The NDA group
Draft Strategy

Published July 2025 for consultation

Introduction to the consultation

How to respond

In this consultation, the NDA wants to hear from members of the public, nuclear regulators, employees from within our NDA group operating companies, subsidiaries, trade unions, local authorities, Site Stakeholder Groups (SSGs), Non-Governmental Organisations (NGOs) and any other organisation or public body. In your response, please state whether you are responding as an individual or representing the views of an organisation. If you are responding on behalf of an organisation, please make it clear who the organisation represents and, where applicable, how you assembled the views of members.

The consultation focusses on a series of questions throughout the document. However, we are happy to receive comments on how our strategy or its implementation can be improved and we will consider where appropriate.

When considering responses to this consultation, the NDA will give greater weight to those that are based on argument and evidence, rather than simple expressions of support or opposition.

This consultation began on 7 July 2025 and will close on 29 September 2025.

By Letter or email: you can respond by letter or email via the contact details below.

Strategy consultation
NDA Herdus House
Westlakes Science and Technology Park
Moor Row, Cumbria, CA24 3HU

Email: strategy5@nda.gov.uk

Confidentiality and data protection

Any information we receive in response to this consultation, including personal data, may be subject to publication or disclosure in accordance with UK information access legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 (DPA) and the Environmental Information Regulations 2004), unless suitable exemptions/ exceptions apply. If you want the information that you provide to be treated as confidential, please let us know, but be aware that we cannot guarantee confidentiality in all circumstances. For example, an automatic confidentiality disclaimer generated by your IT system won't necessarily be binding on the NDA. Please refer to Information Commissioner's Office (ICO) guidance on information provided in confidence for more detail.

Most of the personal information we collect and process is provided to us directly by you. This could include your name, email address, and anything that could be used to identify you. It is an essential part of the consultation process, so that we can contact you regarding your response or for statistical purposes. The lawful basis we are relying on to process your personal data is article 6(1)(e) of the UK General Data Protection Regulations (GDPR), which allows us to process personal data when this is necessary for the performance of our public tasks. We will retain consultation and response information until our work on the subject matter of the consultation is complete.

The NDA is committed to protecting the privacy and security of your personal information. Our Personal Information Charter explains your rights and gives you the information you are entitled to under data protection legislation (DPA and the UK GDPR). If you would like to exercise any of these rights, please contact our Data Protection Officer at dpo@nda.go.uk. If you are dissatisfied with the way we have processed your data you may also contact the Information Commissioner's Office (ICO).

Additional copies

Electronic versions of all the documents being published as part of this consultation are available on the website www.gov.uk/nda

You may make copies of this consultation document without seeking permission. Further printed copies of the consultation document and the Integrated Impact Assessment (IIA) may be obtained by emailing: strategy5@nda.gov.uk

Consultation conduct

If you have any comments or complaints about the way in which this consultation is conducted, please mark them 'Strategy consultation' and send to:

Address: NDA Enquiries, NDA, Herdus House, Westlakes Science and Technology Park, Moor Row, Cumbria, CA24 3HU

Email: enquiries@nda.gov.uk

A copy of the consultation criteria from the Government's Code of Practice on Consultation is provided on www.gov.uk

Consultation events

The NDA will endeavour to respond positively to requests for meetings during the consultation period. If you would like to request such a meeting, please submit your request to the email address below.

Email: strategy5@nda.gov.uk

Next steps

The NDA will consider responses it receives to the consultation and outputs from any events. The NDA will issue a response to the consultation, including a summary of responses received, and revise the Draft Strategy as appropriate. Subject to final approval by both the UK and Scottish governments, the NDA will publish the final version of this document by the end of March 2026.

Cover image – Dounreay site

Contents

KEY
Glossary terms appear in *italics*
(SOxx) refer to the strategic outcomes as reported in the Mission Progress Report

Image on p4 – An active demonstrator at Sellafield

Preface

At the Nuclear Decommissioning Authority (NDA), we have an obligation, under the Energy Act (2004) *(ref 1)*, to decommission the UK's earliest nuclear sites safely, sustainably and responsibly, with care for the environment and the communities adjacent to our sites. Our strategy is founded on a commitment to overcoming the challenges of nuclear clean-up and decommissioning, to ensure our actions and decisions deliver a positive and long-lasting legacy for future generations.

Preface

We work with the UK and devolved governments to ensure their policies are reflected in our strategy and implemented at our sites. Our sponsoring department is the Department for Energy Security and Net Zero (DESNZ), with additional obligations to Scottish Ministers for matters affecting Scotland.

In 2025, we marked our 20th anniversary, and when published in early 2026, this document will represent the fifth iteration of the NDA Strategy.

We operate in an evolving landscape shaped by changing global economics, policies, environmental imperatives and societal trends. Since 2021, major events, including the COVID-19 pandemic and energy security challenges following Russia's invasion of Ukraine, have led to unprecedented state intervention. The UK's increased public debt burden continues to influence government funding decisions and strategic priorities, and funding constraints require us to balance short-term affordability with long-term value for money. We must demonstrate value for the grant we receive from the UK government and explore ways to deliver maximum performance through innovation and efficient ways of working across our estate. We must exploit the opportunities offered by our One NDA subsidiary model (see ***1.3 One NDA***) and prioritise expenditure against our strategic imperatives.

We cannot decommission everything at once. Where we need to defer or slow the pace of decommissioning, we must ensure the safe stewardship of our sites and their facilities. We aim to prioritise our delivery and portfolio manage our resources at a group level.

Although affordability challenges will be a near-term driver, we are developing long-term strategic interventions with the potential to reduce mission costs and schedule. Due to the scale and reach of these interventions, presented in this strategy, success will require all parts of our group to collaborate with determination. We will also continue to identify policy areas that support efficient mission delivery.

The UK nuclear enterprise is undergoing a renaissance. The progressive shutdown of Advanced Gas-cooled Reactors (AGRs), the creation of Great British Energy - Nuclear, and the expansion of the UK's Defence Nuclear Enterprise marks a shift in national priorities. In delivering our mission, we play a vital role in supporting the UK's energy security plans and help contribute towards carbon net zero. While these new nuclear and defence developments are independent of our core mission, they present dependencies, risks, and opportunities. We are aligning our activities with domestic energy security and defence commitments, exploiting synergies and ensuring effective coordination across government and industry. Because of the longevity of our mission, the NDA is recognised as the enduring foundational organisation for the UK nuclear enterprise, one that other government departments can rely on now and into the future.

Social responsibility is important to us and fundamental to our strategy. We can only succeed by working collaboratively and engaging openly and transparently about our work. We involve our stakeholders in open dialogue and recognise their views as an important part of our strategy development. We therefore look forward to receiving stakeholder views on our Strategy throughout the public consultation period (see ***figure 1***).

How we communicate our strategy and report progress

ENGAGE WITH OUR STAKEHOLDERS

NDA Strategy

Twelve-week public consultation every five years. Describes how we will deliver our mission, ensuring that the UK's nuclear legacy sites are decommissioned and cleaned up safely, securely, cost-effectively and in ways that protect people and the environment.

Energy Act (2004) *(ref 1)* requirement.
Covers 100+ years.

Published every five years.

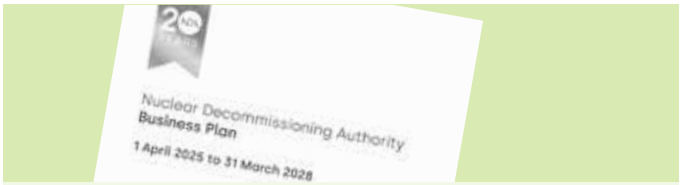
REPORT PROGRESS

Mission Progress Report

Provides our stakeholders with a clear and concise story of NDA mission progress since 2005, that demonstrates delivery of our strategic themes and outcomes as explained in our Strategy.

Covers 100+ years.

Published every year.



NDA Business Plan

Public consultation every year.

Describes key activities across the group over the next three years that align to our strategic outcomes and details the funding available for the next year.

Energy Act (2004) *(ref 1)* requirement.
Covers three years (the first year in more detail).

Published every year.

NDA Annual Report and Accounts

Describes achievements and spending. Reports against Business Plan activities and contains an overall progress update against our mission.

Covers the previous financial year.

Published every year.

Figure 1 – Strategy communication and engagement

1. Introduction

In 2005, the NDA was established as a non-departmental public body (NDPB) under the Energy Act (2004) *(ref 1)* and made responsible for one of the most important environmental clean-up and remediation programmes in the world. As an NDPB, we are accountable to government and the public, which means operating under statutory duties to protect people and the environment, deliver value for the taxpayer and maintain robust oversight of some of Europe's most hazardous nuclear sites.

Our primary mission is to deliver safe, secure, sustainable and publicly acceptable solutions to the challenge of nuclear clean-up and waste management including the provision of disposal. We also have supplementary obligations that include developing our supply chain, research and innovation, skills and talent, socio-economic support for our site's communities and stakeholder engagement.

We also provide strategic advice to the Secretary of State and the UK Government, in support of broader policies related to energy security, defence and international relations, while ensuring these responsibilities complement, not compromise, our primary mission.

17
nuclear sites across the UK

17,500*
employees across the group

947
hectares of designated land on nuclear licensed sites

800+
buildings to be demolished

*permanent employees

1.1 Background

The UK's nuclear legacy derives from pioneering research, reactor development and defence programmes initiated during and after the Second World War. From the first generation of commercial nuclear power stations to cutting-edge fuel-cycle facilities, these historic ventures have shaped today's decommissioning challenge – one of the most technically complex in the world. Successive governments have introduced policies aimed at balancing energy security, environmental protection and national defence commitments. This has resulted in a diverse civil nuclear estate requiring long-term clean-up and remediation, spanning decades and costing approximately £98.5 billion *(2023/2024 figures)*. We have 17 sites: 14 in England and Wales and 3 in Scotland designated jointly by Scottish Ministers. Each of our sites operate under a site licence, with operating companies responsible for day-to-day operations and programme delivery. The operating companies implement our strategy through detailed site programmes.

We rely on government funding, approved through annual and multiyear spending reviews. This public investment is subject to continuous financial scrutiny and evolving government priorities. Legislative frameworks, regulatory expectations and heightened public attention require that we operate with transparency and demonstrate progress in hazard reduction.

At the same time, we aim to support the people who live adjacent to our sites by creating employment, developing skills and fostering economic growth. We are committed to maximising the positive impact of our mission and public investment, particularly in north-west Wales, west Cumbria, Caithness and North Sutherland, while supporting our wider communities across the NDA estate.

1.1 Background

Since we published our last Strategy in 2021 *(ref 2)*, we have:

- Completed major reprocessing missions at Sellafield, including Magnox reprocessing
- Continued to consolidate nuclear materials, thereby reducing risks at multiple sites
- Strengthened our integrated waste management by embracing risk-informed approaches and applying the *Waste Hierarchy*, continuing to implement waste consolidation and exploring new disposal options (such as near-surface disposal (NSD) for certain wastes)
- Helped develop an updated policy framework that strengthens the application of the *Waste Hierarchy* and explores NSD options
- Supported DESNZ to finalise and publish the plutonium disposition strategy statement in January 2025 *(ref 3)*
- Been trusted to do more by government, expanding our remit to include:
  - Responsibility for decommissioning the fleet of Advanced Gas-cooled Reactors (AGR) creating efficiencies by aligning their clean-up with former Magnox sites, with the first AGR owned by EDF Energy transferred to us in 2026
  - Potential transfer of the Vulcan Naval Reactor Test Establishment to the NDA's Nuclear Restoration Services (NRS) site at Dounreay
- Completed the changes required to implement a simpler NDA group operating model, which now comprises four subsidiary operating companies: Sellafield Ltd; NRS; Nuclear Waste Services (NWS) and Nuclear Transport Solutions (NTS) (for information on the One NDA model, see ***1.3 One NDA***).

1.1 Background

Our Strategy describes how we intend to meet ongoing and emerging challenges, including:

- Delivering tangible hazard reductions by intensifying high hazard risk reduction efforts and waste retrieval from the legacy ponds and silos at Sellafield – priority work that is technically complex and essential for reducing overall risk to the workforce, public and the environment
- Maintaining public trust through open and transparent engagement with international, national, regional and local stakeholders to ensure public confidence and accountability
- Embracing technical innovations, new ways of working and data-driven insights to improve efficiencies
- Continuing to ensure sustainability is embedded through our strategy, ensuring that social, environmental and economic impacts are fully considered
- Sustaining a pipeline of skills and talent in a competitive labour market and UK nuclear enterprise renaissance, to ensure we retain the specialist expertise needed for multidecade programmes
- Continuing to work with DESNZ and other stakeholders to realise synergies between the NDA's long-term mission and wider government policies

1.1 Background

By focussing on innovation, collaboration and *continuous improvement*, we aim to demonstrate that decommissioning is not merely about closing a chapter of the past, but also about creating future opportunities for our site communities, the economy and generations to come.

As the UK's nuclear industry evolves, we are playing a growing role in the wider UK nuclear enterprise, by supporting national priorities while remaining focussed on our primary mission. This includes offering access to some of our facilities for managing non-NDA liabilities, such as the Low Level Waste Repository (LLWR) and specific treatment and storage facilities at Sellafield.

As we move forward, we will need to adapt to budget constraints determined through future government spending reviews (see ***1.4 Funding***). We aim to reduce the costs of decommissioning through approaches proportionate to the risks being managed and delicensing our sites where hazards are sufficiently low (see ***4. Site Decommissioning and Remediation***) for proportionate regulatory control measures.

Q1.
Do you think the introduction to our Draft Strategy provides a clear and accessible overview of our purpose, challenges, and approach? Is there any other context or information you would find helpful?

1.2 Strategic outcomes

Spent Fuels

SPENT MAGNOX FUEL

1	All sites defueled	100%
2	All legacy Magnox fuel retrieved	2039
3	All Magnox fuel reprocessing completed	100%
4	All remaining Magnox fuel in interim storage	2042
5	All remaining Magnox fuel disposed	2125

SPENT OXIDE FUEL

6	All EDFE oxide fuel received	2035
7	All legacy oxide fuel retrieved	100%
8	All oxide fuel reprocessing completed	100%
9	All remaining oxide fuel in interim storage	2035
10	All remaining oxide fuel disposed	2125

SPENT EXOTIC FUEL

11	All exotic fuel defueled	2030
12	All exotic fuel consolidated	2045
13	All exotic fuel reprocessing completed	100%
14	All remaining exotic fuel in interim storage	2028
15	All remaining exotic fuel disposed	2125

Nuclear Materials

PLUTONIUM

16	All plutonium produced	100%
17	All plutonium consolidated	100%
18	All cans not suitable for extended storage repackaged	2060
19	All plutonium in interim storage	2060
20	All plutonium put beyond reach and then disposed	2120

URANIUM

21	All uranium produced	100%
22	All uranium consolidated	2028
23	All uranium treated	2055
24	All uranium in interim storage	2055
25	All uranium reused or disposed	2120

Table 1 – Our 47 strategic outcomes

Integrated Waste Management

LOW LEVEL WASTE

26	All LLW produced	**2127**
27	All LLW treated - to enable diversion or reuse	**2127**
28	All waste suitable for disposal in NDA facilities	**2127**
29	All waste suitable for permitted landfill disposed	**2127**

INTERMEDIATE LEVEL WASTE

30	All ILW produced	**2120**
31	All legacy waste retrieved	**2060**
32	All ILW treated	**2120**
33	All ILW in interim storage	**2120**
34	All ILW disposed	**2379**

HIGH LEVEL WASTE

35	All HLW produced	**2039**
36	All HLW treated	**2039**
37	All HLW waste in interim storage	**2039**
38	All overseas HLW exported	**2030**
39	All HLW disposed	**2104**

Site Decommissioning and Remediation

OPERATIONAL AND PLANNED

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

DECOMMISSIONING AND DEMOLITION

42	All buildings decommissioned	**2131**
43	All buildings demolished or reused	**2133**

SITES

44	All land delicensed or relicensed	**2135**
45	All land in End State - all planned physical work complete	**2134**
46	All land demonstrated as suitable for reuse	**2135**
47	All land de-designated or reused	**2380**

947 hectares of land still to be released for other uses

The NDA group will continue to track and report our delivery achievements against our 47 strategic outcomes (see ***table 1***). Our annual Mission Progress Report *(ref 4)* provides transparency to our stakeholders on our hazard reduction, environmental impact and socio-economic responsibilities.

1.2 Strategic outcomes

Our latest roadmap for mission delivery (see ***figure 2***) presents the major milestones for our driving themes: site decommissioning and remediation, integrated waste management, spent fuel and nuclear materials management. These milestones align with the delivery objectives of our operating companies, aiming to reduce the UK's nuclear liabilities safely, securely and in ways that benefit society.

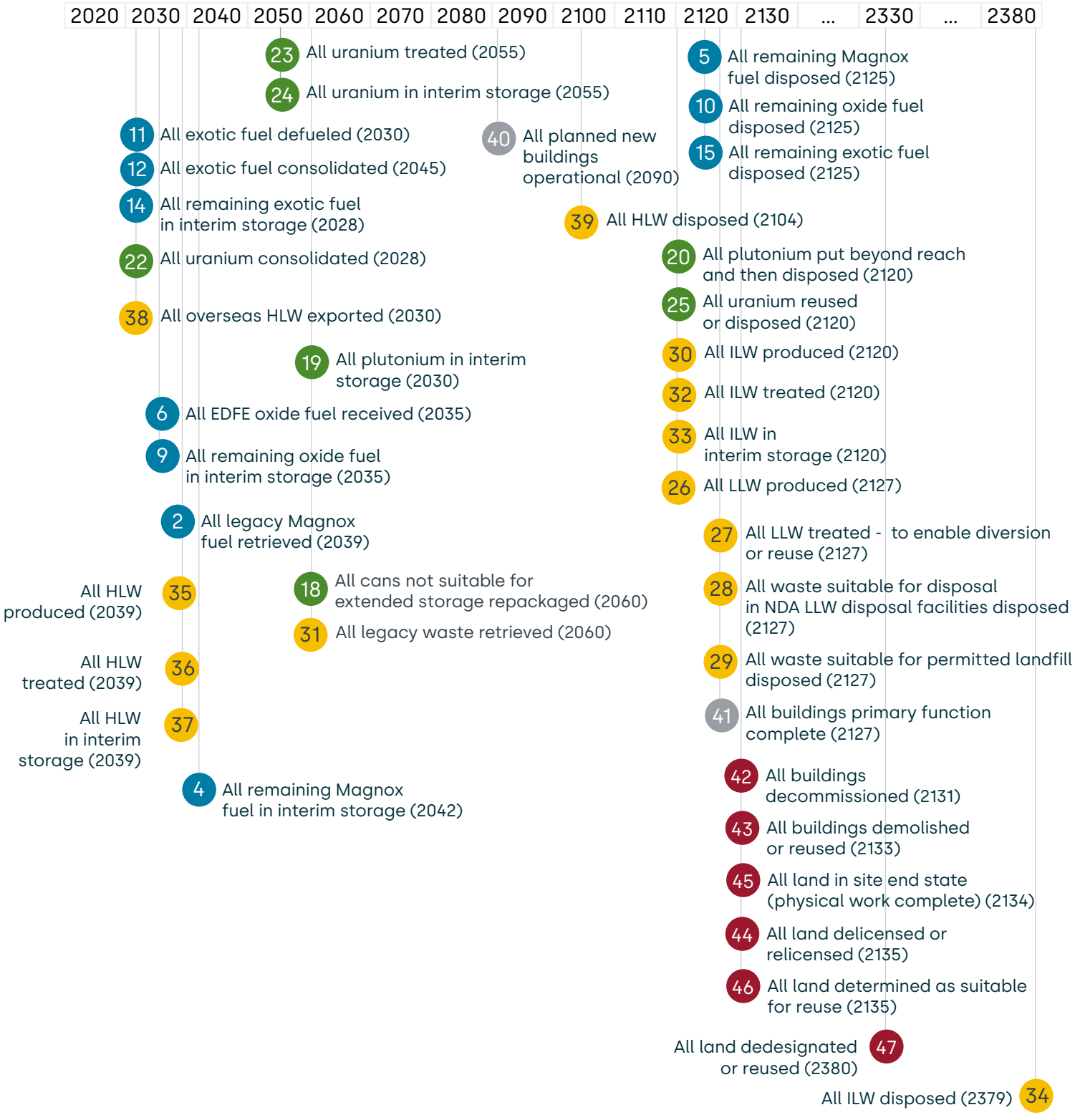


Figure 2 – NDA group roadmap for mission delivery

1.3 One NDA

Building on lessons learnt from early site management approaches, we have completed a move from a parent body organisation model to integrate our organisations into a One NDA subsidiary structure now known as the NDA group. We have created:

- Nuclear Waste Services (NWS) by bringing together LLWR Ltd and Radioactive Waste Management (RWM) and the integrated waste management portfolio
- Nuclear Restoration Services (NRS) by combining Magnox Ltd and Dounreay Site Restoration Ltd under one delivery organisation
- Nuclear Transport Solutions (NTS) to unify transport capabilities
- Our fourth operating company, Sellafield Ltd, remains unchanged by the One NDA model
- Under the new model, we are working as an integrated group, streamlining governance and enabling greater collaboration, strategic alignment and better sharing of knowledge and resources. We are able to coordinate operations more effectively across the estate, while retaining clear accountabilities within each subsidiary organisation.

One NDA benefits

Operating under the new model has already realised many benefits, such as:

- Increased value for money for the taxpayer, with savings of £140 million a year by removing parent body organisation fees and £30 million a year in group nuclear insurance
- Enhanced performance and delivery, with Sellafield and Dounreay sharing best practice and learnings on decommissioning approaches for alpha, ponds and Windscale Advanced Gas-cooled Reactors
- Improved stakeholder confidence, with the 2022 stakeholder survey showing marked improvements in perception of our performance, transparency and leadership, and record small and medium enterprise engagement (34%) and common systems across the group
- An improved culture, including exciting career opportunities and increased mobility across the group afforded by the group leadership academy, graduate programme and talent pipeline, increasing the potential for homegrown executives
- Strong organisational health, with a working group set up to share best practice in cyber capability and training, and our simpler structure saving £500,000 a year by having fewer boards.

The group is now overseen by a Group Leadership Team comprising the Chief Executive Officers of our four operating companies and NDA Executive Officers. Closer working and collaboration at the highest level is filtering down to all levels, progressively changing our culture and creating a rewarding place to work.

The new model has also opened wider change opportunities. For example, we are examining how best to integrate support functions and avoid duplication. These functional reviews may unlock additional opportunities for efficiencies and the optimisation of group-wide resources, helping us to operate as a cohesive group and ensure every function is as efficient and effective as possible.

We are also developing a group-level strategic planning capability to align the planning assumptions and site strategies of our operating companies and assess the mission impacts of strategic interventions to better inform strategic decisions for the group.

1.4 Funding

As a non-departmental public body, the NDA has its annual spending limits set by the UK Parliament and combines government grants with income from commercial activities. From the latest Spending Review, the indicative funding to 2030 will not meet all our planned activities, many of which aimed to accelerate mission delivery and support growth across our estate. As a publicly funded body, we must stay agile, ensuring that any slowing, pausing or stopping of tasks is done in a way that preserves safety, security and the highest hazard work. Where necessary, we will revisit plans and prioritise our critical work across the group. This may include exploring ways to further improve productivity and create efficiencies to balance near-term affordability with long-term goals. We will align with future government priorities, while factoring in the potential funding constraints.

Operationally, we still face significant risks arising from fragile or ageing assets, and we must remain vigilant in managing these. The plans of our subsidiaries are reviewed and updated regularly, to reflect an evolving understanding of decommissioning programmes and costs. Consequently, milestones in this Strategy and associated mission progress reporting may shift as we refine priorities.

We will continue exploring revenue generation based on NDA assets and capabilities, in partnership with government (through DESNZ). The combination of government support, commercial income and cost-optimisation efforts underpins our ability to deliver on the NDA's vital mission, even in a challenging financial climate.

2. Our approach to strategy

Since the publication of our last Strategy in 2021 *(ref 2),* we have continued to evolve our approach to strategy development and delivery. This includes embedding One NDA ways of working for greater collaborative strategy development, reviewing and refining our Critical Enablers and improving how we align strategic priorities across the NDA group. In this Strategy, we present the challenges, our proposed direction and actions.

This Strategy outlines the high-level approach to delivering our mission and is updated every five years to reflect evolving strategic issues and conditions.

Strategic implementation and strategy health monitoring: We translate our strategic requirements into specific outcomes for each site. We manage the specifications through rigorous change control processes and periodic reviews and continuously measure the performance of our operating companies against their delivery plans, to ensure alignment with our strategic outcomes and to monitor the health of our strategies to achieve them.

Adapting to change: Our strategy is designed to be resilient and responsive to external changes, such as evolving government policies, financial conditions and technological advancements. By maintaining a flexible approach, we adapt our strategies to meet new challenges and opportunities.

Group-level coordination: We leverage resources across the NDA group, streamline processes, and adopt standard practices and approaches where possible. Our goal is to accelerate mission progress, share lessons learnt and optimise the use of our estate for mission delivery and other government priorities.

Construction work at Sellafield

Figure 3 – SDGs defined by the United Nations

Q2.

Do you agree that our Strategy embeds sustainability throughout – including alignment with the UN Sustainable Development Goals and the NDA group sustainability definition? Are there any areas where our approach could be strengthened?

Sustainability integration and commitment: An element of our strategic approach is the integration of Sustainability as a cross-cutting principle. Climate policies and sustainability goals remain central to UK government strategy. The commitment to net zero by 2050 (2045 for Scotland) and alignment with the United Nations Sustainable Development Goals (SDG) drive policies that directly impact nuclear decommissioning and waste management. As a core principle, Sustainability guides strategic decision-making to deliver long-term societal benefits while enhancing mission performance.

The Energy Act (2004) *(ref 1)* sets out the functions of the NDA, which directly align with 11 of the 17 SDGs (see ***figure 3***). This is reflected in our sustainability vision of transforming nuclear legacies into opportunities for local, regional and national sustainable development.

We have undertaken a double materiality assessment to identify the sustainability topics that matter most – those which maximise positive societal impact while enhancing mission delivery, and therefore those that deliver value for money and promote shared prosperity for all our stakeholders. The resulting priority topics span safety, resource use, skills, communities and environmental protection.

We follow sustainability standards endorsed by the UK Government.

To illustrate how Sustainability is already being embedded across our estate, a dedicated set of case studies accompanies this Strategy (*ref 5*). These real-life examples demonstrate how strategic principles are being applied in practice – from responsible waste management and skills development to environmental restoration and community benefit. They also highlight the NDA's contribution to the United Nations Sustainable Development Goals (SDGs), providing tangible evidence of how our mission supports long-term social, environmental and economic value.

2.1 Strategic themes and topics

In our previous Strategy *(ref 2)*, we organised our activities into five strategic themes that support mission delivery. This structure has helped us focus on key priorities, understand how different parts of our work are connected and communicate clearly with our stakeholders. These themes remain central to our strategy and ensure we can meet current and future challenges. Our five strategic themes are:

Site Decommissioning and Remediation

We decommission redundant nuclear facilities, manage land quality and prepare sites for their long-term end states. This work involves reducing environmental risks, clearing hazardous materials and restoring land for potential reuse that benefits local communities.

Spent Fuels

Defines our approach to managing the diverse range of spent nuclear fuels for which we are responsible.

Nuclear Materials

Managing the safe storage and disposition on our sites of the UK's stocks of nuclear materials, including plutonium and uranium.

Integrated Waste Management

Managing all forms of waste produced from nuclear operations and decommissioning activities, including waste retrieval from legacy facilities. Our approach ensures proper consideration of the Waste Hierarchy and the system as a whole including preparations for final disposal.

Critical Enablers

Section 9 describes our 14 Critical Enablers, which support every aspect of our work, including our four Strategic Themes and any additional liabilities we receive from the wider UK nuclear enterprise. Some of these Critical Enablers reflect statutory duties set out in the Energy Act (2004) *(ref 1)*.

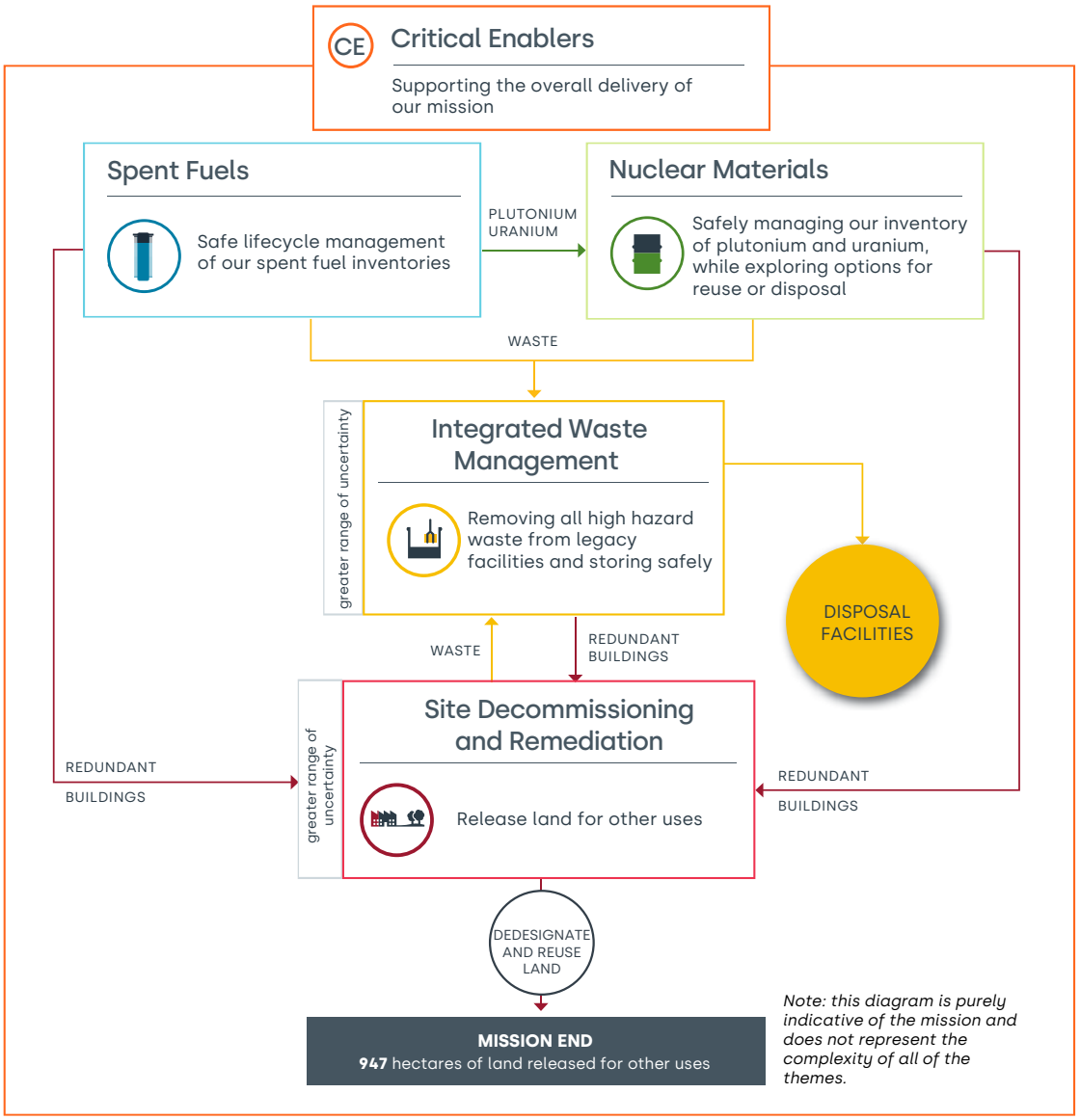


Figure 4 – Our five strategic themes

The work we do under each theme (see ***figure 4***) is closely connected. Changes in one theme, such as decommissioning, often affect other themes, such as waste management. In this document, we use colour coding to show how different strategies have wider dependencies across our strategy. This approach supports clear communication and ensures our stakeholders have a consistent and transparent view of our work as a whole.

Our role in the UK nuclear enterprise has expanded since our previous Strategy *(ref 2)* and is described in ***8. NDA in the UK nuclear enterprise.*** We aim to leverage the unique capabilities and infrastructure of the NDA group to support the UK nuclear enterprise while ensuring the successful delivery of our mission remains our priority.

Throughout this document, our strategic themes and Critical Enabler strategies have the following structure:

- **Objective** – what is the objective of the strategy?
- **Our Strategy** – what is our current strategy and how we manage responsibilities, including key risks and opportunities?
- **Strategy Development** – what strategy development do we plan to undertake in the future?
- **Delivery** – what we have achieved so far and how we plan to continue implementing our strategy and delivering our mission?

2.2 Strategic management

To manage the many interactions between the different parts of our strategy, we have a Strategy Management System *(ref 6)*. This simple, gated decision-making process enables us to:

- Develop strategy in a controlled fashion through distinct stages, allowing us to engage effectively with UK and devolved governments, nuclear regulators, our operating companies and other stakeholders on its development and possible changes in strategic direction
- Ensure the strategy is robust and coherent, while recognising the numerous interdependencies
- Effectively respond to internal and external events that impact our strategy
- Ensure compliance with the regulatory framework
- Transparently underpin the decisions we make on preferred strategic options.

Our Strategy Management System *(ref 6)* approach is aligned with His Majesty's Treasury guidance and uses a business case approach to build the rationale for a strategic decision. It enables us to demonstrate to our stakeholders that we are spending allocated funds on the right things and in the right way. This means doing more than simply meeting regulatory obligations, for example, by ensuring that *sustainability* is more robustly captured throughout the Strategy Management System *(ref 6)*. The decisions we make must deliver value for money and provide the best overall solution for this and future generations. Consequently, shortly after the NDA's creation, we worked with stakeholders to agree on those things that we value about our mission. These factors were gathered together as the NDA Value Framework *(ref 7)*.

The NDA Value Framework *(ref 7)* is not a decision making process; it is a list of factors that we consider during decision-making (see ***figure 5***). In selecting a preferred strategy, we consider the performance of each option in relation to factors in the Value Framework. No attempt is made to pre-empt the weighting of different factors because the weighting will be specific to the decision in question and not all factors may be relevant.

Figure 5 – NDA Value Framework

2.2 Strategic management continued

The NDA Value Framework *(ref 7)* can be used whenever there is a need for a holistic, evidence-based evaluation of alternative options. In practice, it is particularly useful for strategic decisions when setting the direction of travel and deciding what to do (rather than how to do it). By using the framework, we have greater confidence that everything stakeholders value about our mission will inform decisions right through to delivery. It also provides essential context and evidence for subsequent regulatory assessments.

