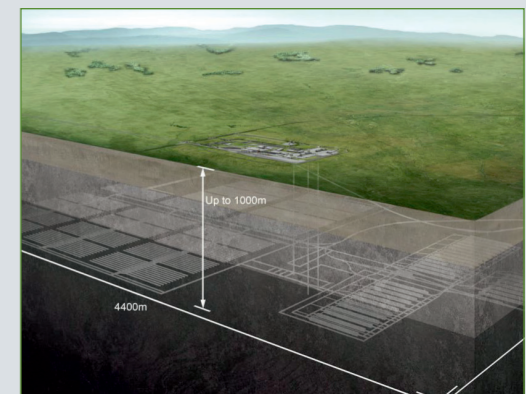
Capenhurst



Current uranium storage at Capenhurst



Part of the uranium inventory at Capenhurst



Artist's impression of a Geological Disposal Facility



Integrated Waste Management

ESTIMATED LIFETIME INVENTORY TO DISPOSE - 2005 TO MISSION END

Low Level Waste		Intermediate Level Waste		High Level Waste	
Raw waste	4,138,000m ³	Raw waste	192,000m ³	Raw waste	3,800m ³
Packaged waste	318,000m ³	Packaged waste	471,000m ³	Packaged waste	1,640m ³

OBJECTIVE

To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provide value for money - *Strategy 2021, p68*

WHAT IS INTEGRATED WASTE MANAGEMENT?

Large quantities of diverse radioactive waste have been produced since the 1950s, and will continue to arise for decades to come. Managing these radioactive wastes, along with conventional waste, is one of the NDA's biggest challenges.

HOW ARE THE WASTES MANAGED?

Wastes are characterised, treated appropriately as informed by radioactivity levels and handling requirements, before being packaged for long-term storage and/or transport and disposal. LLW is disposed of and higher activity waste is stored pending development of a final disposal route.

WHAT HAS HAPPENED SINCE 2005?

Since 2005 considerable progress has been made with the safe management of HLW and we are now getting towards the end of our vitrification programme of treating bulk liquid HLW. In addition, retrievals of ILW from legacy facilities has commenced, as we now prepare ourselves for continuous operations in this highest priority area. The NDA has taken the decision to consolidate some ILW at regional stores, avoiding the need to construct a store at each site. We are repackaging material where necessary and investigating more sustainable treatments for all waste categories. We've followed the waste hierarchy principle and put in place a range of waste management services that has preserved capacity at the Low Level Waste Repository (LLWR). We are now moving to a risk-informed strategy where radioactive wastes are managed according to the nature of the waste (radiological, physical and chemical) rather than simply the radioactive waste category they fall into.

WHAT HAS TO HAPPEN NEXT?

Reprocessing spent fuel, which produces highly radioactive liquid waste, was due to end in 2020 and this has been impacted by the COVID-19 pandemic, although it's not currently anticipated that this will have a significant impact on the completion of HLW productions. We are constructing new waste treatment plants as required and again these have been impacted by the pandemic. Permanent disposal facilities must be constructed for all higher activity waste. The NDA's risk-informed radioactive waste strategy also presents the opportunity to explore near-surface disposal for some of the ILW inventory.



STRATEGIC OUTCOMES - steps to achieving our mission

LOW LEVEL WASTE

	Progress up to 2022	End date	Completed	Mission End
26 All LLW produced	7%	2127		LLWR + LANDFILL
27 All LLW treated - to enable diversion or reuse	9%	2127		
28 All waste suitable for disposal in NDA facilities	15%	2127		
29 All waste suitable for permitted landfill disposed	4%	2127		

INTERMEDIATE LEVEL WASTE

	Progress up to 2022	End date	Completed	Mission End
30 All ILW produced	33%	2120		DISPOSAL
31 All legacy waste retrieved	9%	2048		
32 All ILW treated	10%	2120		
33 All ILW in interim storage	15%	2120		
34 All ILW disposed	0%	2125		

HIGH LEVEL WASTE

	Progress up to 2022	End date	Completed	Mission End
35 All HLW produced	71%	2030		DISPOSAL
36 All HLW treated	74%	2030		
37 All HLW in interim storage	83%	2030		
38 All overseas HLW exported	11%	2025		
39 All HLW disposed	0%	2104		



Integrated Waste Management

To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provide value for money. *Strategy 2021, p68*

ESTIMATED LIFETIME INVENTORY TO DISPOSE - 2005 TO MISSION END

Low Level Waste
 Raw waste 4,138,000m³
 Packaged waste 318,000m³

LOW LEVEL WASTE

To manage radioactive waste and dispose of it where possible, or place it in safe, secure and suitable storage, ensuring that we implement the policies of UK government and the devolved administrations - *Strategy 2021, p72*

In 2022, work continues to divert LLW away from the Low Level Waste Repository prolonging the life of the facility.

