



Mission Progress Report

Published November 2021

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

Foreword



David Peattie
NDA 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

Following the publication of our updated Strategy (4th edition) in 2021, the Mission Progress Report has been revised to incorporate strategic changes.

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.

We, like other organisations, have had to deal with the challenges of the COVID-19 pandemic during 2020/21. The NDA group has responded with professionalism and empathy to our workforce. The pandemic has impacted many of our operations, with slowdowns and pauses experienced during the year. All of the NDA group companies have worked well together throughout this difficult period to support the delivery of the mission.

Progress continues to be made 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 are committed to improving the way we embed sustainability into our operations to support the UK's net-zero greenhouse gas emissions target, set out by the Government in 2019. Fighting climate change is a national priority and we've made carbon net-zero a priority across the NDA group.

David Peattie
NDA Chief Executive

HOW TO READ THIS REPORT

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

As a consequence of publishing our new version of the NDA Strategy in March 2021, we have revised some detail for a number of outcomes to ensure they continue to align with our fresh approach.

In the first 2 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 2021 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.

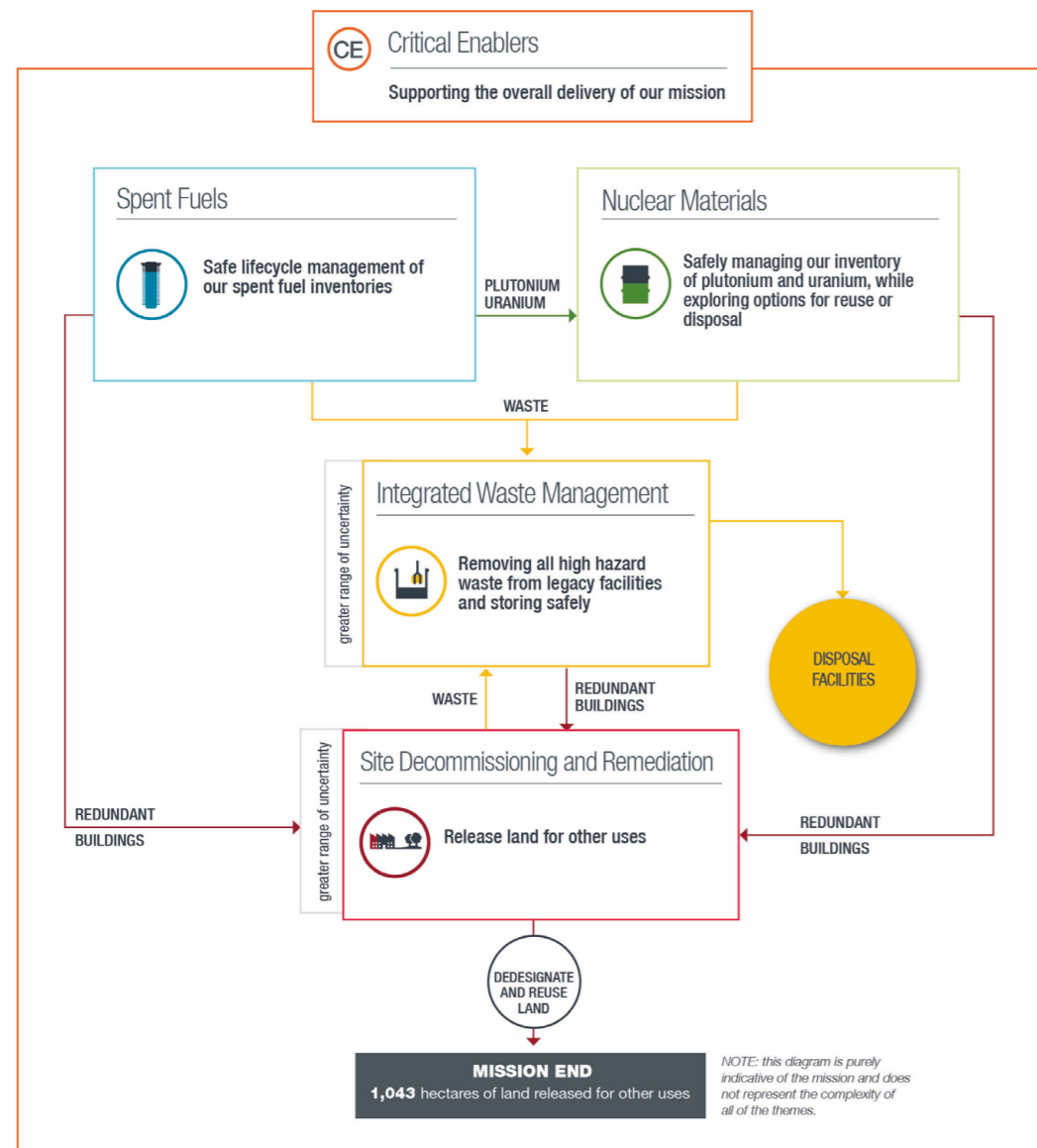
Our strategic approach and themes

We use 5 strategic themes to describe all the activities needed to deliver the NDA's mission.

The first 4, 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 comes from those 4 themes.

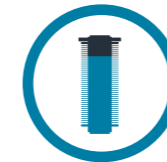
The fifth theme describes the important activities needed to support the delivery of our mission and is known as **critical enablers**. The diagram below demonstrates how they interplay.

These areas are all closely linked. However, 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 4 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 THORP reprocessing plant 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 8 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 2021

Spent Fuels

SPENT MAGNOX FUEL 2021

1 All sites defueled 100%

2 All legacy Magnox fuel retrieved 25%

3 All Magnox fuel reprocessing completed 94%

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 54%

7 All legacy oxide fuel retrieved 100%

8 All oxide fuel reprocessing completed 100%

9 All remaining oxide fuel in interim storage 49%

10 All remaining oxide fuel disposed 0%

SPENT EXOTIC FUEL

11 All exotic fuel defueled 67%

12 All exotic fuel consolidated 55%

13 All exotic fuel reprocessing completed 90%

14 All remaining exotic fuel in interim storage 83%