Our use of the NDA Value Framework *(ref 7)* helps sustainability to be considered in our strategy. We have mapped the Value Framework factors against the UN SDGs to ensure the goals are embedded appropriately in our decision making.

To assess the environmental, health and socio-economic impacts of our Strategy at a national level covering all our sites, we have carried out an Integrated Impact Assessment *(ref 8)* which is summarised in Appendix A.

Demolition work at Oldbury

2.3 Lessons learned since Strategy 2021

Since the publication of our previous Strategy *(ref 2)*, we have learned from our experience and evolved our approach to strategy development, delivery and oversight. This includes embedding One NDA ways of working, refining our Critical Enablers and better aligning our strategic priorities across the group.

Our previous Strategy *(ref 2)* marked a pivotal step in transitioning from a contractual parent body organisation to a unified group operating model under the One NDA structure (see ***1.3 One NDA***). This approach ensures that all NDA subsidiary operating companies work towards shared objectives while making the most of group resources.

We have reviewed our Critical Enablers to ensure they remain relevant and fit for purpose, providing the stable, integrated and flexible environment needed for delivering our mission. They underpin the high standards of safety, security, environmental stewardship and stakeholder engagement we must uphold, while also allowing us to adapt to new technologies, shifting policies, changing operating conditions and societal trends.

We have strengthened our Mission Progress Report *(ref 4)*, which tracks progress against our 47 strategic outcomes (see ***table 1***). This should be viewed alongside our annual Business Plan *(ref 9)*, which sets out our three-year priorities, and the Annual Report and Accounts *(ref 10)*, which provides performance updates on our strategic activities.

The learnings above have strengthened our ability to focus on delivering our mission while ensuring that our strategy remains responsive to the changing landscape.

3. Our group strategy

Low level waste repository in Cumbria

The NDA is a strategic leader; nationally, internationally and within the UK Government. We must ensure the continued safe stewardship of spent fuels, nuclear materials and highly radioactive wastes while pursuing decommissioning and end state goals for our sites.

3. Our group strategy continued

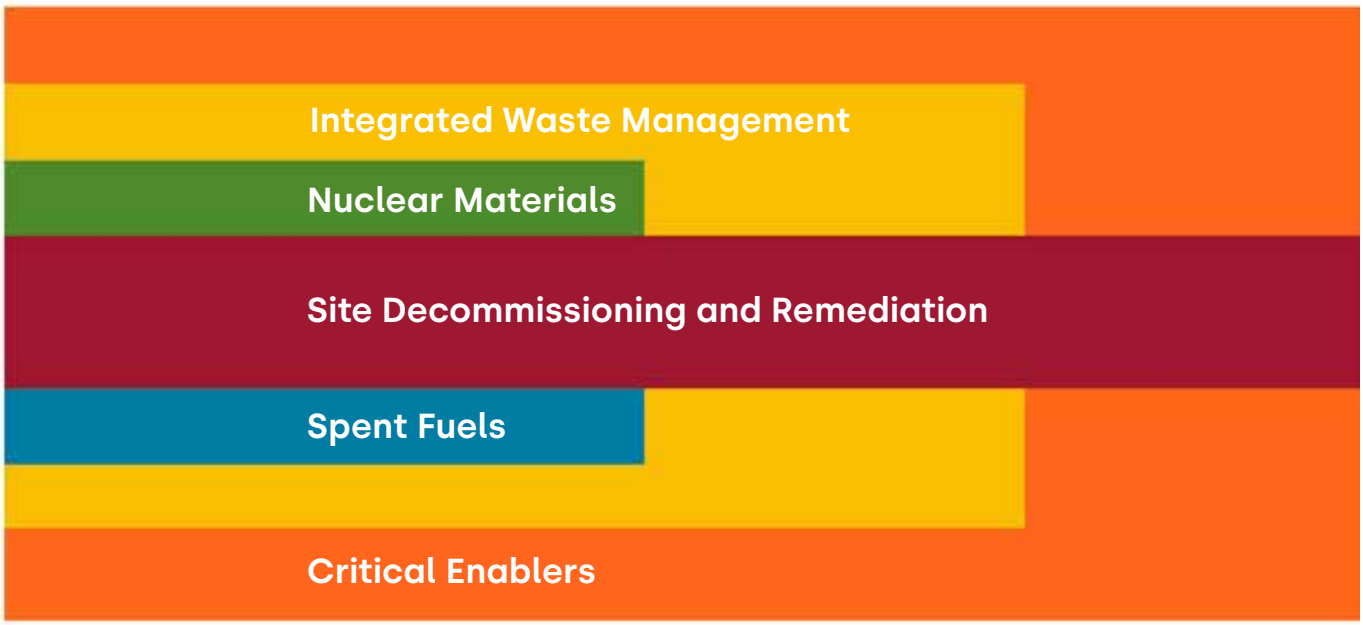


Figure 6 – Illustration of the five strategic themes with an indication of how they interact

To help achieve this, our group strategy focusses on closer working between our operating companies and greater integration between the strategic themes, both Driving Themes and Critical Enablers (see ***figure 6***). This group strategy represents our first developed under the One NDA model and presents the opportunity to assert our group-wide approach to delivering our agreed strategic priorities.

Over the next 25 years, we expect to have:

- Retrieved most of our radioactive waste from high-hazard facilities at the Sellafield site
- Repackaged a proportion of plutonium and begun to convert it into a disposable form
- Delicenced most of our ex-Magnox reactor sites
- Established a number of new storage centres
- Identified a suitable site for a Geological Disposal Facility (GDF)
- Enabled new development opportunities around our sites

As a group, we recognise that our mission is a national endeavour, delivered through the collective efforts of our subsidiary organisations and with an aligned agreement of our group priorities. This will mean delaying or deferring some work. In such cases, we have a fundamental responsibility to ensure the safe stewardship of our sites, by ensuring that they retain the necessary infrastructure and capabilities to safely manage our liabilities until they can be decommissioned.

In delivering our mission, we apply the following strategic principles:

Mission first

We will always put the NDA mission first while recognising the need to enable the wider government nuclear enterprise and associated policy objectives. We will continue to work with government to understand and evaluate the potential impacts on our core mission and deliver our role in supporting the broader nuclear endeavour across civil energy and defence.

Waste-informed decommissioning

We will progress the decommissioning of our assets unconstrained by unknowns in the latter lifecycle stages, specifically the uncertainties in some downstream final waste management routes. We will continue to be mindful of waste opportunities and to make best use of existing waste management routes.

Proportionality

We will apply proportionate approaches to both the extent of decommissioning required to enable the next planned use, and the arrangements we put in place to achieve this.

Efficient use of group resources

We will share the people, assets and capabilities that make up our group resources where appropriate. This includes, for example, sharing waste treatment and storage capabilities to avoid constructing new facilities and reusing or repurposing facilities where economic and practicable.

3. Our group strategy continued

To help deliver our 2050 vision, we will focus on strategic interventions, including:

- Delivering our highest strategic imperative, addressing the intolerable hazards and risks at Sellafield
- Focussing our group resources on fewer national decommissioning priorities to increase our pace of delivery
- Applying proportionate arrangements to reduce the cost and increase the pace of our work
- Continuing to explore opportunities to optimise our site end states
- Applying a risk-informed life-cycle approach to waste management and securing new treatment and disposal routes

We implement these interventions through Group Action Plans, strengthening the collaboration across operating companies, strategic authorities, regulators and the wider industry. This aims to ensure we make maximum progress and deliver value for money.

Our Strategy highlights the importance of ensuring the sustainable management of our estate throughout its lifetime. Put simply, we cannot deliver our mission if we don't have in place the fit-for-purpose infrastructure we need at our sites. Managing our infrastructure involves significant resources but is fundamental to all we do.

In terms of the work we do at our sites, our priority remains the retrieval of waste from legacy ponds and silos at Sellafield. This work aligns with our strategy to reduce risk through safe long-term storage followed by waste conditioning and transfer to a GDF. We need to ensure that waste retrievals from our high-hazard legacy facilities at Sellafield continue in earnest and we will enable this by maintaining access to effluent treatment systems and modern storage.

Reprocessing operations have been completed, and we are continuing to consolidate fuels at Sellafield and uranium at Capenhurst. This offers substantial benefits in risk reduction and increased storage efficiency.

Underpinning and improving the long-term storage arrangements for spent fuels and nuclear materials is now an important focus. We are nearing completion of our bulk High Level Waste (HLW) vitrification programme, although the handover from operations to decommissioning is expected to take more than a decade.

We work as a group to prioritise and deliver decommissioning. This includes using 'lead and learn' approaches and focussing resources from across our group to accelerate work on similar activities and facilities. We will also look to streamline our arrangements and adopt standard approaches and industrial practices where appropriate.

Decommissioning and the safe management of our sites require timely and effective waste management routes and defined disposal solutions for all types of radioactive waste. Our overarching waste management aim is to convert raw waste material arisings into forms that are suitable for:

- Reuse or recycling
- Transport and onward disposal
- Safe storage pending further management, including future disposal.

To enable decommissioning to go ahead, we will store waste safely if suitable treatment and disposal routes are not yet available. Decoupling decommissoning and storage from final treatment will allow time to develop alternative solutions with benefits such as use of storage centres, volume reduction and segregation of higher activity components.

A full range of disposal routes is needed to complete our decommissioning and clean-up mission (see ***7. Integrated Waste Management***). Low Level Waste (LLW) disposal capability is crucial to the NDA mission and other waste producers across the UK. We rely on commercial landfill for the lowest-hazard radioactive material. However, there are currently no disposal routes for packaged wastes requiring geological disposal or Intermediate Level Waste (ILW) suitable for near surface management. Most of the higher inventory material, including the spent fuel and nuclear materials we are currently storing, will be transferred to a GDF once operational. We will also continue to advise UK and devolved governments on their long-term management policies on radioactive wastes.

Since establishing the NDA, the government has set out new aspirations, including those for net zero and climate change resilience, and has supported developments in the broader UK nuclear enterprise. We have also been asked to take on the decommissioning of the Advanced Gas-cooled Reactors (AGR). Most recently, the UK and devolved governments published an updated policy framework for managing radioactive substances and nuclear decommissioning *(ref 11),* including its response to comments received during consultation.

Not everything we do is nuclear, and our work with government and regulators is helping us better understand how we might reduce our nuclear footprint, apply more proportionate arrangements and learn from other industries. Where possible, adopting industrial non-nuclear arrangements will help reduce our costs and increase the pace of transformation of our sites. We will prioritise the use of the estate for our mission delivery and other government priorities, integrating transport and logistics into our planning, and ensuring that we make assets such as our waste stores available for others to use where viable. Our ultimate aim remains the transformation of our sites, to enable beneficial reuse through the delivery of optimised site end states.

Q3.
Do you support the approach set out in our group strategy and its focus on collective delivery across the NDA group? Are there any significant activities or opportunities you think we should also highlight?

4. Site Decommissioning and Remediation

Objective: To decommission and remediate our estate and release it for other uses.

STRATEGIC OUTCOMES -
steps to achieving our mission

OPERATIONAL AND PLANNED

40 All planned new buildings operational

41 All buildings primary function completed

DECOMMISSIONING AND DEMOLITION

42 All buildings decommissioned

43 All buildings demolished or reused

SITES

44 All land delicensed or relicensed

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

46 All land demonstrated as suitable for reuse

47 All land dedesignated or reused

Site decommissioning and remediation is our primary focus, supported by all other strategic themes.

Delivering this requires us to have effective solutions for managing spent fuels, nuclear materials and waste, and suitable land and infrastructure to do our work, for example, security, office accommodation and logistic arrangements.

UK Government policy *(ref 11)* defines decommissioning as those actions that would result in the release of the facility from regulatory control. In practice, these actions include decontamination, dismantling, demolition and remediation, and land management. In some cases, all or part of a facility might be reused rather than being demolished. Remediation relates to managing land, including contamination, so that the land is safe and suitable for reuse.

We work with the UK and devolved governments to ensure that our site decommissioning and remediation strategies align with UK policies and are consistent with accepted international good practice.

Delivering our mission will take a long time, during which we must ensure the safe management of assets across our estate. This includes responding to changes on and around our sites, including the challenges due to climate change (see ***4.1 Safe stewardship***).

Our national mission involves work across England, Scotland and Wales at an increasing number of sites and so, as a group, we prioritise our decommissioning activities and agree what scope of work can be safely deferred (see ***4.2 Decommissioning***). As we deliver our work we capture and share our learning across the group, helping to innovate and increase the pace of our mission delivery.

We work with our stakeholders to define what should be achieved at our sites. The NDA is responsible for defining expectations for the management of its estate (see ***4.1 Safe stewardship***), the priority and pace of decommissioning activities (see ***4.2 Decommissioning***) and what should be achieved at the end of our mission, including opportunities for the beneficial reuse of our estate (see ***4.3 Site end states***). In turn, our operating companies ensure that they deliver the outcomes that the NDA expects in a manner consistent with regulatory requirements.

The land we own and use is a vital national asset that is subject to many, often competing demands from within the NDA group and from others. Consequently, we work as a group and with others to optimise its use and, as it becomes surplus, enable its release at the earliest opportunity (see ***4.4 Estate use***).

Our strategy

Our site decommissioning and remediation strategic theme comprises four topic strategies:

- Safe stewardship
- Decommissioning
- Site end states
- Estate use

The principles of optimisation and proportionality are key to these topic strategies, which we apply through our decision making:

- Optimising, by considering the broadest possible range of options and examining the pros and cons of each option to help us select a preferred approach

- Proportionality, by ensuring that the arrangements for the work we do ensure safety and security, and are proportionate and appropriate to the relevant hazards and risks associated with the work.

4.1 Safe stewardship

Objective: To ensure the safe and sustainable management of our estate.

The safe stewardship of our estate describes the work we do to ensure that we have the appropriate infrastructure and arrangements in place to enable us to safely manage our liabilities or decommission our facilities, now or in the future. The NDA is responsible for the stewardship and safe management of our estate and its physical assets, in accordance with government policies, relevant statutory and legal obligations and sustainability commitments, such as the Government's 25 Year Environment Plan (*ref 12)*. Our operating companies each have specific responsibilities to comply with the nuclear site licences, permits and planning permissions that they hold.

Our strategy

We want our estate to be safe and secure and managed sustainably in accordance with our policies and obligations to retain the fit-for-purpose infrastructure, for example, drainage, accommodation and electricity supply, we need to deliver our mission.

Through the interface agreements with each of our Operating Companies, the NDA sets out the responsibilities for the management of our land and assets, including the responsibilities before, during and after decommissioning and remediation, and until the land or asset is transferred into the ownership of others. We assign responsibility for the management of the licensed portions of our estate to our operating companies while our NDA Land and Property team manages our non-licensed estate. As we deliver our mission, our strategy is to ensure that we have the right institutional controls to ensure the continued safe management of our estate, for example, to consider whether, once delicensed, management responsibility can be transferred to a non-nuclear organisation.

We aim to manage our estate effectively and efficiently. This requires a good understanding of our sites and their use, and how they might be affected by developments on and around the sites. This understanding helps us to protect people and the environment from our activities, including the management and remediation of land contamination and our estate's natural capital.

Our safe stewardship strategy is to:

- Ensure we have clear roles and responsibilities for the management of our estate, including compliance with relevant legal and regulatory obligations and our expectations for health, safety and wellbeing, environment, and security (see ***9.1 Health, safety and wellbeing, 9.2 Environment and 9.3 Security and resilience***)
- Develop, maintain and continuously improve an estate management plan, which records key features of our estate, including any radiological and non-radioactive contamination, natural capital (for example, biodiversity), physical assets, and resilience to climate change, and describes how these are safely and securely managed (see ***9.7 Asset management and continuous improvement***)
- Prevent leaks, spills and the spread of contamination – identifying and characterising radioactive or non-radioactive contamination as soon as practicable, and delivering remediation targets in line with the site end state

- Embed whole-life carbon accounting in our work to minimise the carbon footprint associated with our activities, including applying circular economy principles when developing new assets and managing materials arising from decommissioning
- Understand our buildings and infrastructure through-life maintenance demands, and how these assets can best be used for our mission and made available for others to use once we no longer need them
- Understand the key heritage features of our estate, and capture and preserve our important nuclear and other locally important heritage features that may be relevant to our communities (see ***9.9 Information governance***)
- Engage and work with local authorities, communities and other stakeholders to help ensure we deliver our mission while working towards the heritage we wish to create
- Ensure that we manage our knowledge and keep good records that meet the needs of regulators, local authorities and the land development industry, and that our records will be available to future users and owners of our estate. (see ***9.9 Information governance***)
- Engage with and support opportunities in the wider UK nuclear enterprise and with other third parties where relevant (see ***8.1 Non-NDA liabilities***).

Strategy development

We will develop an estate management plan by reviewing the existing information and arrangements from across our estate, including baseline maps and asset descriptions and decommissioning and remediation plans, to identify and prioritise opportunities to enhance safe stewardship. We will then develop plans to exploit these opportunities, for example, to strengthen our asset care and management and enhance our natural capital.

Working with stakeholders will help to ensure that our strategy and plans take account of regional and national needs and priorities and help inform regional and national planning. We will increase our use of digital tools, including our geographic information system, to ensure that information from all parts of the estate is available from a more consistent and accessible source.

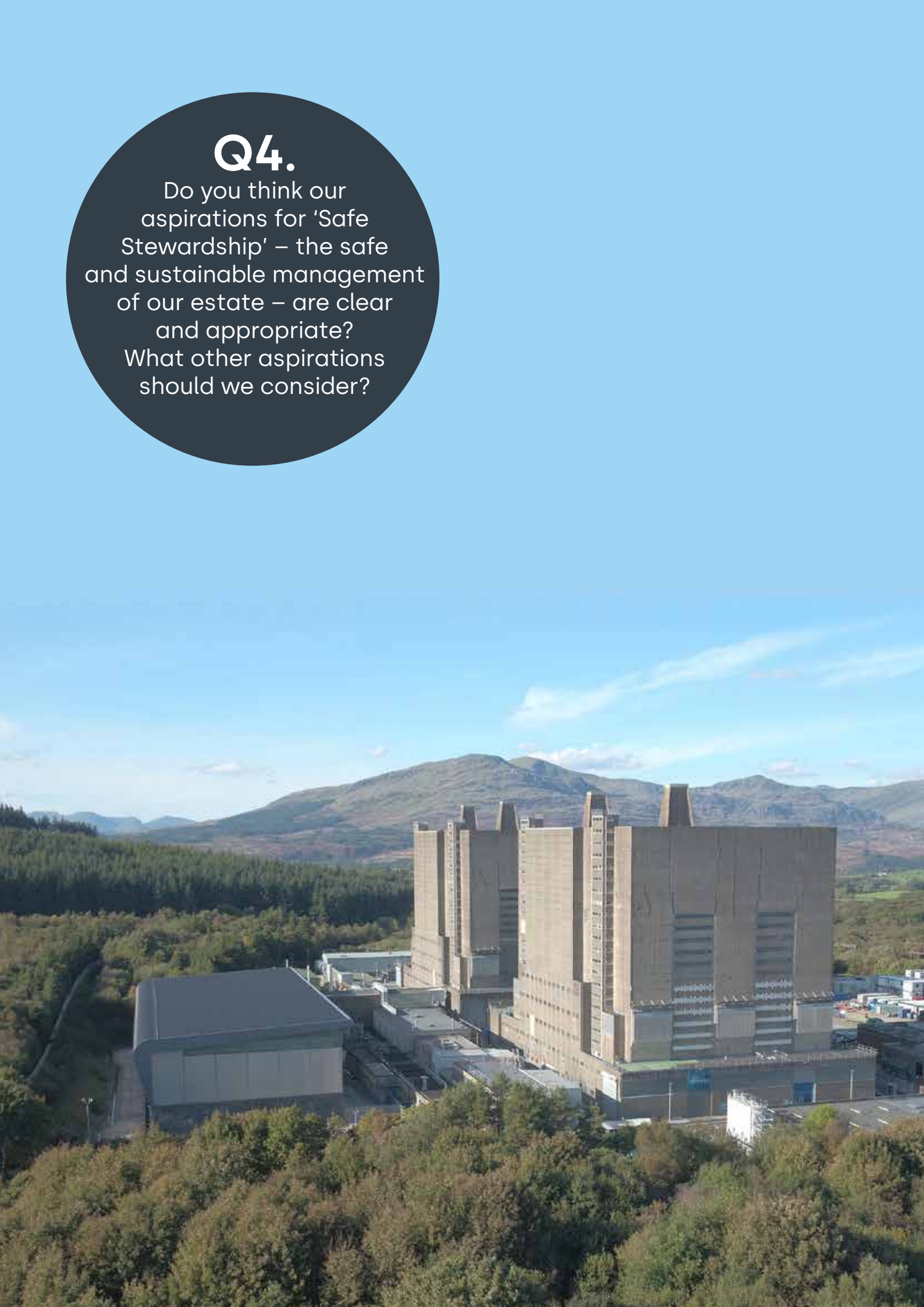
Delivery

Our Strategic Land Management Working Group, comprising representatives from the NDA and our operating companies, will lead the development and oversight of our estate management plan. Findings from this work will help shape all our strategic themes and ensure that our Critical Enabler strategies are clear on the challenges and opportunities we must address.

We will continue to lead the Nuclear Industry Group for Land Quality (NIGLQ), which brings together land quality experts from across the UK nuclear sector to share lessons learnt and maintain awareness of emerging good practice. We will also continue to engage with local planning authorities through their representative body, the Nuclear Legacy Advisory Forum (Nuleaf) for England and Wales and the Scottish Councils Committee on Radioactive Substances (SCCORS) in Scotland, recognising their expertise and regulatory roles relating to land-quality management and development control.

Q4.

Do you think our aspirations for 'Safe Stewardship' – the safe and sustainable management of our estate – are clear and appropriate? What other aspirations should we consider?



4.2 Decommissioning

Objective: To deliver site end states as soon as reasonably practicable with a progressive reduction of risk and hazards.

When facilities on nuclear sites reach the end of their useful life, they cease operations. If these facilities cannot be used for other purposes, they are decommissioned. Ideally, a transitional phase between operations and decommissioning allows for the removal of operational material and waste (known as Post Operational Clean Out (POCO)), organisational changes and the adoption of a decommissioning mindset. The subsequent decommissioning phase involves more extensive decontamination followed by full or partial facility dismantling. For further information, refer to the NDA Code of Practice *(ref 13)* and the International Atomic Energy Agency (IAEA) guidance *(ref 14)*.

It can take many years to complete decommissioning and deliver the agreed end state for a site. Unlike modern nuclear facilities, many of our estate's facilities were not designed, built or operated with decommissioning in mind and so decommissioning legacy facilities is not usually straightforward. Undertaking the initial work normally involves accepting a greater level of risk and uncertainty, however, being able to operate in risky environments is vital if we are to progress our mission. Recent work has helped overcome some of the challenges presented by our most hazardous facilities and is helping us reduce the risk they represent.

Adopting a 'decommissioning mindset' is key to starting such work, ensuring that it is conducted as safely and as practicably as possible, and that issues are dealt with as they arise. This approach has been recognised as good practice by the IAEA.

Delivering our mission will require us to build and operate new facilities, such as waste management stores or a Geological Disposal Facility (GDF). However, some of the facilities we will have to decommission have not yet been built or are not currently within our remit. We are developing new facilities with decommissioning in mind, to help avoid repeating the problems of the past. We will also take on responsibility for decommissioning UK civil facilities currently outside the NDA group, such as Advanced Gas-cooled Reactors (AGR) and former Ministry of Defence (MOD) facilities, which will be designated to the NDA for decommissioning (See ***8.1 Non-NDA liabilities***).

Delivering decommissioning at pace across all our estate is unaffordable and unachievable with our available resources and would be inefficient. Lessons that could be learnt and then applied elsewhere would be lost. Consequently, we must prioritise the timing and pace of our decommissioning activities.

The most appropriate strategy to decommission any nuclear plant within our estate will vary from site to site and facility to facility, but all must be aligned with the objectives of our overarching strategy.

Trawsfynydd site

Our strategy

Existing facilities will be operated and maintained with decommissioning and waste management in mind, and new facilities designed for decommissioning. Delaying decommissioning work because we do not yet have a final waste solution would incur significant additional costs and risks associated with managing ageing facilities. To avoid such delays, our decommissioning strategy is waste-informed - i.e. informed by the availability of waste routes, now and into the future, including the role of safe interim storage of some unconditioned wastes. We won't delay decommissioning owing to the lack of any waste disposal route.

Our preferred strategy is to undertake the dismantling phase as soon as possible after operations end. However, depending on the circumstance, UK policy and international practice also recognises that the deferral of decommissioning can be an appropriate choice. We work as a group to prioritise our decommissioning activities, including what to defer.

To support our mission delivery and optimise resource use across the estate, we apply a rolling programme of decommissioning (RPD). This approach enables us to sequence decommissioning activities across different sites in a way that supports learning transfer, technological development and capability sharing. It allows some sites to move into decommissioning directly while others enter a deferral period before final clearance, depending on risk, readiness and strategic value (see ***10. Nuclear Restoration Services***).

Where risks are intolerable, we will take urgent action to reduce them until they are at least tolerable. In such cases, we may decide to accept managed near-term increases in risk to achieve enduring risk reduction (see ***figure 7***).

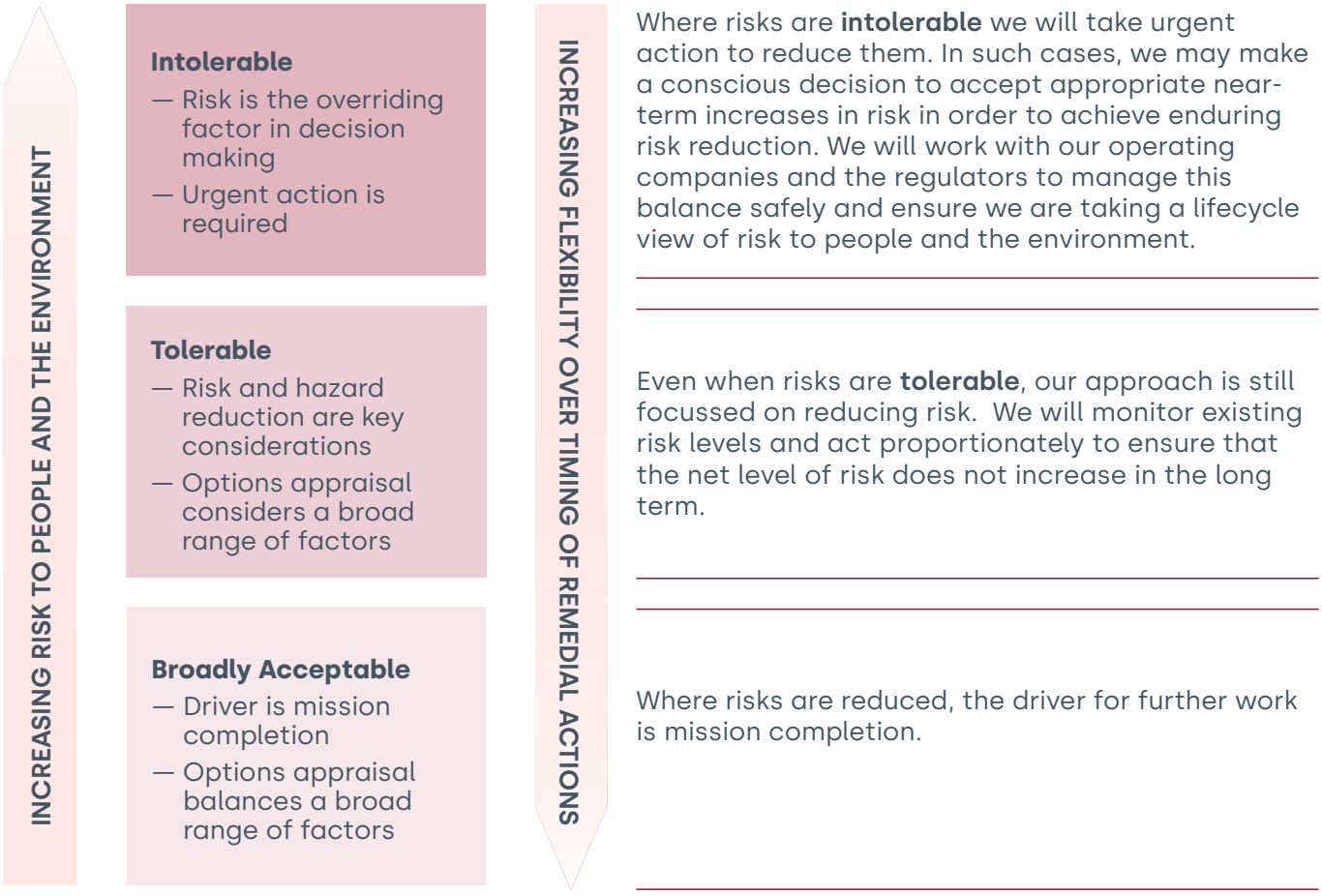


Figure 7 - Tolerability of risk

Where the risk to people and the environment is less significant, as is the case at most of our facilities, we are focussed on completing our mission. In such cases, our prioritisation might be more strongly influenced by factors other than risk, such as opportunities to reduce the asset-management burden, develop skills for future decommissioning, or to release land for other uses.

Whatever prioritisation we set, we will continue to monitor risk levels and act proportionately across our estate to ensure that the net level of risk does not increase in the long term.

Any decision to stop, slow or defer decommissioning will be informed by an appraisal of the benefits and the disadvantages of doing so. This includes a robust evaluation of resources required to ensure the safety of the facility throughout the period of deferral.

Selecting a decommissioning strategy must always be a conscious decision, informed by a range of options, their benefits and disadvantages and by stakeholder views. The initial choice of strategy will often be based on assumptions and therefore subject to regular review and revision, as additional or more accurate information becomes available.

Whatever decommissioning strategy is chosen, and before work begins, we define future conditions where work can be safely stopped or paused. We call these 'interim states'. These enable us to consider the learning to date, introduce new techniques and innovations, or allow a longer pause to reallocate resources elsewhere.

We have published a Code of Practice *(ref 13)* to help our operating companies determine the timing and pace of decommissioning. Following this guidance will help ensure that credible decommissioning strategies are assessed in a structured, consistent and transparent way to optimise our decommissioning activities.

Not everything we do is 'nuclear'. The first steps in decommissioning a nuclear facility involve removing any spent fuels and Higher Activity Wastes (HAW). This removes the nuclear hazards and more than 99% of the radiological hazards. As decommissioning progresses, the nature of the hazard at the facility becomes more conventional and issues such as managing asbestos and working at height tend to dominate safety concerns rather than any residual radioactive contamination. At this stage, our work is much like that at non-nuclear industrial sites which have radioactive contamination. Radioactive hazards and risks still remain and must be managed, but they are no longer the dominant safety issue of concern.

Consequently, as we deliver our work, we will adjust our arrangements to be more proportionate to the hazards and risks we are managing. This will help to deliver our work safely and securely, and at a reduced cost and greater pace.

Each of our site licence companies (SLCs) has established its own management arrangements for delivering work. Many of these refer to activities which are common across our sites. As such, it may be more efficient to adopt common approaches to reduce the extent of management arrangements, share specialist resources across our sites and improve the supply chain understanding of our expectations. We will look to adopt common processes, procedures and standards as appropriate opportunities arise (for example, document review milestones), supported by our continued work with regulators and industry groups.

What is the Rolling Programme of Decommissioning (RPD)?

Our decommissioning activities are delivered through a rolling programme of decommissioning (RPD). Under this approach, sites progress through decommissioning at different times, based on their specific conditions and priorities. Some sites are decommissioned continuously to final end state, while others enter a deferral phase. This allows us to:

- Apply lessons learnt across the NDA group
- Optimise the use of resources, technology and skilled workforce
- Reduce overall programme risks and costs

This programme-based delivery model is embedded in the strategies of our operating companies, including Nuclear Restoration Services (see ***10. Nuclear Restoration Services***).

Strategy development

Group level prioritisation of decommissioning

We want to ensure our decommissioning priorities reflect our national group priorities rather than individual operating company or site-specific priorities. This will help us focus our group resources on the priorities for our mission and support one another in the safe deferral of other activities.

Consequently, we will continue to develop a clear understanding of our national decommissioning priorities, beyond the intolerable facilities we must address. We will engage with our regulators, government, local authorities and host communities to provide a clear rationale for prioritisation and understand their perspectives. We will also explore whether and how we can share our specialist resources better across our group to deliver our national priorities.

Proportionate arrangements

We will continue to support the UK Government as it amends the legislative framework for nuclear sites to enable more proportionate regulation during the final stages of decommissioning and clean-up. The revised regime will enable the Office for Nuclear Regulation (ONR) to relinquish regulation of a site once it is content that nuclear safety and security concerns have been resolved. At this point, residual hazards are similar to those found at non-nuclear industrial sites. This means that site health and safety can be regulated by the Health and Safety Executive (HSE), and the relevant environment agency and local authority.

This arrangement would ensure that a site is regulated by the most appropriate regulators at each stage of the decommissioning process while maintaining obligations for the proper protection of our workforce, the public and the environment.

In 2023, the Energy Act (2004) *(ref 1)* secured amendments to the Nuclear Installations Act *(ref 51)*, representing the first legislative changes required for proportionate arrangements. The ONR developed and consulted on draft guidance which provided their initial interpretations. We have used this to explore how to apply the new regime across our estate. Further work is now needed to address other required legislative changes, for example, to ensure that the environment agencies have the powers they need. Once this has been done, we will be able to access the full benefits of the new regime.

We want to be ready to make use of the new regime as soon as it is available. For that reason, we are helping test the opportunities with our operating companies and regulators. This will help us understand what cases for change might be made and support the regulators to develop guidance. We are also benchmarking similar activities in non-nuclear settings to help ensure that we have the evidence to support any cases for change.

Continued learning

In our previous Strategy *(ref 2),* we described the decision for Nuclear Restoration Services (NRS) to adopt a near-term dismantling strategy at Trawsfynydd and Dungeness A, and for Trawsfynydd to be the lead site for dismantling of Magnox reactors. Since this change of strategy, NRS has been developing tactics for dismantling work at Trawsfynydd.

Our learning from this is helping inform strategy development across our other Magnox reactor sites. For example, our work at Trawsfynydd has highlighted the value of digital twinning to inform our planning work and the implications of different approaches that might be adopted to breaking into the reactor (for example, top-down or side entry). We are also considering the implications for the decommissioning of AGRs, many of which sit alongside existing Magnox reactor sites.