Outputs

Quantities produced

(raw waste vol.m³)

310,000 quantities produced
3,828,000 estimated to be produced
4,138,000 estimated total

7% COMPLETE

LLW produced from NDA operations and decommissioning

26 All LLW produced by 2127

Diversion

(raw waste vol.m³)

64,000 diverted
654,000 estimated still to divert
718,000 estimated total

9% COMPLETE

Diversion capabilities include - metal treatment and incineration

27 All LLW treated - to enable diversion or reuse by 2127

Disposal (NDA Facilities)

(packaged waste vol.m³)

48,000 LLW disposed
270,000 LLW estimated still to dispose
318,000 estimated total

15% COMPLETE

x2 sites Low Level Waste Repository and Dounreay

28 All waste suitable for disposal in NDA facilities by 2127

Disposal (Landfill)

(imported vol.m³)

139,000 VLLW disposed
3,006,000 VLLW estimated still to dispose
3,145,000 estimated total

4% COMPLETE

A number of on site and off site licensed disposal routes.

29 All waste suitable for permitted land-fill disposed by 2127

Redundant Buildings

Inventory

Capability

Strategic Outcome

LLW and VLLW (a sub category of LLW) are produced from the maintenance, operation and decommissioning of facilities across the NDA group; and are reported as aggregated totals here since 2021. These wastes are the largest volume radioactive waste arisings in the NDA group, but account for only 0.0001% of the overall radioactivity. We continue to progress the mission across all areas, noting a slight increase overall volume.

National and NDA Strategy promotes the application of the Waste Hierarchy to LLW management to ensure that the group makes the best use of available disposal capacity. Waste diversion performance has remained high in 2021/22, 5,000m³ of waste being diverted with cross group diversion rates >95%, indicating that application of the Waste Hierarchy is business-as-usual across the NDA group.

Solid LLW is disposed of at 2 facilities - the Low Level Waste Repository (the UK's primary LLW disposal facility) and the Dounreay on-site disposal facility (which only manages waste arisings from Dounreay). LLW disposal rates in the NDA group slowed in 2020/21 owing to operational pauses as a result of the COVID-19 pandemic, and we have now started to see this increase again in 2021/22. There is an overall reduction in forecast volumes as we have seen predictions of a greater level of waste being diverted away from the LLWR site to alternative treatment and disposal routes, reinforcing our application of the Waste Hierarchy.

VLLW is the lowest hazard LLW, mainly consisting of soils, spoil and rubble. Known as Very Low Level Waste (VLLW), it's principally disposed of at appropriately permitted landfill sites and some on-site facilities in the NDA group. Good progress on managing VLLW arisings has been maintained during 2021/22, with successful management of ~15,000m³, coupled with an increased forecast of remaining volume, again showing the benefit of applying our Waste Hierarchy.



LLW Repository



Metal melting - one of the ways of treating LLW



LLWR at Dounreay



Appropriate landfill sites can be used for VLLW



Integrated Waste Management

To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provide value for money. *Strategy 2021, p68*

ESTIMATED LIFETIME INVENTORY TO DISPOSE - 2005 TO MISSION END

Intermediate Level Waste	
Raw waste	192,000m ³
Packaged waste	471,000m ³

INTERMEDIATE LEVEL WASTE - To manage radioactive waste and dispose of it where possible, or place it in safe, secure and suitable storage, ensuring that we implement the policies of UK government and the devolved administrations - *Strategy 2021, p72*

Opening stock 2005

In 2022, ILW continues to be produced with a focus on retrieving waste from legacy ponds and silos.

