



# Mission Progress Report 2023/24



# Foreword



**David Peattie**  
Group Chief Executive Officer

## THE MISSION

Ours is one of the most important environmental programmes in the world, protecting people and the planet, decommissioning 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.

Progress continues to be made across the NDA's mission, which will continue well into the next century. With programmes stretching that far into the future, progress needs to be monitored and programmes, where necessary, need to be adjusted to take account of learning, experience, and new technologies.

This has been a significant year for the nuclear sector with heightened focus on its role supporting the UK's energy security plans and the contribution it can make to help achieve carbon net zero. That attention has also highlighted the importance of our mission, from safely decommissioning the NDA's existing sites to preparing to take responsibility for more, while ensuring we can manage radioactive waste for our existing programme and new nuclear. As our mission grows we will incorporate this additional activity into the Mission Progress Report at the appropriate time.

**David Peattie** FREng HonFNucl  
Group Chief Executive Officer

## 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 2024.

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.

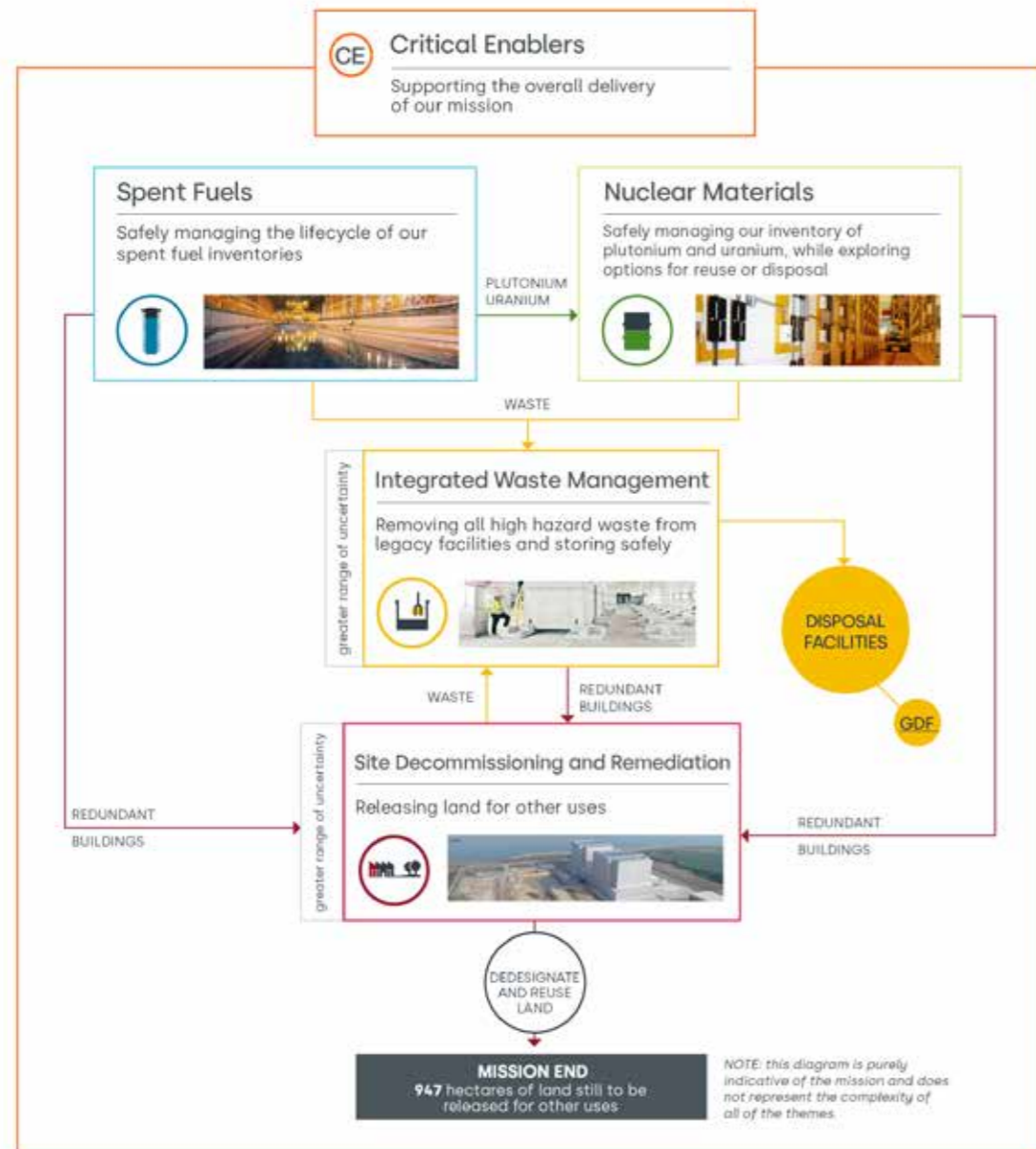
The first four strategic themes, Spent Fuels, Nuclear Materials, Integrated Waste Management and Site Decommissioning and Remediation relate directly to our clean-up and decommissioning and are known as driving themes. All data in this report relates to those four themes.

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.

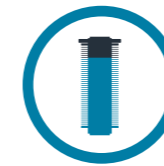
Currently, the most urgent task is dealing with sites' highest hazard materials: spent fuel, nuclear materials and highly-radioactive wastes.

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) and the Magnox reprocessing plant are now both closed. 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 2024

### Spent Fuels

SPENT MAGNOX FUEL		2024
1	All sites defueled	100%
2	All legacy Magnox fuel retrieved	25%
3	All Magnox fuel reprocessing completed	100%
4	All remaining Magnox fuel in interim storage	17%
5	All remaining Magnox fuel disposed	0%
SPENT OXIDE FUEL		
6	All EDFE oxide fuel received	61%
7	All legacy oxide fuel retrieved	100%
8	All oxide fuel reprocessing completed	100%
9	All remaining oxide fuel in interim storage	58%
10	All remaining oxide fuel disposed	0%
SPENT EXOTIC FUEL		
11	All exotic fuel defueled	77%
12	All exotic fuel consolidated	62%
13	All exotic fuel reprocessing completed	100%
14	All remaining exotic fuel in interim storage	84%
15	All remaining exotic fuel disposed	0%

### Nuclear Materials

PLUTONIUM		2024
16	All plutonium produced	100%
17	All plutonium consolidated	100%
18	A: All plutonium repacked in long-term storage B: All cans not suitable for extended storage repackaged	0% 80%
19	All plutonium in interim storage	0%
20	All plutonium reused or disposed	0%
URANIUM		
21	All uranium produced	100%
22	All uranium consolidated	82%
23	All uranium treated	4%
24	All uranium in interim storage	61%
25	All uranium reused or disposed	3%