15 All remaining exotic fuel disposed 0%

Nuclear Materials

PLUTONIUM 2021

16 All plutonium produced 97%

17 All plutonium consolidated 100%

18 **A: All plutonium repacked in long-term storage 0%**
B: All cans not suitable for extended storage repackaged 0%

19 All plutonium in interim storage 0%

20 All plutonium reused or disposed 0%

URANIUM

21 All uranium produced 93%

22 All uranium consolidated 80%

23 All uranium treated 4%

24 All uranium in interim storage 56%

25 All uranium reused or disposed 1%

Integrated Waste Management

LOW LEVEL WASTE 2021

26 All LLW produced 7%

27 All LLW treated - to enable diversion or reuse 8%

28 All waste suitable for disposal in NDA facilities 14%

29 All waste suitable for permitted landfill disposed 4%

INTERMEDIATE LEVEL WASTE

30 All ILW produced 33%

31 All legacy waste retrieved 8%

32 All ILW treated 9%

33 All ILW in interim storage 15%

34 All ILW disposed 0%

HIGH LEVEL WASTE

35 All HLW produced 68%

36 All HLW treated 73%

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 2021

40 All planned new buildings operational **TBD**

41 All buildings primary function completed **35%**

DECOMMISSIONING AND DEMOLITION

42 All buildings decommissioned **18%**

43 All buildings demolished or reused **16%**

SITES

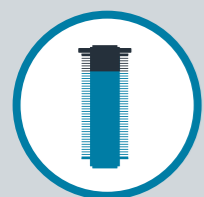
44 All land delicensed or relicensed **9%**

45 All land in End State - all planned physical work complete **41%**

46 All land demonstrated as suitable for reuse **9%**

47 All land de-designated or reused **9%**

950 hectares of designated land on nuclear licensed sites remain to be cleaned up



Spent Fuels

Spent Magnox Fuel		Spent Oxide Fuel		Spent Exotic Fuel	
Opening stock	2,810 te	Opening stock	3,150 te	Opening stock	199 te
Defueling	4,100 te	Receiving	5,290 te	Defueling	33 te
Legacy	500 te	Total	8,440 te	Total	232 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 (estimated 2022), 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, is expected to finish operations in about a year's time. 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 2021	End date	Completed	Mission End
SPENT MAGNOX FUEL				
1 All sites defueled	100%	2020	COMPLETED	REUSED/DISPOSAL
2 All legacy Magnox fuel retrieved	25%	2025		
3 All Magnox fuel reprocessing completed	94%	2022		
4 All remaining Magnox fuel in interim storage	25%	2025		
5 All remaining Magnox fuel disposed	0%	2125		
SPENT OXIDE FUEL				
6 All EDFE oxide fuel received	54%	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	49%	2035		
10 All remaining oxide fuel disposed	0%	2125		
SPENT EXOTIC FUEL				
11 All exotic fuel defueled	67%	2024		REUSED/DISPOSAL
12 All exotic fuel consolidated*	55%	2028		
13 All exotic fuel reprocessing completed	90%	2022		
14 All remaining exotic fuel in interim storage	83%	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.*

In 2021, work continues to retrieve high hazard fuel from Sellafield, complete reprocessing and safely store the spent fuel on an interim basis.