STRATEGIC DECISIONS

Outputs

10,800m³ raw waste in store 2005

Quantities produced (raw waste vol.m³)

55,000	112,000	167,000
quantity produced	still to be produced	estimated total

33% COMPLETE

Waste from operations and decommissioning

30 All ILW produced by 2120

ILW - waste exceeding the upper boundary for LLW that is not significantly heat generating - takes a variety of forms including: redundant nuclear reactor components, reactor core graphite, sludges from radioactive liquid effluent treatment, redundant plant equipment and some building fabric. As the NDA group projects and programmes mature, the volume of ILW will fluctuate as we reduce uncertainty in the inventory.

Legacy ponds & silos (raw waste vol.m³)

1,900	19,400	21,300
retrieved since 2005	still to retrieve	estimated total

9% COMPLETE

New technology and capability projects to retrieve legacy waste

31 All legacy waste retrieved by 2048

The Sellafield legacy ponds and silos represent some of the most complex and difficult global decommissioning challenges; and are a key priority for the NDA group. Significant quantities of bulk fuel and solid ILW have been retrieved from the legacy ponds (Pile Fuel Storage Pond and First Generation Magnox Storage Pond); the quantity of ILW retrieved has increased to 9% - an increase of 115m³ during the year.

Treatment (raw waste vol.m³)

18,000	174,000	192,000
treated	still to treat	estimated total

10% COMPLETE

New capability required

32 All ILW treated by 2120

Different forms of ILW are treated in different ways so they can be safely packaged and stored until a disposal facility is available. ILW treatment is ongoing using the many available treatment plants available across the NDA group and work is ongoing to design, build and commission the approximately 40 new treatment facilities that are needed to complete this important stage of the ILW lifecycle.

Interim storage (packaged waste vol.m³)

56,000	316,000	372,000
current inventory	still to store	estimated total

15% COMPLETE

New capability required

33 All ILW in interim storage by 2120

Retrieved, treated, and packaged ILW undergoes safe storage until appropriate disposal facilities are available. 15% of the total packaged ILW to be produced over the lifetime of the NDA group is currently in safe storage. Further new stores will be required to enable safe storage of the remaining inventory at Sellafield and for NDA sites in Scotland.

Disposal (packaged waste vol.m³)

0	471,000	471,000
disposed of	still to be disposed	estimated total

0% COMPLETE

NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF)

34 All ILW disposed by 2125

Final disposal of ILW arising from the NDA group is reliant on the availability of the right disposal facilities. The NDA group is working with UK Government, local communities, regulators and technical specialists to identify a site for and to construct a GDF for ILW arising in England and Wales. The policy in Scotland is for near-site, near-surface management. Progress has been made with Community Partnerships for the GDF. The NDA is also working with English and Welsh Governments to decide whether some ILW may be suitable for near-surface disposal which - subject to national policy and community acceptance - has the potential to be implemented earlier than the GDF.

Inventory

Capability

Strategic Outcome

Redundant Buildings →



ILW Magnox fuel cladding swarf



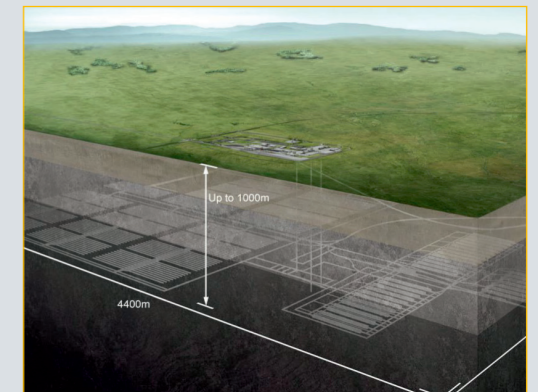
Retrieving waste from the legacy ponds



ILW Treatment and Storage at Sellafield



Trawsfynydd ILW Store



Artist's impression of a Geological Disposal Facility (GDF)



Integrated Waste Management

To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provide value for money. *Strategy 2021, p68*

ESTIMATED LIFETIME INVENTORY TO DISPOSE - 2005 TO MISSION END

High Level Waste	
Raw waste	3,800m ³
Packaged waste	1,640m ³

HIGH LEVEL WASTE - To manage radioactive waste and dispose of it where possible, or place it in safe, secure and suitable storage, ensuring that we implement the policies of UK government and the devolved administrations. *Strategy 2021, p72*

In 2022, work will continue to treat and store HLW on an interim basis.