Similarly, we are working with other UK operators to review approaches to alpha decommissioning across our sites. This is helping to identify and inform further opportunities for improvement (see ***Case Study: Alpha Waste and Decommissioning*** *(ref 15).*

Delivery

We will continue to use the extensive network of working groups, across the NDA group and beyond, to increase collaboration and alignment of our decommissioning activities, share learning, manage overlaps and ensure efficient strategy delivery.

As we develop our decommissioning approaches and revise our site plans, we will work with regulators and communities, including local planning authorities and the supply chain. This engagement will help to ensure continued compliance with relevant legal and regulatory obligations across our sites and inform local waste and development plans.

We will work with the UK Government and devolved governments to ensure that our decommissioning strategies are aligned with UK policies and are consistent with international good practice. We will also represent UK and NDA decommissioning interests at relevant IAEA and Nuclear Energy Agency (NEA) committees and working groups, and work with other countries with similar challenges. For example, we will share Magnox reactor graphite dismantling experience with counterparts in France, Italy and elsewhere, and work with the USA and Canada to understand their use of interim states to safely defer work.

4.3 Site end states

Objective: To define credible objectives for the decommissioning and remediation of our estate.

Approximately one quarter of our estate is 'designated' land assigned to us by the UK Government for decommissioning and remediation. We are required by government to propose the end state for designated land at each of our sites. The site end state describes the condition to which the site will be taken at the end of the decommissioning and remediation and includes land, infrastructure and natural capital.

Our strategy

Site end states are the most tangible product of our decommissioning and remediation activities: safe, sustainable and publicly acceptable situations that allow us to release land for others to use. End states are key to helping define our objectives for management of structures, infrastructure and land quality, and they have implications for the management of waste arising from operations, decommissioning and remediation.

Our preference is to ensure a sustainable approach to the remediation of our operational estate, while optimising our work to deliver safe states that enable beneficial reuse as early as possible.

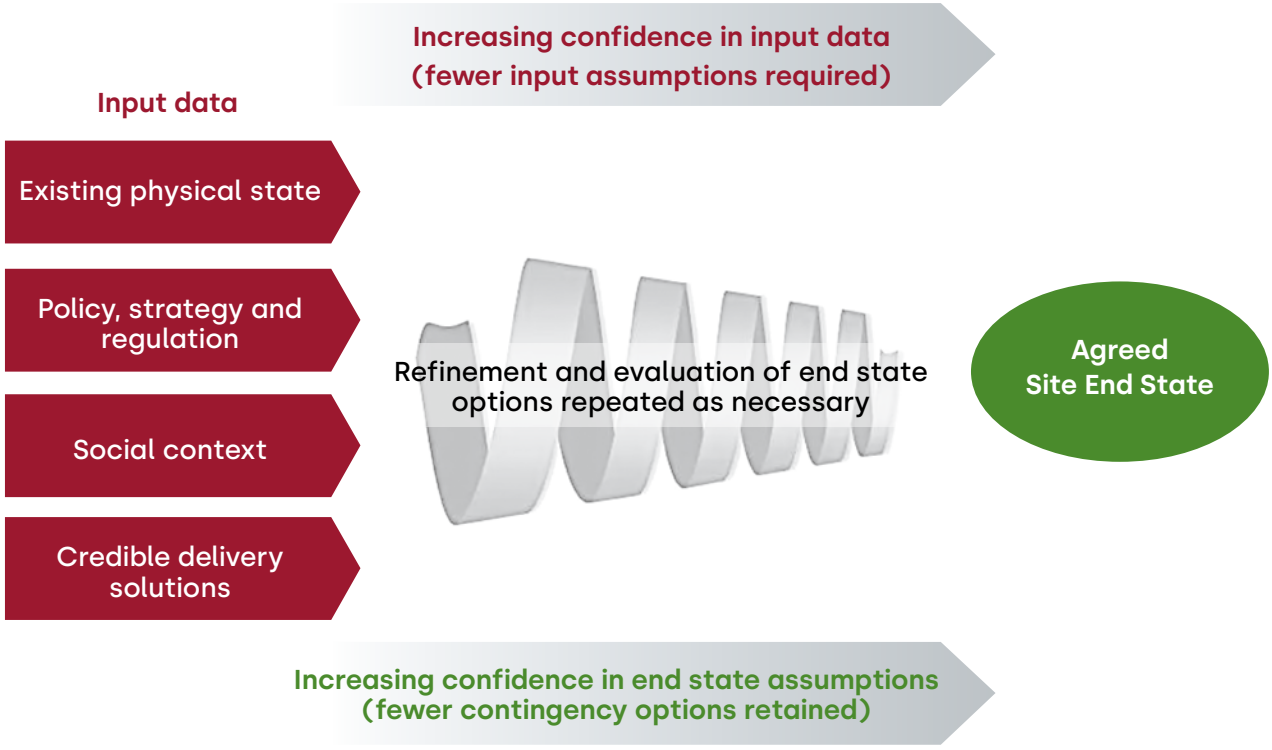


Figure 8 - Iterative and adaptive approach to defining a site end state

For many of our sites, the planned end state is decades away. Consequently, our strategy is to develop and use assumptions about the site end state, mindful of how the land might be used next, and to review these assumptions regularly.

This iterative approach to our determination of site end states (see ***figure 8***) allows us to demonstrate further confidence in our preferred option or to change our assumptions. Such changes might be in response to changing circumstances on and around our sites or because of what we learn from our experiences or those of others. Over time, this approach ensures that we can identify the options that perform best based on the balance of benefits and detriments and explain why this is the case (see ***9.12 Public and stakeholder engagement***).

To define site end states, we must consider a range of available options and assess these against a broad range of factors. Such factors include the extent of radioactive and non-radioactive contamination, deliverability, societal requirements, cost to the taxpayer, and the potential future use of the site, or part of it. We consider the impact that each option might have on and off the site, now and in the future.

The success of our work depends on engagement with local communities, regulators, local planning authorities and government. It also involves working with others to understand the levels of interest in the subsequent use of our land and what form this use might take.

Our assumptions about site end states inform the work we do at each of our sites and help ensure the milestones in our decommissioning and remediation plans are aligned with the eventual goal.

We define individual site journeys as site strategic threads. These threads help us understand the relationship between site end states, decommissioning decisions, interim states and land use strategies, so we can align the activities through the life of a site and inform and build confidence in delivery of the planned end state. They also form the basis for managing change, such as accommodating additional mission scope, for example, the transfer of AGRs, or opportunities related to delicensing, programme efficiency or understanding the impact of new technologies or research.

Strategy development

We will review our assumptions on site end states across our estate and identify new opportunities that could optimise our work (see ***Case Study: Determination of Suitable Site End States***) *(ref 16)*. Site-strategic threads will help ensure we align our strategies at each site and across our group.

We will review the lessons learnt from our initial on-site disposal applications made under the environment agencies' Guidance on Requirements for Release from Radioactive Substances Regulation (GRR) *(ref 17)* for Trawsfynydd and Winfrith.

We will also work with our regulators and local authorities to facilitate the beneficial reuse of wastes generated from demolition activities and land remediation, including developing approaches for handling and stockpiling of materials and waste that is suitable for reuse, where this represents the most sustainable solution.

Our work with government and regulators will explore further opportunities to enhance the UK policy and/or regulatory framework to better enable our delivery of sustainable site end states.

Delivery

Working with key stakeholders, we will agree on the information that should be recorded by our operating companies about interim and end states, to ensure that assets are used appropriately and safely now and in the future. Our work with local planning authorities will ensure that site end states and statements on the next planned use of sites are consistent with local waste and development plans.

We will share our experience in site-end-state management with the wider UK nuclear industry, for example, through NIGLQ and NuLeaf, and work with the IAEA and the NEA to benchmark our methods for site end-state assessment.

Winfrith site

4.4 Estate use

Objective: To optimise the use and reuse of our estate.

Our estate is vital to our mission delivery. It includes land on which our liabilities exist and land used for new facilities to help us decommission and manage our wastes. It also has significant natural capital and supports our net zero and biodiversity net gain aspirations. Some parts of our estate are licensed, others are not.

We recognise that our estate is useful not only to us, as we deliver our mission, but also to others, for example, helping to support other government priorities such as clean energy development. As a vital asset, we must use our estate efficiently and in ways that are mindful of all potential interests – helping avoid delays in our mission or conflicts with other parties.

Working with others to help secure a valuable future use for our land and assets will help us to maintain the pace of decommissioning and remediation when the level of risk to people and the environment is no longer a strong driver for progress. Where the benefits of reuse are significant, we may be able to justify quicker decommissioning and remediation and ultimately release land earlier than originally scheduled.

Our strategy

We seek to optimise the use of our estate in support of our mission. We will prioritise the use of our land for our decommissioning mission and, where possible, make it available for use by others – either when our mission is complete or on an interim basis before achieving the site end state.

In optimising the use of our estate, we seek to:

- Avoid duplication in our development of new assets
- Enable reuse of our land and assets, either by our operating companies or others
- Minimise our nuclear footprint, for example, by delicensing where we can or consolidating our nuclear activities where practicable
- Integrate transport and logistics considerations into our spatial planning for any new developments
- Ensure climate resilience and support delivery of net zero by 2050
- Deconflict and secure synergistic opportunities across the UK nuclear enterprise.

In line with government policy and the principles of sustainable development, we will encourage the reuse of brownfield land over the development of greenfield land.

We will be proactive in researching and raising awareness of reuse opportunities for all our land and assets, including opportunities for reusing our land to support other government priorities such as national infrastructure projects.

Strategy development

We will develop group-wide management arrangements and guidance on how to optimise our estate. This will include guidance on how we decide on the development of our land and the use of our assets, and how we engage with our communities and other interested parties in support of these decisions.

Our estate management strategy (see ***4.1 Safe stewardship***) will inform this work and we will consider the:

- Needs of our non-NDA liabilities strategy
- Land and asset requirements of our geological disposal programme
- Interests of our communities and other parties in the use of our estate.

We will identify where potential changes in the ways we currently use our estate could benefit mission delivery and meet any new obligations (for example, biodiversity net gain).

Proposals for alternative uses will be supported by appropriate strategic cases for change and approved through our strategic governance arrangements to ensure that they demonstrate value to our mission. They will also be informed through engagement with our communities and other parties who might have interests in the use of our land. We will be proactive in understanding the needs of others and integrating these needs into the work we do in managing the condition of our land and redundant assets so that, wherever possible, we can support aspirations for next planned use.

We will work with government and others across the UK nuclear enterprise to seek opportunities where our land and assets could support other priorities and to understand other local development needs. Our engagement with local government and communities will help establish masterplans in support of regional developments around our sites.

We will advertise details of any available land once we are confident that it is surplus to our needs.

Delivery

Our Estate use strategy will be implemented by the NDA Land and Property team through appropriate revisions to local strategies and plans within our operating companies. We will establish relations with interested parties to help ensure effective collaboration, and work with our communities, regulators and planning authorities to understand other factors that might inform our decision making and to ensure transparency.

Q5.
Do you think our objective to optimise the use and reuse of our estate is clear and appropriate? Are there other opportunities we should explore to achieve this goal?

Bradwell in its interim end state

5. Spent Fuel

Objective: To ensure safe, secure and cost-effective lifecycle management of our spent fuels.

STRATEGIC OUTCOMES -
steps to achieving our mission

SPENT MAGNOX FUEL

1. All sites defueled
2. All legacy fuel retrieved
3. All Magnox fuel reprocessing completed
4. All remaining Magnox fuel in interim storage
5. All remaining Magnox fuel disposed

SPENT OXIDE FUEL

6. All EDFE oxide fuel received
7. All legacy fuel retrieved
8. All oxide fuel reprocessing completed
9. All remaining oxide fuel in interim storage
10. All remaining oxide fuel disposed

SPENT EXOTIC FUEL

11. All exotic fuel defueled
12. All exotic fuel consolidated*
13. All exotic fuel reprocessing completed
14. All remaining exotic fuel in interim storage
15. All remaining exotic fuel disposed

*irradiated fuel only

The NDA inventory of spent fuels consists of large quantities of oxide fuels, and smaller quantities of Magnox fuel and diverse non-standard fuel types that we refer to as exotic fuels.

The vast majority of spent oxide fuels come from the Advanced Gas-Cooled Reactors (AGR) owned and operated by EDF Energy. The Magnox spent fuel has come from the first generation of Magnox reactors. Most of the Magnox material is degraded fuel that is in, or has been recovered from, the legacy ponds, with a smaller amount of fuel that was not reprocessed following completion of the Magnox Operating Programme. The exotic fuels tend to have come from prototype, experimental or research reactors as part of the development of the nuclear power industry.

Managing our spent fuels effectively is essential to enable us to decommission and remediate our sites with the end goal of releasing them for other uses.

The UK Government has recently updated its spent fuel policy to reflect the end of industrial-scale reprocessing in the UK *(ref 11)*. The policy states that the decisions on whether or when to reprocess spent fuel rest with the spent fuel's owner.

In making decisions on spent fuel management, we consider the entire lifecycle, including the required facilities, by-products, secondary wastes and discharges. Our decision-making process is guided by the NDA Value Framework *(ref 7)* , and we engage with stakeholders to gather input before finalising and implementing decisions.

Our strategy

The NDA strategy for managing our spent fuels focusses on three phases:

- Consolidation
- Safe and secure interim storage
- Disposal in a Geological Disposal Facility (GDF).

Consolidation

Our strategy is to consolidate all the spent fuels we own or are contracted to manage at Sellafield.

Removing the remaining spent fuels from reactor sites, including Dounreay, and consolidating them at Sellafield significantly reduces the radioactivity and hazard at reactor sites and enables decommissioning and remediation. Managing all our spent fuels at Sellafield enables us to fully leverage the site's extensive and specialised facilities, capabilities and expertise.

At the Sellafield site, our strategy is to further consolidate spent fuels in a smaller number of more modern facilities, thereby gradually releasing ageing facilities for decommissioning.

Safe and secure interim storage

Our strategy is to store our spent fuel inventories, maintaining their condition in line with regulatory requirements, until the packaging and treatment options, and disposal in a GDF, are available. While our fuels are in interim storage, they will be managed in a way that does not foreclose future options.

Our spent fuels have a diverse range of physical and chemical characteristics, and this impacts their storage requirements. The approach we take considers how they are expected to evolve in storage and the timescales and nature of geological disposal.

Disposition

Our strategy is to provide safe and secure lifecycle management of our spent fuels through storage and then disposal in a GDF. Packaging and treatment for disposal will take place when the necessary disposal requirements are fully understood. In most but not all cases, this will also be aligned with the availability of a GDF to receive and permanently dispose of the spent fuel. This approach to managing spent fuels is reflected in our strategic outcomes, the plans of our sites and the GDF-derived inventory.

Since the publication of our previous Strategy *(ref 2)*, the last reprocessing plant in the UK, the Magnox reprocessing plant at Sellafield, has finished its mission. Completion of reprocessing operations has enabled Sellafield Ltd to increase its focus on decommissioning and clean-up.

Although the NDA has no plans to restart reprocessing, we continue to manage our spent fuels as potential assets. We are working with stakeholders to understand how and when spent fuels should be categorised as waste.

We are working with Nuclear Waste Services (NWS) and Sellafield Ltd on options for preparing and packaging our spent fuel inventories so that they are suitable for disposal in a GDF. These options will inform requirements for the interim storage strategy. For some of our fuels, the options included in strategic assessments may consider early conditioning for disposal when existing waste-processing facilities are available. This approach allows for more efficient use of resources, reduces the need for new infrastructure and can expedite the decommissioning mission. We will work to balance uncertainties of lifecycle and the potential evolution of fuel in the GDF with nearer-term value for money.

Strategy development

Through Sellafield Ltd, we are exploring opportunities to improve the efficiency of how we store our spent fuels across our existing and planned assets.

The long timescales for interim storage mean that several of our Critical Enabler strategies (see ***9. Critical Enablers***) are particularly relevant to our spent fuel strategy, for example, asset management, information governance and research, development and innovation (RD&I).

We will continue to:

- Invest in the facilities and infrastructure required to safely and securely provide lifecycle management for our spent fuels, including, for example, pond monitoring and cooling systems, and prioritising the effective use of our existing assets, especially where this can avoid costly new facilities and enable the decommissioning of older assets
- Monitor performance and plant conditions and develop options, including contingency options, to manage risks and uncertainties, to ensure that conditions and performance are consistent with the delivery of our strategy and in line with regulatory requirements
- Undertake research and development (R&D) to underpin the interim storage and disposal of our spent fuels.

In line with our Innovation Strategy *(ref 18)* the majority of the R&D work will be managed by our operating companies Sellafield Ltd and NWS, although some work will be directly funded by the NDA. This R&D work will help to maintain key skills and capabilities for the long term. We will also consider new and innovative proposals for spent fuel management in line with our RD&I strategy and encourage the involvement of supply-chain partners in developing and proposing new technologies.

We are working closely with NWS to develop disposal options for our spent fuel inventories and enable the R&D needed to support the safety case for geological disposal.

A key part of the R&D effort will be work conducted by the UK National Nuclear Laboratory (UKNNL) on the post-storage examination and disposability of spent fuels. Some of this work will be undertaken in the Active Handling Facility at Sellafield, owned by the NDA and operated by the UKNNL. We must work closely with the UKNNL and the UK Government to ensure this facility, and the broader capability to examine spent fuels, is retained as a national strategic asset.

To manage our fuels as effectively as possible, we will ensure that the necessary records, information and knowledge are maintained, including transferring information from reactor operators and ensuring access to international good practice and technology development. We will build meaningful and targeted collaborations with UK reactor operators and international organisations with expertise in spent fuel management.

NWS continues to work with Nuclear Transport Solutions (NTS) on potential approaches to transporting packaged fuel to a GDF, a process that is expected to start later this century.

In line with UK Government expectations, we will supply advice and information about spent fuel lifecycle management options to government and third parties involved in the UK's nuclear new build programme and developers of advanced nuclear technologies.

Delivery

Delivery of our spent fuels strategy requires collaborative working, with EDF Energy to optimise the defueling of the AGR power stations, and across all our operating organisations which have the following responsibilities:

- NTS for road, rail and marine transport of spent fuels
- Sellafield Ltd for the receipt of spent fuel from NDA sites Dounreay and Harwell, EDF-owned AGR power stations and Ministry of Defence (MOD) submarine sites, and safe storage and packaging of these fuels for disposal in a GDF
- NWS for implementing the geological disposal of spent fuels and providing advice to Sellafield Ltd on how to prepare and package fuels so that they are disposable in a GDF, and maintaining spent fuel inventories for disposal in a GDF.

We have asked NWS to ensure that the GDF will have the capability and capacity to dispose of our spent fuels.

5.1 Spent Oxide Fuel

Our oxide fuels inventory consists of AGR fuels and a small amount of other oxide fuels from the Thermal Oxide Reprocessing Plant (THORP) programme that can be managed alongside AGR fuels.

We currently hold about 3,000 tonnes of spent AGR fuel at Sellafield and, by the time defueling of the AGR power stations finishes, this is expected to increase to about 5,000 tonnes.

Most of the AGR spent fuel at Sellafield will be owned by the NDA, but some is owned by EDF. This split in ownership reflects the changes to the UK nuclear industry that occurred in the mid-2000s when British Energy, the company that then owned the AGR power stations, was restructured.

In the UK, EDF owns Light Water Reactor (LWR) fuel arising from the Sizewell B reactor, and there are plans for further LWRs at Hinkley Point C and Sizewell C. Spent fuel arising from these reactors will also be owned by EDF and they are not part of the NDA's strategy. Decisions about these fuels are owned by EDF.

We consolidate all spent AGR fuel from the EDF stations at the Sellafield site. We are contractually committed to receiving and managing all AGR spent fuel from the EDF stations at Sellafield. Managing AGR spent fuel is a major source of income for the NDA, but this will gradually reduce over the next decade as the AGR power stations cease electricity generation and are defueled.

EDF has publicly declared its intention to operate its AGR power stations for as long as this is safe and economical. Based on their published plans, by the end of 2030 all the AGR power stations should have ceased generating electricity. However, our strategy can accommodate potential changes in their closure dates.

Once electricity generation has ceased, the NDA will support optimised defueling of the AGR power stations to enable their transfer from EDF to the NDA for decommissioning. During the defueling phase, there will be an increased demand to move the spent fuel and it is important that we maintain fuel transport assets and infrastructure to support our strategy for oxide fuels.

In 2016, the AGR Operating Programme (AGROP) was launched to develop an integrated, collaborative delivery programme covering the activities of EDF, the NDA and its subsidiaries (Sellafield Ltd and NTS). AGROP is now fully established, and the participating organisations share a common mission to ensure the safe, secure and cost-effective defueling of the AGR power stations.

Sellafield Ltd provides safe and secure interim storage for all oxide fuels in appropriate facilities at the Sellafield site. Except for a small amount of fuel, nearly all the oxide fuel is stored under water, in carefully controlled conditions, to manage heat and prevent corrosion. We expect that all the spent AGR fuel will be consolidated into a single pond in the THORP facility on the Sellafield site, which will release other facilities for alternative uses or decommissioning.

Sellafield Ltd continues to develop its approach for the interim wet storage of AGR fuel at the THORP pond storage facility. A new fuel storage container, known as the 63 can rack, has been introduced to the THORP pond. This has greatly increased the pond's storage capacity and removes the need to build a costly extension or new facility. Over the coming years, most of the fuel held in older storage containers will be transferred into these new storage containers.

We will continue to monitor performance and plant conditions and develop options, including contingency options, to manage risks and uncertainties. We will undertake R&D work on the drying of AGR spent fuel, which is a necessary step for disposal and could serve as a contingency for pond storage. This work will require access to specialised facilities such as the Active Handling Facility, which is owned by the NDA and operated by the UKNNL.

Over the coming decade, Sellafield Ltd will make further improvements to our spent fuel management facilities, including the THORP pond. These local investments will enable fuel storage for several decades and potentially allow for further compatible fuels to be stored in the THORP facility.

Spent oxide fuels at Sellafield are expected to be in interim storage for several decades, until the high-heat-generating waste disposal area of a GDF is ready to receive them and all fuel has been transported to it. Interim storage and disposal of our spent fuels is an intergenerational programme requiring skills, capabilities, information and knowledge to be maintained over several decades. To this end, we are working with Sellafield Ltd, NWS and EDF to identify and share the necessary records and information to support the storage and disposal of AGR spent fuel.

NWS continues to develop its approach to geological disposal, which will enable all the oxide spent fuels to be disposed of in a GDF. We are currently developing a disposal case for AGR fuels.

THORP storage pond at Sellafield

5.2 Spent Magnox Fuel

The Magnox reactors were the first generation of commercial nuclear power stations to operate in the UK. They have now all been defueled and the fuel consolidated at Sellafield, where the vast majority of it was reprocessed.

We reprocessed as much of the Magnox spent fuel as was practicable. In 2022, the Magnox Operating Programme concluded when the reprocessing plant finished its final campaign. Over its lifetime, the plant reprocessed nearly 55,000 tonnes of spent fuel.

Our Magnox fuels inventory consists of 250 tonnes of spent fuel from commercial Magnox power stations and approximately 500 tonnes of other metallic fuels from the legacy ponds, First Generation Magnox Storage Pond (FGMSP) and Pile Fuel Storage Pond. Most of the fuels from legacy ponds are highly degraded.

The FGMSP is a legacy pond and one of the highest risk facilities in the NDA estate. It is also one of the most complex and difficult to decommission. We will remove the highly degraded fuels from the FGMSP as soon as practicable and place them into more modern storage facilities, reducing the intolerable risk and enabling clean-up and decommissioning of the FGMSP.

Some of the fuel has already been recovered from FGMSP and transferred to the more modern Fuel Handling Plant (FHP). We will continue to consolidate fuel from the FGMSP into the FHP where there is an overall safety benefit in doing so. This will reduce the risk with the management of spent fuels. FHP also stores a smaller amount of spent Magnox fuel that is in good condition.

We will continue to store fuels in the FHP following a regime that minimises corrosion until we develop a life cycle approach, including safe storage and disposal in a GDF. Given the diverse range of spent Magnox fuels, it is highly likely that more than one technical option will be deployed to manage the inventory. The options could include continued pond storage, transfer into a dry storage system or encapsulation using one of the existing or planned waste processing facilities.

Some of the fuel in the FGMSP will be unsuitable for consolidation in the FHP. Through Sellafield Ltd, we have developed a new container for storing highly degraded Magnox fuels which have been or will be recovered from the FGMSP. These ‘self-shielded boxes’ provide containment and shielding for the fuel.

In some cases, we may need to treat the spent Magnox fuels before they are packaged for disposal in a GDF. For some fuels, there are likely to be opportunities for early treatment for disposal and storage as a waste package.

5.3 Exotic Fuel

Our exotic fuels inventory consists of a small amount of non-standard fuels, including metallic, oxide and carbide materials.

Some of the exotic fuels are a legacy of earlier nuclear industry activities, such as the development of research, experimental and prototype fuels, and some are non-standard oxide. We have exotic fuel types arising from the Dounreay Fast Reactor, the Dounreay Prototype Fast Reactor, the Windscale AGR and the Steam Generating Heavy Water Reactor at Winfrith. We also own oxide materials from R&D activities which cannot be efficiently managed alongside the oxide fuels described in the previous sections.

We are consolidating our exotic fuels at Sellafield, enabling us to accelerate the decommissioning and remediation of the Dounreay and Harwell sites, and reducing the overall cost of the NDA mission.

The exotic fuels have specific challenges owing to their diverse and sometimes unique physical and chemical properties, and a range of tailored storage solutions will be required. These will vary from minor alterations, to enable inclusion in the oxide or Magnox management routes, to bespoke solutions.

Through Sellafield Ltd and NWS, we are developing life-cycle solutions which will allow safe disposal of exotic fuels in a GDF once a disposal route is available.

We are also contracted to receive and store irradiated fuels from the Ministry of Defence (MOD) which arise from the development and operation of the UK Defence Nuclear Programme. The decisions and strategy for long-term management and disposition of these fuels, beyond interim storage, rest with the MOD. We will continue to work closely with the MOD to support it in developing options for the long-term disposition of these fuels.

Since publication of our previous Strategy *(ref 2)*, we have reprocessed some exotic fuels. However, it was not economical or possible to reprocess some exotic fuels within existing facilities and we decided to store them until a GDF becomes available. The Dragon fuel held at Harwell is an exotic fuel unsuitable for reprocessing and classified as waste in the UK Radioactive Waste Inventory *(ref 19)*. We have decided that this fuel will be encapsulated using existing waste-processing facilities at Sellafield to simplify our approach to storage. We have started transferring this fuel to Sellafield, where it will be stored until a GDF is available.

5.4 The vision: nuclear safeguards

Safeguards

Nuclear safeguards are measures to verify that civil nuclear materials and activities are only used for their intended peaceful purposes. They include the requirement to keep accurate accounts of quantities and the location of nuclear materials.
As safeguards arrangements change owing to decommissioning progress, we continue to ensure that our operators meet international and domestic nuclear safeguard requirements.

IAEA

The International Atomic Energy Agency (IAEA) is an independent science and technology-based intergovernmental organisation within the United Nations family. Part of the IAEA role is to conduct independent verification to ensure that states comply with their non-proliferation agreements, including nuclear safeguards. The UK is a signatory to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) *(ref x)* and has concluded a voluntary offer safeguards agreement and Additional Protocol (AP) agreement with the IAEA. This means that all civil nuclear material at UK nuclear facilities is eligible for IAEA safeguards inspection, and reports on civil nuclear material, facilities and other civil nuclear fuel-cycle-related activities must be submitted to the IAEA.

The ONR

The Office for Nuclear Regulation (ONR) is the UK's domestic regulator for nuclear safeguards and is the state regulatory authority for IAEA safeguards as part of the UK State System of Accounting for, and Control of, Nuclear Materials. The ONR's safeguards functions enable the UK to meet its international safeguards obligations in respect of facilitating IAEA activities and reporting on safeguards, and other obligated reports. As the regulator, the ONR seeks evidence that operators are achieving sustained compliance with domestic safeguards regulations by inspecting and assessing, and where necessary, enforcement, and facilitating IAEA safeguards verification activities in the UK.

Why should the NDA be involved?

The NDA owns large quantities of spent fuel and nuclear material, including civil separated plutonium from reprocessing operations which are managed by our operating companies. We are responsible for ensuring domestic and international safeguards obligations are being met across the NDA group. We also support our operating companies in making the best use of opportunities presented by the group model, which includes longer-term planning for skills and capability in this highly specialised area.

The detailed inventory information held by safeguards teams across the NDA is essential in accounting for what material we have and where it is stored. These are also important lifetime records to inform future strategy, including potential disposal of nuclear materials and wastes in a GDF.

Progress and future developments

There have been several developments since the publication of our previous Strategy in 2021 *(ref 2)*. The NDA group has successfully transitioned to the new safeguards regulatory regime under the Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19) *(ref 20)*, following the UK's exit from the European Union. The transition process has included the removal of redundant equipment used by the previous safeguards regulator, Euratom, and the installation of new IAEA equipment so that the UK can continue to comply with international safeguards regulations.

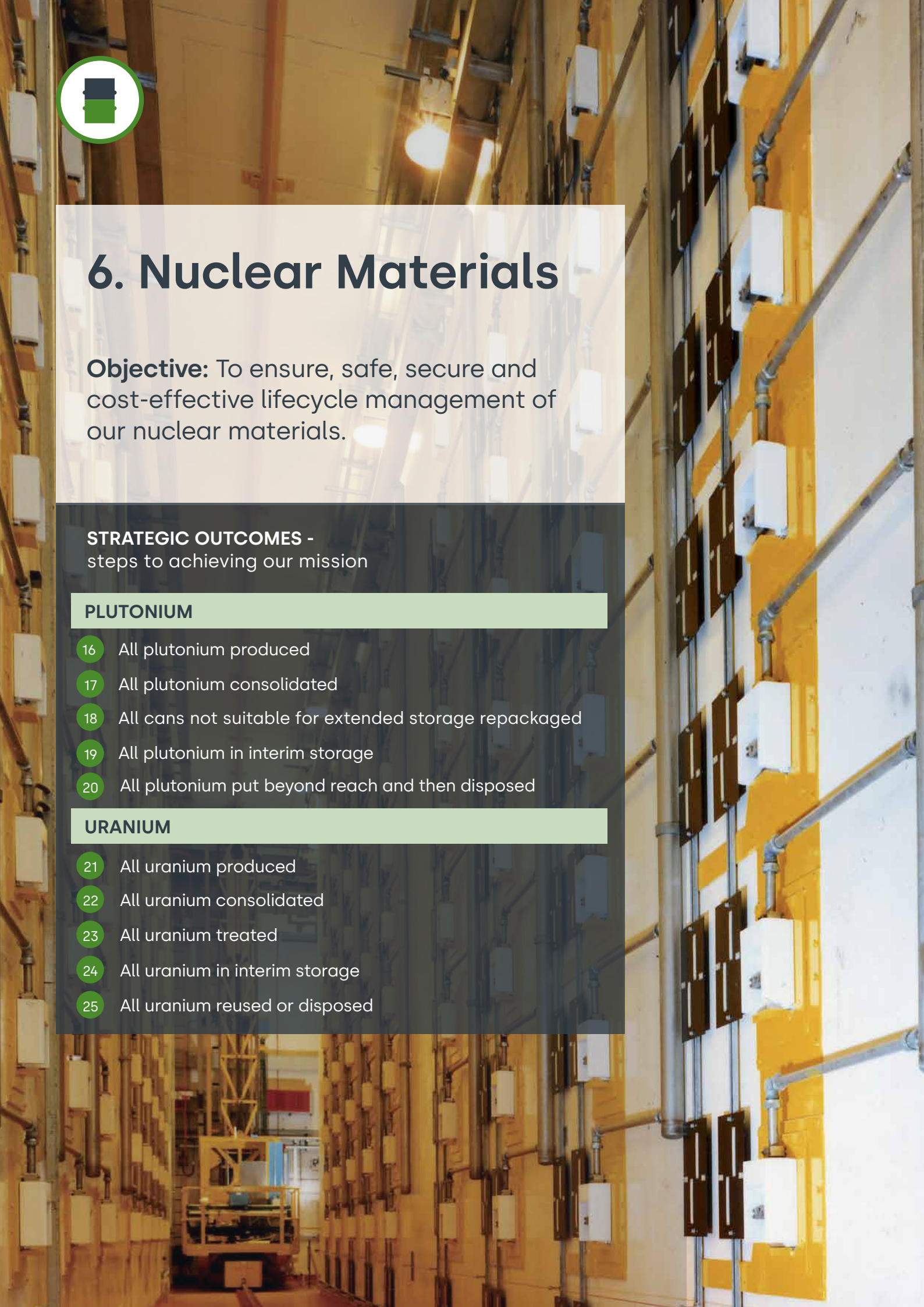
Our sites have adapted to the outcome-focussed UK safeguards regulations (NSR19) *(ref 20)*, which changes how compliance is demonstrated through the ONR's regulatory inspections and assessment activities.

Safeguards activities at our sites are changing as our decommissioning mission progresses. The completion of reprocessing operations at Sellafield allows our operators to perform post-operational clean out of these facilities, and provide detailed nuclear material accountancy figures for the facilities.

Implementing safeguards arrangements in new facilities for the safe management and storage of plutonium will be another key focus over the next few years. We have already made significant progress and will continue to work closely with the IAEA, the ONR, the UK Government and Sellafield Ltd to ensure that sufficient but proportionate measures are in place to enable the operation of these facilities in line with our international obligations.

We will continue our oversight of nuclear safeguards across the group and engage the domestic and international community during the development of approaches to safeguards related to geological disposal. Safeguards experts from across the NDA group will continue to support UK Government on the development of the nuclear safeguards regime in the UK, especially regarding the operational practicalities of implementing agreements.

We also support our operating companies to take advantage of the One NDA model to address the key challenges of developing and maintaining specialised skills in the safeguards field.



6. Nuclear Materials

Objective: To ensure, safe, secure and cost-effective lifecycle management of our nuclear materials.

STRATEGIC OUTCOMES -
steps to achieving our mission

PLUTONIUM

16 All plutonium produced

17 All plutonium consolidated

18 All cans not suitable for extended storage repackaged

19 All plutonium in interim storage

20 All plutonium put beyond reach and then disposed

URANIUM

21 All uranium produced

22 All uranium consolidated

23 All uranium treated

24 All uranium in interim storage

25 All uranium reused or disposed

We own large quantities of civil uranium and plutonium from nuclear fuel enrichment, fabrication and reprocessing. These nuclear materials are diverse in nature and properties. Managing them is essential for decommissioning our sites and delivering our mission.