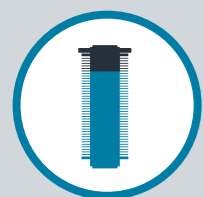
### Integrated Waste Management

LOW LEVEL WASTE		2024
26	All LLW produced	8%
27	All LLW treated - to enable diversion or reuse	10%
28	All waste suitable for disposal in NDA facilities	16%
29	All waste suitable for permitted landfill disposed	5%
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	16%
34	All ILW disposed	0%
HIGH LEVEL WASTE		
35	All HLW produced	62%
36	All HLW treated	73%
37	All HLW waste in interim storage	82%
38	All overseas HLW exported	51%
39	All HLW disposed	0%

### Site Decommissioning and Remediation

OPERATIONAL AND PLANNED		2024
40	All planned new buildings operational	TBD
41	All buildings primary function completed	40%
DECOMMISSIONING AND DEMOLITION		
42	All buildings decommissioned	23%
43	All buildings demolished or reused	21%
SITES		
44	All land delicensed or relicensed	9%
45	All land in End State - all planned physical work complete	49%
46	All land demonstrated as suitable for reuse	9%
47	All land de-designated or reused	9%

**947** hectares of land still to be released for other uses



# Spent Fuels

ESTIMATED LIFETIME INVENTORY - 2005 TO MISSION END

Spent Magnox Fuel		Spent Oxide Fuel		Spent Exotic Fuel	
Opening stock	2,810 te	Opening stock	3,150 te	Opening stock	194 te
Defueling	4,100 te	Receiving	5,570 te	Defueling	33 te
Legacy	500 te	<b>Total</b>	<b>8,720 te</b>	<b>Total</b>	<b>227 te</b>
<b>Total</b>	<b>7,410 te</b>				

## 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. They are placed in safe and secure interim storage in line with regulatory requirements pending a future decision on whether to classify them as waste for disposal in a GDF. For planning purposes, we assume that the remaining spent fuels will be disposed of in a GDF.

### WHAT HAS HAPPENED SINCE 2005?

THORP completed reprocessing operations of oxide fuels in 2019. The Magnox reactors are now all defueled, with all of the fuel brought to Sellafield for reprocessing. The Magnox reprocessing plant, which was Sellafield's last reprocessing facility finished reprocessing Magnox fuel in July 2022 with plant washout continued until March 2023.

### WHAT HAS TO HAPPEN NEXT?

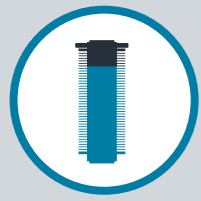
No more spent fuels will be reprocessed. Sellafield continues to receive oxide fuel under commercial contracts with EDF Energy. All remaining spent fuel will be placed in interim storage pending a decision whether to classify it as waste for disposal.



## STRATEGIC OUTCOMES - steps to achieving our mission

	Progress up to 2024	End date	Completed	Mission End
<b>SPENT MAGNOX FUEL</b>				
1 All sites defueled	100%	2020	COMPLETED	REUSED/DISPOSAL
2 All legacy Magnox fuel retrieved	25%	2039		
3 All Magnox fuel reprocessing completed	100%	2022	COMPLETED	
4 All remaining Magnox fuel in interim storage	17%	2042		
5 All remaining Magnox fuel disposed	0%	2125		
<b>SPENT OXIDE FUEL</b>				
6 All EDFE oxide fuel received	61%	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	58%	2035		
10 All remaining oxide fuel disposed	0%	2125		
<b>SPENT EXOTIC FUEL</b>				
11 All exotic fuel defueled	77%	2028		REUSED/DISPOSAL
12 All exotic fuel consolidated*	62%	2028		
13 All exotic fuel reprocessing completed	100%	2023	COMPLETED	
14 All remaining exotic fuel in interim storage	84%	2028		
15 All remaining exotic fuel disposed	0%	2125		

\*irradiated fuel only

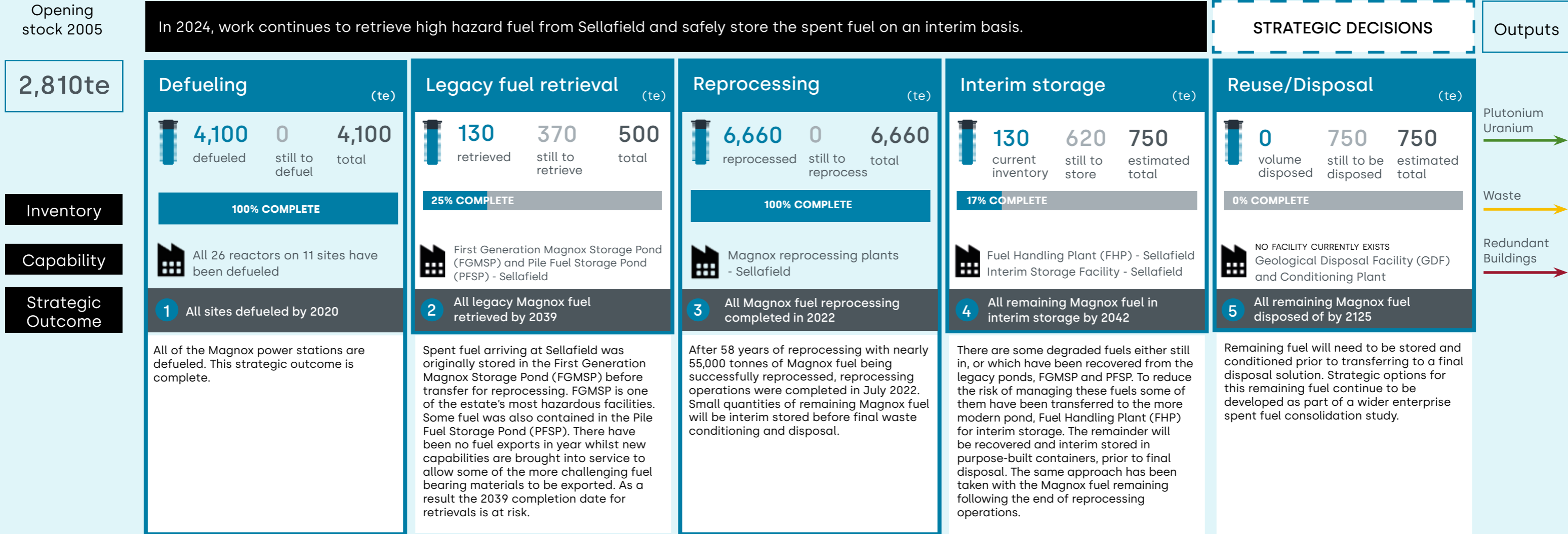


# Spent Fuels

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
<b>Total</b>	<b>7,410 te</b>

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



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	5,570 te
<b>Total</b>	<b>8,720 te</b>

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

In 2024, we continue to receive fuel from EDF Energy sites. Reprocessing has been completed and we safely store the remaining spent fuel on an interim basis.

### STRATEGIC DECISIONS

### Outputs

Opening stock 2005

3,150te

Inventory

Capability

Strategic Outcome

#### Receipts (te)



61% COMPLETE

Fuel Handling Plant (FHP) - 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 seven 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. The increased total to be received reflects possible increased receipts resulting from these potential extensions.