Outputs

- Inventory
- Capability
- Strategic Outcome

Redundant Buildings →

Quantities produced	Treatment	Interim storage	Disposal/Export
LIQUID (raw waste vol.m ³)	CONDENSED LIQUID (raw waste vol.m ³)	SOLID (packaged vol.m ³)	(packaged vol.m ³)
<p>2,700 quantities produced</p> <p>1,100 still to produce</p> <p>3,800 total</p> <p>71% COMPLETE</p> <p>Highly Active Storage Tanks</p> <p>35 All HLW produced by 2030 (including post operational clean out)</p> <p>Highly Active Liquor (HAL) is a highly radioactive by-product of nuclear fuel reprocessing at the Sellafield site. The liquor is concentrated through evaporation and is stored in specially engineered Highly Active Storage Tanks prior to treatment. 11.7m³ of HAL has been produced and managed through this process this year.</p>	<p>537 treated</p> <p>190 still to treat</p> <p>727 total</p> <p>74% COMPLETE</p> <p>Waste Vitrification Plant</p> <p>36 All HLW treated by 2030</p> <p>HAL is converted into a solid form for storage and disposal through a process called vitrification. In this process, the liquor is mixed with crushed glass in a furnace to produce a solid, stable glass which is poured into stainless steel canisters. An additional 0.11% of the total waste arisings has been vitrified over the past year.</p>	<p>1,210 current inventory</p> <p>250 still to store</p> <p>1,460 estimated total</p> <p>83% COMPLETE</p> <p>Vitrified Product Store (VPS)</p> <p>37 All HLW in interim storage by 2030</p> <p>The vitrified High Level Waste is stored in a purpose-built store - the Sellafield Vitrified Product Stores - until a UK disposal facility for HLW becomes available. An additional 0.25% of the total arisings was transferred into storage in 2021/22.</p>	<p>180 exported</p> <p>1,460 still to be exported or disposed</p> <p>1,640 estimated total</p> <p>11% COMPLETE</p> <p>NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF)</p> <p>38 All overseas HLW exported by 2025 39 All HLW disposed by 2104</p> <p>UK HLW disposal is pending the availability of a deep GDF; and the NDA group is working with government, local communities, regulators, and other stakeholders to make progress on delivering this essential capability. Sellafield earns revenue from the processing of spent fuel for overseas customers and waste from this reprocessing is returned to the customer in line with contractual requirements.</p>