Our strategy is to support operating companies to safely and securely store our nuclear materials in line with regulatory requirements while we develop and implement effective lifecycle solutions for their management in accordance with UK Government policy and international good practice.

Much of our nuclear material was originally separated for reuse in nuclear fuel for generating electricity. Some of these materials are suitable for reuse but, inevitably, we need to dispose of some nuclear material.

We own most of the nuclear materials managed on our sites. We also support operating companies to safely and securely store and manage materials on behalf of customers, including EDF, overseas utilities (See ***8.1 Non-NDA liabilities***) and the MOD, in line with contractual commitments and customer requirements. Overseas owners are responsible for disposition strategies for their nuclear materials.

Storage of uranium at Capenhurst

6.1 Plutonium

Objective: To ensure the safe and secure management of separated plutonium held by the NDA and to implement the government policy to immobilise the material.

One of our most complex challenges in dealing with the UK's nuclear legacy is managing the 141 tonnes of separated civil plutonium stored safely and securely at the Sellafield site. Nearly all the UK's civil separated plutonium is stored at Sellafield except for tiny amounts used for research and commercial purposes.

Plutonium is highly radioactive and fissile, requiring specialised handling skills and facilities. Stringent safety and security arrangements are required to store and account for plutonium.

This material has arisen from large-scale reprocessing of spent fuel from UK Magnox and Advanced Gas-Cooled Reactor (AGR) power stations, and, under historical commercial agreements, from overseas energy utilities.

Seventy years of civil plutonium production from spent fuel reprocessing finished in 2022 when the Sellafield Magnox reprocessing plant completed its mission.

Civil plutonium can only be used for peaceful purposes. It is managed strictly in accordance with the UK's voluntary International Safeguards agreements with the International Atomic Energy Agency (IAEA) and the Office for Nuclear Regulation (ONR) safeguards requirements.

The UK Government's objective is to put the civil plutonium inventory beyond reach, into a form which reduces the long-term safety and security burden during storage and ensures it is suitable for disposal in a geological disposal facility (GDF). This will reduce long-term security risks and proliferation sensitivities for future generations.

In 2025, the UK Government decided to immobilise the UK-owned civil separated plutonium inventory at Sellafield. We are working with Sellafield Ltd, Nuclear Waste Services (NWS) and our delivery partners to implement this policy.

Our strategy

The NDA's strategy for plutonium has two components:

- Ensure long-term safe and secure storage at Sellafield
- Work with the UK Government and delivery partners to implement the policy to immobilise the material and put it beyond reach.

To ensure the long-term safe and secure storage of plutonium, it needs to be repackaged and, in some cases, treated. Our approach to storage is evolving and will require new facilities and research and development to support it (see ***Delivery*** section).

Following NDA's analysis of the available options, the UK government have decided to dispose of the civil plutonium inventory. Immobilisation is considered the approach that will put the material beyond reach soonest and with greatest delivery confidence.

Our strategy is to implement this policy as soon as practicable. We are now focusing on selecting the preferred immobilisation technology.

Owing to the size of the plutonium inventory and the complexity of developing and delivering immobilisation options, any long-term management solution will take many decades to fully implement. We will continue to ensure our approach on plutonium aligns with Government requirements and UK strategic considerations.

In 2011, the Government decided that overseas-owned plutonium stored in the UK under contractual arrangements, which remains the responsibility of its owners, could be managed alongside UK plutonium or transferred to UK ownership subject to commercial terms that are acceptable to the UK Government. We will continue to work with customers to find an appropriate solution for their material.

Strategy development

Developing a long-term solution for plutonium

We are working with Sellafield Ltd, NWS, the UK National Nuclear Laboratory (UKNNL) and supply-chain partners to begin plutonium immobilisation.

To date, we have investigated the feasibility of plutonium reuse and immobilisation options. We will continue to work with technology suppliers, developers, regulators and the UK Government to establish how immobilisation options will be implemented (see ***9.5 Research, development and Innovation***). This work is focussed on demonstrating and developing each of the technical options under consideration, including the potential for them to be constructed and licensed in the UK. We continue to develop implementation scenarios, informed by technology development work, with the associated cost and schedule estimates for the facilities and processes needed to deliver each approach.

The most technically mature options are highly durable ceramics. We are investigating a range of different waste forms and manufacturing processes and working with NWS to understand the behaviours of these materials in a GDF.

The UKNNL and the unique plutonium facilities it operates at Sellafield will have a key role to play in underpinning the technology development. We will also work closely with international partners who have highly specialised skills and experience in plutonium management. The R&D programme supports the UK in retaining the skilled workforce needed to manage plutonium and the capability to implement long-term disposal.

When there is enough confidence in the preferred technology and sufficient progress has been made on the decommissioning mission at Sellafield, we will seek approval and funding from the government to begin the next phase of work. We would then start a major programme of plutonium immobilisation at Sellafield, providing long-term investment in nuclear infrastructure and skills, and creating thousands of highly skilled job opportunities in Cumbria and the wider supply chain over several decades.

Plutonium immobilisation will involve constructing, operating and decommissioning a large new-build nuclear facility, and require a large, skilled workforce. We will focus on maintaining and developing the full range of skills necessary to enable effective plutonium handling and management (see ***9.6 People***). To support this we will participate in the networks and activities instigated by the Alpha Resilience and Capability initiative in partnership with Sellafield Ltd and other organisations managing alpha-related challenges in the UK.

For a small part of the plutonium inventory that we refer to as residues, we have decided to encapsulate some material in a cement-based matrix suitable for storage and disposal in a GDF. This approach is already used at Sellafield for plutonium wastes produced from processing operations. Within the next two years, we aim to start processing some of these plutonium residues through an existing plant at Sellafield.

Delivery

Underpinning long-term, interim safe and secure storage

Owing to the radioactive and fissile nature of the material, plutonium handling and storage requires specialised facilities and effective management arrangements. There are several plutonium stores on the Sellafield site. Our aim is to gradually transfer all plutonium into the most modern facilities such as the Sellafield Product and Residue Store (SPRS) over the next few decades. To ensure that the plutonium packages can be safely stored in the SPRS, they will be repackaged and, where appropriate, some plutonium will be treated to stabilise it for long-term storage. To support this strategy, a major new facility to repackage and, where appropriate, re-treat the plutonium packages, known as the SRP (SPRS Retreatment Plant), is expected to be fully operational within a few years.

Some of the older plutonium packages and facilities used in early production are among the highest hazards on the Sellafield site. We are continuing a major programme of asset care at these facilities to support safe operation until they can be decommissioned. Some older packages have been successfully repacked in existing plants to ensure their safe management in the short to medium term before they can be treated for the long term in the SRP. We have been able to decommission older facilities after moving packages to more modern stores.

In 2019, we finished moving plutonium from Dounreay to Sellafield. Some of the materials moved from Dounreay have unique management challenges owing to their form and storage configuration. In due course, all these materials will also be repackaged, and where appropriate treated, in the SRP facility.

The SRP operation, the interim repacking programme and the emptying of older stores are examples of the active interventions we believe are required to safely manage the storage of these materials.

Strategy delivery is supported by a technical programme that aims to improve our scientific understanding of long-term storage and how we can apply modern technologies, such as robotics, to improve the safety and effectiveness of operations. We are collaborating within the group and with a range of industry organisations, academia and worldwide operators with similar challenges.

While Sellafield Ltd continues to reduce risks, plutonium storage will remain a key focus for the site, the NDA and regulators over the coming years.

6.2 Uranium

Objective: To continue safe and secure storage of our uranium inventory, to support its reuse where cost effective and to ensure its final disposition.

The uranium we own and manage and store safely and securely on our sites has been produced from nuclear fuel enrichment, fabrication and reprocessing since the 1950s.

Although we own most of the uranium on our sites, some is owned by customers, including the MOD, EDF and overseas utilities, and managed under contractual terms.

We manage approximately 70,000 tonnes of uranium, more than 95% of which is at Capenhurst with the remainder at Dounreay, Sellafield, Springfields and Harwell. The inventory includes:

- Magnox depleted uranium (MDU), in the form of uranium trioxide (UO3), a product of spent Magnox fuel reprocessing, stored at Capenhurst
- Thermal Oxide Reprocessing Plant (THORP) Product Uranium (TPU) in the form of UO3, a product of spent oxide fuel reprocessing, the vast majority of which is owned by our customers and could be recycled by them in the future
- Uranium hexafluoride (hex), a by-product of uranium enrichment, stored at Capenhurst, with some at Springfields, in cylinders many of which are several decades old with signs of corrosion
- Very small amounts of highly enriched uranium (HEU), in a variety of solid and powder forms from research reactor fuel development and production
- Low-enriched, natural and depleted uranium in a variety of forms, including metal scraps recovered from fuel fabrication processes, powders and liquors.

The following developments have occurred since we published our previous Strategy *(ref 2)*:

- Following the Russian invasion of Ukraine, there is renewed interest and commitment to ensuring a secure and resilient supply of nuclear fuel in the UK through regeneration of the UK's domestic fuel cycle capabilities on existing nuclear-licensed sites
- The UK Government's new policy for managing radioactive substances supports us in developing a uranium strategy by:
  - Recognising that uranium is potentially an asset and, accordingly, should not be categorised as waste while a future use can be foreseen by the owner
  - Clarifying that, under certain circumstances, we may take ownership of overseas-owned uranium to close historic reprocessing contracts and liabilities
- We have completed Magnox reprocessing and, consequently, no longer produce MDU, which has now all been consolidated at Capenhurst where it is managed on our behalf by Urenco UK
- The small amount of uranium residues held at Dounreay which were not economical to reuse, as part of an agreement we had with the Euratom Supply Agency and United States Department of Energy for the production of medical isotopes, has now been categorised as waste for disposal.

Our strategy

Our uranium strategy is developed in line with government policy. Decisions on the uranium management are a matter for its owner, subject to meeting necessary regulatory requirements.

We have different management approaches for the varied forms of uranium:

- We are **consolidating** our uranium onto fewer stores on fewer sites to reduce long-term management costs and enable the decommissioning of the emptied facilities
- Most of our uranium is in an oxide form which is highly suitable for **safe and secure storage**. However, some material, such as our hex, is held in cylinders that are several decades old. We are continuing our work to improve how these materials are stored for the long-term, before they can be reused or disposed of
- We are continuing to develop **disposition** options for our uranium for sale and reuse or disposal as waste (see below).

Strategy development

Some of our uranium has the potential to be reused in nuclear fuel by nuclear power station operators. As the economics of nuclear fuel production are driven by market prices for mining and processing of fresh uranium, the sale value of our uranium inventory can change markedly over time.

Some of our uranium, especially reprocessed uranium, may need treatment or specialised fuel-cycle facilities to enable its reuse, which can impact reuse economics.

We are continuing to seek opportunities to recycle our uranium materials where it is economical to do so. Working with the UK Government, in line with its policy, and other nuclear companies, we will support the development of options for the recycling of our uranium through new UK fuel-cycle facilities and its reuse in future reactors.

Applications for our reuse of uranium, especially reprocessed uranium (MDU and TPU), outside the nuclear fuel cycle are currently small scale and limited.

In its recent review of our work, the Committee on Radioactive Waste Management recognises that some of our uranium will require disposal. Our operating company, NWS is working with other UK uranium owners to develop potential approaches to disposal, should reuse be economically unviable.

In line with its strategy, we are working closely with the MOD to determine whether it wishes to transfer ownership of uranium materials with no further strategic use to the NDA, under appropriate agreements, for management alongside our materials. This would reduce the long-term costs of managing these materials and enable the MOD to focus on its primary mission.

Delivery

We have been consolidating our uranium from various NDA sites to Capenhurst over several years. Some uranium materials which are more highly enriched will be managed at Sellafield alongside similar materials.

Most of our hex is safely and securely stored at Urenco's Capenhurst site, with some at our Springfields site, where it is managed safely by Urenco Nuclear Stewardship and Springfields Fuels Ltd, respectively, under contract to the NDA. We have recently taken ownership from the MOD of a significant quantity of hex. This is being managed at Capenhurst as part of our broader inventory.

We are continuing our strategy with Urenco for transferring hex into modern cylinders and then de-converting it into a form of uranium oxide which is much less hazardous and more suitable for long-term management. We are working closely with Urenco on an opportunity to use an existing facility at Capenhurst to achieve this and will provide updates on this work. This approach could also enable the potential reuse of some of our material which would partly offset the costs for managing it. While we are developing hex treatment options, we are also working with Urenco to better understand the condition and improve the storage arrangements for some of the old and degrading cylinders that they manage on our behalf.

We own a small quantity of low uranium concentration residues that do not pose significant hazard but are unsuitable for storage. We are evaluating these residues to identify viable, cost-effective and environmentally responsible routes to uranium recovery for storage at Capenhurst or conditioning for disposal.

Capenhurst site

7. Integrated Waste Management

Objective: To drive mission progress through effective waste management and application of our Integrated Waste Management principles.

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

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 - final disposal operational

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 - final disposal operational

Waste management is at the heart of our overall mission. At our sites, waste management is changing to enable decommissioning and site remediation.

In the nearer term, we will ensure that we can continue to deal with higher hazard legacy wastes being retrieved from older, higher risk facilities. In the longer term, our waste management strategy will realise the waste prevention, minimisation, reuse and recycling opportunities associated with the larger volumes of low hazard radioactive and non-radioactive wastes that decommissioning will generate.

The diverse radiological, chemical and physical properties of our wastes give us a broad range of risks to manage today and for decades to come. We are implementing an Integrated Waste Management (IWM) system that provides a range of treatment, storage and disposal capabilities. This will ensure we make the right choices to deliver the right life-cycle solutions for all our waste. Sustainable and resilient infrastructure for radioactive waste management is crucial to enable us to demonstrate management of our nuclear legacy and support future requirements.

We have supported the development, consultation and publication of the UK policy framework for managing radioactive substances and nuclear decommissioning *(ref 11)*. This policy framework and our strategy provide a basis for our operating companies to implement risk-informed radioactive waste management. We will continue to support Scottish Government as they progress with their HAW policy review, utilising the expertise we have in the NDA group to deliver on specific commitments made in the Scottish Government HAW implementation strategy, which will help underpin updated HAW policy. We also have a wider role as leaders in radioactive waste management and embrace the United Nation's sustainability development goals (UNSDGs) as part of this leadership. We will work with non-NDA waste producers and our stakeholders to implement solutions that benefit the UK taxpayer (see ***8. NDA in the UK nuclear enterprise***).

We will continue to ensure that effective waste management plans are being safely implemented across our estate, with recognition of the need to manage risks and pursue opportunities across each site, our estate and, if appropriate, with other UK waste producers.

Depending on its radioactivity and whether or not it generates heat, radioactive waste is classified as High Level Waste (HLW), Intermediate Level Waste (ILW) or Low Level Waste (LLW). LLW includes the subcategory of Very Low Level Waste (VLLW). HLW is only present on the Sellafield site.

Our strategy

Our focus is to work with our operating companies to implement our strategic objectives more effectively to drive mission progress. We will capitalise on our One NDA group model and develop a waste management system that reflects the scale of our mission, keeps pace with decommissioning activities and matches the volumes of waste generated.

We will continue to support high-hazard retrievals from our legacy ponds and silos at Sellafield, and wider retrieval challenges across our estate. We also work closely with our Site Decommissioning and Remediation teams to ensure we deploy a decommissioning approach that considers the properties of the waste, and that, as the nuclear hazard on our sites reduces, we are applying proportionate arrangements to waste management.

Our strategy is to use a risk-informed approach to managing waste and seek solutions that help to optimise management through the lifecycle of radioactive and non-radioactive wastes (see ***Case Study: Risk-informed waste management)*** *(ref 21)*. This involves:

- Understanding the radiological, chemical and physical properties of the waste, the hazard posed and the risk of harm to people and the environment
- Using this information to inform plans for managing current and future arisings of radioactive waste
- Taking these hazards and risks into account when managing the waste to protect people and the environment.

We introduced IWM principles in 2016 to inform the development and implementation of our waste strategies and provide our operating companies with direction within a strategic framework. Based on our experience and learning from their use, we have reviewed and updated our principles, which are now as follows:

- A proportionate and risk-informed approach that ensures we adopt safe, secure, environmentally acceptable and cost-effective solutions, and management approaches that demonstrate value for money and are proportionate to the risk posed to people and the environment
- Supporting key risk and hazard reduction initiatives by enabling a flexible approach to long-term waste management
- Driving effective implementation by applying a clearer focus on delivering our mission, and realising wider opportunities and benefits across the NDA group
- Applying the Waste Hierarchy when making waste management decisions, promoting timely characterisation and segregation of waste to deliver effective solutions
- Investing in sustainable and resilient infrastructure which optimises the economic, environmental and social value of managing radioactive waste across its lifecycle, enabling us to decommission our facilities, manage our legacy and continue to benefit from the use of radioactive materials
- Considering the entire waste management lifecycle, including how waste management is needed to support other NDA strategic or wider UK initiatives such as large-scale nuclear decommissioning programmes
- Applying a systems approach to our group infrastructure, by considering its overall flexibility in enabling us to respond to the demands of our mission and coordinating the implementation of the capabilities we require.

These principles will help us to optimise our waste management. Our waste management options will be subject to regulatory scrutiny and need to meet best available techniques (BAT)/best practicable means (BPM) and as low as reasonably practicable (ALARP) requirements.

The Waste Hierarchy continues to be an important cornerstone of our strategy, which means preventing and minimising waste from existing and new facilities is an important objective. However, while disposal is the least preferred option, without disposal capability we would be unable to complete our mission.

Where we cannot avoid generating waste, we adopt the following broad approaches, managing waste through to:

- **Reuse or recycling** for waste that poses very little hazard or risk or presents an inherent value and could therefore provide opportunities to manage higher up the Waste Hierarchy

- Disposal near to the surface, which could include:

- Non-radioactive waste where there is no alternative management option

- Waste that requires disposal at an existing Near Surface Disposal (NSD) facility or potential new NSD facility, for example, the Low Level Waste Repository, the low-level waste disposal facility adjacent to Dounreay or through commercial permitted landfill for waste with limited reuse or recycle opportunities

- Disposal of less hazardous ILW in a suitable NSD facility, in Scotland. In England, Wales and Northern Ireland it would apply to less hazardous ILW currently destined for a Geological Disposal Facility (GDF) but could be suitable for disposal in a NSD

- Disposal at a GDF for the most hazardous waste that will require isolation and containment, for example, owing to the high concentration and/or long-lived nature of the radioactive content.

We take a flexible approach to adopting these routes and will seek alternative management options, such as decay storage, decontamination, and sort and segregation where these provide benefits (NDA strategic position on radioactive waste treatment: August 2023) *(ref 22)*. Investing in treatment techniques, and storage and disposal facilities, including through supply-chain partnerships, will enable us, through our operating companies, to optimise the lifecycle management of our wastes. This will lead to opportunities to reduce waste volume and divert some waste away from disposal routes, including reuse and recycling.

Our overarching strategic vision is the effective use of our cross-group waste management infrastructure as a system.

Recognising the major contribution of waste management to our overall nuclear liabilities, we aim to derive the maximum value from our current and future infrastructure through incremental improvements to our planned delivery and transformational solutions where there is a demonstrable benefit. As appropriate, we will engage with key stakeholders such as regulators, planning authorities and local communities. Our vision can be broken down to:

- Consolidation and asset care, maintaining and making best use of our facilities and pursuing consolidation opportunities to ensure we are maximising the capabilities of our overall waste management system

- Optimising future infrastructure to support retrieval, treatment, reuse, recycle, packaging, storage, transport and disposal, through enhancing our approach to ensure better value for money

- Maximising benefit across the waste lifecycle, ensuring that each waste management stage alleviates constraints or introduces opportunities elsewhere in the lifecycle, and supports the development of an optimised overall system

- Innovative approaches that deliver transformational strategies and solutions to improve our overall system and approach to waste management.

Q6.

Do our updated set of IWM principles reflect the nature of our mission and cover the key areas of focus for waste management?

7.1 Radioactive waste strategy

Objective: To apply risk-informed management of our radioactive waste in a safe, secure and proportionate manner to help deliver our mission.

Our Radioactive Waste Strategy published in September 2019 *(ref 23)* explains our key positions, areas for development and strategic direction, with a focus on:

- Planning and preparation
- Treatment and packaging
- Storage
- Disposal.

We are planning to update our Radioactive Waste Strategy *(ref 23)* following the publication of this strategy document. Through the development of this strategy and following public consultation, we will ensure continued alignment with the updated UK policy framework for managing radioactive substances and nuclear decommissioning *(ref 11)*, mature our radioactive waste objectives and provide more detail on strategy implementation. We will engage with a broad range of stakeholders to ensure that the strategy supports the NDA and wider industry.

As our strategy has matured, we have developed our waste lifecycle ***(figure 9)***. This provides a clearer focus on application of the Waste Hierarchy, showing less of a linear view towards disposal as an end point. It also recognises that an important part of our waste lifecycle is the generation of waste through decommissioning activities and retrieval operations.

Planning and preparation

Effective planning and preparation provide a foundation for applying IWM principles. At this early lifecycle stage, we identify preferred waste management approaches and opportunities to implement the Waste Hierarchy, i.e. focus on waste prevention, minimising waste, and opportunities for reuse and recycling.

Our operating companies use the NDA Value Framework *(ref 7)* when making waste management decisions and to engage effectively with stakeholders, including regulators and local planning authorities.

Waste characterisation is pivotal, informing the lifecycle of waste management, decommissioning and remediation activities. Continually improving our understanding of the properties, nature and quantity of our inventory and managing uncertainty enables us to deliver more effective waste management planning and decision making. Timely and proportionate characterisation and inventory management will help us to identify opportunities, deliver optimisation and increase operational confidence.

Developing a detailed understanding of the inventory is essential for effective and efficient treatment, packaging, storage and disposal. Nuclear Waste Services (NWS) produces the UK Radioactive Waste Inventory *(ref 19)* with oversight from the NDA and the UK Government.

Figure 9 - Integrated waste management lifecycle

The inventory is updated every three years and provides the best available information on all categories of radioactive wastes and materials.

We will review the Integrated Waste Implementation Plan Specification and Guidance *(ref 24)* to ensure it remains up to date and facilitates a clear transition from the NDA strategy to site implementation. This review will also consider industry views and regulatory requirements such as site-wide environmental safety cases and waste management plans.

Our disposability assessment process enables us to progress the decommissioning mission while managing the risk associated with disposal for current and future operations. NWS manages a disposability risk management process on behalf of the group to facilitate early engagement and risk mitigation. Our operating companies are collaborating and using processes such as this to improve strategic planning.

Treatment and packaging

Treatment

Treatment can involve multiple steps and a range of technologies at different points in the lifecycle, including:

- Sorting and segregation to separate, or keep separate, types of waste or material based on radiological, chemical and/or physical properties
- Size reduction to physically decrease the size of an item, for example, by cutting or crushing to make packaging or treatment easier
- Decontamination through a physical or chemical process
- Thermal/chemical/physical processes to change the waste characteristics to facilitate subsequent management steps, such as recycling or disposal
- Packaging and containerisation, the process of loading waste into a container suitable for handling, storage, transport and disposal
- Conditioning/immobilisation/passivation to change the waste form so the resulting waste product can be safely handled, transported, stored and disposed of.

The effective treatment and packaging of radioactive waste allow us to reduce overall waste volumes and maximise long-term package performance. Using a toolkit of waste-treatment options and a risk-informed approach to waste treatment gives our operating companies the flexibility to drive near-term implementation of our decommissioning mission. Treatment can help us to apply the Waste Hierarchy, for example, by enabling diversion, reuse and recycling.

Our operating companies need to consider the treatment demands of the NDA estate. We will support our sites to consider the role of treatment within an overall waste management system that meets the needs of our mission. We have undertaken a strategic review to understand the status, issues, risks and opportunities, and ensure we have a prioritised work programme which is focussed on enabling our core mission and delivering better value.

Recent work by Sellafield Ltd, the NDA and NWS shows that thermal treatment technologies can deliver significant benefit, particularly volume reduction. We will ensure that our operating companies undertake a full evaluation of thermal treatment use. Encapsulation is still a significant part of our mission, and we remain focussed on maintaining capability and developing alternative encapsulants that offer operational or long-term performance benefits.

HLW, which generates heat, is managed only on the Sellafield site. Our strategy for HLW is mature – using a vitrification process to enable long-term safe storage and onward disposal to a GDF. We anticipate this continuing until the late 2030s. However, we are exploring opportunities to complete vitrification sooner.

NWS provides access to a range of treatment services to help waste producers manage their waste throughout the lifecycle. We have also provided waste treatment for other UK producers of radioactive waste and will continue to investigate opportunities for consolidated treatment where this provides value to the NDA group, the wider industry and the taxpayer (see ***8. NDA in the UK nuclear enterprise***).

Packaging

The packaging stage involves the transfer of waste into containers that are designed to provide containment through subsequent phases of the waste management lifecycle. A waste package comprises the waste container, providing a physical barrier and enabling safe handling, the waste form which includes the waste itself and a form of physical or chemical containment of radionuclides and other associated hazardous materials, and the associated waste record. Waste package records are an essential component of a disposable ILW package.

Our strategy is for our operating companies to transfer waste into an agreed suite of containers throughout the waste management lifecycle, and to optimise our management, commercial and manufacturing approach through closer collaboration.

Containerisation is the process of packaging raw waste for storage pending pretreatment or transfer for treatment and/or disposal. It can help to accelerate decommissioning and hazard reduction, as demonstrated for the Magnox Swarf Storage Silo at Sellafield. Packaging can provide opportunities to store waste for a purpose and avoid foreclosing future options.

Storage

Storage is required where we are unable to treat or dispose of waste immediately. We must provide and maintain storage facilities until suitable treatment and disposal facilities are available. Recently, we have reviewed the status of storage across our industry and are pursuing opportunities to improve our approach. We expect our operating companies to consider their role in a group storage system that meets the collective needs of our mission.

We will investigate the benefits and boundaries of storing waste for a specific purpose rather than prompt treatment and packaging. This could include an appropriate time for radioactive decay which may change our management approach or enable us to use more suitable treatment routes.

As well as the long-term storage of wastes on the site of origin, consolidation of packaged wastes from several sites to a single location may be beneficial. For example, consolidation can release land for other uses (see ***4. Site Decommissioning and Remediation***), reduce hazard and security levels, help to optimise infrastructure use, and reduce the number of facilities we need to build and ultimately decommission. Making the best use of existing assets and investigating store consolidation opportunities, where available, has the potential to provide cost and schedule benefits.

We provide industry guidance *(ref 25)* on an integrated approach to the interim storage of HLW and ILW packages.

Inside an intermediate level waste store

Disposal

Disposal is the final stage of the waste management lifecycle and is the emplacement of waste into an appropriate facility with no intention to retrieve it.

Disposal is the least preferred option in the Waste Hierarchy and should only be pursued when all other options have been exhausted. We need a range of disposal capabilities to manage the variety of wastes, including on-site disposal, permitted landfills, NSD and geological disposal.

Our previous Strategy *(ref 2)* set out our disposal vision which would enable waste producers to select the most appropriate route to follow a risk-informed approach to disposal. The change in the UK and Welsh Governments' policies enables NSD for suitable, less-hazardous ILW in England and Wales, which is aligned with Scottish Government policy; the focus of the strategy is now implementing the disposal vision.

We need to ensure our overall disposal system is optimised in line with UK and NDA strategic objectives. The NSD programme will be implemented using a phased approach. NWS is currently focussed on the first phase of implementation which includes exploring, with key stakeholders including regulators, UK Government, waste producers, local authorities, and local communities, the potential for the optimisation of the LLWR site to accept some suitable, less hazardous ILW.

We recognise there are significant constraints associated with the disposal of radioactive waste in the LLWR, for example, the impact of coastal erosion. Therefore, to get the full benefits afforded by the updated policy we are investigating alternative solutions for the disposal of all radioactive waste that does not require disposal in a GDF. These alternative solutions include those on non-NDA-owned land, which could involve working with supply-chain partners.

NWS, on behalf of the NDA, is the organisation responsible for delivering a GDF, and it will continue to develop as an effective delivery organisation for geological disposal. The GDF siting process is ongoing.

The environment agencies' joint regulatory guidance for releasing nuclear-licensed sites from radioactive substances regulation *(ref 26)*, when all activities involving the generation and disposal of radioactive wastes have ceased, expects a range of options for radioactive waste management to be considered. In addition to conventional options for radioactive waste management, there are options for *in-situ* disposal and disposal for a purpose. We are considering this range of options and the applicability of them to our sites. We are currently progressing with the implementation of some of these options on our sites (see ***Case Study: Determination of Suitable Site End States*** *(ref 16)*.

Although we will investigate alternative approaches to disposal, where appropriate, we will also continue to work actively with our operating companies and the wider nuclear industry to establish new solutions for their wastes that minimise the need for disposal.

7.2 Liquid and gaseous discharges

Objective: To minimise the environmental impact of radioactive liquid and gaseous discharges to safeguard human health and protect the environment.

Our operating companies generate liquid and gaseous discharges during operations, decommissioning and remediation. These discharges must be managed alongside other radioactive and non-radioactive wastes Requirements for managing these effluents include:

- International commitments
- National policy expectations
- Legal requirements
- Conditions and limits within specific environmental permits
- Local commitments to best practices.

At the national level, the UK Strategy for Radioactive Discharges *(ref 27)* updates government policy and outlines how the UK will continue to implement agreements from the 1998 Ministerial Meeting of the Oslo and Paris Conventions (OSPAR) Commission *(ref 28)* to protect the marine environment of the North-East Atlantic. The update of this strategy will assess progress regarding the UK's implementation of OSPAR's North-East Atlantic Environment Strategy 2030 *(ref 29)*, adopted in October 2021 to cover 2020–2030.

Our strategy

We require our operating companies to implement the UK Strategy for Radioactive Discharges *(ref 27)* and comply with relevant UK legal requirements, and do not believe that a separate NDA strategy would add value. The strategy is driven by the following general principles:

- Use of Best Available Technique (BAT) in England and Wales and Best Practicable Means (BPM) in Scotland and Northern Ireland to prevent or minimise gaseous and liquid discharges and their impacts on the environment
- The unnecessary introduction of radioactivity into the environment is undesirable
- The preferred use of 'concentrate and contain' in the management of radioactive waste over 'dilute and disperse' in cases where there would be a definite benefit in reducing environmental impact
- The 'precautionary principle' which allows for decisions to be made in situations where there is evidence of potential harm in the absence of complete scientific proof
- The 'polluter pays' principle where those responsible for producing the waste bear the costs of prevention, control and reduction measures
- Recognition of the requirement for flexibility to ensure that hazard- and risk-reduction activities are not compromised.

If there is any significant change in our predicted discharges during decommissioning activities, we will engage with government, regulators and other stakeholders early to determine the appropriate way forward.

We worked with the nuclear industry to develop an aqueous waste management good practice guide, and will continue to collaboratively review, maintain and develop this document.

We are focussed on delivering our overall mission sustainably, and our operating companies are exploring ways to support this. We will continue to work across the NDA group and with regulators to develop more sustainable methods for managing these discharges.

Strategy development

The NDA will support the UK Government in meeting its OSPAR-related commitments and applying relevant UK radioactive discharge policies. The North-East Atlantic Environmental Strategy 2030 *(ref 29)* includes an objective to prevent pollution by radioactive substances, thereby safeguarding human health and protecting the marine environment. The aim is to achieve and maintain concentrations in the marine environment at near background levels for naturally occurring radioactive substances and close to zero for human made radioactive substances.

The UK's eighth BAT report was submitted to OSPAR in 2022, with the ninth report expected in 2028. The NDA will help in updating the UK Strategy for Radioactive Discharges *(ref 27)* as needed.

To better prepare for retrievals, decommissioning and treatment of legacy radioactive wastes, we will enhance our understanding of uncertainties – such as variations in the composition and volume of potential liquid and gaseous discharges, evolving regulatory or operational conditions, and unforeseen technical challenges – by implementing a structured lead-and-learn approach. We will also get a better understanding of non-radioactive discharges generated during construction and operation.

Delivery

Management of liquid and gaseous discharges remains the responsibility of our operating companies. They will seek to understand the challenges and uncertainties and identify opportunities to improve discharge management in accordance with the regulatory framework. This requires robust decision making based on a wide range of criteria, informed by UK policy and strategy.

7.3 Non-radioactive waste

Objective: To optimise our approach to and deliver sustainable solutions for the management of non-radioactive wastes across the NDA group.

This strategy covers wastes from a nuclear site that have not been contaminated radioactively and those with radioactivity levels so low that they are not regulated as radioactive substances and fall under non-radioactive waste legislation. This includes soil, concrete, demolition rubble, aggregate, granular material, packaging, paper and food waste. Our approach is to manage these wastes through our operating companies, considering the circular economy.

We will comply with the UK's well-established regulatory regime for managing non-radioactive wastes. Effective and efficient management of wastes is essential to delivering our mission, minimising environmental impact and ensuring regulatory compliance. Some hazardous wastes (known as special wastes in Scotland) require careful handling, processing and disposal, for example, asbestos, oils and solvents.

Our strategy

Waste management strategies have been developed at national, regional and local levels by the UK and devolved governments and planning authorities. Out of all the waste we will generate across the NDA group, it is our non-radioactive inventory where we have the greatest opportunity to reuse material. We expect our operating companies and their supply-chain partners to implement these strategies and demonstrate leadership in sustainable waste management.

Decommissioning and land remediation activities will create large volumes of non-radioactive waste, and we should be considering opportunities to manage these materials *in situ*. Where waste needs to be generated, we should see these materials as a potential asset with value, unless we can determine that they have no further use.

Our IWM principles apply to all types of waste. However, for non-radioactive wastes, including hazardous wastes, some additional practices apply:

- Ensuring the sustainable design of new facilities with waste prevention and minimisation in mind
- Working with, and learning from, the construction and demolition industry and other relevant companies outside the NDA group to adopt practices and technologies that generate reusable products and minimise secondary wastes while reducing overall costs.

We require our operating companies to follow these practices to help ensure full regulatory compliance. We also expect them to design, build and operate affordable and fit-for-purpose facilities sustainably. We will consider incentivising desirable waste management and circular-economy activities to eliminate avoidable waste by 2050.

Strategy development

Our strategy is mature. We will embrace the principles outlined in our Sustainability Strategy *(ref 30)* and recognise opportunities to reduce non-radioactive waste requiring disposal.