#### Legacy fuel retrieval (te)



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)



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)



58% 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 EDFE 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. Currently the interim stores are split between Fuel Handling Plant, oxide ponds and the THORP pond. Our critical enabler work will progressively deliver the asset care needed to move to a single pond. The forecast end date of 2035 is subject to a range determined by possible life extension for the EDFE AGR stations and therefore to the fuel received for interim storage.

#### Reuse/Disposal (te)



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



Hinkley Point A and the EDFE 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	194 te
Defueling	33 te
<b>Total</b>	<b>227 te</b>

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

In 2024, work continues to defuel the Dounreay Fast Reactor and consolidate exotic fuel at Sellafield.

### STRATEGIC DECISIONS

### Outputs

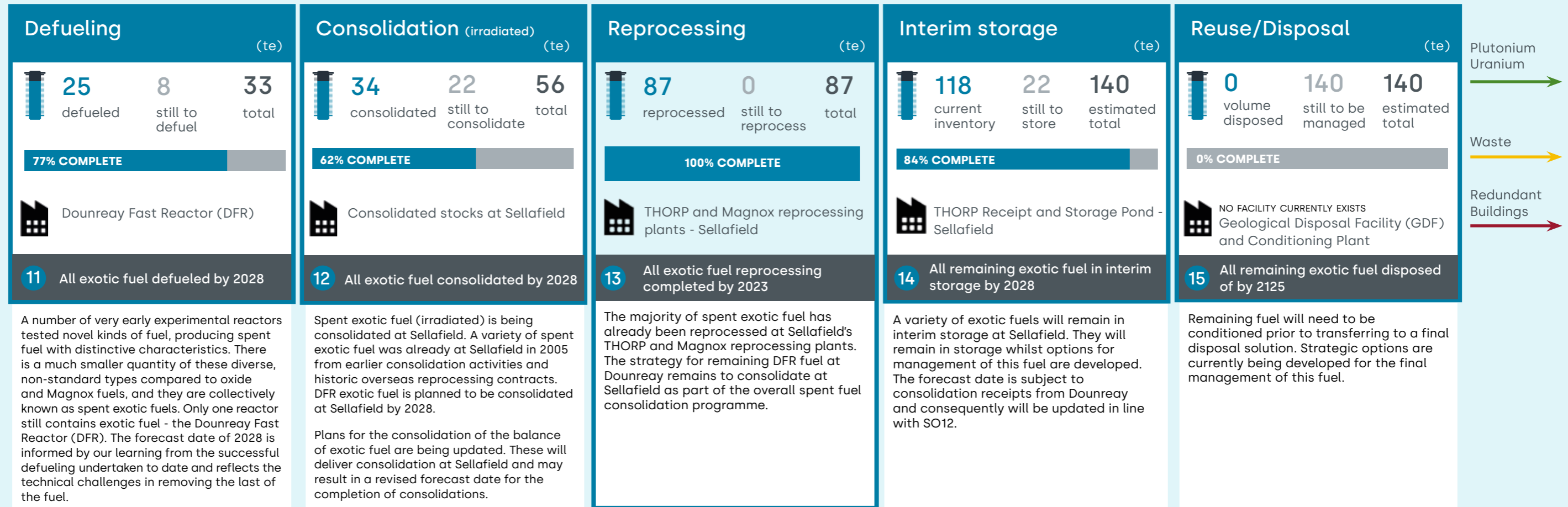
Opening stock 2005

194te

Inventory

Capability

Strategic Outcome



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		Uranium	
Opening stock	104 te	Opening stock	63,000 te
Produced	37 te	Produced	7,000 te
<b>Total</b>	<b>141 te</b>	<b>Total</b>	<b>70,000 te</b>

## 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) who are 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 at Sellafield is now complete. Consolidation of uranium remains ongoing. Some uranium must be treated and repackaged for interim storage. Plutonium at Sellafield will be repackaged in a form suitable for long term storage. The NDA will support the UK government to develop a policy for plutonium and then implement that policy.



## STRATEGIC OUTCOMES - steps to achieving our mission

	Progress up to 2023	End date	Completed	Mission End
<b>PLUTONIUM</b>				
16 All Plutonium produced	100%	2023	COMPLETED	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	80%	2060		
19 All Plutonium in interim storage	0%	2060		
20 All Plutonium reused or disposed	0%	2120		

## URANIUM

21 All Uranium produced	100%	2023	COMPLETED	REUSED/DISPOSAL
22 All Uranium consolidated	82%	2028		
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*

<b>Plutonium</b>	
Opening stock	104 te
Produced	37 te
<b>Total</b>	<b>141 te</b>

**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*

In 2024, work continues to provide the capability and capacity to treat and store plutonium at Sellafield.

### STRATEGIC DECISIONS

### Outputs

Opening stock 2005

104te

Inventory

Capability

Strategic Outcome

Quantities produced (te)	Consolidation (te)	Repacking (te)	Interim storage (te)	Reuse/Disposal (te)																														
<table border="1"> <tr> <td>37</td> <td>0</td> <td>37</td> </tr> <tr> <td>quantity produced</td> <td>still to be produced</td> <td>total</td> </tr> </table> <p><b>100% COMPLETE</b></p> <p>Magnox and THORP reprocessing - Sellafield</p> <p><b>16</b> All plutonium produced by 2023</p> <p>When the NDA was established, 104 tonnes of plutonium had already been produced from reprocessing. Magnox reprocessing has now finished and there will be no more large quantities of plutonium produced. There will possibly be a small amount of plutonium produced as part of the remaining Post Operational Clean Out (POCO) work. The amount produced is unlikely to change the value, with a final inventory of 140 tonnes.</p>	37	0	37	quantity produced	still to be produced	total	<table border="1"> <tr> <td>2</td> <td>0</td> <td>2</td> </tr> <tr> <td>consolidated</td> <td>still to consolidate</td> <td>total</td> </tr> </table> <p><b>100% COMPLETE</b></p> <p>Consolidated stocks at Sellafield</p> <p><b>17</b> All plutonium consolidated by 2019</p> <p>The NDA took the decision to consolidate all plutonium in new storage at Sellafield and this consolidation is complete. The plutonium inventory will however need repackaging into long-term storage containers.</p>	2	0	2	consolidated	still to consolidate	total	<table border="1"> <tr> <td>0</td> <td>140</td> <td>140</td> </tr> <tr> <td>repacked</td> <td>still to repack</td> <td>total</td> </tr> </table> <p>18A <b>0% COMPLETE</b></p> <p>18B <b>80% COMPLETE</b> 5 repacked 1 still to repack 6 total</p> <p>NO FACILITY CURRENTLY EXISTS            SPRS Re-treatment Plant (SRP) currently in construction phase - Sellafield</p> <p>A: All plutonium repacked in long-term storage by 2060            B: All cans not suitable for extended storage repackaged by 2060</p> <p><b>18</b></p> <p>18a - 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 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. New store capacity in future years will be required to achieve the outcome.            18b - Some older packages are to be repacked in existing plants to ensure their safe management. After this repackaging campaign completes, ongoing care of these packages will be needed until SRP has treated them and they are moved from interim to long-term storage in SPRS.</p>	0	140	140	repacked	still to repack	total	<table border="1"> <tr> <td>0</td> <td>140</td> <td>140</td> </tr> <tr> <td>current inventory</td> <td>still to store</td> <td>estimated total</td> </tr> </table> <p><b>0% COMPLETE</b></p> <p>Product and Residue Stores - Sellafield</p> <p><b>19</b> All plutonium in interim storage by 2060</p> <p>Following repackaging, 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</p>	0	140	140	current inventory	still to store	estimated total	<table border="1"> <tr> <td>1</td> <td>140</td> <td>141</td> </tr> <tr> <td>volume reused</td> <td>still to be reused or disposed</td> <td>estimated total</td> </tr> </table> <p><b>0% COMPLETE</b></p> <p>NO FACILITY CURRENTLY EXISTS            Geological Disposal Facility (GDF)</p> <p><b>20</b> All plutonium reused or disposed of by 2120</p> <p>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.</p>	1	140	141	volume reused	still to be reused or disposed	estimated total
37	0	37																																
quantity produced	still to be produced	total																																
2	0	2																																
consolidated	still to consolidate	total																																
0	140	140																																
repacked	still to repack	total																																
0	140	140																																
current inventory	still to store	estimated total																																
1	140	141																																
volume reused	still to be reused or disposed	estimated total																																