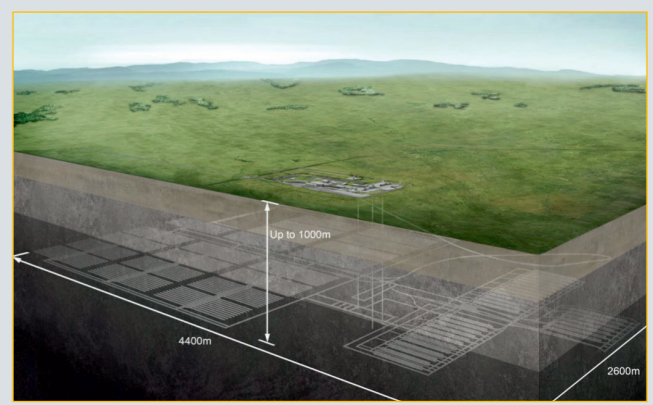
HLW containers



Waste Vitrification Plant



Vitrified Product Store - Sellafield



Artist's impression of a Geological Disposal Facility



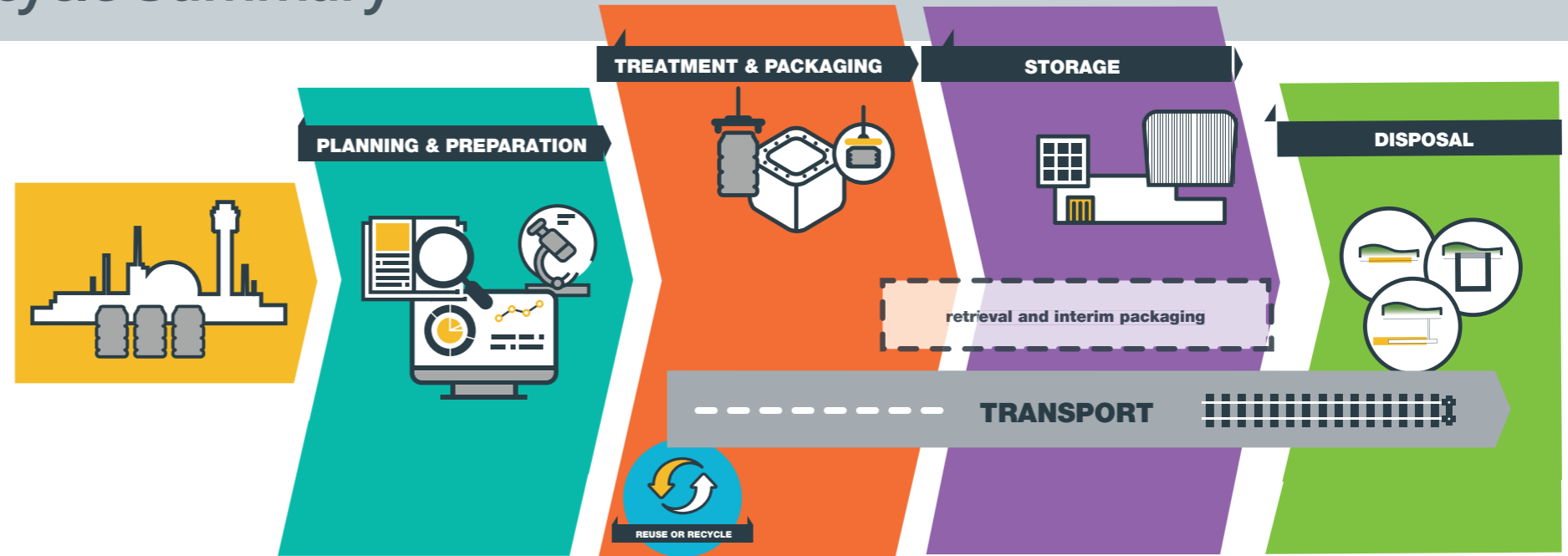
Integrated Waste Management - Waste Management Lifecycle Summary

This page introduces the Waste Management Lifecycle. The summary compliments the Integrated Waste Management pages which are split by waste hierarchy and should be read in conjunction with these pages.

The Waste Management Lifecycle (SO26-39)

Waste management on our sites is changing as our mission moves away from operations to decommissioning, site remediation (see **Site Decommissioning and Remediation**) and safe and secure management of those wastes that require interim storage. This means we will generate larger volumes of lower activity radioactive and non-radioactive wastes, with an associated increase in opportunities for waste minimisation,

reuse and recycling. We expect our Site Licence Companies (SLCs) to apply the Waste Hierarchy and we challenge them to ensure they derive as much value as practicable from the waste management system and appropriately manage the environmental impacts. However, we need to ensure that retrievals of legacy wastes (SO31) are managed promptly and effectively pending the availability of disposal routes.



STRATEGIC OUTCOMES - steps to achieving our mission

WASTE PRODUCED

- 26 All LLW produced
- 30 All ILW produced
- 31 All legacy waste retrieved
- 35 All HLW produced

WASTE TREATED

- 27 All LLW treated - to enable diversion or reuse
- 32 All ILW treated
- 36 All HLW treated

WASTE STORED

- 33 All ILW in interim storage
- 37 All HLW in interim storage

WASTE DISPOSED

- 28 All waste suitable for disposal in NDA facilities
- 29 All waste suitable for permitted landfill disposed
- 34 All ILW disposed - final disposal operational
- 38 All overseas HLW exported
- 39 All HLW disposed - final disposal operational

		WASTE MANAGEMENT LIFECYCLE			
		WASTE PRODUCED	WASTE TREATED	WASTE STORED	WASTE DISPOSED
WASTE HIERARCHY	LLW	26 All LLW produced 7% 310,000m ³ 2127	27 All LLW treated - to enable diversion or reuse 9% *64,000m ³ 2127 <small>*Not all LLW can be treated to enable diversion and the balance is disposed</small>	Disposal facilities available for LLW so interim storage not required	28 All waste suitable for disposal in NDA facilities 15% 48,000m ³ 2127 29 All waste suitable for permitted landfill disposal 4% 139,000m ³ 2127
	ILW	30 All ILW produced 33% 55,000m ³ 2120 31 All legacy waste retrieved 9% 1,900m ³ 2048	32 All ILW treated 10% 18,000m ³ 2120	33 All ILW in interim storage 15% 56,000m ³ 2120	34 All ILW disposed - final disposal operational 0% 0m ³ 2125
	HLW	35 All HLW produced 71% 2,700m ³ 2030	36 All HLW treated 74% 537m ³ 2030	37 All HLW in interim storage 83% 1,210m ³ 2030	38 All overseas HLW exported 11% 180m ³ 2025 39 All HLW disposed - final disposal operational 0% 0m ³ 2104
	TOTALS	8% 369,600m ³	9% 82,537m ³	15% 57,210m ³	5% 187,180m ³