STRATEGIC DECISIONS

Outputs

Opening stock 2005

2,810te

Inventory

Capability

Strategic Outcome

Defueling



100% COMPLETE

All 26 reactors on 11 sites have been defueled

1 All sites defueled by 2020

All of the Magnox power stations are now defueled. This strategic outcome is now complete.

Legacy fuel retrieval



2021 25% COMPLETE

First Generation Magnox Storage Pond (FGMSP) and Pile Fuel Storage Pond (PFSP) - Sellafield

2 All legacy Magnox fuel retrieved by 2025

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).

Reprocessing



2021 94% COMPLETE

Magnox reprocessing plants - Sellafield

3 All Magnox fuel reprocessing completed in 2022

The NDA was aiming to complete reprocessing prior to the end of 2020. Due to the COVID-19 pandemic this is no longer possible. The final date for completion is still to be confirmed, but is likely to be 2022.

Interim storage



2021 25% COMPLETE

Fuel Handling Plant (FHP) - Sellafield Interim Storage Facility - Sellafield

4 All remaining Magnox fuel in interim storage by 2025

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, Fuel Handling Plant (FHP), where it will be stored until it can be transferred into dry storage. We expect to update this estimated total following the completion of reprocessing.

Reuse/Disposal



2021 0% COMPLETE

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

5 All remaining Magnox 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



Defueling activity at one of the Magnox stations



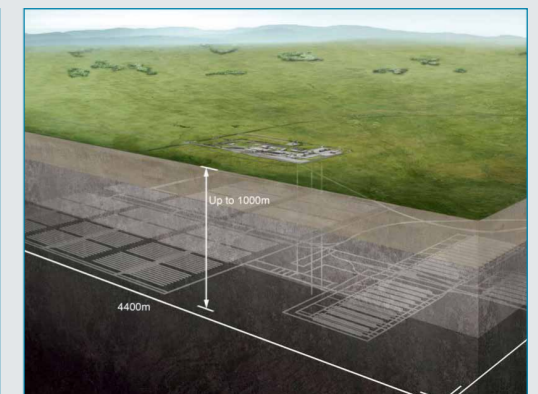
Pile Fuel Storage Pond - Sellafield



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

Spent Oxide Fuel	
Opening stock	3,150 te
Receiving	5,290 te
Total	8,440 te

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

In 2021, 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

Opening stock 2005

3,150te

Inventory

Capability

Strategic Outcome

Receipts



2021 **54% 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 around 2035, 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



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



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



2021 **49% 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

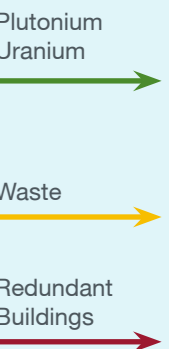


2021 **0% COMPLETE**

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.



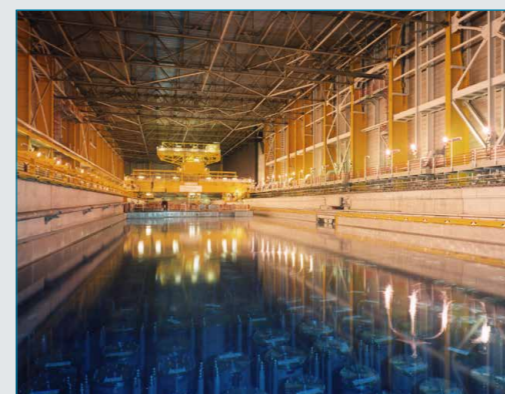
Hinkley Point A and the EDF owned (B) station