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

<b>Uranium</b>	
Opening stock	63,000 te
Produced	7,000 te
<b>Total</b>	<b>70,000 te</b>

**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*

Opening stock 2005

63,000te

Inventory

Capability

Strategic Outcome

In 2024, work continues to consolidate uranics at Capenhurst.

**STRATEGIC DECISIONS**

Outputs

Quantities produced (te)	Consolidation (te)	Treatment (te)	Interim storage (te)	Reuse/Disposal (te)															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 7,000 quantity produced</td> <td style="width: 33%;"> 0 still to be produced</td> <td style="width: 33%;"> 7,000 total</td> </tr> </table> <div style="background-color: #4CAF50; color: white; text-align: center; padding: 5px; font-weight: bold;">100% COMPLETE</div> <p> Magnox reprocessing - Sellafield</p>	7,000 quantity produced	0 still to be produced	7,000 total	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 12,000 consolidated</td> <td style="width: 33%;"> 3,000 still to consolidate</td> <td style="width: 33%;"> 15,000 total</td> </tr> </table> <div style="background-color: #4CAF50; color: white; text-align: center; padding: 5px; font-weight: bold;">82% COMPLETE</div> <p> Consolidated stocks at Capenhurst</p>	12,000 consolidated	3,000 still to consolidate	15,000 total	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 1,000 treated</td> <td style="width: 33%;"> 26,000 still to treat</td> <td style="width: 33%;"> 27,000 total</td> </tr> </table> <div style="background-color: #4CAF50; color: white; text-align: center; padding: 5px; font-weight: bold;">4% COMPLETE</div> <p> NO FACILITY CURRENTLY EXISTS Re-cylindring facility (in initiation) and deconversion facility (existing Tails Management Facility) Capenhurst</p>	1,000 treated	26,000 still to treat	27,000 total	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 42,000 inventory in interim storage</td> <td style="width: 33%;"> 26,000 still to store</td> <td style="width: 33%;"> 68,000 estimated total</td> </tr> </table> <div style="background-color: #4CAF50; color: white; text-align: center; padding: 5px; font-weight: bold;">61% COMPLETE</div> <p> Uranium store - Capenhurst THORP Product Store - Sellafield</p>	42,000 inventory in interim storage	26,000 still to store	68,000 estimated total	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 2,000 re-used/disposed</td> <td style="width: 33%;"> 68,000 still to be re-used/disposed</td> <td style="width: 33%;"> 70,000 estimated total</td> </tr> </table> <div style="background-color: #4CAF50; color: white; text-align: center; padding: 5px; font-weight: bold;">3% COMPLETE</div> <p> NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF)</p>	2,000 re-used/disposed	68,000 still to be re-used/disposed	70,000 estimated total
7,000 quantity produced	0 still to be produced	7,000 total																	
12,000 consolidated	3,000 still to consolidate	15,000 total																	
1,000 treated	26,000 still to treat	27,000 total																	
42,000 inventory in interim storage	26,000 still to store	68,000 estimated total																	
2,000 re-used/disposed	68,000 still to be re-used/disposed	70,000 estimated total																	
<p><b>21</b> All uranium produced by 2023</p> <p>No further uranium will be produced as spent fuel reprocessing at Sellafield has completed.</p>	<p><b>22</b> All uranium consolidated by 2028</p> <p>The NDA has consolidated the majority of uranium stock at Capenhurst. Work is underway to consolidate the remaining quantity of uranium on stock from the completed Magnox fuel reprocessing at Sellafield, as well as relatively small quantities of uranium from Dounreay, Magnox sites and Springfields to Capenhurst.</p>	<p><b>23</b> All uranium treated by 2055</p> <p>Uranium hexafluoride (HEX) is a chemically hazardous by-product of uranium enrichment. The NDA is seeking to put in place the capability to re-cylinder and treat 26,000tU of HEX at Capenhurst to ensure that the cylinders and their content are within the input specifications of the downstream facilities. After re-cylindring, the HEX will either be re-used or deconverted into a stable oxide form to remove the chemical hazard, so that it can be interim stored pending disposal.</p>	<p><b>24</b> All uranium in long-term storage by 2055</p> <p>Uranium (NDA-owned and NDA customer material) will be interim stored at Capenhurst and Sellafield until it can be re-used or a decision is taken to dispose of it.</p>	<p><b>25</b> All uranium reused or disposed of by 2120</p> <p>Remaining uranium may need to be conditioned prior to transferring to a final disposal solution. Strategic options are currently being developed for the final management of this nuclear material.</p>															

Waste →

Redundant Buildings →



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

Raw waste 4,137,000m<sup>3</sup>  
Packaged waste 311,000m<sup>3</sup>

## Intermediate Level Waste

Raw waste 192,000m<sup>3</sup>  
Packaged waste 471,000m<sup>3</sup>

## High Level Waste

Raw waste 4,570m<sup>3</sup>  
Packaged waste 1,500m<sup>3</sup>

## 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 and treated appropriately as informed by radiological, chemical and physical properties and associated 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. Effective and optimised waste management is an essential requirement for the delivery of the mission and is a significant part of the programme.