Site Decommissioning and Remediation

Buildings (radioactive)		Land (ha)	
Lifetime stock	1,237	Opening stock	1,043ha
Planned new builds	119	Land de-designated/reused	93ha
Total	1,356	Still to be de-designated/reused	950ha
		Total	1,043ha

OBJECTIVE

To decommission and remediate our designated sites, and release them for other uses - *Strategy 2021, p26*

WHAT IS SITE DECOMMISSIONING AND REMEDIATION?

The NDA is cleaning up each site safely and cost-effectively for eventual release. This requires all facilities to be decommissioned, waste removed, structures demolished and the land remediated.

WHAT HAS TO BE DONE?

The NDA must define the pace of decommissioning and the final condition for each site, including any remaining structures, infrastructure such as roads or services and the land itself. This influences future plans and near-term work targets, and shapes current activities.

WHAT HAS HAPPENED SINCE 2005?

Many structures have already been dismantled and demolished, and land released. The NDA is assessing alternatives for the final stages of decommissioning, earlier release of land and the potential for future employment opportunities when sites are released.

WHAT HAS TO HAPPEN NEXT?

In response to government's proposal to amend primary legislation and enable more streamlined regulation during the final stages of decommissioning, the NDA is working with regulators, SLCs and other stakeholders on the optimal end state for each site. The NDA is also working with local authorities on their development plans, to ensure proposed end states and development plans are aligned.



STRATEGIC OUTCOMES - steps to achieving our mission

OPERATIONAL AND PLANNED

- 40 All planned new buildings operational
- 41 All buildings primary function completed

	Progress up to 2022	End date	Completed	Mission End
	TBD	2090		BUILDINGS COMPLETED
	38%	2127		

DECOMMISSIONING AND DEMOLITION

- 42 All buildings decommissioned
- 43 All buildings demolished or reused

	21%	2131	DECOMMISSIONED AND DEMOLISHED OR REUSED
	19%	2133	

SITES

- 44 All land delicensed or relicensed
- 45 All land in End State - all planned physical work complete
- 46 All land demonstrated as suitable for reuse
- 47 All land de-designated or reused

	9%	2135	DEDESIGNATED OR REUSED
	43%	2134	
	9%	2135	
	9%	2333	



Site Decommissioning and Remediation

To decommission and remediate our designated sites, and release them for other uses. *Strategy 2021, p26*

Buildings (radioactive)	
Lifetime stock	1,237
Planned new builds	119
Total	1,356

DECOMMISSIONING (radioactive buildings) - To deliver site end states as soon as reasonably practicable with a progressive reduction of risk and hazard. *Strategy 2021, p32*

Lifetime stock

NDA sites are making good progress decommissioning buildings that are no longer required, and a number of new builds are still required to deliver the Mission.

STRATEGIC DECISION

Operational and planned (No.)

119 planned new builds	727 currently operational	510 completed primary function since 2005
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35% COMPLETED PRIMARY FUNCTION

- 40 All planned new buildings operational by 2090
- 41 All buildings primary function completed by 2127

A nuclear installation is generally comprised of a number of buildings. When they are near the end of their operational life, a phase of work begins to transition it from operations to decommissioning. This phase normally starts well before operations finish and removes most of the nuclear hazard. New installations are still to be built to support the decommissioning mission, for example to package and temporarily store waste and ultimately, these will be decommissioned once their operational life is complete.

Decommissioning (No.)