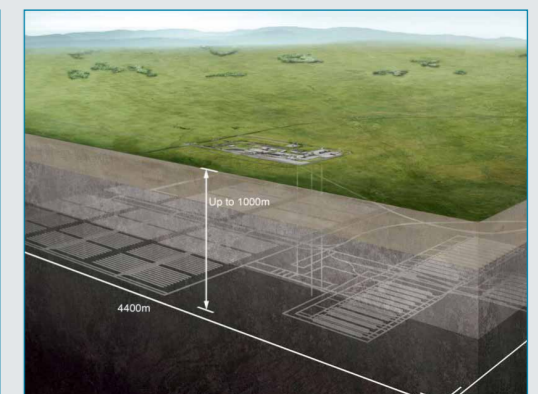
Shearing operations - Sellafield



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	199 te
Defueling	33 te
Total	232 te

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

In 2021, work continues to defuel the Dounreay Fast Reactor, consolidate exotic fuel at Sellafield and complete reprocessing.

STRATEGIC DECISIONS

Outputs

Opening stock 2005

199te

Inventory

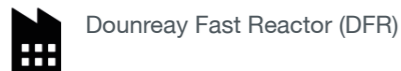
Capability

Strategic Outcome

Defueling



2021 67% COMPLETE



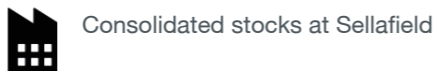
11 All exotic fuel defueled by 2024

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 and they are collectively known as Spent Exotic Fuels. Only one reactor still contains exotic fuel - the Dounreay Fast Reactor (DFR). Previously, some of the fuel that was removed from DFR prior to 2005 was included in the report. Of the 44te only 33te remained in the reactor in 2005.

Consolidation (irradiated)



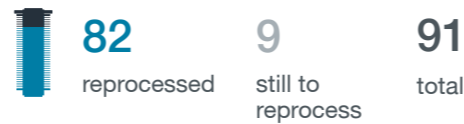
2021 55% COMPLETE



12 All exotic fuel consolidated by 2028

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.

Reprocessing



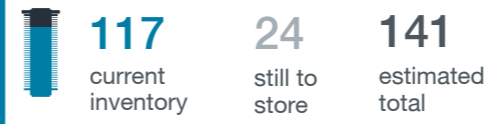
2021 90% COMPLETE



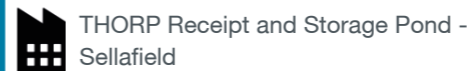
13 All exotic fuel reprocessing completed by 2022

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 to Sellafield, is to reprocess as much as is practicable before the Magnox reprocessing plant ceases operations. The final date for completion is still to be confirmed, but is likely to be in 2022.

Interim storage



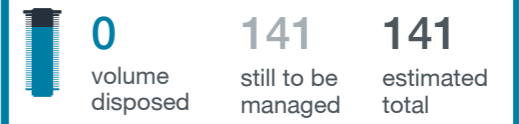
2021 83% COMPLETE



14 All remaining exotic fuel in interim storage by 2028

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.