### WHAT HAS HAPPENED SINCE 2005?

Since 2005 considerable progress has been made with our preparations for retrievals of radioactive waste from legacy facilities, which has now commenced. The NDA has taken the decision to consolidate some waste 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). The majority of HLW has been vitrified and is in safe and secure storage pending the availability of a geological disposal facility. The NDA advocates 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. We have published our Treatment Strategic Position to clearly articulate why waste treatment is an important part of the NDA mission and why we invest significant time and effort on it. This supports the approach taken by waste producers who are developing and implementing enhanced waste treatment techniques and supports the pursuit of strategic opportunities.

### WHAT HAS TO HAPPEN NEXT?

A key aim for the NDA is to secure continuous retrieval operations at our highest priority legacy facilities, which will take a number of decades to complete. We are constructing new waste treatment plants and storage facilities across the NDA estate where we will make best use of existing and future capability as well as continuing to use off-site supply chain capability as appropriate. Permanent disposal facilities must be constructed for all higher activity waste. The NDA's risk-informed radioactive waste strategy supports near-surface disposal for some of the ILW inventory where the case can be made. Such a risk-informed approach is now an expectation set in the recent managing radioactive substances and nuclear decommissioning policies update. The Integrated Waste Management Programme has been established that helps to implement our strategy by delivering group-wide initiatives that Nuclear Waste Services (NWS) manage on our behalf.



## STRATEGIC OUTCOMES - steps to achieving our mission

### LOW LEVEL WASTE

- 26 All LLW produced
- 27 All LLW treated - to enable diversion or reuse
- 28 All waste suitable for disposal in NDA facilities
- 29 All waste suitable for permitted landfill disposed

Progress up to 2023

8%

10%

16%

5%

End date

2127

2127

2127

2127

Completed

Mission End

LLWR + LANDFILL

### INTERMEDIATE LEVEL WASTE

- 30 All ILW produced
- 31 All legacy waste retrieved
- 32 All ILW treated
- 33 All ILW in interim storage
- 34 All ILW disposed

33%

9%

10%

16%

0%

2120

2060

2120

2120

2379

DISPOSAL

### HIGH LEVEL WASTE

- 35 All HLW produced
- 36 All HLW treated
- 37 All HLW in interim storage
- 38 All overseas HLW exported
- 39 All HLW disposed

62%

73%

82%

51%

0%

2039

2039

2039

2030

2104

DISPOSAL



# 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 4,137,000m<sup>3</sup>  
 Packaged waste 311,000m<sup>3</sup>

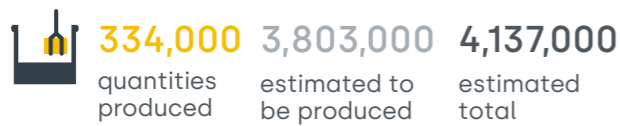
**LOW LEVEL WASTE** To manage radioactive waste and dispose of it where possible, or place it in safe, secure and suitable storage, ensuring that we implement the policies of UK government and the devolved administrations - *Strategy 2021, p72*

In 2024, work continues to divert LLW away from the Low Level Waste Repository prolonging the life of the facility.

Outputs

## Quantities produced

(raw waste vol.m<sup>3</sup>)



8% COMPLETE

LLW produced from NDA operations and decommissioning

26 All LLW produced by 2127

## Diversion

(raw waste vol.m<sup>3</sup>)



10% 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.m<sup>3</sup>)



16% COMPLETE

x2 sites Low Level Waste Repository and Dounreay

28 All waste suitable for disposal in NDA facilities by 2127

## Disposal (Landfill)

(imported vol.m<sup>3</sup>)



5% COMPLETE

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

29 All waste suitable for permitted landfill disposed by 2127

Redundant Buildings

LLW and Very Low Level Waste (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 < 0.0001% of the overall radioactivity. As we progress the mission we note a slight reduction in overall volume, due to waste processing and re-classification of waste.

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 2023/24, with cross group diversion rates 98%, indicating that application of the waste hierarchy is business as usual across the NDA group.

Solid LLW is disposed of at two facilities - the Low Level Waste Repository (the UK's primary LLW disposal facility) and the Dounreay on-site disposal facility (which only manages waste arising from Dounreay). There is a slight 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 (circa. 98% being diverted).

VLLW is the lowest hazard LLW, mainly consisting of soils, spoil and rubble. It is 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 2023/24.



LLW Repository



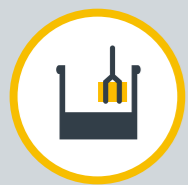
Metal melting - one of the ways of treating LLW



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<sup>3</sup>  
 Packaged waste 471,000m<sup>3</sup>

## 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*

In 2024, ILW continues to be produced with a focus on retrieving waste from legacy ponds and silos.

### STRATEGIC DECISIONS

Outputs

Opening stock 2005

**10,800m<sup>3</sup>**  
raw waste in store 2005

Inventory

Capability

Strategic Outcome

Quantities produced (raw waste vol.m <sup>3</sup> )	Legacy ponds and silos (raw waste vol.m <sup>3</sup> )	Treatment (raw waste vol.m <sup>3</sup> )	Interim storage (packaged waste vol.m <sup>3</sup> )	Disposal (packaged waste vol.m <sup>3</sup> )																														
<table border="1"> <tr> <td>55,000</td> <td>112,000</td> <td>167,000</td> </tr> <tr> <td>quantity produced</td> <td>still to be produced</td> <td>estimated total</td> </tr> </table> <p>33% COMPLETE</p> <p>Waste from operations and decommissioning</p> <p>30 All ILW produced by 2120</p>	55,000	112,000	167,000	quantity produced	still to be produced	estimated total	<table border="1"> <tr> <td>2,000</td> <td>19,000</td> <td>21,000</td> </tr> <tr> <td>retrieved since 2005</td> <td>still to retrieve</td> <td>estimated total</td> </tr> </table> <p>9% COMPLETE</p> <p>New technology and capability projects to retrieve legacy waste</p> <p>31 All legacy waste retrieved by 2060</p>	2,000	19,000	21,000	retrieved since 2005	still to retrieve	estimated total	<table border="1"> <tr> <td>20,000</td> <td>172,000</td> <td>192,000</td> </tr> <tr> <td>treated</td> <td>still to treat</td> <td>estimated total</td> </tr> </table> <p>10% COMPLETE</p> <p>New capability required</p> <p>32 All ILW treated by 2120</p>	20,000	172,000	192,000	treated	still to treat	estimated total	<table border="1"> <tr> <td>58,000</td> <td>314,000</td> <td>372,000</td> </tr> <tr> <td>current inventory</td> <td>still to store</td> <td>estimated total</td> </tr> </table> <p>16% COMPLETE</p> <p>New capability required</p> <p>33 All ILW in interim storage by 2120</p>	58,000	314,000	372,000	current inventory	still to store	estimated total	<table border="1"> <tr> <td>0</td> <td>471,000</td> <td>471,000</td> </tr> <tr> <td>disposed of</td> <td>still to be disposed</td> <td>estimated total</td> </tr> </table> <p>0% COMPLETE</p> <p>NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF)</p> <p>34 All ILW disposed by 2379</p>	0	471,000	471,000	disposed of	still to be disposed	estimated total
55,000	112,000	167,000																																
quantity produced	still to be produced	estimated total																																
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0	471,000	471,000																																
disposed of	still to be disposed	estimated total																																
<p>ILW is waste exceeding the upper boundary for LLW that is not significantly heat generating. It 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 be subject to change as we reduce uncertainty in the inventory.</p>	<p>The Sellafield Legacy Ponds and Silos (LP&amp;S) represent some of the most complex and difficult global decommissioning challenges and are a key priority for the NDA group. Two significant milestones were achieved this year with the start of waste exports from Pile Fuel Cladding Silo and the commencement of ion exchange (Zeolite) skip exports from the First Generation Magnox Storage Pond to the Interim Storage Facility using the Self Shield Boxes that may also be used to exporting fuel bearing materials in the future. Whilst the date for completion of retrievals remains at 2060 this represents the bulk waste, with retrievals of residual waste extending beyond this period. Residual waste now forms part of the work required to deliver interim state which falls under the requirements for delivering SO42.</p>	<p>Different forms of ILW are treated in a number of ways so they can be safely stored until a disposal facility is available. ILW treatment is ongoing using the many available treatment plants across the NDA group and work continues to design, build and commission new treatment facilities that are needed to complete this important stage of the ILW lifecycle.</p>	<p>Retrieved and packaged ILW undergoes safe storage until appropriate disposal facilities are available. 16% 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. However some ILW will require further conditioning before final disposal.</p>	<p>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 construction of 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 engaging with UK 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. Public consultation on a new draft framework for managing radioactive substances and nuclear decommissioning has been issued.</p>																														