510 total	46 in post operational clean out	49 in decommissioning (decontamination and dismantling)	137 decommissioning deferred	278 completed decommissioning since 2005
------------------	--	---	--	--

21% COMPLETED DECOMMISSIONING

- 42 All buildings decommissioned by 2131

In line with Government strategy, NDA strategy is for installations to be decommissioned immediately after cessation of operations. Sometimes however a decision might be taken to defer decommissioning of a particular installation in order, for example, to realise benefits such as radioactive decay or to manage a constraint (e.g. restricted access, a lack of waste management infrastructure or limited resources).

Demolition or reuse (No.)

278 total	25 available for demolition or reuse	2 in demolition	251 demolished or reused since 2005
------------------	--	---------------------------	---

19% DEMOLISHED OR REUSED

- 43 All buildings demolished or reused by 2133

The final part of decommissioning is demolition which is dominated by non-nuclear risks. The extent of final dismantling and demolition depends on the agreed end state. It typically generates large volumes of waste, a proportion of which may be contaminated with radioactivity.

1,237
No. of radioactive buildings (not including new builds)

Inventory

Strategic Outcome



Demolition work at Dungeness



Demolition work at Harwell



Turbine hall demolitions



Site Decommissioning and Remediation

To decommission and remediate our designated sites, and release them for other uses. *Strategy 2021, p26*

ESTIMATED LIFETIME INVENTORY - 2005 TO MISSION END

Land hectares (ha)	
Opening stock	1,043(ha)
Land de-designated/reused	93(ha)
Still to be de-designated/reused	950(ha)
Total	1,043(ha)


LAND QUALITY MANAGEMENT AND LAND USE (sites) - To optimise the reuse of NDA sites. Strategy 2021, p44

Opening stock 2005

The NDA Mission is not complete until all Designated Directions associated with the land have been removed. Since 2005 we have completed 9% of the Mission.

MISSION END

Licensing status of land

	938	93	1,031
	total licensed land	total de/relicensed land	total

9% LAND DELICENSED SINCE 2005

44 All land delicensed or relicensed by 2135

Land quality management

(assessment)			(delivery)				
524	507	1,031	581	3	354	93	1,031
land to be characterised	land characterisation complete	total	awaiting remediation	physical work in progress	all physical work complete	land demonstrated as suitable for reuse	total

49% LAND WHERE CHARACTERISATION IS COMPLETE SINCE 2005


43% LAND WHERE PHYSICAL WORK IS COMPLETE SINCE 2005

9% LAND DEMONSTRATED AS SUITABLE FOR REUSE SINCE 2005

45 All land in End State - all planned physical work complete by 2134

46 All land demonstrated as suitable for reuse by 2135

Dedesignated or reused land

	93	0	950
	total land de-designated	total land reused	total still to be de-designated or reuse

9% COMPLETE

47 All land dedesignated or reused by 2333

1,043*
hectares (ha)
1,031
licensed & designated
12
Dounreay LLW facility

Inventory

Strategic Outcome

*The 1,043 hectares of land consists of 1,031 hectares of licensed and designated land and 12 hectares of land adjacent to the Dounreay nuclear licensed site that is used for the Dounreay LLW facility. Once all LLW has been removed from the Dounreay site the vaults will be sealed and the surface restored. The LLW facility site will then be monitored for 300 years, by which time 95% of the radioactivity will have decayed.

Each NDA site operates under a Nuclear Site Licence granted to the relevant Site Licence Company by the Office for Nuclear Regulation (ONR). The 'de-licensing' or 're-licensing' activity needs to take place before land can be 'de-designated' and put to another use.

The NDA continues to support UK government's proposal to amend the legislative framework that applies to nuclear sites and enable more streamlined regulation during the final stages of decommissioning and clean-up. The proposed amendment would enable site operators to optimise end states on a site by site basis. With this in mind, the NDA is working with regulators, SLCs and other stakeholders on the optimal end state for each site. The NDA is also working with local authorities to ensure that site end states and statements on the next planned use of sites are consistent with local waste and development plans.

In 2005, the NDA was given responsibility for land, under a 'designating' order by the Secretary of State. 'De-designating' this order signifies that the NDA's mission is complete. We have utilised new software which can now more accurately measure the areas from our maps. Parts of Berkeley are now a college campus while land at Harwell and Winfrith has been developed as business parks. The last land to be de-designated was 3 hectares at Winfrith in Feb 2019.



Bradwell in care and maintenance



Harwell



Winfrith