Reuse/Disposal



2021 0% COMPLETE



15 All remaining exotic 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



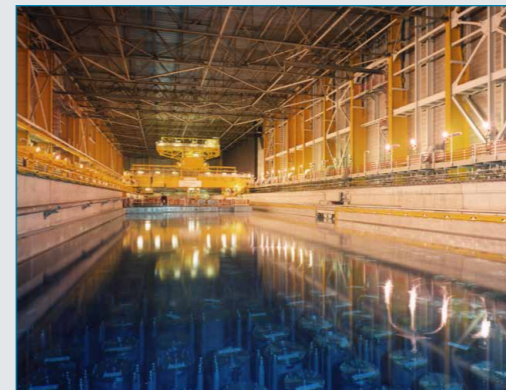
Dounreay Fast Reactor



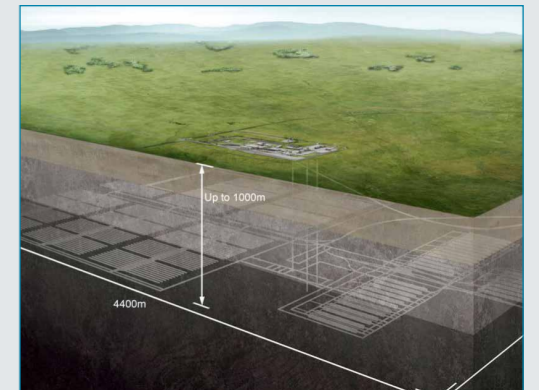
Transporting exotic fuel to Sellafield



Magnox Reprocessing Plant - Sellafield



THORP Receipt and Storage Pond - Sellafield



Artist's impression of a Geological Disposal Facility



Plutonium		Uranics	
Opening stock	104 te	Opening stock	54,000 te
Produced	38 te	Produced	7,000 te
Total	142 te	Total	61,000 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. 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 2021	End date	Completed	Mission End
PLUTONIUM				
16 All Plutonium produced	97%	2022		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	0%	2060		
19 All Plutonium in interim storage	0%	2060		
20 All Plutonium reused or disposed	0%	2120		
URANIUM				
21 All Uranium produced	93%	2022		REUSED/DISPOSAL
22 All Uranium consolidated	80%	2025		
23 All Uranium treated	4%	2055		
24 All Uranium in interim storage	56%	2055		
25 All Uranium reused or disposed	1%	2120		





Nuclear Materials

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

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

In 2021, 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

37	1	38
quantity produced	still to be produced	total

2021 **97% COMPLETE**

16 Magnox and THORP reprocessing - Sellafield

16 All plutonium produced by 2022

When the NDA was established, 104 tonnes of plutonium had already been produced from reprocessing. Plutonium production will complete when Magnox reprocessing finishes which is likely to be in 2022.

Consolidation

2	0	2
consolidated	still to consolidate	total

2021 **100% COMPLETE**

17 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

0	141	141
repacked	still to repack	total

2021 **0% COMPLETE**

18 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 (SO19). To ensure that the plutonium packages can be safely stored in SPRS, they will be repacked and, where appropriate, some plutonium will be treated to stabilise it for long-term storage. A major new facility to repackage materials is required to support this strategy. This facility will repackage and, where appropriate, retreat all of the plutonium packages and is currently being constructed. Some older packages are to be repacked in existing plants to ensure their safe management in the short to medium term.

Interim storage

0	141	141
current inventory	still to store	estimated total

2021 **0% COMPLETE**

19 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 will be required to achieve the outcome.

Reuse/Disposal

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

2021 **0% COMPLETE**

20 NO FACILITY CURRENTLY EXISTS
 Geological Disposal Facility (GDF)

20 All plutonium reused or disposed of by 2120

The plutonium dispositioned 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



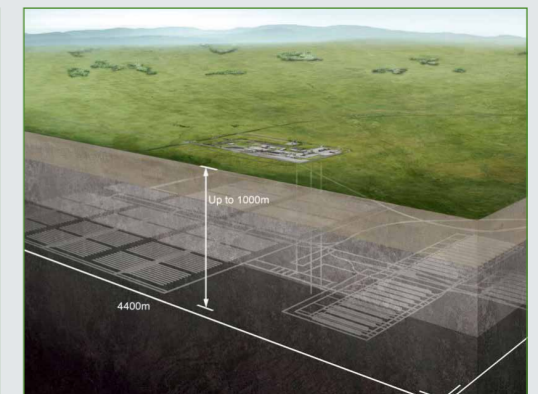
One of the NTS fleet of nuclear transport ships



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

Uranium	
Opening stock	54,000 te
Produced	7,000 te
Total	61,000 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*

Opening stock 2005

54,000te

Inventory

Capability

Strategic Outcome

In 2021, work continues to complete reprocessing and consolidate uranics at Capenhurst.