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	4,570m <sup>3</sup>
Packaged waste	1,500m <sup>3</sup>

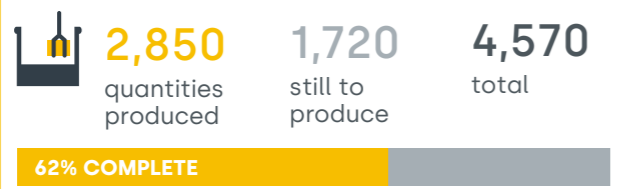
**HIGH LEVEL WASTE** - To manage radioactive waste and dispose of it where possible, or place it in safe, secure and suitable storage, ensuring that we implement the policies of UK government and the devolved administrations. *Strategy 2021, p72*

In 2024, work will continue to treat and store HLW on an interim basis.

Outputs

## Quantities produced LIQUID

(raw waste vol.m<sup>3</sup>)



Highly Active Storage Tanks

**35** All HLW produced by 2039 (including post operational clean out)

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. With reprocessing at Sellafield now complete, the remaining quantities to produce will come from management of those historic facilities culminating in Post Operational Clean Out (POCO).

## Treatment CONDENSED LIQUID

(raw waste vol.m<sup>3</sup>)



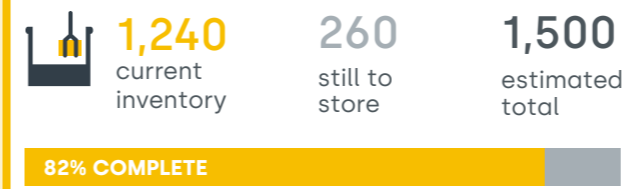
Waste Vitrification Plant

**36** All HLW treated by 2039

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.

## Interim storage SOLID

(packaged vol.m<sup>3</sup>)



Vitrified Product Store (VPS)

**37** All HLW in interim storage by 2039

The vitrified High Level Waste is stored in a purpose-built store, the Sellafield Vitrified Product Store(s), until a UK disposal facility for HLW becomes available.

## Disposal/Export

(packaged vol.m<sup>3</sup>)



<b>38</b> <b>51% COMPLETE</b>	<b>180</b> exported	<b>170</b> still to export	<b>350</b> total
<b>39</b> <b>0% COMPLETE</b>	<b>0</b> disposed	<b>1,330</b> still to dispose	<b>1,330</b> total

NO FACILITY CURRENTLY EXISTS  
Geological Disposal Facility (GDF)

**38** All overseas HLW exported by 2030  
**39** All HLW disposed by 2104

UK HLW disposal is pending the availability of a GDF; and the NDA group is working with government, local communities, regulators, and other stakeholders to make progress on delivering this essential capability. Sellafield returns reprocessed spent fuel to overseas customers in line with contractual requirements.

Redundant Buildings

Inventory

Capability

Strategic Outcome



HLW containers



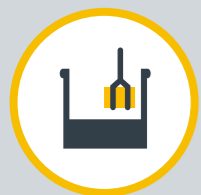
Waste Vitrification Plant



Vitrified Product Store - Sellafield



Artist's impression of a Geological Disposal Facility



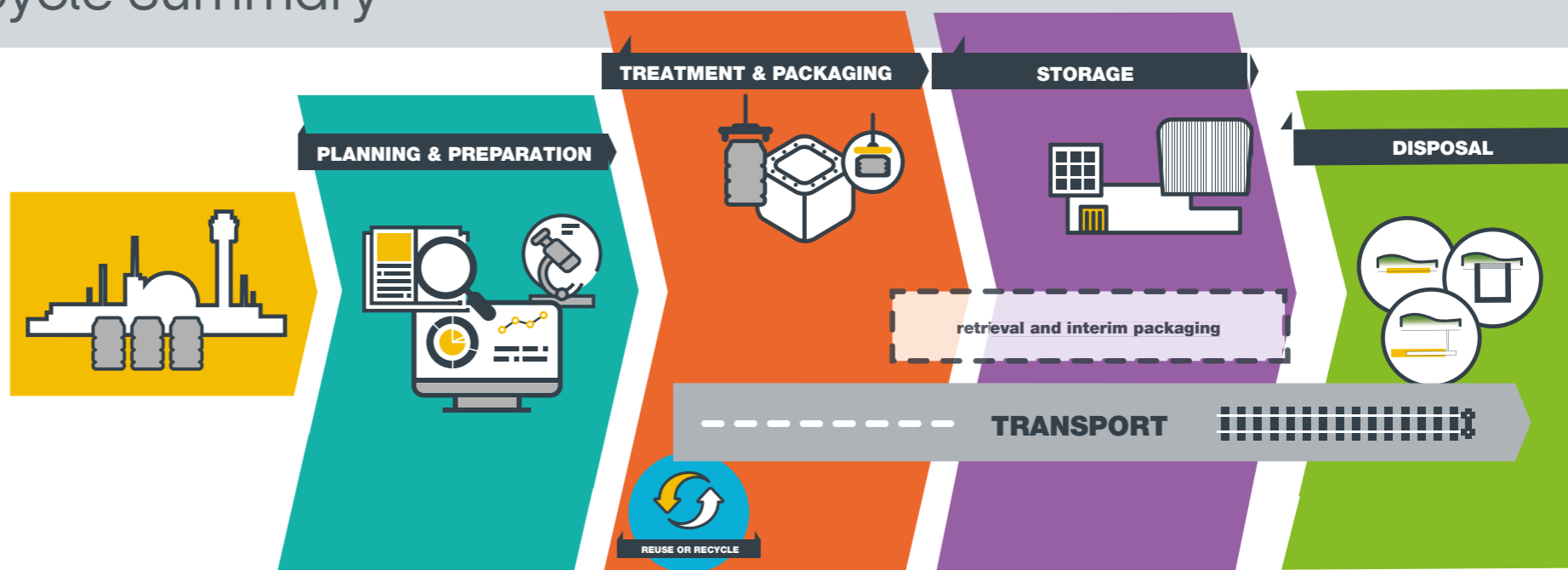
# Integrated Waste Management - Waste Management Lifecycle Summary