To evolve our non-radioactive waste management strategy, we will focus on the following areas:

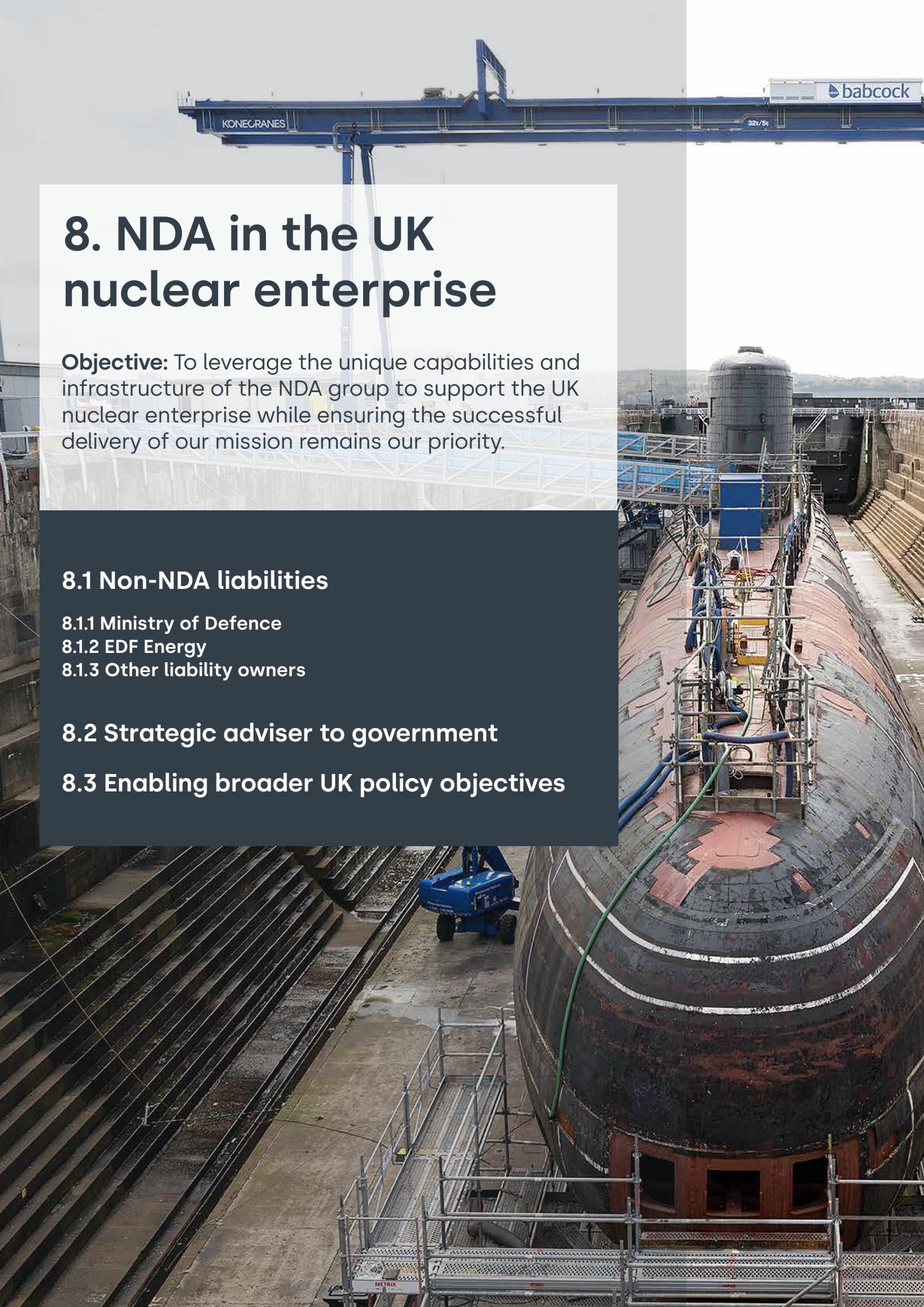
- Cross-group collaboration to identify and implement non-radioactive waste management opportunities, including sharing best practices and leveraging synergies across our operating companies
- Reducing landfill disposal, following the Waste Hierarchy, while aligning with government ambitions for zero waste to landfill, which include increasing reuse and recycling across the group and exploring alternative management solutions
- Controlled waste inventory to improve tracking and effective management of these wastes
- Cost reduction in non-radioactive waste management by promoting a mindset that avoids applying default approaches derived from the management of radioactive wastes to non-radioactive wastes, including systematically reviewing our practices to identify and implement cost-reduction opportunities while maintaining compliance.

Delivery

Effective delivery of our non-radioactive waste management strategy requires close collaboration between our operating companies, learning from other industries and seeking input, innovation and support from our supply chain. Our Integrated Waste Implementation Plans will also cover the management of non-radioactive wastes (see ***Planning and preparation***). These plans aim to reduce waste generation and incorporate the reuse of non-radioactive waste materials within the estate for multiple applications where the appropriate permissions and authorisations can be secured. For example, clean excavated materials can be used to fill voids and reduce the need to import materials.

The NDA group will continue to work with regulators, local planning authorities and communities to build trust and ensure transparency while fostering a collaborative approach to waste management. We will monitor and evaluate the performance of waste management practices regularly, using data to drive continuous improvement and ensure compliance while setting sustainable targets.

Q7.
Are there any specific opportunities or considerations you think we should take into account when developing solutions for deriving value from non-radioactive materials, such as through reuse and recycling?



8. NDA in the UK nuclear enterprise

Objective: To leverage the unique capabilities and infrastructure of the NDA group to support the UK nuclear enterprise while ensuring the successful delivery of our mission remains our priority.

8.1 Non-NDA liabilities

8.1.1 Ministry of Defence
8.1.2 EDF Energy
8.1.3 Other liability owners

8.2 Strategic adviser to government

8.3 Enabling broader UK policy objectives

As a result of our distinct nuclear heritage, the NDA occupies a foundational role within the UK's nuclear industry *(figure 10)*.

Since the publication of our previous Strategy *(ref 2)*, there has been a resurgence in the UK's civil and defence nuclear enterprises. It is therefore important to reflect on our role within the wider nuclear industry and the extent to which we should leverage our unique assets and capabilities to maximise value for money, while ensuring the successful delivery of our mission.

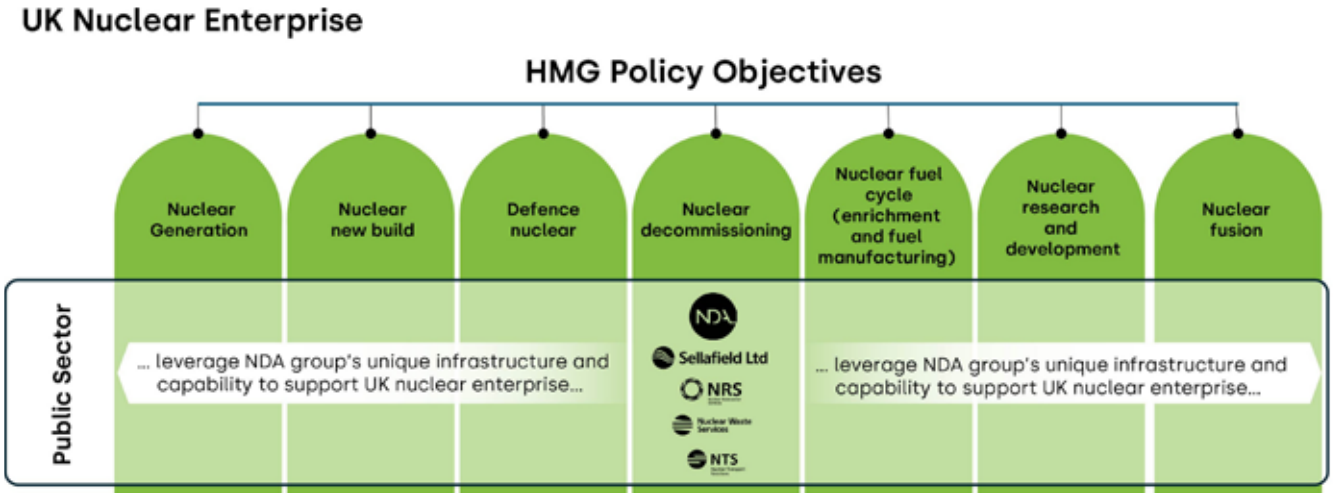


Figure 10 - The UK nuclear enterprise across the public sector

We already provide the UK nuclear enterprise with access to our infrastructure through the Low Level Waste Repository (LLWR), the Miscellaneous Beta Gamma Waste Store on the Sellafield site and a range of other waste treatment services. These are examples of how we support the management of non-NDA liabilities in a manner that complements delivery of our own mission.

In line with UK government policy, we recognise other capabilities that we could leverage to support non-NDA liabilities (see ***9.9 Information governance***) for the benefit of public and private sector entities. In each instance, we need to consider value to the taxpayer and any potential impact on the NDA's mission delivery. We will continue to use the NDA Value Framework *(ref 7)* and NDA Strategy Management System *(ref 6)* to support these assessments.

We recognise that our capabilities should, where appropriate, be used to support broader UK government policy objectives (see ***9.3 Security and resilience***), for example, energy security, counterterrorism and international relations. We will continue to work with our sponsoring department and other UK government departments to understand the broader value of supporting these opportunities and the potential impacts on our mission of doing so. We also have a duty to provide expert advice to the Secretary of State for the Department for Energy Security and Net Zero (DESNZ) and third parties (see ***9.2 Environment***).

Our primary focus is to deliver our core mission. Additional scope needs to be consciously managed with its impacts on the core mission mitigated appropriately. This will enable us to support the wider industry without distraction from our nationally important mission.

Q8.

Our strategy sets out the NDA's role in supporting the wider UK Nuclear Enterprise, while maintaining our focus on core mission delivery. Do you think the strategy clearly defines our position? Are there any additional areas we should consider or clarify?

8.1 Non-NDA liabilities

Objective: To identify, assess and optimise the management of non-NDA liabilities to deliver greater value for the UK.

Non-NDA liabilities are UK nuclear public and private sector liabilities that are not owned by the NDA ***(figure 11)***.

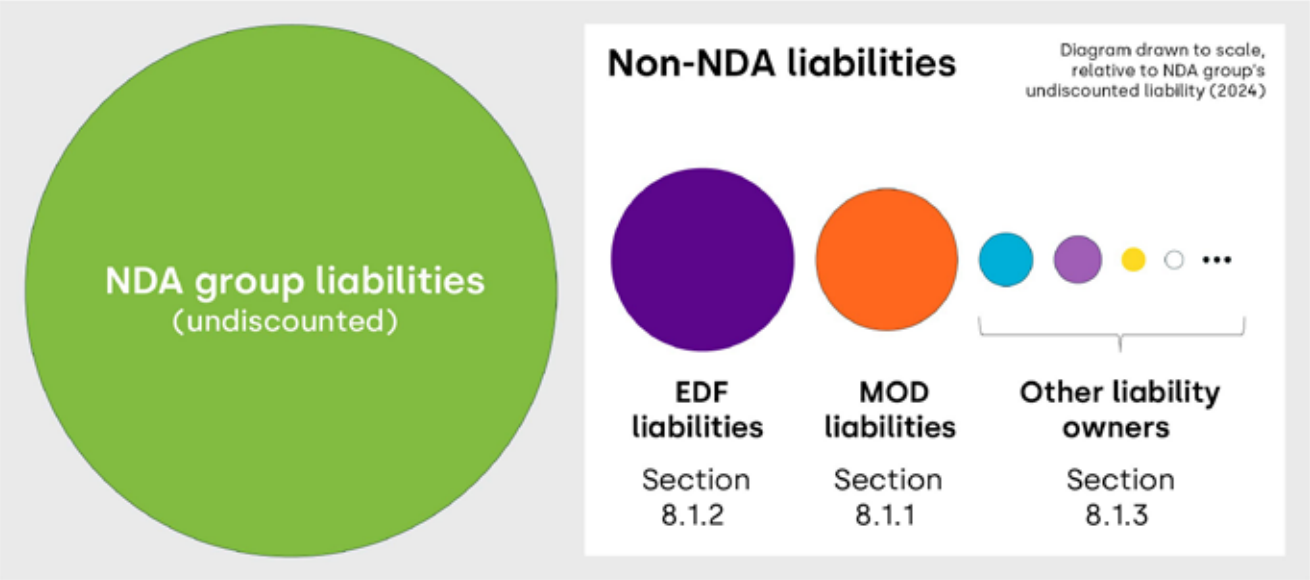


Figure 11 - Non-NDA liabilities

We are contracted to manage non-NDA liabilities for domestic customers, such as EDF Energy (EDF) and the Ministry of Defence (MOD), and overseas customers. We do this by providing a range of services including spent fuel management and radioactive waste management and disposal, and safe storage of nuclear material.

Some non-NDA liabilities from historic activities and inherited contracts are on NDA-owned sites, and it may be appropriate for the NDA group to manage these liabilities where this delivers benefit to the taxpayer by simplifying contractual arrangements.

Other non-NDA liabilities are on third-party sites. There may be opportunities to use our existing or planned facilities and capabilities to support the management of these liabilities where it offers value to the UK.

In all instances, the ownership of non-NDA liabilities remains with the third parties unless or until title transfer or another solution is agreed. Where we are contracted to manage liabilities, we will consider the liability owner's needs in developing our strategy and plans. The management of non-NDA liabilities is incorporated in the Strategic Outcome Specification (SOS) for our businesses and addressed through the appropriate strategic themes (see ***4, 5, 7 and 9***).

8.1.1 Ministry of Defence

Our strategy

Collaboration across the UK's nuclear enterprise is a national priority driven by a range of civil and defence initiatives. Through proactively collaborating across civil and defence, we will seek to manage the UK's current and future nuclear legacies in a coherent manner to minimise the burden on future generations.

We are working with the MOD to maximise synergies across the civil and defence enterprise. This covers the MOD's nuclear liabilities across its estate and enabling works required to support nuclear liability management. With the MOD, we will:

- Manage and deliver our existing contractual commitments, while simplifying arrangements where possible, and take on additional liabilities where appropriate
- Consider opportunities where there may be wider benefits to the UK and present these to government.

Strategy development

We are implementing our strategy for MOD liabilities. By continuing to work with DESNZ and the MOD, we will ensure we maximise strategic alignment for the management of nuclear liabilities across the UK nuclear enterprise.

Delivery

AWE Nuclear Security Technologies liabilities

The decommissioning and waste management challenges faced by the NDA and the Atomic Weapons Establishment (AWE) are similar and there are synergies in the management of our nuclear legacies. For example, AWE's Higher Activity Waste (HAW) is managed through the Waste Treatment Complex (WTC) on the Sellafield site. This offers many benefits such as avoiding additional capital expenditure for AWE to develop its own facility, reducing risks associated with this material, and maximising the use of our existing assets and the associated sustainability benefits this brings (see ***Case Study: Alpha Waste and Decommissioning*** *(ref 15)*).

We are working with the AWE to explore other potential radioactive waste management synergies, drawing on expertise from across the NDA group. Each of these opportunities will be assessed in line with our Strategy Management System *(ref 6)* and progressed through our normal governance processes.

Some MOD-owned nuclear materials are already managed alongside civilian inventories. To simplify ownership and management arrangements, and maximise efficiencies, material which is of no strategic use to the MOD (such as uranium hexafluoride) has been transferred to the NDA for long-term management.

The MOD is also generating new nuclear liabilities. We are providing expert advice to support the development of liability management strategies for future MOD programmes which consider synergies with NDA programmes.

Submarine Delivery Agency liabilities

Sellafield plays a critical role in the management of the MOD's nuclear liabilities associated with its submarine programme. Irradiated submarine fuel is stored at the site and the UK National Nuclear Laboratory (UKNNL) provides post-irradiation examination services through the Active Handling Facility.

The NDA and Sellafield Ltd have worked with the Submarine Delivery Agency to streamline the management of some of the MOD's legacy wastes on the Sellafield site. We will take on the title for some legacy wastes to enable co-management in line with Sellafield's existing programmes, to result in benefits to the UK

The MOD's submarine programme also has liabilities associated with the Vulcan Naval Reactor Test Establishment (NRTE) adjacent to Dounreay. Approval has been provided by the MOD and the DESNZ to start work on the potential transfer of Vulcan to the NDA (see ***Case Study: Vulcan***)*(ref 31)*.

The MOD is currently defueling and dismantling submarines at Devonport and Rosyth, respectively. We are advising the MOD on its optimisation of these programmes and will assess potential synergies with NDA programmes which may offer taxpayer benefit.

Facilitating collaboration - Link to Critical Enablers

To facilitate greater collaboration across the civil and defence nuclear enterprises, we are working across multiple organisations within the UK public sector. This includes establishing new information technology (IT) capabilities within the NDA group (see ***9.3 Security and resilience***) and creating new routes for secondments between organisations (see ***9.6 People***). We have memoranda of understanding with the MOD that articulate mechanisms for working between departments and enable collaboration while mitigating impact on the delivery of our core mission.

AWE drums

8.1.2 EDF

Our strategy

In June 2021, the UK government reached agreement with EDF to implement new decommissioning arrangements for seven Advanced Gas-Cooled Reactor (AGR) sites. These new arrangements have resulted in a restatement of the Nuclear Liabilities Funding Agreement and the NDA being designated with the responsibility for decommissioning the AGR sites once transferred to the NDA.

After electricity generation stops, the priority for the AGR stations is safe and efficient reactor defueling (see ***5. Spent fuel***). EDF will remain the site licensee, controlling mind and strategic authority for the sites until transfer. After transfer, NRS will become the licensee and permit holder and continue to optimise the decommissioning programmes.

We will:

- Manage and deliver our existing contractual commitments, while simplifying arrangements where possible
- Collaborate with EDF to facilitate efficient defueling of the AGR sites and the seamless transfer of sites from EDF to the NDA group
- Work with EDF and NRS to optimise the strategic alignment between the AGR and NRS fleet for future decommissioning, maximising synergies wherever possible (see ***4. Site Decommissioning and Remediation*** and ***7. Integrated Waste Management***).

Strategy development

The strategy for EDF liabilities is being implemented. We will continue to work with EDF to ensure we maximise strategic alignment of the AGR decommissioning programme with the broader NRS fleet and NDA group decommissioning programmes.

We will continue to work with EDF as the title owner for historic liabilities managed by the NDA group and seek to optimise their management within the UK nuclear enterprise.

Delivery

We have contracts with EDF to receive its spent fuel from AGR stations. There is sufficient capacity for the long-term storage of AGR fuel under all foreseeable scenarios associated with station lifetime extension (see ***5. Spent Fuel***).

The defueling of AGR stations has been underway for several years and is a well-practised operation. Hunterston B was successfully defueled by December 2024 and defueling is underway at Hinkley Point B and Dungeness B. This is managed through a collaborative programme known as the AGROP (AGR Operating Programme), which is proactively managed by EDF, the NDA, Sellafield Ltd and Nuclear Transport Solutions, which reports to a DESNZ-chaired Defueling Steering Panel.

Work is underway to prepare for the seamless transfer of the stations to the NDA after defueling. Plans are in place for the transfer of Hunterston B in 2026 (see ***Case Study: AGR Transition Programme*** *(ref 32)*).

8.1.3 Other liability owners

Our strategy

The UK nuclear industry has evolved over time and is made up of both public and private sector organisations. We recognise that there is a benefit to the NDA group in better understanding the full inventory of non-NDA liabilities and making our facilities and capabilities available to other public and private sector nuclear liability owners, in line with updated UK policy (2024) *(ref 11)*. Our support is provided on a case-by-case basis and is subject to our normal governance and assurance processes. Crucially, our core mission remains our priority, and any additional scope is consciously managed to avoid detracting from our delivery commitments.

We recognise the wider value to the UK of enabling appropriate use of NDA group capabilities to support the safe and efficient management of non-NDA liabilities. We will:

- Manage and deliver our existing contractual commitments, while simplifying arrangements where appropriate
- Where appropriate, collaborate with other liability owners to identify opportunities to optimise liability management.

Strategy development

To enable better strategic alignment with national policy and public value, we will:

- Work with government and stakeholders to improve understanding of the full inventory of non-NDA liabilities across the UK
- Explore opportunities to optimise liability management through the efficient use of NDA infrastructure and services
- Engage with prospective users of a Geological Disposal Facility (GDF) to support long-term planning
- Further develop commercial and technical frameworks to support access to NDA facilities, including the Miscellaneous Beta Gamma Waste Store and the LLWR/ Nuclear Waste Services (NWS) waste services framework.

We will continue to engage with public and private organisations, including GE HealthCare, Urenco, the Science and Technology Facilities Council, and the UK Atomic Energy Authority, to identify opportunities for the NDA group to support the industry where it offers national value.

Delivery

We will implement our strategy through structured and transparent arrangements that protect our core mission. In doing so, we will:

- Provide access to relevant NDA group facilities and services through agreed commercial arrangements
- Maintain NDA group planning to ensure the delivery of NDA mission objectives is not compromised by additional scope
- Provide expert support to other liability owners to help improve safety, environmental performance, and overall programme delivery.

Through NWS, we will continue to provide expert advice on disposability of waste in a GDF.

8.2 Strategic adviser to government

Objective: To advise the UK and devolved governments to support their ambitions for the UK nuclear enterprise.

We have access to world-renowned experts, extensive experience, a distinct heritage and scarce capabilities, coupled with an intergenerational mission, which equips us to objectively advise on current and future programmes within the UK nuclear enterprise.

Our strategy

We recognise, given the position we hold within the UK nuclear industry, our duty to provide strategic advice to UK government. We will advise the:

- DESNZ on the deconstruction of EDF's AGR fleet
- DESNZ on other priorities, for example, Great British Energy-Nuclear and international engagement
- Devolved governments to support policy development
- MOD on nuclear liabilities and continue working in line with our existing Memoranda of Understanding.

Strategy development

We will continue to provide expert advice and guidance across the UK nuclear enterprise, where appropriate. We will consider formalising strategic advisory roles and responsibilities with other liability owners where there is value for the UK.

Delivery

As the strategic adviser for the AGR transition and transfer, we provide advice and oversight to EDF and the DESNZ on defueling, deconstruction strategy and transfer (see ***8.1.2 EDF***).

In addition to providing strategic advice on nuclear policy, strategy and programme development, our Non-NDA Liability Assurance (NLA) team acts as an agent of the Secretary of State in relation to the administration of the Nuclear Liabilities Funding Agreement. This ensures the Secretary of State has objective expert advice in managing the drawdown of funds to support EDF's defueling and preparations for deconstruction of the AGR fleet. Our NLA team also reviews the decommissioning and waste management plans for Hinkley Point C and Sizewell C on behalf of the Secretary of State to ensure that waste management strategies are effective and environmentally responsible.

We support the MOD in the management of non-NDA liabilities (see ***8.1.1 Ministry of Defence***). In addition, we act as the UK Government's strategic authority on nuclear decommissioning and waste management, providing strategic advice on defence projects.

In support of the UK Government, we also engage with international organisations and industry stakeholders to strengthen the UK's position as a leader in nuclear decommissioning, by facilitating knowledge transfer and promoting responsible nuclear decommissioning worldwide (see ***9.14 International relations***).

8.3 Enabling broader UK policy objectives

Objective: To use our unique assets, infrastructure and capabilities to support the delivery of broader UK policy objectives, while ensuring successful delivery of our core mission remains our priority.

We are frequently called on to engage with public and private sector organisations to support a range of UK policy objectives. For each request, we consider the value to the UK public sector and cost to the NDA of supporting additional scope.

Our strategy

Although we recognise the significant value we can contribute to other policy areas, it is imperative that the successful execution of our core mission remains our priority. Any additional scope identified will be rigorously assessed, prioritised and sanctioned through our internal governance forums (see ***8.1 Non-NDA liabilities***). We will:

- Manage and deliver our existing contractual commitments, while simplifying arrangements where possible
- Identify, assess and make decisions with due regard to the successful delivery of our mission
- Seek guidance from our sponsoring department, DESNZ, on scope over and above our core mission.

While our priority remains the effective decommissioning of our nuclear legacy, we will continue to collaborate with the UK and devolved governments where appropriate or directed to contribute to national objectives. This will involve:

- Engaging with liability holders as directed by DESNZ
- Assessing the impact of new policy objectives and maintaining communication with departments to ensure transparency and visibility
- Confirming UK government support and alignment with our mission, where appropriate.

Strategy development

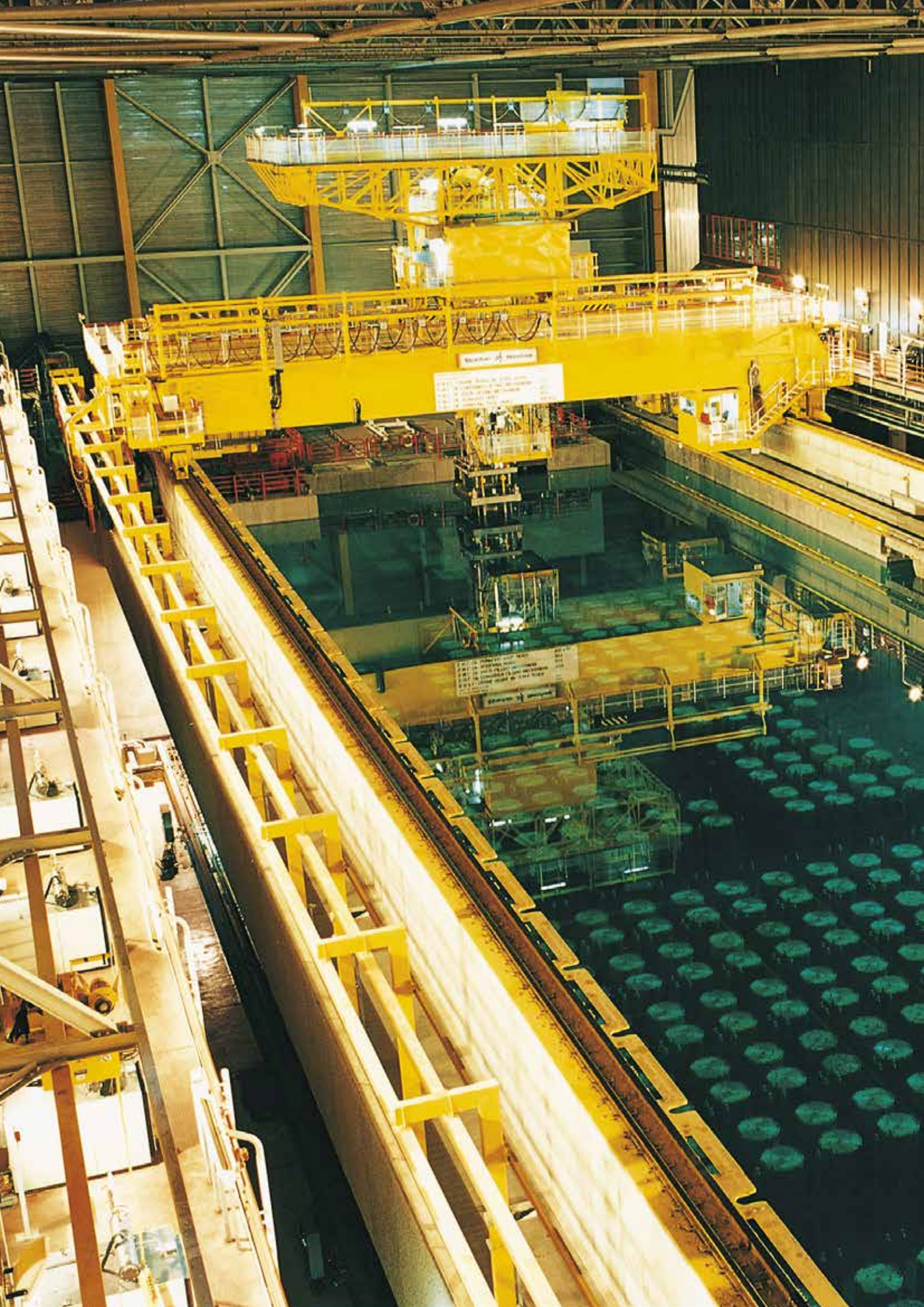
The NDA will continue to evolve its strategy in response to the UK's policy needs. This will include active engagement with stakeholders to support objectives such as developing new nuclear energy, meeting net zero commitments and national security.

Delivery

We help to achieve broader policy outcomes by engaging with the public sector. For example, we:

- Support UK government counterterrorism and national security objectives through programmes such as Operation Fieldfare (see ***Case Study: Operation Fieldfare***) *(ref 33)*
- Leverage our expertise and infrastructure to support DESNZ, the UK Health Security Agency and the UK regulators to mitigate risks and ensure public protection through initiatives like National Arrangements for Incidents involving Radioactivity
- Engage with stakeholders to develop the global nuclear supply chain, supporting domestic and international markets, and helping to foster a resilient and sustainable supply chain for the UK nuclear industry (see ***9.14 International relations***)
- Support the Department for Education through the Alpha Resilience & Capability (ARC) programme which seeks to sustain and enhance the UK's world-leading alpha skills capabilities, and contribute to the UK Nuclear Skills Taskforce, aimed at developing critical expertise in nuclear decommissioning (see ***9.6 People***)
- Identify where it is feasible for us to secure access to radionuclides to improve space industry and radiopharmaceutical research
- Work with owners of UK liabilities abroad, for instance, collaborating with the Science and Technology Facilities Council to support the development of a decommissioning plan for the Institut Laue–Langevin, France.

Hartlepool AGR



9. Critical Enablers

Objective: To ensure that we have a stable and effective operating environment with the essential capabilities, conditions and resources to deliver our mission.

The earlier sections (Site Decommissioning and Remediation, Spent Fuel, Nuclear Materials and Integrated Waste Management) outline what we aim to achieve. They are about ensuring that we make the right strategic decisions to deliver our mission – we call this 'doing the right thing'. However, we recognise that we can only be successful if we have the right strategies, which we call Critical Enablers, to provide a stable, integrated and flexible environment in which our core mission can succeed.

The Energy Act (2004) *(ref 1)* placed a responsibility on the NDA to develop skills, carry out research, development and innovation, engage with our stakeholders, develop the supply chain, operate with due regard to the socio-economic circumstances within our local communities, have regard to the need to safeguard the environment, protect people from risks to their health and safety, and preserve nuclear security.

Several of our Critical Enabler strategies respond to our highest group strategic risks and require group focus and attention. These include ***Health, safety and wellbeing***, ***Asset management and continuous improvement***, ***Security and resilience***, including ***Cyber security, Commercial and supply chain***, and ***People***.

Our Critical Enablers also include topics which are important to mission delivery and are well developed and being implemented, such as ***Environment, Transport and logistics*** and ***Information governance***.

Our strategy

Even the most robust strategies can only deliver results if they have sound foundations. The Critical Enablers are those key strategies that:

- **Underpin delivery**, providing the necessary expertise, infrastructure and governance so that, once we have identified what needs to be done, we can execute it in the most efficient, safe and responsible way
- **Reflect our responsibilities**, to ensure that as a public body we work transparently, engage local communities, meet the highest standards of health and safety, and support environmental sustainability
- **Keep us agile** so we can adapt to a changing operating environment, and new technologies, security and resilience requirements and government policies.

Our Critical Enabler strategies differ in maturity and urgency. We remain open to adjusting how they are structured, to ensure we respond effectively to our evolving mission and regulatory context. In this revision of our Strategy, we have updated some Critical Enabler strategies and identified new strategic objectives.

We have separated Environment from Health, safety and wellbeing, to reflect the growing complexity and importance of environmental stewardship and to provide a more focussed approach to protecting people and preventing harm.

Sustainability is now hardwired into all our strategic thinking (see ***2. Our approach to strategy***). We have reflected this approach by incorporating sustainability within each strategic theme rather than keeping it as a separate Critical Enabler.

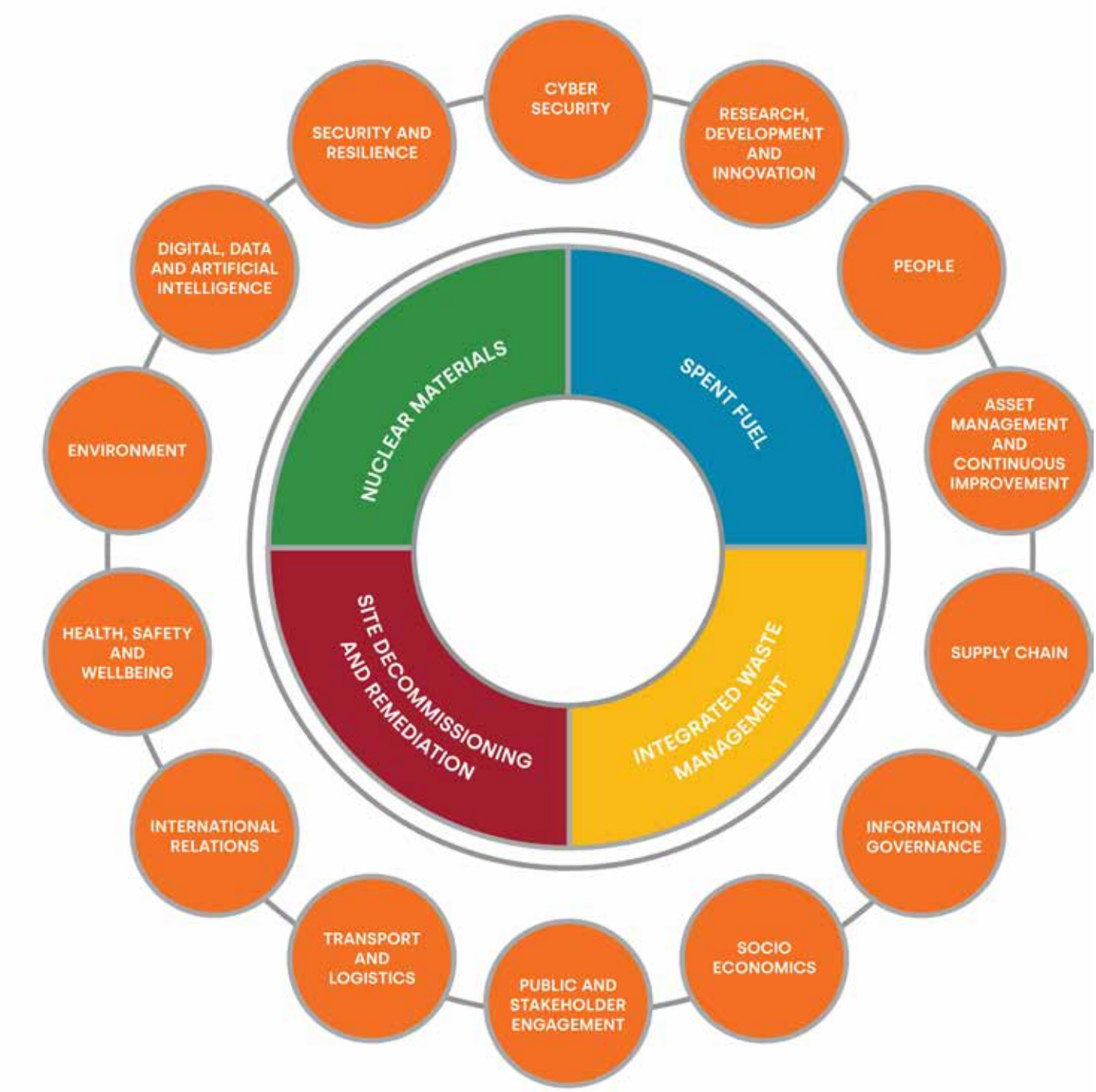


Figure 12 - Critical Enablers

We have expanded the ***Supply Chain Critical Enabler*** strategy to acknowledge the wider role that commercial management has within the NDA beyond supply chain, such as the increased significance of contracts and revenue. This broader Commercial and supply chain strategy recognises the full commercial lifecycle and encapsulates the opportunities presented by cross-group working.