STRATEGIC DECISIONS

Outputs

Quantities produced	Consolidation	Treatment	Interim storage	Reuse/Disposal																																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 6,000 quantity produced</td> <td style="width: 33%;"> <1,000 still to be produced</td> <td style="width: 33%;"> 7,000 total</td> </tr> <tr> <td colspan="3">2021 93% COMPLETE</td> </tr> <tr> <td colspan="3"> Magnox reprocessing - Sellafield</td> </tr> <tr> <td colspan="3">21 All uranium produced by 2022</td> </tr> </table> <p>A small quantity of uranium remains to be produced from Magnox fuel reprocessing at Sellafield.</p>	6,000 quantity produced	<1,000 still to be produced	7,000 total	2021 93% COMPLETE			Magnox reprocessing - Sellafield			21 All uranium produced by 2022			<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> <tr> <td colspan="3">2021 80% COMPLETE</td> </tr> <tr> <td colspan="3"> Consolidated stocks at Capenhurst</td> </tr> <tr> <td colspan="3">22 All uranium consolidated by 2025</td> </tr> </table> <p>The NDA has consolidated the majority of uranium stock at Capenhurst. Work is underway to consolidate the remaining quantity of uranium from Magnox fuel reprocessing from Sellafield, as well as a relatively small quantity of uranium from Dounreay, Magnox sites and Springfields to Capenhurst.</p>	12,000 consolidated	3,000 still to consolidate	15,000 total	2021 80% COMPLETE			Consolidated stocks at Capenhurst			22 All uranium consolidated by 2025			<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> <tr> <td colspan="3">2021 4% COMPLETE</td> </tr> <tr> <td colspan="3"> NO FACILITY CURRENTLY EXISTS Legacy Cylinder Facility currently in initiation phase - Capenhurst</td> </tr> <tr> <td colspan="3">23 All uranium treated by 2055</td> </tr> </table> <p>Uranium hexafluoride (HEX) is a chemically hazardous by-product of the uranium enrichment. The NDA is seeking to put in place the capability to re-package 26,000tU of HEX at Capenhurst. After repackaging the HEX will be treated to remove the chemical hazard, so that it can be interim stored pending re-use/disposal.</p>	1,000 treated	26,000 still to treat	27,000 total	2021 4% COMPLETE			NO FACILITY CURRENTLY EXISTS Legacy Cylinder Facility currently in initiation phase - Capenhurst			23 All uranium treated by 2055			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> 34,000 inventory in interim storage</td> <td style="width: 33%;"> 26,000 still to store</td> <td style="width: 33%;"> 60,000 estimated total</td> </tr> <tr> <td colspan="3">2021 56% COMPLETE</td> </tr> <tr> <td colspan="3"> Uranium store - Capenhurst THORP Product Store - Sellafield</td> </tr> <tr> <td colspan="3">24 All uranium in long-term storage by 2055</td> </tr> </table> <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>	34,000 inventory in interim storage	26,000 still to store	60,000 estimated total	2021 56% COMPLETE			Uranium store - Capenhurst THORP Product Store - Sellafield			24 All uranium in long-term storage by 2055			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"> <1,000 re-used/disposed</td> <td style="width: 33%;"> 60,000 still to be re-used/disposed</td> <td style="width: 33%;"> 61,000 estimated total</td> </tr> <tr> <td colspan="3">2021 1% COMPLETE</td> </tr> <tr> <td colspan="3"> NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF)</td> </tr> <tr> <td colspan="3">25 All uranium reused or disposed of by 2120</td> </tr> </table> <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>	<1,000 re-used/disposed	60,000 still to be re-used/disposed	61,000 estimated total	2021 1% COMPLETE			NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF)			25 All uranium reused or disposed of by 2120		
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Please note: Previously NDA reported against uranium that was owned by the NDA, produced from enrichment or reprocessing. The NDA also manages uranium on behalf of customers, and this has now been included with the exception of customer owned reprocessed uranium at Sellafield.



Magnox Reprocessing Plant



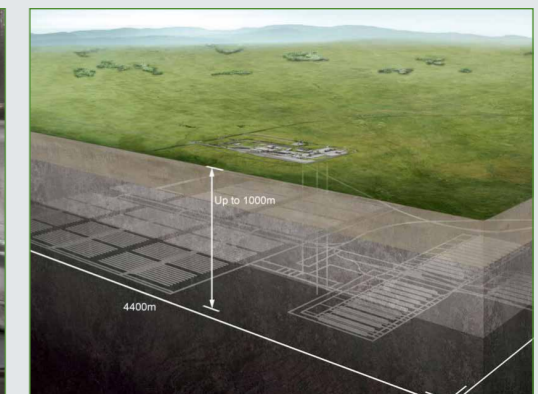
Capenhurst



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	4,092,000m ³	Raw waste	192,000m ³	Raw waste	4,000m ³
Packaged waste	342,000m ³	Packaged waste	471,000m ³	Packaged waste	1,650m 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 2021	End date	Completed	Mission End
26 All LLW produced	7%	2127		LLWR + LANDFILL
27 All LLW treated - to enable diversion or reuse	8%	2127		
28 All waste suitable for disposal in NDA facilities	14%	2127		
29 All waste suitable for permitted landfill disposed	4%	2127		