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
LLW	26 All LLW produced 8%   334,000m <sup>3</sup>   2127	27 All LLW treated - to enable diversion or reuse 10%   *73,000m <sup>3</sup>   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 16%   50,000m <sup>3</sup>   2127 29 All waste suitable for permitted landfill disposal 5%   149,000m <sup>3</sup>   2127
ILW	30 All ILW produced 33%   55,000m <sup>3</sup>   2120 31 All legacy waste retrieved 9%   2,000m <sup>3</sup>   2060	32 All ILW treated 10%   20,000m <sup>3</sup>   2120	33 All ILW in interim storage 16%   58,000m <sup>3</sup>   2120	34 All ILW disposed - final disposal operational 0%   0m <sup>3</sup>   2379
HLW	35 All HLW produced 62%   2,850m <sup>3</sup>   2039	36 All HLW treated 73%   556m <sup>3</sup>   2039	37 All HLW in interim storage 82%   1,240m <sup>3</sup>   2039	38 All overseas HLW exported 51%   180m <sup>3</sup>   2030 39 All HLW disposed - final disposal operational 0%   0m <sup>3</sup>   2104
TOTALS	9%   393,850m <sup>3</sup>	10%   93,556m <sup>3</sup>	16%   59,240m <sup>3</sup>	5%   199,180m <sup>3</sup>





# Site Decommissioning and Remediation

Buildings (radioactive)		Land (ha)	
Lifetime stock	1,200	Opening stock	1,040ha
Planned new builds	112	Land de-designated/reused	93ha
<b>Total</b>	<b>1,312</b>	Still to be de-designated/reused	947ha
		<b>Total</b>	<b>1,040ha</b>

## 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 responsible for the cleaning up of each site safely and cost-effectively so that land can be released for other uses. This requires all facilities to be decommissioned and the land remediated, including, where appropriate, the removal of wastes and demolition of structures.

### WHAT HAS TO BE DONE?

The NDA defines the final condition for each site including any remaining structures, infrastructure such as roads or services and the land itself, and must ensure the preferred decommissioning strategies, in terms of the pace and timing of work, balance the benefits and detriments of each option so that the greatest net benefit is delivered. This influences future plans and near-term work targets, and shapes current activities.

### WHAT HAS HAPPENED SINCE 2005?

Some 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. The assumed end-states for each of our sites have been reviewed to ensure that they remain appropriate and take account of opportunities to optimise end-state delivery in accordance with regulatory guidance. Consequently, initial opportunities for on-site disposal of low activity radioactive waste is being explored at two of our sites (Trawsfynydd and Winfrith) and learning from these will inform approaches at our other sites in due course. The NDA Strategy published in 2021 established a move to a Rolling Programme of Decommissioning at our Nuclear Restoration Services (NRS) Reactor sites. Work to implement this is underway with initial consideration being given to prompt decommissioning at our 'lead and learn' site at Trawsfynydd.

### 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 has worked with its OpCos and the ONR to support the development of revised regulatory guidance – to consider the implications of the Energy Act 2023 amendments for our sites and to consider what further, secondary legislation, might be required to establish a more proportionate regulatory regime for final stage decommissioning and clean-up. The NDA is also working with local authorities on their development plans, to ensure proposed end states and development plans are aligned. Associated with this, the NDA is also working with Government to consider opportunities within Planning regimes that might better support nuclear decommissioning and clean-up. An initial site-specific decommissioning strategy, for Trawsfynydd, will be developed and learning from this will inform a review of site-specific strategies across our other NRS Reactor sites. The NDA is supporting NRS, working with EDF, to enable the timely transfer of the AGR fleet of reactors and to consider the implications of this for our decommissioning strategies.

## STRATEGIC OUTCOMES - steps to achieving our mission

	Progress up to 2023	End date	Completed	Mission End
<b>OPERATIONAL AND PLANNED</b>				
40 All planned new buildings operational	TBD	2090		BUILDINGS COMPLETED
41 All buildings primary function completed	40%	2127		
<b>DECOMMISSIONING AND DEMOLITION</b>				
42 All buildings decommissioned	23%	2131		DECOMMISSIONED AND DEMOLISHED OR REUSED
43 All buildings demolished or reused	21%	2133		
<b>SITES</b>				
44 All land delicensed or relicensed	9%	2135		DEDESIGNATED OR REUSED
45 All land in End State - all planned physical work complete	49%	2134		
46 All land demonstrated as suitable for reuse	9%	2135		
47 All land de-designated or reused	9%	2380		



# Site Decommissioning and Remediation

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

Buildings (radioactive)	
Lifetime stock	1,200
Planned new builds	112
<b>Total</b>	<b>1,312</b>

**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.)

<b>112</b> planned new builds	<b>681</b> currently operational	<b>519</b> completed primary function since 2005
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40% COMPLETED PRIMARY FUNCTION

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

When a nuclear installation or facility is nearing the end of its operational life, a phase of work begins to transition it from operations to decommissioning. This phase normally starts well before operations finish and includes post operational clean out (POCO) which removes most of the nuclear inventory, such as fissile material. New facilities 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.)

<b>519 total</b>	<b>33</b> in post operational clean out	<b>52</b> in decommissioning (decontamination and dismantling)	<b>138</b> decommissioning deferred	<b>296</b> completed decommissioning since 2005
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23% COMPLETED DECOMMISSIONING

- 42 All buildings decommissioned by 2131

In line with UK Government strategy, NDA's preferred strategy is for nuclear facilities to be decommissioned immediately after cessation of operations. Sometimes however a decision might be taken to defer all or part of decommissioning in order to realise specific 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.)

<b>296 total</b>	<b>21</b> available for demolition or reuse	<b>1</b> in demolition	<b>274</b> demolished or reused since 2005
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21% DEMOLISHED OR REUSED

- 43 All buildings demolished or reused by 2133

Decommissioning is the final phase in the asset lifecycle where dismantling is completed to an agreed end state. The final stages of dismantling include demolition which is dominated by non-nuclear risks. Deconstruction typically generates large volumes of waste, a proportion of which may be contaminated with radioactivity.