We have combined ***Asset management and continuous improvement*** into a single Critical Enabler to reflect the close interplay between asset lifecycle management and continuous operational enhancement. By aligning these disciplines, we can embed best practice more consistently across the NDA group, to enable safer and more efficient use of our assets throughout their lifecycle while accelerating mission delivery.

We have also identified the need for a new Critical Enabler strategy to cover ***Digital, data and artificial intelligence***. In line with the UK government's digital and AI strategies, this highlights our transformation towards a 'digital-first' culture, an integrated group approach to data exploitation and the potential for artificial intelligence (AI) to accelerate mission delivery.

Q9.

Our mission and strategy delivery is underpinned by our Critical Enablers.
Do you agree with the proposed Critical Enabler Strategies and that we have focussed on the most important issues in each topic? Are there further suggestions you might have for the NDA to consider, whether general or on a specific Critical Enabler?

Supporting the mission

Together, our set of Critical Enabler strategies ***(figure 12)*** give us the tools and stability to progress our strategic themes and stay focussed on delivering value to the taxpayer. As our mission develops and external conditions shift, we will continue to refine and update these Critical Enablers, to make sure that they remain fit for purpose and responsive to emerging opportunities and challenges.

This approach allows us to build on shared experiences, streamline ways of working, and harness economies of scale to ensure that we uphold the highest standards of safety, security and environmental stewardship, while delivering on our responsibilities to local communities and future generations

9.1 Health, safety and wellbeing

Objective: To deliver our mission, while improving health, safety and wellbeing management across the NDA group.

The Energy Act (2004) *(ref 1)* requires us to have measures for the protection and safety of people, to secure the adoption of good practice, and to encourage and support activities that benefit the social or economic life of communities living near our sites.

To succeed in our mission, we must stay attuned to the evolving risk landscape. We will continue to support our operating companies and uphold safety standards, while prioritising prevention to minimise harm, and using proportional risk management to concentrate on the most critical areas.

Our strategy relies on collaborating with our operating companies and stakeholders to find the best practices for preventing harm to people and the environment during the delivery of our mission.

Our strategy

The aim of our strategy is to improve health, safety and wellbeing management by:

- Providing a focus on the actions needed to prevent harm proactively
- Ensuring that risks are prioritised in an environment where hazards and hazard levels change frequently (including nuclear, radiological and major accident hazards)
- Driving high standards with our operating companies such that we, as a group, are aware of and encourage use of best practice
- Ensuring that people are at the heart of our decision making in everything we do as a group.

Strategy development

For our health and safety strategy, we will:

- Build a strong and questioning safety culture, through collaboration with our operating companies, to provide an assurance environment that allows all participants to be candid in their view of safety risk management and feel psychologically safe to do so
- Commit to a continuous cycle of improvement and maintain our preventive forward look to reduce injuries and harm, including continuous horizon scanning to ensure emerging risks are identified through our routine interactions with operating companies and assurance activities, even if harm is reducing or absent
- Report meaningful key performance indicators and continue to work with our colleagues to provide a greater range of indicators
- Require highly skilled, experienced and competent individuals to implement the strategy and provide an ongoing commentary of performance to stakeholders such as leaders, safety committees, operating companies, the NDA board and the UK government.

Our wellbeing strategy is to:

- Drive our three-pillar leaders–people–communities framework
- Enable and empower people in our business to do the right thing for them and their teams.

Delivery

We will deliver our health and safety strategy through agreed assurance actions and activities, adapting them periodically to address emerging risks and assurance findings. Annual targets will be set for injury performance, improvement plan delivery and assurance activities. This will include the monitoring of our operating companies' assurance and improvement plans and providing feedback.

We will work with our operating companies to agree key performance indicators, providing a true measure of progress in safety management. This will also support the development of our processes, ensuring our strategy remains relevant and adapts to change.

Our competent people will deliver an assurance plan aligned with the expectations of key stakeholders, including our operating companies, the NDA Leadership and Executives, UK Government, the Office for Nuclear Regulation and the Scottish Environment Protection Agency.

Our wellbeing strategy will be delivered via our wellbeing centre of excellence and associated governance, including through:

- Delivering the nine strategic goals that underpin the strategy ***(figure 13)***
- Meeting ISO 45003:2021 requirements by the close of the first phase
- Publishing a second phase and associated tactical delivery plan
- Initiating and continuing the journey to Wellbeing by Design
- Clearly demonstrating through the way we train and develop our wellbeing leaders that good wellbeing management is a core part of our operational approach
- Continuing to monitor our agreed key performance indicators, benchmarking the journey and successes.

Figure 13 - Our strategic wellbeing goals

9.2 Environment

Objective: To protect and enhance the environment now and for the future, while maximising the environmental benefits of delivering the NDA's mission.

We are committed to delivering our environmental remediation programme with care for people and the environment. This means achieving the best environmental outcomes in the context of mission progress and value for money.

As a world leader in nuclear decommissioning, we have a responsibility to protect and enhance the environment, which involves reducing often-complex environmental hazards to ensure delivery against national and international obligations.

Our strategy

The environment strategy enables our mission by directly supporting our environmental obligations and commitments and supporting good planning and decision making. It enables us to manage operational environmental risks while protecting and seeking to enhance the environment. By doing this, we aim to retain stakeholder trust, allowing our mission to progress, while delivering positive environmental outcomes and helping to meet government targets.

Strategy development

As illustrated in ***figure 14***, our environmental strategy is to:

- Act on climate change
- Protect and enhance nature
- Value natural resources
- Prevent pollution, reduce environmental risk and remain compliant.

Acting on climate change

We have reduced Scope 1 and 2 carbon emissions[1] since the publication of our previous Strategy *(ref 2)*. Over the next five years, we will focus on refining and delivering our roadmap to achieve net zero emissions by 2050[2] driven by ambitious carbon-reduction targets, alongside continued progress in generating low-carbon power, reducing travel impacts and implementing effective carbon reduction measures across our operations.

We are implementing industry good practice for carbon reduction throughout our work. This includes taking opportunities to design out and minimise carbon from construction, operation and demolition, and adopting the Construction Leadership Council Five Client Carbon Commitments *(ref 34)*.

[1] Scope 1 emissions are direct carbon emissions from sources owned or controlled by the NDA; Scope 2 are indirect emissions associated with consumption of purchased electricity by the NDA.

[2] We also recognise that Scotland is working towards carbon net zero by 2045.

In decommissioning the UK's earliest nuclear sites we are successfully solving a unique multi-generational challenge, reducing complex environmental hazards, to protect and enhance the environment now and for the future

Figure 14 - Our environmental vision

Our carbon management plans will align with site strategies and decommissioning plans. We will optimise energy use to deliver best value for taxpayers with intelligent provision of the energy required to deliver our mission. Scope 3 carbon emissions[3] contribute significantly to our carbon footprint and we will work with our supply chain to drive down these emissions.

We will continue to improve our carbon-footprint measurement and forecasting. We will also develop a strategy for offsetting residual carbon beyond 2050 through the removal of carbon from the atmosphere.

We will need to ensure that we are resilient to climate change impacts to minimise disruptions to the mission and protect our people and the communities we work within. We will do this by developing plans to help us safely adapt to climate-change impacts and by continuing to learn within the group and externally.

Protecting and enhancing nature

We will build on our understanding of natural capital to inform land use/stewardship decisions that enable our mission while protecting and enhancing nature. We will integrate biodiversity into mission delivery, ensuring compliance with our biodiversity duties and supporting government nature policies and recovery targets.

[3] Scope 3 emissions are other non-Scope 2 indirect emissions, such as those from the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or directly controlled by the organisation, electricity-related activities (e.g, transmission and distribution losses), outsourced activities and waste disposal.

As we develop infrastructure across our sites, we will consider nature in land-use decisions, aiming to improve biodiversity to more than offset any losses. By partnering with local authorities and stakeholders, we will create opportunities for nature and communities to thrive while advancing our mission. Our Nature Recovery Plan *(ref 35)* will guide our commitment to protecting and enhancing nature across the NDA estate.

Valuing natural resources

We will apply circular economy principles (avoid, reuse, repair, repurpose and recycle) alongside the proportionate application of the Waste Hierarchy when making decisions. This will help to minimise environmental impacts through the effective use of the large volumes of materials we will generate during decommissioning and which we will require for site development and remediation.

Preventing pollution, reducing environmental risk, remaining compliant

Reducing environmental risk is central to our mission, and we must remain compliant with complex environmental permits that aim to drive pollution prevention and minimise impacts. We will engage proactively with our regulators and other stakeholders to achieve these fundamental goals and deliver the best outcomes for the environment.

Delivery

Our environment strategy supports our mission by ensuring compliance, good decision-making, environmental protection and delivery against other environmental obligations. Although day-to-day operations are managed by our operating companies, the NDA sets high expectations for performance, good practice and continuous improvement, working closely with them and regulators to reduce environmental risks.

We will adopt sustainable development principles, focussing on a low-carbon future, reducing resource use, minimising waste, and protecting and enhancing our environment, including biodiversity and water resources and quality.

Collaboration across strategic themes and with partners is key to maximising environmental benefits. We will work in accordance with ISO 14001 and continuously improve our processes. We will develop, deliver and monitor against a detailed environmental plan and continue to use and develop environmental key performance indicators to measure our performance.

To support our strategy, we will focus on:

- Understanding our environmental impacts, risks and opportunities to inform our actions
- Embedding environmental considerations into our culture and mindset
- Growing environmental knowledge and skills within our workforce and investing in new people
- Embracing innovation and technology to address complex environmental challenges.

9.3 Security and resilience

Objective: To provide proportionate security and resilience solutions throughout the decommissioning lifecycle.

Security is a fundamental element of all civil nuclear operations. As a signatory of the International Atomic Energy Agency (IAEA) Convention on the Physical Protection of Nuclear Material, the UK is committed to protecting nuclear facilities and materials in use, storage and transport.

Our security stance is informed by an annual UK government-reviewed threat and risk assessment for civil nuclear sites. We continue to enhance our security and resilience (SAR) arrangements to meet government risk expectations while adapting to evolving threats.

Working under outcome-focussed regulation, we will continue to review SAR regularly throughout the decommissioning lifecycle. Our dynamic approach to the provision of high-quality proportionate SAR considers all risks that may impact the NDA mission delivery.

Our strategy

Our current SAR strategy aligns with the government's security strategy, national regulations, international agreements and good practice guides. It leverages collaboration across the NDA group to improve our collective SAR arrangements.

We want to become the leading UK SAR organisation, operating transparently and addressing lessons effectively to continuously improve the civil nuclear sector's SAR capabilities.

Strategy development

Across the NDA group, bespoke requirements are needed to deliver proportionate risk mitigations to protect a varied portfolio of activities. Building on work completed under our previous Strategy *(ref 2)*, we will identify and deliver innovative security solutions (***see Case Study: Remote Monitoring of Sensitive Sites***) *(ref 55)* that provide pragmatic and flexible approaches supporting our mission. Our strategy will concentrate on five key areas:

- Delivering proportionate risk-based SAR solutions to support our mission. We will continue to challenge the status quo by regularly reviewing our SAR arrangements. Through the development of strong security cases, we will adopt a dynamic approach to SAR delivery to protect our assets. We will build on innovation trials conducted under our previous Strategy *(ref 2)* and, where appropriate, use new technologies to supplement, support and enhance SAR capabilities and potentially replace existing security solutions as risk reduces during the decommissioning lifecycle.
- Improving SAR culture. We will continue to develop and encourage improvements in our SAR culture by, for example, supporting group initiatives and sharing learning. This work extends across national boundaries, to support international nuclear security initiatives led by the Department for Energy Security and Net Zero (DESNZ) and the IAEA.

- Providing assurance that our SAR measures are fit for purpose. We will use the security assurance model (SAM) developed under our previous Strategy *(ref 2)* to deliver our obligations under the Energy Act (2004) *(ref 1)*. The SAM provides a detailed methodology for assessing a range of SAR activities, including security aspects that sit outside regulations.
- Supporting national resilience response and recovery capabilities. We will continue to support government departments to improve national response and recovery capabilities and contribute to local and regional resilience forums.
- Monitoring and adapting risk mitigations to manage the impact of emerging threats. The COVID-19 pandemic demonstrated the need to adapt working practices to meet unforeseen challenges. Geopolitical issues continue to change with concerns over sustainability, climate change, international unrest and conflicts, each with a potential impact on the delivery of our mission. We will monitor events and ensure the SAR aspects relating, for example, to supply chain security and resilience of supporting goods and services, are considered with contingency plans to ensure business continuity.

Delivery

To deliver the SAR strategy objectives, we will need to ensure effective engagement internally, with the NDA group SAR community and external stakeholders such as the Office for Nuclear Regulation (ONR), DESNZ and local resilience forums.

The delivery plan includes a SAR assurance programme that uses the SAM to assess the NDA group against identified and quantifiable criteria.

In addition, we will continue to provide a service that assures that our supply chain community has sufficient measures to protect our assets. This initiative greatly reduces supply chain security risks through shared service capability. We will further develop this service to consider the threats, vulnerabilities and risks from component parts and commissioning services.

We will support the NDA group SAR community through representation at government forums and regularly chair internal forums. Our current approach is to set NDA group expectations and standards, add value by providing a group-wide overview, and deliver assurance and improvements in all SAR activities.

9.4 Cyber security

Objective: Proactively deter, detect, defend against, recover from and be resilient to current and evolving cyber threats.

The National Cyber Security Centre highlights that we live in a dangerous and volatile world, where geopolitical tensions and technological change have the potential to threaten our economic security. Hostile states and non-state actors are acquiring increasingly sophisticated tools to disrupt our daily lives and businesses, including the civil nuclear industry. The rapid rise of artificial intelligence (AI) is accelerating change, compounding the threats and lowering the barrier to entry.

To address the cyber security threat, we have established a group-wide cyber services management capability supported by specialist supply-chain partners to ensure that we become an increasingly difficult target for those who seek to do harm to our businesses and sites. We will ensure that we can collectively protect ourselves, detect cyber incidents early and have mature response and recovery plans to minimise disruption to our core mission of nuclear clean-up and environmental restoration.

Our strategy

Our strategy is to develop a more secure and resilient estate with a collective defence through the sharing of knowledge, skills and costs. We will maintain and grow our group capabilities and aim to positively shape the defence of critical national infrastructure across the UK nuclear industry and the wider energy sector. Our cyber security strategy is aligned with government strategy being delivered by the National Cyber Security Centre, the Civil Nuclear Cyber Security Strategy published by the Department for Energy Security and Net Zero (DESNZ) and requirements set by the Office for Nuclear Regulation (ONR).

Strategy development

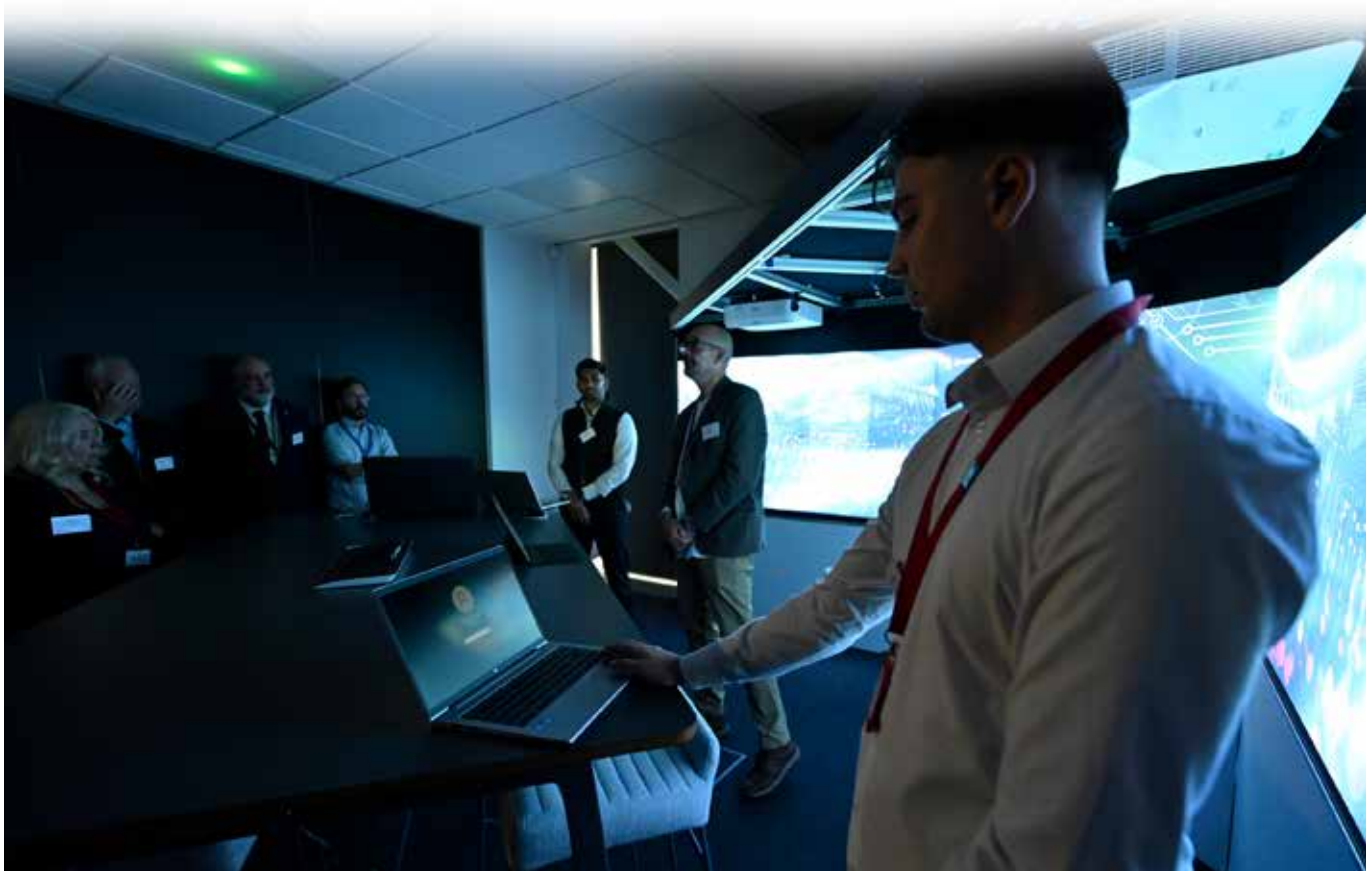
All the NDA group organisations will work together to deliver our strategy in a way that enables and empowers staff, partners and communities to use information and technology to safely achieve our shared goals. We will exemplify security leadership that promotes and embeds the awareness, behaviours, culture and risk management needed for our business and mission. Each operating company will maintain and continually develop strong and resilient information and cyber security that supports the use of information to achieve the mission, underpinned by local and group-wide services and capabilities.

Delivery

Our strategy is enabled by providing a modern, cost-effective and secure information technology (IT) infrastructure to ensure the ability to protect against a cyber attack (cyber security) and detect, respond and recover from the effects of a cyber attack (cyber resilience).

Cyber security and resilience are implemented through:

- Group Cyber Services that provide ongoing and new group-wide services to support the mission
- The Group Cyber Collaboration Centre (GC3), a collaborative centre of excellence unifying our approach to cyber challenges, research and industrial experience
- The Group Security Operations Centre (GSOC) and the Sellafield Security Operations Centre, which enable the group to detect and respond to threats
- Programmes, projects and continual improvement within all operating companies, working closely with information governance, operational facilities, IT and other key functions
- Our supply chain and partners who we rely on for delivering our mission, share our data with and require the active engagement and support of to deliver our strategy
- National and sector-wide bodies, including the National Cyber Security Centre as one of our key strategic partners.



Demonstrations in the Group Cyberspace Collaboration Centre

9.5 Research, development and innovation

Objective: To transform and accelerate the delivery of our mission through research, development and innovation.

Research, development and innovation (RD&I) is fundamental to ensuring efficient and cost-effective delivery of our mission. Through strategic investment, collaboration and sharing of good practice, nationally and internationally, RD&I can improve safety, security and sustainability, thereby reducing costs, timescales and environmental impact.

RD&I drives transformational change by helping us to:

- Understand the challenges and inform our strategy development
- Underpin our solutions and assure successful deployment
- Transform mission delivery.

The NDA has a duty under the Energy Act (2004) *(ref 1)* to carry out and share research in nuclear decommissioning, promote and enable related innovation, share good practice and develop key skills.

Collaboration across the NDA group and beyond is key to maximising impact, avoiding duplication and ensuring value for money. We are committed to developing the technical skills and expertise needed for the future, supporting our supply chain and ensuring rapid adoption of emerging technologies across the NDA group.

Our strategy

RD&I is an integral part of our programmes throughout our business. Our RD&I strategy has five focus areas:

- Identifying, prioritising and coordinating RD&I activities across the group to support decision making and build confidence in new solutions
- Horizon scanning to explore emerging trends and signals to harness future opportunities (see our ***Case Study: Grand Challenges***) *(ref 36)*
- Delivering a strategic portfolio of short-, medium- and long-term activities targeting group-wide RD&I needs and opportunities to enable innovation and adoption of new technology
- Collaborating with external organisations with shared challenges or where we can harness shared resources
- Identifying and supporting the development of technical experts of the future.

Collaborating and sharing learning to add value

We collaborate with UK RD&I partners to drive investment and innovation that supports our mission. This includes working with government organisations like the Ministry of Defence and UK Atomic Energy Authority (UKAEA), Innovate UK and the UK research councils, our regulators, national laboratories (such as the UK National Nuclear Laboratory and National Physical Laboratory), academia, the wider supply chain and other sectors. By influencing the national research agenda, we help ensure strategic coordination and effective use of UK R&D funding.

Sharing our R&D needs, progress and learning is central to maximising impact. We publish research priorities, share findings and amplify messaging with our collaborators. We foster cross-sector learning across the NDA group and are developing a benefits management approach to measure impact.

Delivering innovation

We are investing in innovation across the NDA group, understanding current approaches, spotting trends and system-wide challenges, sharing and signposting best practice, identifying common barriers, and helping to create the strategic focus, progressive environment and culture which enables innovation to thrive. Reward and recognition are key in enabling our people to innovate. We need to make it easier to innovate and disrupt the existing system to facilitate change and deliver value. We have published our Innovation Strategy *(ref 18)* that sets the direction for the group and are growing our group-wide in-house innovation management capability.

Through our collaborations, we provide sustained funding to foster the right environment for technical innovation to succeed. We bring innovators and end users together to accelerate deployment on our sites and develop a vibrant RD&I supply chain, particularly seeking to enable RD&I from small and medium enterprises. We work in partnership with other sectors, to access new technologies and suppliers, and promote cross-sector opportunities. We recognise that our RD&I portfolio underpins the competitiveness of UK organisations abroad in support of UK growth.

Building confidence in new solutions

Technical assurance is key in ensuring solutions work when and where they are needed. We want to accelerate the uptake of innovative approaches across the group and create an innovation culture linked to learning outcomes.

Robotics and artificial intelligence (RAI) technology has the potential to transform how we deliver our mission. We are collaborating across the group and externally to help us effectively exploit RAI and improve our existing decommissioning baseline. We have established a group-wide RAI RD&I strategy, programme and community which is developing our people, transferring learning and accelerating trialling and adoption of new approaches (see ***Case Study: Accelerating the Deployment of Robotics in Nuclear Decommissioning***) *(ref 37)*. Our collaboration with UKAEA, the University of Manchester and Sellafield has enabled new approaches to be used in otherwise hard-to-access environments, providing us with updated information to better plan decommissioning. Capturing the learning from these trials is key to harnessing benefits across the group and beyond.

Developing and attracting future experts

Decommissioning the UK's civil nuclear legacy requires a highly skilled and expert workforce in the NDA and our supply chain for generations to come. To ensure we have the right specialist expertise at the right time, we maintain a portfolio of postgraduate and postdoctoral researchers and provide industrial support and training to focus their research, maximise impact and encourage retention in the sector. Maintaining our strong retention rate from these programmes is a priority, and we are exploring initiatives to further integrate postgraduates into the workforce. By investing in future experts, we ensure the long-term sustainability of nuclear decommissioning and maximise the benefits of our research investments.

Strategy development

We will continue to:

- Optimise our group-wide approaches, including our university research strategy *(ref 38)* and our programme of demonstrator projects, which trial new technologies in high-radiation areas to prove they can meet our needs and deliver faster, cheaper and safer decommissioning solutions
- Strengthen and expand our collaboration opportunities with wider sectors, problem holders and new partners
- Actively attract new talent by working with recruitment teams and sector initiatives such as Destination Nuclear to promote specialist nuclear careers.

Delivery

The majority of our RD&I is delivered by our operating companies and their supply chains. We will maintain our group-wide, well-established governance and advisory routes for RD&I as integral parts of our overall delivery plans. These routes, including the NDA Group Future Challenge Board, the NDA Group Technology and Innovation Steering Committee, the NDA Group Innovation Council and the Nuclear Waste and Decommissioning Research Forum, identify common needs, risks and opportunities, and share good practice.

At the NDA, we retain strategic oversight and lead a strategic portfolio of needs-driven RD&I activities, targeting group-wide needs and opportunities to inform and develop strategy, encourage innovation and support key technical skills.

Our approach to delivering this strategy is flexible and has been revised to realise the benefits from working collaboratively across the group and beyond, learning from our outcomes. We continuously review the strategy scope and our requirements and adapt accordingly to deliver the programme. Our RD&I strategy supports the delivery of our driving themes and other critical enabling strategies such as people, information governance, security, environmental, safety and international relations.

9.6 People

Objective: To ensure we have the right talent, skills and culture to safely and efficiently deliver our mission.

The NDA has a legal responsibility through the Energy Act (2004) *(ref 1)* to maintain and develop a skilled workforce to deliver nuclear decommissioning and clean-up activities.

Since the COVID-19 pandemic, workforce expectations, working patterns, technological developments and societal considerations have shifted, presenting an opportunity to develop people for the benefit of our communities and mission delivery. The 2024 National Nuclear Strategic Plan for Skills *(ref 39)*, sponsored by the UK government, aims to recruit 40,000 additional nuclear sector workers to deliver civil and defence nuclear programmes. We have a strategic role in delivering this plan, allowing us to collaborate across the sector on skills workforce initiatives, and supporting government decisions on the broader sector such as new build and small modular reactors.

We also have a responsibility to ensure full compliance with site licence conditions. Safety and security, environmental, and information and cyber security standards are paramount, and we are ensuring our people strategy focusses on these areas.

Our people, skills, culture and values are essential enablers for mission delivery. This strategy will ensure that we can meet our immediate and long-term decommissioning objectives, while building a resilient, adaptable and skilled workforce for the future.

Our strategy

Our people strategy has five focus areas:

- Attracting, retaining and developing a high-performing workforce to ensure the right people are in the right roles at the right time
- Driving greater collaboration in people-related areas across the NDA group to provide greater value for money for the taxpayer
- Developing great leaders who can shape mission delivery, drive innovation, develop talent and embed behaviours and values to create a thriving cultural environment
- Leveraging technology and simplifying processes, including using digital and artificial intelligence (AI) technologies in people, processes and systems, and simplifying and standardising systems and processes across the group
- Developing strong partnerships and collaborations with trade unions, regulators and stakeholders.

We will continue to contribute to the socio-economic sustainability of the communities in which we operate, while striving to achieve a diverse, inclusive and highly effective workforce reflective of society.

Strategy development

We will work across the NDA group and the nuclear sector, and with our stakeholders, to ensure that we understand the skills demand and what our key people-related risks will be in the short, medium and long-term. For example, we need to understand the effects of:

- New nuclear and continued investment in defence increasing competition for key skills
- The uptake of science, technology, engineering and mathematics in primary, secondary, further and higher education, affecting our ability to recruit people with the skills we need to deliver our mission
- The pace and scale of technological and digital change, including the use of robotics and AI.

Delivery

We have developed five key focus areas to deliver our strategy commitments and ambitions:

- Attracting, retaining and developing a high-performing workforce to ensure the right people are in the right roles at the right time
- Continuing to focus on strategic workforce planning with short, medium and long-term plans which can inform recruitment, development and talent pipelines
- Identifying our critical, scarce and high-demand skills, including developing strategies and delivering interventions to develop and recruit to these roles
- Continuing to enhance succession planning across functions to build our internal pipeline of talent
- Building our jobs families, career pathways, and reward mapping and alignment
- Developing a best-in-class employee value proposition, enabling us to compete and be an employer of choice within the nuclear sector and beyond
- Supporting greater levels of mobility of people and work across the group
- Continuing our long-term commitment to group-wide programmes for apprentices, graduates and postgraduate recruitment
- Developing group-wide local, regional and national school engagement and outreach activities
- Driving greater collaboration in people-related areas across the NDA group to provide greater value for money for the taxpayer
- Developing group-wide services and structures to avoid duplication
- Adopting a best-athlete approach to specialist services or processes
- Developing centres of expertise to enable us to deliver the mission more effectively, safer, faster and ultimately cheaper
- Developing great leaders who can lead mission delivery, drive innovation, develop talent and embed behaviours and values to create a thriving cultural environment
- Developing and delivering high-quality performance management at all levels

- Embedding and enhancing our approach to succession planning at all levels and across all functions
- Fostering a culture of respect, inclusion and diversity
- Fostering a culture of innovation, sustainability, wellbeing and ethics

• Leveraging technology and simplifying processes, including using digital and AI technologies in people processes and systems, and simplifying and standardising systems and processes across the group

- Adopting AI, automation and technologies to improve employee experience and the effectiveness of the people functions
- Ensuring digital equity and quality of digital access for employees
- Ensuring governance is appropriate and fit for purpose

• Developing strong partnerships and collaborations with trade unions, regulators and stakeholders

- Reviewing and refreshing our arrangements with our recognised trade unions at local and national levels
- Working with our regulators to ensure that our shared goals and ambitions can be delivered through ongoing engagement and collaboration
- Working with UK and devolved governments and wider departments to deliver our mission, value for money for the taxpayer, and associated policy and strategic objectives
- Ensuring that we fulfil our commitment to our local communities, by providing opportunities for employment, development and education.

9.7 Asset management and continuous improvement

Objective: To optimise mission performance across the NDA group by embedding robust asset management and continuous improvement capabilities.

The Energy Act (2004) *(ref 1)* and UK policy on managing radioactive substances and nuclear decommissioning *(ref 11)* require us to apply safe, cost-effective and environmentally responsible asset management across the NDA group. We have committed to being a learning organisation that understands what impacts our mission delivery and secures solutions in a structured and systematic way. We meet this commitment by embedding sustainable good practice asset management and continuous improvement.

Our assets span all stages of the lifecycle, including those:

- Yet to be developed or newly acquired
- That are operational and essential to mission delivery
- That are and will be beyond their original operational lifetimes, that need to be effectively managed so they continue to function.
- No longer required and being maintained or demolished.

Optimising asset performance across their lifecycle – including systems, processes and people – is critical to our mission. By applying group-wide learning and continuous improvement principles, we enhance reliability, reduce risks and demonstrate value for money (see ***Case Study: NDA's Connected Infrastructure Project***) *(ref 40)*. This approach also strengthens compliance, safety, quality, data management and financial planning.

Embedding ISO 55000 asset management standards and industry good practices enables efficiency improvements across all group functions. Strengthening asset management aligns with our broader business strategies, including ***9.6 People,*** ***9.9 Information governance,*** and ***9.4 Cyber security***, to enhance workforce experience and operational effectiveness.

Continuous improvement applies across all that we do. Securing consistent systematic ways of identifying the need to improve across our group is fundamental to ensuring we understand what is affecting our ability to deliver our mission, and to delivering optimised solutions.

Using the One NDA approach across both asset management and continuous improvement will drive greater efficiency, maximise resource utilisation and deliver long-term benefits to the UK taxpayer.

Our strategy

To optimise mission performance, we will:

- Increase awareness and understanding of good asset management and continuous improvement practice, ensuring all individuals recognise their role in embedding these principles and practices in the way we work
- Establish a consistent asset management approach aligned with ISO 55001, enhancing capability across the group and enabling operating companies to pursue certification where beneficial and support informed, group-level decision making to optimise mission delivery, resources and financial efficiency
- Embed a single, accredited continuous improvement approach within all functions to improve performance transparency, identify gaps and opportunities, resolve root causes and improve mission performance

- This will reduce the risk of failure and accelerate decommissioning

- Where appropriate, we will integrate efforts across the group while maintaining clear accountabilities and leveraging leadership within our operating companies.

- Facilitate group-wide learning and collaboration, allowing problems to be solved once and good practice to become the new way of working
- Modernise our management systems, processes, asset data and information to make safety, risk and performance visible at the right time, to the right people, enabling us to make timely and more effective intervention decisions
- Integrate asset-management and continuous-improvement principles into all commercial relationships in collaboration with our commercial and supply chain teams
- Align asset-related decision making across operations, maintenance, engineering and project delivery functions to ensure new and existing assets meet mission needs from day one and throughout their lifecycle
- Collaborate with learned bodies, industry and supply chains to maintain an understanding of asset management and continuous improvement good practice to improve our capabilities and mission delivery
- Meet the regulatory desire to embed asset management good practice across the nuclear industry
- Maintain oversight and report progress supporting strategy development.