INTERMEDIATE LEVEL WASTE

	Progress up to 2021	End date	Completed	Mission End
30 All ILW produced	33%	2120		DISPOSAL
31 All legacy waste retrieved	8%	2048		
32 All ILW treated	9%	2120		
33 All ILW in interim storage	15%	2120		
34 All ILW disposed	0%	2125*		

HIGH LEVEL WASTE

	Progress up to 2021	End date	Completed	Mission End
35 All HLW produced	68%	2030		DISPOSAL
36 All HLW treated	73%	2030		
37 All HLW in interim storage	83%	2030		
38 All overseas HLW exported	11%	2025		
39 All HLW disposed	0%	2104		

*the policy for Scotland is to have near surface management, the final decision on which is not accounted for in this date.



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 4,092,000m³
 Packaged waste 342,000m³

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 2021, 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)



2021 7% COMPLETE

LLW produced from NDA operations and decommissioning

26 All LLW produced by 2127

Diversion

(raw waste vol.m³)



2021 8% 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)



2021 14% 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)



2021 4% 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 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 for the first time. These wastes are the largest volume radioactive waste arisings in the NDA group, but account for only 0.0001% of the overall radioactivity.

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 2020/21, 3,000m³ 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; although the LLWR remained operational to support non-NDA group disposals.

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 2020/21, with successful management of ~5,000m³.



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 192,000m³
 Packaged waste 471,000m³

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 2021, ILW continues to be produced with a focus on retrieving waste from legacy ponds and silos.

STRATEGIC DECISIONS

Outputs

Opening stock 2005

10,800m³ raw waste in store 2005

Inventory

Capability

Strategic Outcome

Quantities produced (raw waste vol.m ³)	Legacy ponds & silos (raw waste vol.m ³)	Treatment (raw waste vol.m ³)	Interim storage (packaged waste vol.m ³)	Disposal (packaged waste vol.m ³)
55,000 quantity produced 112,000 still to be produced 167,000 estimated total 2021 33% COMPLETE	1,800 retrieved since 2005 19,500 still to retrieve 21,300 estimated total 2021 8% COMPLETE	18,000 treated 174,000 still to treat 192,000 estimated total 2021 9% COMPLETE	55,000 current inventory 317,000 still to store 372,000 estimated total 2021 15% COMPLETE	0 disposed of 471,000 still to be disposed 471,000 estimated total 2021 0% COMPLETE
Waste from operations and decommissioning 30 All ILW produced by 2120	New technology and capability projects to retrieve legacy waste 31 All legacy waste retrieved by 2048	New capability required 32 All ILW treated by 2120	New capability required 33 All ILW in interim storage by 2120	NO FACILITY CURRENTLY EXISTS Geological Disposal Facility (GDF) 34 All ILW disposed by 2125
<p>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.</p>	<p>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 8% - an increase of 200m³ during the year.</p> <p>Progress has been made on preparations for retrieval from the legacy silo facilities with installation of the 400te first silo emptying plant in Magnox Swarf Storage Silo and creation of new access to the Pile Fuel Cladding Silo.</p>	<p>Different forms of ILW are treated in different ways so they can be safely packaged and stored until a disposal facility is available.</p> <p>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.</p>	<p>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 - approximately 11 - will be required to enable safe storage of the remaining inventory at Sellafield and for NDA sites in Scotland.</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 and to construct a GDF for ILW arisings in England and Wales. The policy in Scotland is for near-site, near-surface management. Progress has been made with the first Community Working Groups for the GDF being established in the past year. 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.</p>

Redundant Buildings →



ILW Magnox fuel cladding swarf



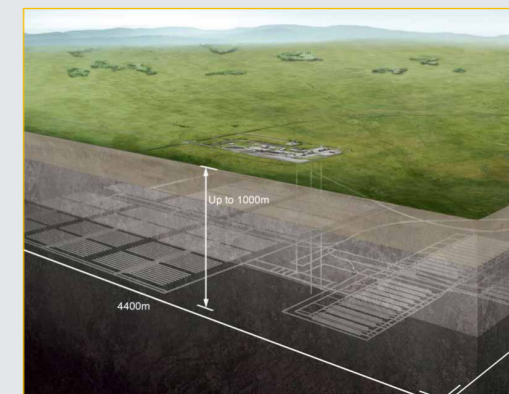
Retrieving waste from the legacy ponds



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 4,000m³
 Packaged waste 1,650m³