**1,200**  
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

<b>Land hectares (ha)</b>	
Opening stock	1,040(ha)
Land de-designated/reused	93(ha)
Still to be de-designated/reused	947(ha)
<b>Total</b>	<b>1,040(ha)</b>

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

Opening stock 2005

**1,040\***  
hectares (ha)  
**1,030**  
licensed & designated  
**10**  
Dounreay LLW facility

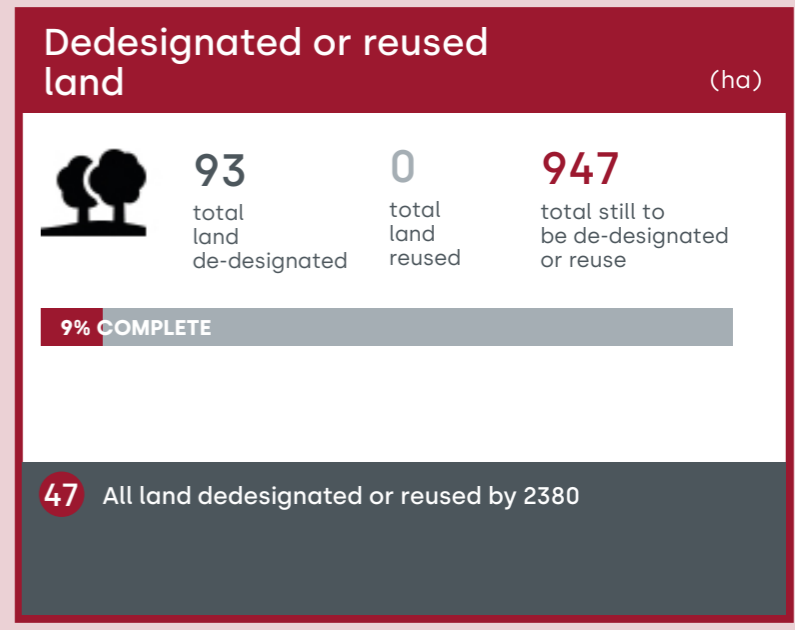
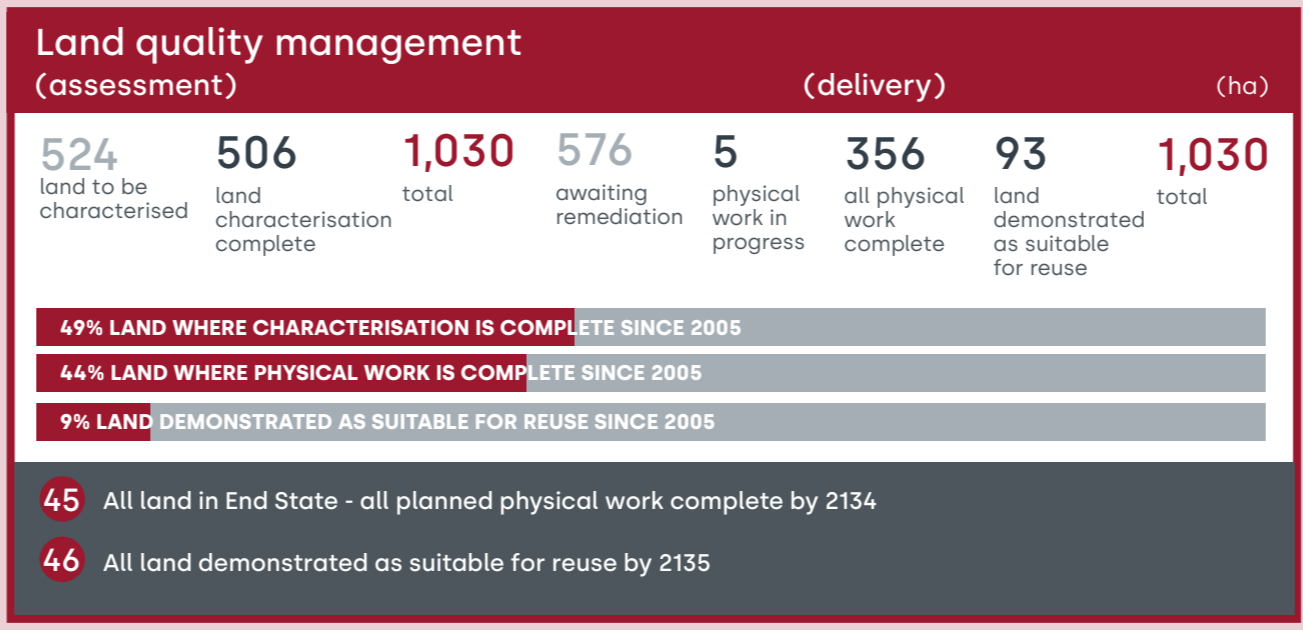
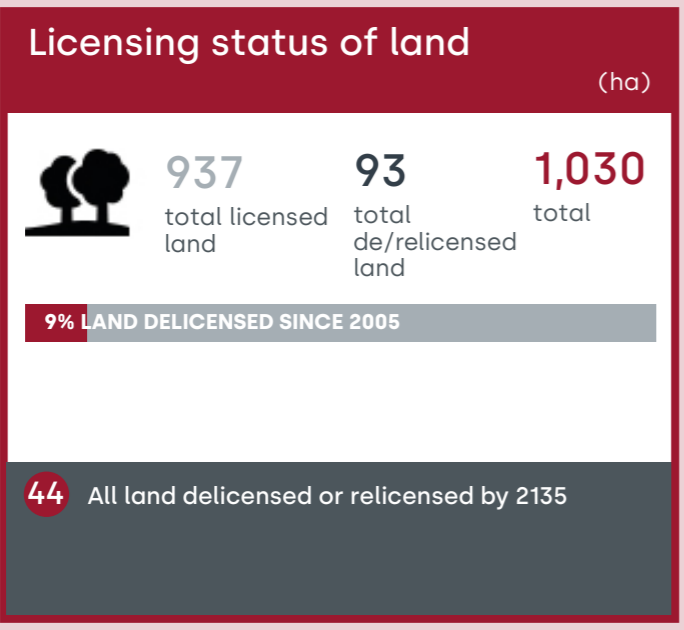
Inventory

Strategic Outcome

\*The 1,040 hectares of land consists of 1,030 hectares of licensed and designated land and 10 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.

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**



Each NDA site operates under a nuclear site licence granted to the relevant Site Licence Company (SLC) by the Office for Nuclear Regulation (ONR). The site or part of the site needs to have regulatory controls removed, delicensed, before land can be de-designated.

The NDA continues to support UK Government's plans to amend the legislative framework that applies to nuclear sites which will enable more proportionate regulation during the latter stages of dismantling. The amendments will 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. 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 three hectares at Winfrith in Feb 2019.



Bradwell in care and maintenance



Harwell



Winfrith