Strategy development

We will develop a group-wide implementation programme to deliver our strategy and realise associated benefits. This includes developing and continuously improving through-life asset management plans for critical and new assets to ensure value for money performance across their lifecycle. Our team will enhance performance management at all levels by learning from group experience, solving problems once and embedding good practices.

Through group-wide collaboration, we will roll out Digital Enterprise Asset Management improvements with internal and external learning that will optimise operational and business processes, leading to improved productivity.

We will ensure asset management and continuous improvement skills are developed and retained at all levels attracting necessary talent into our teams (see ***9.6 People***).

Working across the NDA group, industry and our supply chains, we will seek and develop good practice to improve asset management and continuous improvement. We will also explore opportunities to support our sustainability goals and reduce costs by optimising assets across their lifecycle.

Delivery

We will embed asset management and continuous improvement capabilities across the group using an outcome-focussed, benefit-driven, resourced and collaborative approach. We will also apply the lead-and-learn principle. Our approach will focus on improving mission delivery, productivity and value for money, and reducing asset-related risk. It will align with our sustainability goals and operating company plans.

There are many challenges in delivering this strategy, not least managing assets safely and securely while transforming the way we manage them and continuously improving overall performance. We will prioritise our work with reference to existing governance arrangements and through our group-wide governance forum.

Pipework removal on one of our decommissioning sites

9.8 Commercial and supply chain

Objective: To provide commercial excellence now and in the future through collaboration as One NDA, to deliver our collective mission.

The obligations set out by the Energy Act (2004) *(ref 1)* and commitments outlined in our previous Strategy *(ref 2)* remain, while we continue to improve effectiveness and process. We also recognise the need to evolve our strategy to meet new goals and developments across the NDA group.

In today's dynamic and competitive marketplace, our commercial function plays a pivotal role in enabling cost-effective mission delivery now and in the future. Our One NDA approach enables us to maximise benefits through group-wide collaboration, including on delivery solution design, procurement, contract and risk management, and revenue generation. We are working to address a skills shortage within the commercial profession, to improve resilience and delivery excellence.

The NDA group commercial profession must continue to mature and innovate to ensure we can meet the needs of the business within the context of our mission.

Our strategy

Our strategy recognises the benefits of One NDA working and focusses on people, processes and commercial opportunities. It addresses the importance of continuous improvement to further a holistic commercial life cycle approach aiming to deliver optimum value for money, including leveraging NDA estate spend.

There are four key themes:

- We aim to create a **highly capable and professional commercial workforce**, forming an excellent cross-group commercial function. This will be achieved by fostering a strong sense of community and sharing practices making the NDA a great place to work. We will help our people to be the best they can be by providing internal and external training. Workforce planning, recruitment, career pathways and succession planning will help create a capable, sustainable and resilient workforce.
- Our **'Digital by Design'** strategy seeks to maximise the use of digital technology to drive opportunities and manage risk by simplifying processes, procedures and governance. This will ensure effective and agile delivery, while addressing increasing cyber security risks.
- An emphasis on **whole-life commercial provision** will help enable successful mission delivery. We will leverage One NDA buying power and drive value by working collaboratively with the supply chain, aligning contract and supplier relationship management to ensure a robust, competitive and sustainable supply chain.
- Through **One NDA working**, we will simplify inter-group trading frameworks and maximise the value of knowledge, group assets and predictable delivery, remove barriers to entry, and simplify ways of working, leading to the NDA group being a customer and supplier of choice.

Strategy development

We are broadening our focus to recognise our commercial function in its entirety. A key emphasis will continue to be placed on the important role commercial plays in safety, as a key priority within the NDA, including ensuring nuclear safety and managing the risks associated with grey-market goods. Demand will be challenged; specifications will adhere to industry best practice and facilitate appropriate innovation.

At the NDA group, we spend approximately half our £4 billion annual budget within the supply chain – of which historically up to 38% has been with small and medium-sized enterprises (SME). We will continue to consider long-term contracts, SME engagement and zero value frameworks to improve the supply chain and deliver government targets relating to SME spend.

To improve and develop a diverse supply chain we must address supplier vulnerability, skills shortages, streamline process, minimise single-source procurements, build on Procurement Act 2023 performance reporting obligations and enhance supplier engagement. We will exploit the opportunities presented by the Procurement Act to realise the benefits of more efficient, transparent and sustainable procurement practices.

We are using non-nuclear specialists where appropriate to drive competition and value for the taxpayer.

Opportunities for cross-government working, such as the NDA's commercial representation at the DESNZ Nuclear Forum, address industry risk by providing visibility and the opportunity to improve our delivery.

We will continuously review our procurement and supply-chain guidance to ensure a resilient and ethical supply chain, including adherence to our modern slavery policy, and continue to support the NDA's carbon ambitions.

One of our key strategy developments is to encourage the operation of a One NDA commercial function. This will include collaborative procurements on behalf of multiple NDA entities. We will continue to develop our commercial team and build trust and confidence within the group and among our supply chain and stakeholders. To do so, we will focus on continuous improvement of commercial as a function.

Our new strategy also highlights the role and contribution of teams responsible for managing commercial contracts, business development and revenue generation. For context, in 2023/24, we managed nationally important contracts which brought in more than £700 million revenue. Within the business development team, we will help to deliver the NDA agenda, including exploiting revenue generating opportunities.

Delivery

We will build and maintain a highly competent, collaborative commercial team which will work together in an open manner to build trust and confidence across the group, and our supply chain and stakeholders.

As a One NDA function, we will collaborate to develop and deliver under a common set of strategic objectives and key projects, while deploying the standards necessary for working in the nuclear industry. This will encompass improving safety and supply chain quality to consistently provide right-first-time products and services.

We remain committed to developing a more diverse, robust and sustainable supply chain, with appropriate experience, delivering social value when securing a broad range of goods, works and services across the NDA estate. We will consider innovative solutions, leverage our commercial expertise, continue to invest in appropriate specifications and ensure early engagement to achieve better outcomes and value.

In delivering the NDA's mission, the commercial function enables and is part of assuring £2.3 billion of supply chain spend, representing approximately 58% of the £4 billion total group expenditure. The Business Development and Revenue team continues to contribute to this by managing a revenue portfolio.

Construction work at Sellafield

9.9 Information governance

Objective: To effectively manage and reuse knowledge and information assets in a compliant and secure manner to support NDA group mission delivery.

The NDA owns most of the legacy, current and future knowledge and information assets produced and managed by the NDA group. Through this strategy, we aim to help our operating companies to comply with statutory and regulatory requirements, realise the value of our information, promote its reuse and improve its accessibility.

We address key risks including:

- Loss of information and knowledge owing to an ageing workforce
- Obsolescence or unavailability of data within ageing information technology systems
- Loss of control of our information assets (through negligence or a cyber attack)
- The inability to deliver mission-critical objectives owing to the absence of appropriate records
- Reputational damage associated with one or all of the above.

Through delivery of this strategy, we aim to provide long-term preservation and accessibility of records, enabling us to fulfil our regulatory, legislative and policy obligations, reduce risks and costs, increase the opportunity to share and collaborate across the group and deliver our mission effectively.

Our strategy

Our information governance strategy is categorised into seven distinct, but interdependent, areas:

- Document, record and archive management to ensure compliance with relevant legislation, promote openness and transparency, and reduce risk and baseline costs, while adding value to each of our businesses
- New ways of working (business change) to improve working practices and business efficiency, achieved by supporting our businesses to adopt new and innovative ways of working, helping them navigate change, increasing the digital literacy of their staff, and making digital tools available to help them more effectively manage their knowledge and information
- Knowledge management – we will be proactive in sharing and encouraging continual learning and collaboration, including capturing, managing and transferring knowledge necessary to the decommissioning mission spanning more than 100 years
- Heritage and legacy management to identify, safeguard and celebrate the tangible and intangible assets, objects and memories of the UK's civil nuclear industry, the people who worked in it and the communities that supported it
- Information risk management to improve confidence in our ability to manage information risk effectively, including making sound business-led judgements, getting the balance right between a more secure 'need to know' posture and a collaborative 'need to share' approach, applied consistently within the group

- Information rights management to protect and be able to exploit information, knowledge and corporate memory, and to ensure that we comply with relevant legislation regarding copyright
- Information access management to promote openness and transparency with a broader range of stakeholders and to ensure compliance with the relevant statutory legislation.

Strategy development

It is vital that all information and knowledge assets in the group are created, managed, secured and reused effectively. Our enduring focus as we evolve this strategy will be on getting the right information to the right people when, where and how they need it. This will help us by enhancing operational performance, improving stakeholder confidence, and enabling improved and effective decision making.

We will continue to develop tailored group-wide services, such as those adopted at the Nucleus Archive: establishing and sharing effective and compliant processes, procedures and policies, engaging in collaborative procurement opportunities, and adopting standardised technologies and solutions. This is in accordance with the NDA's archive management obligations as identified in the UK government Policy document: Managing Radioactive Substances and Nuclear Decommissioning *(ref 11)* and other key regulations.

Delivery

To deliver this strategy, we will focus on the key areas outlined below.

Provision of group-wide services

We will:

- Maximise the benefits of working with our strategic partners and developing national capabilities such as the Nucleus Archive, including exploring the commercial potential of this service
- Simplify and standardise our approach to information governance and assurance by providing common tools and methodologies so we can collaborate more effectively, including encouraging the sharing of learning, experience, knowledge and know-how to ensure that our people know where and how to access information
- Evolve and improve our secure collaboration and communities platforms and tools for use by all stakeholders in the civil nuclear sector, including the supply chain and academia.

Continual improvement

Our work across the group will include developing information and knowledge-management improvement plans. We will also ensure that we standardise 'what good looks like', and exploit (and where possible incentivise) opportunities to collaborate on relevant activities and services.

Our New Ways of Working programme will contribute to our digital transformation by improving operational activities, determining how best to develop staff digital and data skills, streamlining processes and improving efficiency, and exploiting information, data and technology more effectively.

The skills challenge that we face in our sector means that we need to invest more in the proactive capture, management, sharing and reuse of our staffs' knowledge. This will be a priority, with the intention of creating a taskforce that delivers a cross-group programme building on the work of the Alpha Resilience Capability programme knowledge management and information management workstream.

Nuclear legacy and heritage management

We will:

- Working with a wide range of stakeholders, provide a framework to support the collation of, and access to, existing nuclear heritage and cultural records, and support a structured approach to the management of all future records
- Address the group's legacy data sets, identifying, preserving and adding value to improve searchability and access to information from within and outside the group
- Shape and grow the Nucleus Archive, into a centre of excellence for all information governance activities and services.

Leadership, governance and assurance

An effective governance regime will continue to be critical to success, as will ensuring that all relevant stakeholders are part of decision-making processes and assurance activities. We will promote the benefits of working more collaboratively within the group. This includes developing assurance plans that are designed to provide confidence that the target operating models and key objectives we agree together are being met and delivering benefits.

Nucleus: The Nuclear and Caithness Archive

9.10 Socio-economics

Objective: To support sustainable local economies for communities living near NDA sites and, where possible, contribute to regional economic growth.

At the NDA, we do not regard social impact as an optional work stream. We believe that decommissioning activities should benefit local communities, while developing the required capabilities for future mission delivery and providing a positive legacy during and on completion of our work.

The NDA Social Impact and Communities Strategy *(ref 41)*, published in April 2024, flows from the Energy Act (2004) *(ref 1)* that provides us with a legal duty to have regard for the impact of our activities on communities living near our sites. We also share the wider responsibilities all public bodies have under the Social Value Act (2012) *(ref 42)*.

As a group, we are determined to deliver the maximum positive social impact from the public investment in our mission. The Social Impact and Communities Strategy *(ref 41)* informs the individual social impact strategies and plans of our applicable operating companies.

We are committed to working closely with the UK, Scottish and Welsh governments, local authorities, local partners, supply-chain companies and other stakeholders in developing and delivering our social impact programme.

Our strategy

Our Social Impact and Communities Strategy *(ref 41)* aims to deliver against the following six strategic themes:

- **Resilient economies** – enabling and supporting the conditions for local economic output, improved productivity and growth
- **Thriving communities** – enabling and supporting the conditions for social cohesion, supporting disadvantaged groups and other social benefits
- **Sustainable incomes** – improving aspirations and access to work through a programme of high-impact education, skills, personal development and employability support activities
- **Sustainable growth** – reflecting the importance of the climate agenda and working to achieve economic, social and competitive advantage for our nuclear communities by integrating sustainable growth into our socio-economic interventions
- **Social value chains** – working closely with our suppliers to create social impacts with our supply chain
- **Collective impact** – leveraging social impact and investment by working with our stakeholders, partners and communities to practice an integrated approach and culture of delivery.

These themes represent areas in which we make socio-economic interventions with and through our operating companies and in partnership with local communities. We focus on interventions supported by the findings of our independent economic analyses and consistent with our statutory responsibilities.

Strategy development

We will develop our strategy to address emerging challenges, including changes to the following:

- Our estate which is being expanded to include the Advanced Gas-Cooled Reactor (AGR) sites (see ***8. NDA in the UK nuclear enterprise***)
- Independently produced **economic impact studies**, covering all our sites and comparing a range of factors including current and previous employment levels (published in 2022 *(ref 43)* and being refreshed in 2025/26)
- Our group-wide **grant-giving programme** which invests in helping partners to deliver co-created projects to maximise community benefit and long-lasting economic change. Our Social Impact and Communities Strategy *(ref 41)*, and associated guidance, sets out how we manage our grant programme.
- Embedded guidance on administering grants and funding rules across our group through closer working across our socio-economic teams to ensure we have consistent practices.

Delivery

Meaningful socio-economic interventions are co-created with local stakeholders. They are based on evidence of local need, aligned with strategic themes and focus on our priority investment areas of west Cumbria, North Wales, and Caithness and North Sutherland. We have intentionally focussed our socio-economic approach on enduring high-level themes and priorities. This enables us to maintain a responsive grant-giving programme which is open for communities to apply to throughout the strategy duration.

However, as separate entities, the NDA and its operating companies also invest in multiyear projects which result in the deliberate pressurisation of annual socio-economic budgets, for example, the Morlais tidal energy project on Anglesey, and the Industrial Solutions Hub in west Cumbria. In other words, our budget is largely allocated years in advance so that we know to a large degree what we will spend and why in future financial years. This helps to prompt long-term thinking and better projects.

We facilitate coherent delivery, consistent with our strategic socio-economic objectives through:

- The NDA Social Impact and Communities Strategy *(ref 41)*
- The NDA Group Socio-economic Policy *(ref 44)*
- Strategic Outcome Specifications and interface agreements
- Routine group working via the One NDA socio-economic forum and group-wide representation on individual operating company funding panels
- A shared grant management system for all socio-economic investments.

9.11 Digital, data and artificial intelligence

Objective: To empower our people to transform the delivery of our mission through the right digital and data tools, skills and culture.

Our strategy

The NDA group is a data-rich organisation. Everything we touch, including asset and waste records, geographical location, transport, human resources and finance, has a data equivalent.

We use the term 'digital' when any of these industry definitions apply to deliver real tangible and measurable benefits:

- **Digitisation** – converting analogue data into digital, for example, digitising paper or physical-based records
- **Digitalisation** – optimising a business and its processes using digital technologies
- **Digital transformation** – fundamentally transforming a business – how it operates and delivers value – through digitalisation and exploitation of its data, including the adoption of artificial intelligence (AI) enabled technologies.

Data, digital and AI are foundational to achieving our mission. The ongoing evolution and adoption of AI and digital technologies are reshaping our approach to decommissioning. Our mission hinges on the exploitation of our data, and harmonisation and integration of digital practices across our operations. Digital tools – spanning advanced data analytics, automation and AI – are now indispensable enablers, significantly boosting precision and efficiency.

The majority of our digital, data and AI work is undertaken in our operating companies as an integral part of their delivery and transformation plans. At group level, we collaborate to agree best practice, technology and architecture standards, processes, and principles to ensure consistency in approaches and the ability to share across the group.

Consequently, as a group, we have agreed the following strategic outcomes:

- The right characteristics and principles for digital and data leadership within the group, and empowering our people in those roles, to provide the groundwork for success
- Strategic and tactical decisions underpinned by accurate and timely data that can be easily analysed, repeated, verified, trusted and reused
- Digital and data cultures embedded in everything we do, by fostering curiosity and a thirst for data-led insight, with ubiquitous development of data and digital fluency and skills, so we feel empowered to share data appropriately with colleagues and stakeholders
- Active leveraging of data to enable effective collaboration, with a common understanding of our critical information and collective responsibility to treat data as an asset, bringing critical data owners and users closer to business outcomes
- Application of integration, interoperability and security by design, group-wide, to allow seamless data sharing, with methods and approaches replicable across the group, as interoperability and scalability become critical design principles (see ***Case Study: NDA's Connected Infrastructure Project***)*(ref 45)*

- Digital and data capabilities matured and future-proofed through harnessing, coordinating and championing the latest technological advances, group-wide, to turn novel applications into benefits for the group
- Adoption of a new operating model for digital and data to harmonise and consolidate our approaches, enabling the One NDA model and shared value streams, to remove duplication and deliver efficiencies, while balancing shared and operating company capability.

We must empower our workforce with the latest digital tools and the knowledge to use them. This is essential for enhancing our operational capabilities and fostering an inclusive, skill-rich workplace, thereby increasing trust in our delivery excellence.

Over the past three years, we have developed and approved an NDA group digital strategy, and more recently extended it to include data and AI. This strategy sets the vision and roadmap for how these technologies underpin our business outcomes and is aligned with the UK government's approach.

Strategy development

To ensure that we and the wider NDA group effectively exploit digital, data and AI over the next five years, we have identified specific digital technologies that will be used and adopted in key areas of our business. These include:

- Artificial intelligence
- Digital enterprise asset management
- Augmented and virtual reality
- Digital twins
- Data, analytics and management information
- AI-powered knowledge management.

These technologies will be deployed across functional and operational areas, including Asset management, Operations and maintenance, Integrated waste management, Projects, Decommissioning and remediation, Nuclear transportation and logistics, Research, development and innovation, and end-user applications.

Strategic development will also focus on agreeing and implementing group-wide data and digital architecture principles, establishing a single data dictionary and publishing group-wide data standards by domain. We will harmonise data governance approaches, implement a data quality framework, and develop common master data management and data retention processes. This will enable better interoperability, trusted decision making, and more effective sharing and exploitation of our critical information assets.

Delivery

We have agreed a roadmap which builds on the chosen technologies to deliver the strategic outcomes. It includes:

- **People and culture** – actively grow, enhance and evolve our digital, data and AI skills, increasing their understanding through interventions such as Lunch and Learn. We will adopt standardised roles using the government's Digital, Data and Technology Professional Capability Framework, establishing data leadership through data champions and identifying data and information owners, and Centres of Practice across the group. We will ensure AI integration aligns with human factors.
- **Processes and governance** – implement a hub-and-spoke model and governance to remove duplication and fragmentation, and ensure cohesion and harmonisation in our approach, while enabling the NDA group to exploit digital, data and AI. We will harmonise all data domains, supported by data governance. We will accelerate systematic adoption and use of advanced analytics to improve operational and strategic insights.
- **Technology** – agree data and digital architecture principles, and a common approach to technology and build partnerships; and evaluate and standardise current data tools. We will set up a group Geographic Information System (GIS) and already have an operational group business intelligence platform that underpins performance management.

  We will apply the specific digital technologies identified as most valuable to the group to the relevant functional and operational areas.
- **Information and data** – publish and implement a group-wide data standard by data domain, and a single data dictionary. We will agree a data quality framework including data quality monitoring and driving continuous improvement, and implement a common master data management and retention approach.

9.12 Public and stakeholder engagement

Objective: To build a better understanding of our mission among the public and our stakeholders, and maintain their support, confidence and trust.

Our public and stakeholder engagement strategy is mature but constantly evolving to build on the successes delivered under our previous Strategy *(ref 2)*, and to listen and respond to stakeholder feedback.

We have a varied stakeholder base and planned activity to support ongoing dialogue. Engagement with some specific stakeholder groups, such as our regulators and the international community, are addressed by other Critical Enablers.

Effective engagement with our broad range of stakeholders is central to building support, confidence and trust in the NDA group. It supports the delivery of our mission, including when we have a statutory obligation to engage and consult, and helps make the group a career option of choice.

Open and transparent engagement helps us build relationships on a global, national, regional and local level, and fosters better understanding of the complexities of our mission, to allow productive two-way dialogue. Such dialogue can provide insight and knowledge which informs decision making, and listening to feedback enables us to adapt our approach.

Supportive communities grant us our social licence to operate. By communicating how we deliver value and mission progress, we emphasise our importance and vital place in the nuclear lifecycle: driving UK net zero, energy security, skills and economic growth.

We strongly value our existing stakeholder connections and are committed to further deepening relationships through more meaningful discussions. We are also keen to engage with new and harder-to-reach audiences, with recognition that our work will continue into the next century.

Our strategy

Our engagement strategy themes remain similar to those in the previous Strategy *(ref 2)* and support our mission. These are:

- Engaging with a diverse set of perspectives in delivering our mission
- Exploiting a wide range of channels to reach our audiences
- Partnering with others to share best practice and extend our reach
- Striving to maximise the effectiveness of our engagement.

Our operating companies also have defined engagement areas, for example, the community-led approach to siting a Geological Disposal Facility (GDF) delivered by Nuclear Waste Services (NWS).

Strategy development

Engaging with a diverse set of perspectives

We will build on our progress under our previous Strategy *(ref 2)* to strengthen opportunities for meaningful engagement. We will also strive to extend our reach, looking to define, explore and connect with seldom-heard voices and other under-represented groups.

As part of this effort, we will develop our relationships with non-governmental organisations (NGO). The NGO community can provide valuable independent thinking and challenge our approach to delivering the mission. There is potential to further build on the effectiveness of our NGO forum and our dialogue, to gain a better understanding of the NGO landscape and broaden the mix of stakeholders. We will explore how we can share best practice between the various NGO forums chaired by people in the NDA group, government and regulators.

Reaching a younger mix of stakeholders, not just those who may be interested in a career within the group, is a clear aspiration. We will continue to use our partnership with the Young Generation Network - the young member's network of the Nuclear Institute - more effectively and explore other channels to help connect with this group and younger people in our communities.

We will support the transition of the AGR fleet into our portfolio, approaching this strategically and taking into account our existing engagement and improvement plans.

Exploiting a wide range of channels

We will:

- Exploit the value of our existing channels to highlight our work and provide opportunities for engagement
- Engage with people on their interests using external channels to inform them of our mission progress, including media and social media, and targeting national, regional and trade media outlets proactively with relevant and timely content to build understanding, promote progress and deliver effective management of reputational risk to build trust
- Build on our social media strategy to deliver content which is bespoke to the channel and targeted to the needs and interests of our stakeholders, including working with third parties to expand our reach and engage new audiences
- Look at how we can identify opportunities to demonstrate the NDA group model in action and the value of working together across our operating companies
- Use analytics and metrics intelligently to measure reach and engagement levels, and use this insight to inform our calendar of stakeholder events and engagement methods.

As part of our drive to connect with new audiences, we will explore the meaning of deliberative engagement – a way of placing citizens closer to our decision making in the broadest sense. We have commissioned initial work with the University of Aberdeen to investigate this subject. With colleagues, we will examine best practice and judge how such an approach could be of value to the NDA group.

We will use our channels to be open and transparent about our engagement and consider developing and publishing an openness and transparency policy to underpin our approach. This will include a commitment to publishing insights, feedback and findings from our activity.

Partnering with others

We will:

- Maximise the relationships we have with others and strengthen our engagement with devolved and regional voices
- Focus on strengthening relationships with the existing Scottish and Welsh Cross Party Groups and with local authorities and our regulators
- Enhance our existing local authority networks and continue to engage with the Nuclear Legacy Advisory Forum (Nuleaf), Nuclear Free Local Authorities (NFLA) and the Scottish Councils Committee on Radioactive Substances (SCCORS), for example, developing the role for a new SCCORS engagement officer
- Build on our existing relationships and improve our engagement with our important and valued trade unions
- Engage at a regional level, to complement what we offer locally, nationally and globally.

Striving to maximise the effectiveness of our engagement

We will deliver our public and stakeholder engagement strategy by listening and responding to our stakeholders. This includes making the best use of group resources and our support for organisations such as the Young Generation Network and the Nuclear Industry Association, by taking advantage of their reach and helping to shape their activity to support ours.

Our Site Stakeholder Groups (SSG) have helped engagement with the communities near our nuclear-licensed sites for 20 years and have ensured our interactions are conducted openly and our decisions are informed by the local community's views.

To ensure our valued community engagement remains effective against the backdrop of societal and technological changes in communication, and in collaboration with the SSG community, we have commissioned an independent review of the SSGs. Following the review, we will develop plans to agree and implement improvements in partnership with the SSG community and other interested parties.

We have an opportunity to build on our colleagues' experiences as a group and ensure better alignment in our planning with our operating companies.

One rich area of potential is in coordinating and sharing the data gained through stakeholder surveys, helping us to identify areas of strength and success in our engagement, and possible gaps and areas for improvement. We will develop a group-wide strategy for mining this valuable feedback, and ensure we use an effective joined-up approach to obtain and share this intelligence. This approach will also deliver efficiencies and help provide best value for our spend. An initial project will be to redesign our stakeholder survey, with consideration of how the findings will have multiuse benefits for the group.

Delivery

While the overarching strategy and principles of public and stakeholder engagement remain the same, changes in our experience and the environment in which we operate will influence the way we deliver our engagement.

There has always been a clear distinction between our engagement and that of our operating companies. We engage and communicate on group-wide strategic activities and our operating companies share information about their performance and activities.

However, we continue to aspire to greater coordination of engagement across the NDA group, as part of a more joined up One NDA way of working. For example, improved coordination of meetings will reduce stakeholder travel, avoid unnecessary repetition, and ensure messages and feedback are consistent and reach the right people at the right time.

We will continue to engage with EDF and any relevant nuclear organisations and departmental bodies, such as Great British Energy - Nuclear, to exchange experiences of community engagement and work together on future engagement needs in partnership with each community.

It is especially important that we consider how the NDA's expanding portfolio will influence our local and regionalised engagement. We must also consider how we work with industry bodies and involve and engage the workforce across our estate.

We are committed to finding creative ways of involving people in our decision-making processes and looking at whether there are more effective ways of engaging with people from all age groups and backgrounds.

The 2024 NDA group Stakeholder Summit

9.13 Transport and logistics

Objective: To ensure the effective, safe and secure transportation of materials to enable the successful delivery of the NDA mission.

The transport and logistics strategy covers the movement of radioactive and nuclear materials, and critical bulk non-nuclear materials (including soil and spoil), but not consumable materials. It does not extend to the transport of people to and from work, which is covered by travel plans developed by our operating companies. We have updated the strategy to reflect changes to the NDA group structure and our support for the UK government and the Civil–Defence Collaboration Programme, and an increasing expectation from society and regulators for greater transport sustainability.

The effective delivery of the NDA mission, and nearly half of our strategic outcomes, relies on our ability to transport radioactive and bulk materials safely and effectively to and from our sites. Our operating companies have the infrastructure, assets, systems, processes and skilled people to deliver safe, secure and reliable transport solutions. We provide these services under the International Atomic Energy Agency (IAEA) Transport Regulations *(ref 46)* and the Convention on the Physical Protection of Nuclear Material *(ref 47)* which are implemented into UK law and regulated by the Office for Nuclear Regulation.

Transport and waste are pillars of the One NDA way of working, which is designed to enable the group to work more collaboratively and effectively to deliver our mission. We created Nuclear Transport Solutions (NTS) in 2021 to bring together the capability and expertise of the NDA group's transport companies into a single organisation. NTS aims to be the leading global provider of safe, secure and reliable nuclear transport solutions, to support the NDA group and to provide value beyond the NDA mission in the UK and overseas.

Our operating companies transport radioactive material, including:

- Spent nuclear fuels from EDF AGR stations and from Dounreay by rail for management at Sellafield
- Low-level waste between waste generating, and treatment and disposal sites, such as compaction facilities, metallic waste recycling or smelting, incinerators, permitted landfill and the Low Level Waste Repository
- Intermediate Level Waste (ILW) for consolidation in stores at Sellafield and on Nuclear Restoration Services sites
- Sealed radioactive sources by road to Sellafield for storage before disposal
- Some Ministry of Defence Higher Activity Wastes (HAW) and irradiated fuel to Sellafield
- Reprocessing (mixed oxide and High Level Waste (HLW)) products by sea to customers in Europe and Japan
- Customer-owned uranium to release space at Sellafield and support recycling projects.

We are increasingly looking to move bulk non-radioactive materials such as soil, spoil and aggregates as part of construction programmes to enable decommissioning works. For a future Geological Disposal Facility (GDF), we will need to understand how to manage the huge volume of spoil generated during construction, and deliver ILW, HLW, spent fuels and nuclear materials for disposal efficiently and sustainably during operation.

Our strategy

We will ensure that transport remains safe and secure, by investing in people and skills, engaging effectively with regulators, sharing and adopting international good practice, and through our membership of and support for industry groups. We will also review how we deliver NDA group transport requirements, informed by the NDA Value Framework *(ref 7)*, and seek opportunities, including through innovation, to minimise associated environmental, economic and social impacts. Carbon emissions, natural capital, climate-change resilience, jobs and employment, and the impact on people will be considered.

Creating NTS to bring together our transport and logistics capability and expertise is key to delivering our strategy. By engaging effectively with local authorities, key transport bodies and other stakeholders, we will seek to influence those organisations and groups that maintain and make improvements to rail, road and marine infrastructure that are critical to our mission.

Drawing on our world-leading capability to transport sensitive nuclear cargoes, we will advise and support the UK government on matters relating to the transport of radioactive and nuclear material, and work with key stakeholders in partner countries to support strategic programmes that improve global nuclear security.

Strategy development

We will continue to refine our understanding of the NDA-mission transport demand, and hence the resources, assets and infrastructure needed. To do this, we need to understand the requirements, dependencies and interactions of other NDA programmes such as the Advanced Gas-Cooled Reactor Operating Programme, Group Integrated Decommissioning Programme, near-surface disposal and GDF. For future requirements, such as the GDF, we need to determine how we can maintain knowledge and ensure we have capability when needed.

To help lessen the impact of heavy goods vehicles on local communities and reduce emissions, we will look at where we can retain, restore or enhance rail access across the NDA estate, where rail is the best transport option and this is justified by forecast demand. This links to the NDA group land use strategy and may provide socio-economic benefits and opportunities for local communities.

In addition to the physical transport of materials, we will look to optimise logistics (i.e., planning, controlling, storage and handling). This includes continuing to develop our understanding of transport container requirements, so we can develop the containers we need to deliver our mission and determine how to manage the lifecycle of these assets and associated capabilities, with opportunities to improve value for money. NTS will be the design authority for new transport containers developed by the group. We will investigate opportunities to strengthen the resilience of design authority capability within the group by centralising some capability in NTS.

The NDA group supports the collaboration between the civil and defence nuclear sectors, and NTS will share its expertise, experience and capability to help the UK defence sector deliver the safe transport of radioactive material.

Delivery

NTS and our other operating companies use their experience, assets and proven capability to deliver the transport we require to fulfil our mission. NTS will use its transport and logistics expertise to become the partner of choice for the NDA group:

- Advising operating companies on how best to address their transport and logistics challenges
- Overseeing transport planning, coordination and management
- Increasingly delivering transport for the group.

Within the NDA group, we manage forums to provide appropriate structure and governance, including:

- The Transport and Logistics Working Group, acting as a knowledgeable expert group, identifying issues, risks and opportunities, and seeking to optimise transport and logistics across the NDA group
- The Transport Senior Strategy Committee, a key discussion forum for group transport issues, monitoring progress on delivery of strategic development work and providing direction and support for engagement between the NDA, NTS and the other operating companies to ensure effective, safe and secure transport within the NDA group.

The NDA group is a corporate member of the World Nuclear Transport Institute (WNTI), the international organisation representing the collective interests of the radioactive materials transport sector. This enables us to share and adopt good practice with industry worldwide and influence regulatory standards.

NTS supports the UK government on matters relating to the transport of nuclear and radioactive material, for example, determining the transport requirements for new nuclear programmes, developing a new container for transporting high-assay low-enriched uranium, nuclear transport security, and as the national focal point for the denial and delay of radioactive material transport. NTS also provides commercial services to third parties in the UK and overseas, to build and maintain its capabilities and assets, and generate income to help fund the NDA mission.

9.14 International relations

Objective: To engage and collaborate effectively with international partners to facilitate delivery of the NDA group's strategic objectives.

The NDA operates in an international context. Peer organisations across the world face many of the same challenges, and our policy framework and strategies are informed by international standards and guidance. In addition, the work we do and the materials we manage have safety and security considerations on an international scale. Consequently, international engagement is essential to fulfilling our international programmes and commitments, and to ensure we are adopting international best practice in the delivery of our domestic mission to clean-up the UK's earliest nuclear sites safely, securely and cost-effectively.

As a world leader in nuclear decommissioning and waste management, we also have a responsibility to share our expertise and demonstrate leadership internationally. By doing this, we aim to enhance the UK's reputation and improve safety, security and environmental protection in nuclear decommissioning and radioactive waste management internationally.

We have established an extensive portfolio of partnerships, collaborations and joint programmes in fulfilling these obligations, and remain committed to developing these further.

Our strategy

We will build and maintain relationships with overseas counterpart organisations to:

- Facilitate the NDA group's mission delivery
- Provide international leadership on decommissioning and radioactive waste management and disposal
- Support wider UK benefits.

Our goal is to be recognised internationally as an expert organisation and a trusted partner, willing to lead, learn and innovate.

Facilitating mission delivery

We will draw on relationships with international organisations to support delivery of nuclear decommissioning, and radioactive waste management and disposal at our UK sites.

To achieve this, we will take a targeted approach to collaboration with counterpart organisations and international bodies to share knowledge and experience, access and deliver peer reviews, access international research facilities and infrastructure, share technical advice and assurance and conduct joint technology development projects. Our priorities will be driven by the key strategic issues detailed throughout this document and across the NDA group, such as the geological disposal programme, high hazard risk reduction at Sellafield and Magnox/AGR decommissioning. This sharing of good practice and learning from successes and failures helps to avoid duplicating effort and deliver effective safety, security and value for money.

We will also maintain international relationships to support the completion of contractual programmes with overseas customers and stakeholders regarding historic reprocessing services, and new and ongoing spent fuel and nuclear materials transport obligations and associated consultancy activities. Where appropriate, we will take advantage of international opportunities to generate revenue, to deliver value for money for the taxpayer, provided that this is aligned with the NDA group's strategic goals and delivery of our core mission.