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 2021, 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>1,300 still to produce</p> <p>4,000 total</p> <p>2021 68% 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. 60m³ of HAL has been produced and managed through this process this year.</p>	<p>536 treated</p> <p>194 still to treat</p> <p>730 total</p> <p>2021 73% 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 1.5% of the total waste arisings has been vitrified over the past year.</p>	<p>1,210 current inventory</p> <p>260 still to store</p> <p>1,470 estimated total</p> <p>2021 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 Store(s) - until a UK disposal facility for HLW becomes available. An additional 1% of the total arisings was transferred into storage in 2020/21.</p>	<p>180 exported</p> <p>1,470 still to be exported or disposed</p> <p>1,650 estimated total</p> <p>2021 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. During 2020/21, 30m³ of HLW was successfully returned to customers.</p>



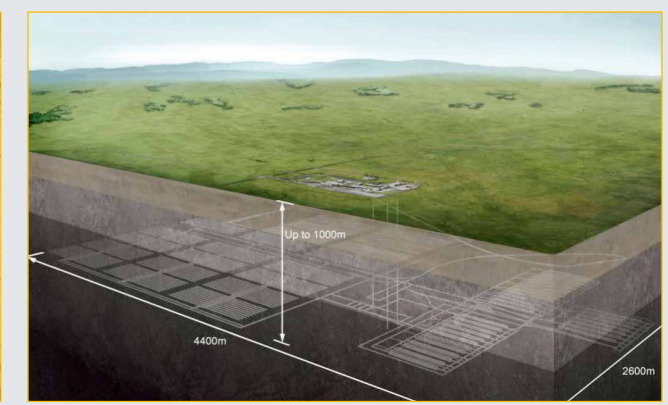
HLW containers



Waste Vitrification Plant



Vitrified Product Store - Sellafield



Artist's impression of a Geological Disposal Facility



Site Decommissioning and Remediation

ESTIMATED LIFETIME INVENTORY - 2005 TO MISSION END

Buildings (radioactive)		Land (hectares)	
Current stock	1,227	Opening stock	1,043
New builds	116	Land de-designated/reused	93
Total	1,343	Still to be de-designated/reused	950
		Total	1,043

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

	Progress up to 2021	End date	Completed	Mission End
OPERATIONAL AND PLANNED				
40 All planned new buildings operational	TBD	2090		BUILDINGS COMPLETED
41 All buildings primary function completed	35%	2127		
DECOMMISSIONING AND DEMOLITION				
42 All buildings decommissioned	18%	2131		DECOMMISSIONED AND DEMOLISHED OR REUSED
43 All buildings demolished or reused	16%	2133		
SITES				
44 All land delicensed or relicensed	9%	2135		DEDESIGNATED OR REUSED
45 All land in End State - all planned physical work complete	41%	2134		
46 All land demonstrated as suitable for reuse	9%	2135		
47 All land de-designated or reused	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	1,227
New builds	116
Total	1,343

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

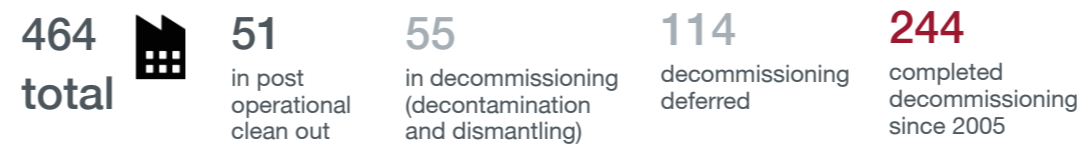


2021 **35% COMPLETED PRIMARY FUNCTION**

- 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



2021 **18% 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



2021 **16% 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.

1,227
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

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

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

Opening stock 2005

1,043* hectares
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.

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.

Licensing status of land

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

2021 **9%** LAND DELICENSED SINCE 2005

44 All land delicensed or relicensed by 2135

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.

Land quality management

(assessment)			(delivery)					
525	506	1,031	583	23	332	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	

2021 **49%** LAND WHERE CHARACTERISATION IS COMPLETE SINCE 2005

2021 **41%** LAND WHERE PHYSICAL WORK IS COMPLETE SINCE 2005

2021 **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

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.

MISSION END

Dedesignated or reused land

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

2021 **9%** COMPLETE

47 All land dedesignated or reused by 2333

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