Providing international leadership

We will draw on our collective capability and experience to demonstrate leadership internationally on nuclear decommissioning and radioactive waste management.

To achieve this, we will continue to contribute to and influence the development of international standards and guidance, to promote best practice and drive optimisation. By doing this, we aim to ensure value for money while maintaining the highest levels of nuclear safety, security and protection for people and the environment.

We will also maintain open and transparent communication with our international neighbours and work to maintain and enhance our international reputation.

Supporting wider UK benefits

We will continue to leverage our experience, relationships and capabilities to enhance the reputation of the UK nuclear industry, enable commercial opportunities for the UK supply chain and support wider UK government objectives.

To achieve this, we will continue to showcase UK supply chain skills and technologies and support their access to international markets. Where appropriate, we will provide NDA-owned information and know-how to support these activities.

We will continue to offer our world-leading expertise in nuclear decommissioning and waste management to support wider UK government priorities and to enhance the UK's reputation internationally.

As we support wider UK benefits, delivery of our core mission will remain our main focus.

Strategy development

We will work across the group to develop our international relations strategy in response to emerging international challenges as they arise. Our enduring focus will be to use international relations to facilitate delivery of NDA group's strategic objectives.

Delivery

We will deliver our international relations strategy by:

- Focussing on like-minded countries and key multilateral organisations, prioritised according to the NDA group's needs:

- Ensuring activities are targeted and aligned with our strategic objectives, make the best use of group resources and consider where capability could be enhanced by collaborating internationally

- Maintaining collaboration agreements with priority partners to facilitate effective collaboration

- Working collaboratively across the NDA group to collectively identify opportunities, agree priorities and deliver activities, enabling us to leverage our collective assets and reputation to further our individual and combined goals more effectively, for example, in influencing policies and standards or in providing or sourcing expert advice

- Working with the UK government to support their wider priorities as appropriate

- Facilitating NDA group and UK stakeholder engagement in international networks and conferences, and hosting visits by overseas organisations to our sites.

10. Information about the NDA group

Sellafield Ltd

Operating company strategy

Sellafield Ltd's core mission is to remediate the Sellafield site, and safely and securely manage the radioactive material and waste stored there until its final disposal in a Geological Disposal Facility (GDF).

The company's large radioactive inventory needs to be prepared for final storage and there are many legacy facilities that need to be decommissioned. It has a key role in managing national assets and liabilities, including spent fuel from Magnox and Advanced Gas-Cooled Reactor (AGR) sites.

Sellafield Ltd is an NDA subsidiary, responsible for delivering its part of the NDA mission, through operating and decommissioning Europe's largest and most complex nuclear site. This includes cleaning up nuclear facilities and safeguarding nuclear fuel, materials, and waste – creating a clean and safe environment for future generations.

Sellafield Ltd strategy flows from government policy, as set by the Department for Energy Security and Net Zero (DESNZ), through NDA Strategy and the Strategic Outcome Specification into the enterprise-wide strategy within the Business Plan and its supporting value stream and functional strategies.

Our strategic focus areas are:

- Safe, secure, sustainable site stewardship
- 'Progress at pace' decommissioning and **hazard reduction of legacy facilities**, **waste management** and **disposal**, and **site remediation**
- Lifetime value for money through people and workforce development, stakeholder engagement and transparency, and innovation and technology.

Sellafield Ltd uses a risk-based management framework to drive priorities, focussing on the time at risk for intolerable facilities. We also manage a significant radioactive inventory, at various stages of its storage life, before final deposition in a GDF. The goal of our decommissioning and waste management is site remediation, providing lifetime value for money to the taxpayer. In doing these things, we support nationally important missions.

Sellafield Ltd works with the other NDA operating companies in a variety of ways to achieve the wider NDA mission. This includes accepting material via Nuclear Transport Solutions (NTS) from Nuclear Restoration Services (NRS) sites and others, for ongoing management to anticipating final deposition within a GDF, whose design and implementation is managed by Nuclear Waste Services (NWS).

Sellafield Ltd supports the One NDA approach to group-wide working, putting the NDA mission first while enabling wider government priorities. We support and work towards the strategic themes identified by the NDA's strategy, for example, our contribution to skills development and embedding sustainability into our approach.

Sellafield Ltd remains committed to the continuing NDA mission and supporting the UK nuclear enterprise. We have approximately one hundred years of work ahead of us, and our future will include as many challenges and opportunities as we have already faced. These represent a unique opportunity for innovation and our highly skilled workforce is well placed to drive this.

Sellafield is our largest and most complex site, and has played a pivotal role in the nuclear industry since the 1940s. Historically, operations on the site have included electricity generation, reprocessing and fuel fabrication. Following the end of fuel reprocessing in 2022, the focus at Sellafield is on interim fuel storage, waste treatment and decommissioning, and maintaining the assets needed to deliver this.

Mission delivery

Sellafield Ltd, a wholly owned NDA subsidiary, is the operating company responsible for the site. It works alongside the other NDA operating companies to deliver our strategic outcomes. Several mission-enabling capabilities are in progress at Sellafield, including new electricity infrastructure and facilities to repackage plutonium and process effluents.

The sections below set out where we have made progress at Sellafield in implementing our strategy. Further detail on delivery plans can be found in the Sellafield Enterprise Strategy *(ref 48)*. We have completed the Sellafield component of three strategic outcomes ***(SO)*** since our previous Strategy *(ref 2)* was published:

- ***SO3*** – All Magnox fuel reprocessing completed
- ***SO13*** – All exotic fuel reprocessing completed
- ***SO16*** – All plutonium produced.

Reprocessing of oxide fuels ***(SO8)*** was completed in 2018, and a new storage regime was implemented. All fuel from operating and defueling AGR stations will be safely managed on site pending a decision on its disposal ***(SO9 and SO10)***. We have modified the fuel storage facility to allow long-term storage and are increasing storage capacity to enable fuel from the AGR stations to be safely and securely stored ***(SO9)***.

All fuel from Magnox power stations (including Calder Hall) has been transferred to Sellafield ***(SO1)*** and shipments of Dounreay Fast Reactor material continue to be received at the site ***(SO12)***.

Operations at the Magnox reprocessing plant ceased in 2022, ending all reprocessing activities at the Sellafield site after more than 70 years. A small proportion of Magnox fuel was not reprocessed and is being stored safely on the site pending a decision on its disposal ***(SO4)***. We are making arrangements to transfer the more degraded fuels from wet storage in ponds to dry storage in robust packages, which will enable the decommissioning of legacy ponds.

Exotic fuels, such as the remaining fuels from the Dounreay site, will also be stored at Sellafield pending a decision on their disposal ***(SO14)***. These fuels may be stored and disposed of alongside Magnox and oxide fuels or may require bespoke solutions. The site also continues to store some irradiated fuel on behalf of the Ministry of Defence (MOD).

Nuclear material production also ceased following the end of reprocessing operations ***(SO16 and SO21)***. Plutonium packages will continue to be retrieved from older stores and consolidated in modern facilities ***(SO19)***. We are constructing a new facility which will repackage plutonium ***(SO18)***, including material consolidated from Dounreay, to enable its continued safe long-term storage while a long-term disposition solution ***(SO20)*** is developed (see ***6.1 Plutonium***). Some older plutonium packages will be repacked in existing facilities to ensure their safe management in the short to medium term. For our uranium inventory, our focus is on delivering safe and secure storage ***(SO24)***, pending decisions on commercial reuse or disposal.

Sellafield's Integrated Waste Implementation Plan defines the approach to managing site decommissioning waste. We are continuing to look for opportunities to apply the Waste Hierarchy more effectively. This means minimising waste and looking for options to reuse it or divert it to a lower waste category through segregation or treatment. We are also looking at how waste can be better segregated, and how clean soils and bulk material can be used elsewhere.

Overseas High Level Waste (HLW) is progressively being returned to owners ***(SO38)***, whereas UK HLW will be stored until a waste disposal route is available ***(SO37 and SO39)***.

Since our previous Strategy *(ref 2)*, new equipment and capabilities have allowed us to start retrieving waste from two silos. This means that all four of the legacy ponds and silos, some of the most complex decommissioning challenges at the site, are now being emptied. Waste is being retrieved from these ageing facilities into modern engineered containers before on-site storage pending conditioning and final disposal.

At Sellafield, we are constructing new treatment ***(SO32)*** and storage facilities ***(SO33)*** and developing new technologies to condition waste feeds. For example, we are building a Site Ion Exchange Continuity Plant to provide continued effluent abatement of the site's liquid discharges. We have also commissioned a Box Encapsulation Plant Product Store/Direct Import Facility to receive wastes, and will develop further stores ***(SO33)*** for Intermediate Level Waste (ILW).

To ensure sufficient capacity at the Low Level Waste Repository (LLWR) for the lifetime of our mission, efficient application of the Waste Hierarchy has allowed us to divert more than 50% of Low Level Waste (LLW) for incineration, volume reduction treatment ***(SO27)*** or alternative disposal ***(SO28)***.

The end of reprocessing means greater focus on the site's eventual decommissioning and remediation. The skyline at Sellafield continues to change. For example, we have removed the diffuser on top of the Windscale pile chimney, which has reduced the seismic risk to the structure. At Sellafield, we are also striving to make better use of existing buildings for new facilities, rather than constructing new buildings.

Legislative changes to allow more proportionate regulatory control of nuclear sites will allow us to optimise the site end state in consultation with local stakeholders including regulators (see ***Case Study: Determination of Sustainable Site End States***) *(ref 16)*.

Without the Critical Enablers, mission delivery would not proceed. For example, the asset management programme ensures continued availability of the capabilities required to deliver the mission. As aged assets reach the end of their operational life they may need to be refurbished or replaced. Keeping enabling activities off the site's critical path reduces the risks to mission delivery.

At Sellafield, we have taken a strategic decision to pause the Replacement Analytical Project and are assessing how best to deliver analytical capabilities on site for the next two decades, with a focus on making greater use of existing facilities.

We are investing in our workforce, growing our alpha-waste management skills to meet future decommissioning demands.

Socio-economics

The NDA Social Impact and Communities Strategy (2024) *(ref 41)* sets out how we work to deliver the maximum positive social impact from the significant public investment made in our mission each year. A key part of this is delivered through a programme of grant giving which is administered in collaboration with each of the NDA group operating companies and through which the group supports a multitude of projects in the communities near to our sites.

Through our grant giving programme we can help local partners to deliver co-created projects which have a demonstrable social impact in our communities. We are also able to help local partners to be better placed to deliver transformational economic projects, through accessing inward investment and match funding from other strategic sources.

Funding decisions consider local economic strength, dependency on NDA group site and other external factors as explained in our detailed guidance. Social impact budgets are administered by each operating company plus an additional NDA budget which is administered centrally and can be used flexibly to support projects across the estate.

Site end state

As part of an iterative and adaptive approach to end states planning, Sellafield Ltd has started a decades-long programme to challenge the status quo, improve site end-state assumptions and find the most sustainable solution. Engagement with our key stakeholders will be essential to developing future solutions.

It has become clear that dividing the site into distinct inner and outer zones, as reported in our previous Strategy *(ref 2)*, is no longer feasible. Optimum results will be delivered by different approaches for different parts of the site. Revisiting the end state in an iterative way means we can apply learning from delivery of the current end-state assumptions and benefit from greater flexibility for end-state options associated with changes in the regulatory framework. See ***Case Study: Determination of Sustainable Site End States*** *(ref 16)*.

Roadmap for mission delivery

NRS
Nuclear Restoration Services

Operating company strategy

At Nuclear Restoration Services (NRS), our strategy sets out how we will deliver our part of the overarching NDA strategy. We have four elements to our strategy:

- Delivering our existing commitments, safely and sustainably
- Transforming how we operate our business
- Innovating across technology, systems thinking and the future potential of our sites
- Growing to take on new missions in a careful and considered way.

We deliver our strategy through a rolling programme of decommissioning across the UK. This means some sites will be continuously dismantled, while others are placed in a deferral state before final site clearance.

Our strategy is ambitious, while offering the agility to change course depending on what we discover or learn. Using the NDA Strategy as our north star means that we consider not only how we deliver our own objectives, but also how our work can support the rest of the group in achieving theirs through increased learning and innovation.

Our delivery goals over the next 10 years are to decommission our sites so that:

- Safety, security and compliance is at the heart of everything we do
- Fuel and waste is retrieved, treated and disposed of
- Buildings are dismantled or demolished
- Land is de-designated or reused.

At Dounreay, we want to take a significant step forward in decommissioning our fast reactors by removing the remaining fuel and sodium coolant.

We believe that these activities should benefit local communities, while developing the required capabilities for future mission delivery and providing a positive legacy during and upon completion of our work.

In 2023–24, we brought together the work of Magnox Ltd and Dounreay Site Restoration Services Ltd into one place to create NRS. This new organisation is responsible for safely and efficiently decommissioning the first-generation nuclear and research sites across the UK. NRS also operates a hydroelectric plant and is preparing to take on the decommissioning of the seven AGR stations, currently managed by EDF, and the MOD's Vulcan site.

NRS Sites

The NRS Sites delivery business is responsible for decommissioning and remediating ten former Magnox reactor sites and two former Magnox research sites at Harwell and Winfrith. Following a strategy review, we have endorsed a site-specific approach to Magnox reactor decommissioning. For some sites, decommissioning will progress straight to site end state, whereas, for others, we will adopt a deferral strategy. The intention is that, together, the site-specific strategies will result in a rolling decommissioning programme which will maximise the opportunity for sharing lessons learned, developing and implementing new technologies and strengthening wider capability.

In 2021, we were directed by the Department for Business, Energy and Industrial Strategy (now the Department for Energy Security and Net Zero) to take on the ownership and decommissioning of seven EDF AGR sites, once they have been defueled. EDF's defueling work is being supported by Sellafield Ltd and, once this is complete, we will start decommissioning work.

Mission delivery

We have finished consolidating nuclear material from Harwell to Capenhurst, and the last shipment to Sellafield is due in late 2027. This will further reduce the nuclear hazard profile at Harwell ***(SO22 and SO24)***.

The NRS strategy for managing ILW is to retrieve and condition the waste into appropriate packages ***(SO32)***, and then transfer those packages to purpose-built interim ILW storage facilities at certain NRS sites, pending disposal ***(SO34)***. Scottish government Higher Activity Waste (HAW) policy differs from that in England and Wales and does not include disposal in a Geological Disposal Facility (GDF). HAW generated at Scottish sites may require a period of extended storage before its final disposal.

To date, NRS has built all but one of its interim ILW stores ***(SO33)*** and has conditioning capabilities at selected sites. In some instances, these capabilities could be transferred to other sites in the future, and ILW stores are sometimes shared to deliver a variety of benefits. The programme for managing all ILW outside the reactor cores, along with bulk asbestos removal, remains our short-term priority. ILW contained in the reactor cores, for example, graphite, is a significant consideration when developing site-specific strategies for reactor decommissioning.

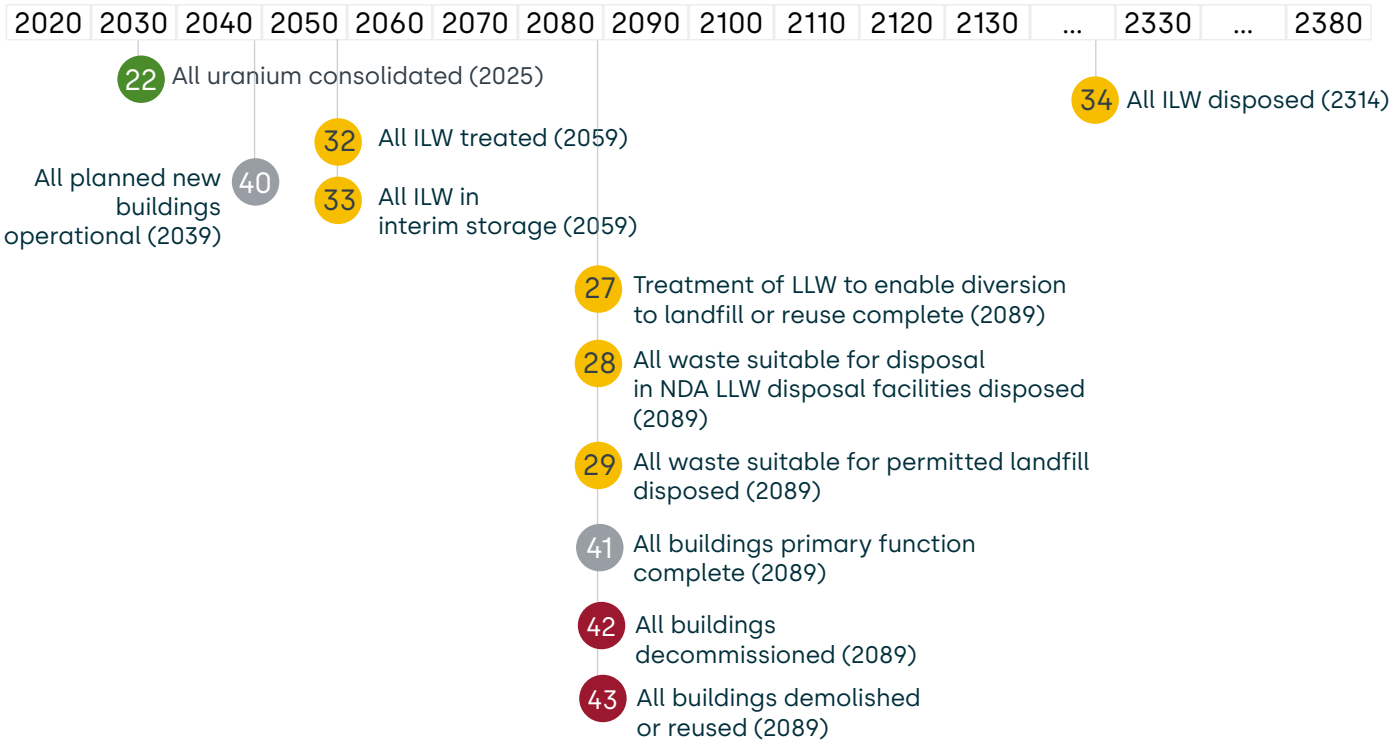
The remainder of NRS's waste inventory is lower-activity waste (LAW) and non-radioactive waste. The non-radioactive waste is managed through the application of the Waste Hierarchy using conventional means. The same is true for LAW; we divert unavoidable wastes away from disposal or reduce the volume to enable more efficient disposal ***(SO28)***.

Over the last 10 years, on average NRS has diverted 95% of waste from disposal at the Low Level Waste Repository (LLWR) site in west Cumbria. This is important because site-specific reactor-decommissioning strategies could result in significant volumes of LAW and ILW being generated sooner than planned, enabling more efficient mission delivery for NWS.

Through NRS, we are responsible for delivering our mission to release all designated land by decommissioning and remediating ***(SO42 and SO43)*** so that it can be de-designated or transferred to a third party ***(SO47)***. In line with the move to site-specific decommissioning strategies, we have assessed whether decommissioning should continue straight to site end state or be deferred (the site placed in an interim safe and secure state for an agreed period). Winfrith, Trawsfynydd, Hunterston A, Harwell, Dungeness A, Hinkley Point A and Chapelcross will undergo continuous decommissioning under a rolling programme. Berkeley, Sizewell A, Wylfa, Oldbury and Bradwell will enter deferral periods before final site clearance.

In June 2021, it was announced that, once offline and defueled, the AGR sites currently owned and operated by EDF would move into NDA ownership for decommissioning by NRS. The first two sites to transfer will be Hunterston B and Hinkley Point B, in early 2026 and late 2026 respectively. Similarly, we are working with the MOD on the transfer of the Vulcan facility adjacent to Dounreay.

Roadmap for mission delivery



Socio-economics

The NDA Social Impact and Communities Strategy (2024) *(ref 41)* sets out how we work to deliver the maximum positive social impact from the significant public investment made in our mission each year. A key part of this is delivered through a programme of grant giving which is administered in collaboration with each of the NDA group operating companies and through which the group supports a multitude of projects in the communities near to our sites.

Through our grant giving programme we can help local partners to deliver co-created projects which have a demonstrable social impact in our communities. We are also able to help local partners to be better placed to deliver transformational economic projects, through accessing inward investment and match funding from other strategic sources.

Funding decisions consider local economic strength, dependency on NDA group site and other external factors as explained in our detailed guidance. Social impact budgets are administered by each operating company plus an additional NDA budget which is administered centrally and can be used flexibly to support projects across the estate.

Site end state

Alongside site-specific strategies, site end states are being optimised to align with new regulatory guidance (see ***Case Study: Determination of Suitable Site End States***) *(ref 16)*. We aim to agree end-state assumptions for all sites over the next decade. Current work to achieve the end states includes:

- Radioactive and non-radioactive contamination being reduced to meet the requirements of the relevant regulatory regime for the next planned use of the site and the current use of adjacent land
- The licence being surrendered, where the next planned use does not require a nuclear site licence, with the management of any residual hazards subject to regulation by the Health and Safety Executive, the relevant environment agency and local planning authority
- The physical state of designated land being made suitable for the next planned use with structures and infrastructure made safe or removed where necessary, having first explored reuse opportunities.

NRS Dounreay

NRS Dounreay is our other delivery business and the site licence company responsible for operating the Dounreay site in Caithness, Scotland. Dounreay was the UK site for fast reactor research from 1955 to 1994. It supported a Materials Test Reactor, the Dounreay Fast Reactor and the Prototype Fast Reactor, and a suite of nuclear fuel fabrication and reprocessing facilities within the Fuel Cycle Area. It also supported commercial fuel reprocessing and fabrication around the world, which resulted in a range of nuclear and non-nuclear legacies including exotic fuels, nuclear materials, and historic ILW and LLW disposal facilities.

Mission delivery

Through NRS Dounreay, we continue to deliver our site decommissioning, demolition and remediation programme. To enable delivery of our mission, we require new facilities on site to handle and store ILW, support shaft and silo remediation, and export irradiated fuel.

We have made significant strides in hazard reduction by completing the unirradiated exotics, remnants and uranium disposition programmes. Building on group-wide collaboration, experience and learning, we will consolidate all remaining irradiated fuel at the site to Sellafield, which will further reduce the hazard ***(SO12)***.

The Integrated Waste Strategy details our approach to managing the full range of waste identified on the site to support decommissioning. We have provided additional ILW storage on site by building the Cementation Plant Store Extension ***(SO33)***. Offsite waste routes for LLW bulk metal have been opened ***(SO27)*** and there is capacity to construct four more LLW vaults for operational and demolition waste at the offsite LLW disposal facility ***(SO28 and SO29).***

Although the scope of work at the Dounreay site is fundamentally unchanged since our previous Strategy *(ref 2)*, there have been two significant changes: first, the removal of the Parent Body Organisation and merger with Magnox Ltd to form one of the NRS delivery businesses; second, changes to the implementation strategy by splitting it into specific programmes and production of a new site plan.

Our focus remains on safety and compliance while working to reduce the remaining high hazards. We will continue key decommissioning programmes, including removing reactor breeder fuel, retrieving shaft and silo ILW, and post-operational clean out in the fuel cycle area ***(SO42 and SO43)***. These programmes sit alongside our high-priority asset management and sustainability work.

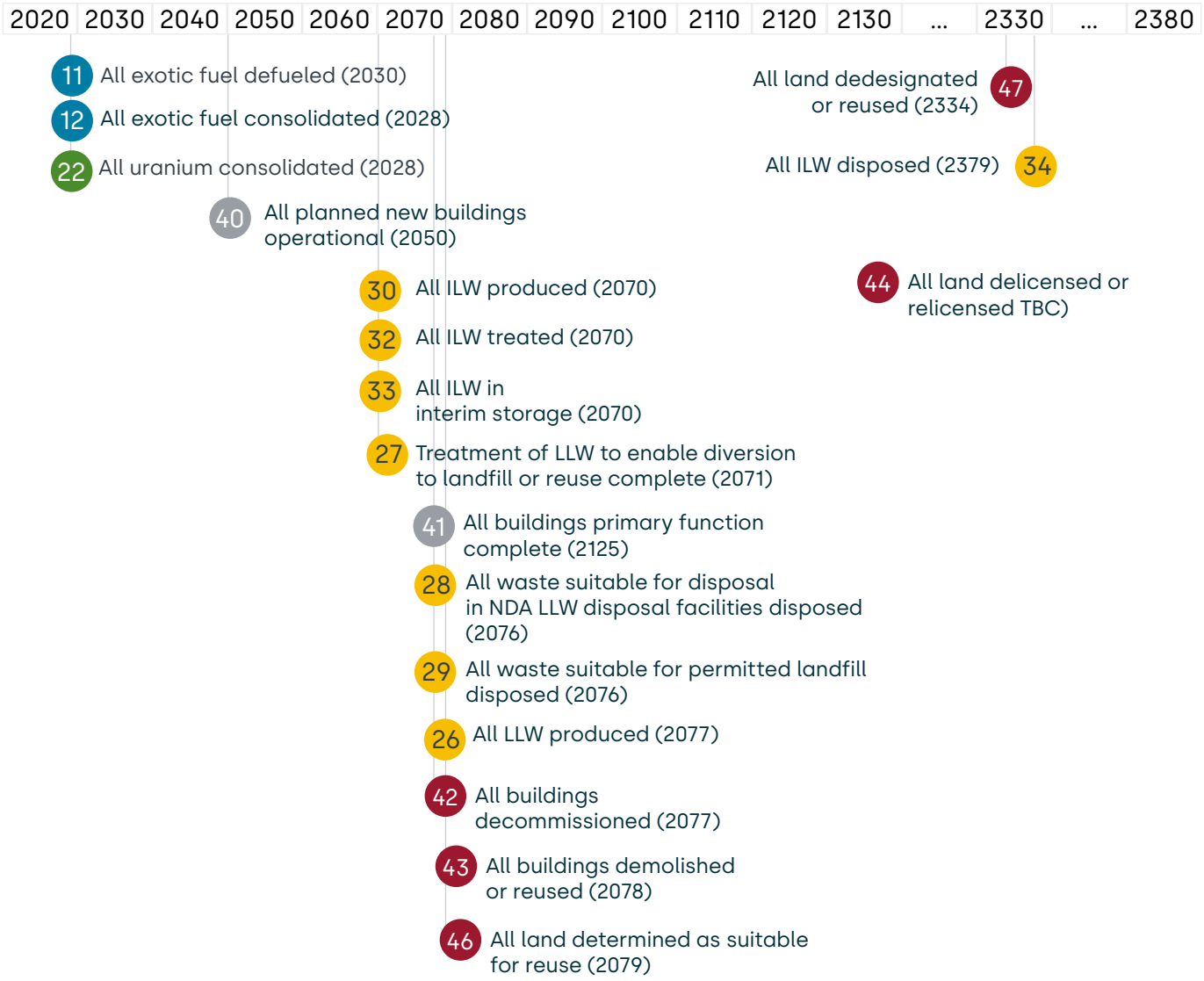
Socio-economics

The NDA Social Impact and Communities Strategy (2024) *(ref 41)* sets out how we work to deliver the maximum positive social impact from the significant public investment made in our mission each year. A key part of this is delivered through a programme of grant giving which is administered in collaboration with each of the NDA group operating companies and through which the group supports a multitude of projects in the communities near to our sites.

Through our grant giving programme we can help local partners to deliver co-created projects which have a demonstrable social impact in our communities. We are also able to help local partners to be better placed to deliver transformational economic projects, through accessing inward investment and match funding from other strategic sources.

Funding decisions consider local economic strength, dependency on NDA group site and other external factors as explained in our detailed guidance. Social impact budgets are administered by each operating company plus an additional NDA budget which is administered centrally and can be used flexibly to support projects across the estate.

Roadmap for mission delivery at NRS Dounreay



Site end state

Current work to achieve the end states includes:

- Reducing radioactive and non-radioactive contamination to meet the requirements of the relevant regulatory regime for the next planned use of the site and current use of adjacent land
- The licence being surrendered, where the next planned use does not require a nuclear site licence, with the management of any residual hazards being subject to regulation by the Health and Safety Executive, the relevant environment agency and the local planning authority
- The physical state of designated land being made suitable for the next planned use, with structures and infrastructure made safe or removed where necessary, and having first explored reuse opportunities
- Emptying existing waste disposal facilities, or engineering them for closure, as determined by the relevant environmental safety case
- Storing ILW on the site to comply with current Scottish government HAW policy *(ref 49)*.

As our understanding of the site and its potential future use increases, we will reassess the site end state to ensure we are moving towards an optimised and sustainable solution.

Nuclear Waste Services

Operating company strategy

Nuclear Waste Services (NWS) was created with the vision and purpose of making nuclear waste permanently safe, sooner.

We enable the NDA group and other UK producers of radioactive waste, to access the full range of radioactive waste management and disposal solutions and services. We will ensure that the right waste is in the right package, in the right facility, and will accelerate decommissioning through innovation. We have a clear picture of the organisation we will become by 2030, and our values set out who we want to be as a world-leading organisation. We are:

- Action-oriented, delivering for our customers, partners and people safely and securely
- Ambitious problem solvers who embrace and act upon new challenges
- Trusted and acting with integrity to build a safe and sustainable future
- Collaborative and inclusive, as we have greater success when we work together.

NWS is proud to bring together the UK's leading nuclear waste management capabilities, to protect people and the environment by managing waste effectively and seizing the opportunities this presents to secure a sustainable future for domestic clean energy security.

The NDA set8s an overarching strategy, in line with Government policies, for the group. Our strategy sets out how we will deliver our part by aligning and supporting the NDA's Strategy, and the NDA's driving theme of Integrated Waste Management. We also have Critical Enabling Strategies that support the NDA's ***Critical Enablers***.

The LLWR in Cumbria

Our strategy has the following elements:

- Creating a more sustainable business with a strong and common sustainability agenda across all waste arrangements
- Strengthening stakeholder confidence through simplified interfaces, arrangements and communication to provide a single 'front door'
- Delivering new and optimised waste routes through a single set of integrated business priorities
- Providing greater value and diverting more waste as a single business working across the full lifecycle and waste spectrum
- Enhancing and optimising outcomes through being a central hub to address the biggest challenges and opportunities in waste management
- Being a great place to work, providing opportunities across shared facilities, knowledge, expertise and relationships.

The creation of NWS in January 2022 brought together the expertise of LLWR Ltd, Radioactive Waste Management Ltd and the NDA group's Integrated Waste Management Portfolio (IWMP). With skills in areas such as nuclear science, engineering and community engagement, NWS combines the best of the UK's expertise in radioactive waste management and offers a full range of solutions across preparation and planning, treatment and packaging, and disposal.

At NWS, we are responsible for delivery of a GDF as the safe, secure and long-term solution for the most hazardous radioactive waste. The GDF will be one of the largest environmental protection programmes in the UK and ensure we remove the burden from future generations of having to keep waste safe and secure in surface storage facilities for many thousands of years. Under the Government's siting process for England and Wales, a GDF will only be built where there is a suitable site with a willing community. We estimate that approximately 750,000 m^3 of radioactive waste and nuclear materials could be destined for a GDF.

We also operate the LLWR site in west Cumbria, to the south of the Sellafield site. The LLWR has been operating since 1959 and is of strategic importance to all UK low-level radioactive waste producers, including nuclear sites, hospitals and research laboratories. Most waste arrives at the site by rail in large metal containers. Before consigning the waste to the site, waste producers must ensure that it meets the waste acceptance criteria set out by NWS and demonstrate that it is suitable for disposal at the site. After arriving at the LLWR site, we fill any space left in the containers with grout and, after the grout has set, we transfer the containers to engineered concrete vaults for final disposal.

Mission delivery

By coming together as a single business, we are capitalising on vast experience, capabilities and optimisation of assets across the waste disposal spectrum. This integrated approach offers more sustainable and efficient services to waste producers across all nuclear waste streams, now and in the future. Our mission is to be the 'one-stop shop' for nuclear waste management and disposal in the UK. This includes the continued safe operation, optimisation and closure of the LLWR site, development of the GDF, and management of the IWMP, to deliver efficiencies, synergies and opportunities within waste management across the NDA group.

Geological Disposal Facility

A core part of NWS's role is the development, operation and closure of a GDF for the most hazardous radioactive waste. Construction will only start when a suitable site is identified by NWS, the local community has confirmed its willingness to host the facility through a Test of Public Support, and all the necessary consents and permits have been obtained. These steps could take approximately 10–15 years. The current planning assumption is that a GDF will be available for waste emplacement in the 2050s. A GDF will be constructed in sections over its operational lifetime. Continually constructing, operating and filling a GDF, then closing it, will run into the next century.

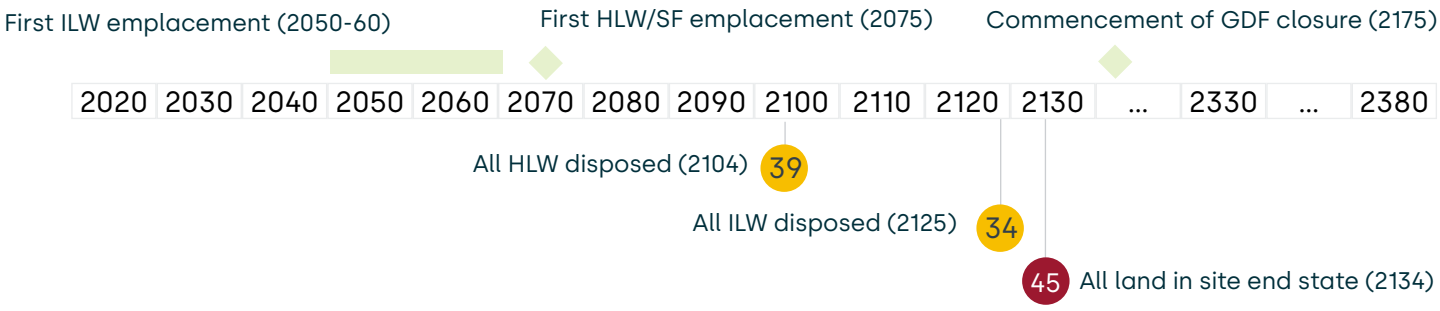
Following UK and Welsh government policies, we are currently working with communities to identify a willing host community and a GDF site. By 2026, NWS aims to provide the UK Government with a recommendation on which communities to take forward to deep borehole investigations and to provide these communities with increased investment. We plan to start deep borehole investigations for site characterisation in early 2030s, subject to environmental permitting and a development consent order.

We are required to demonstrate that the most hazardous radioactive waste can be safely disposed of in accordance with regulatory expectations. This will be an essential component of our work with potential host communities and the regulators. To do this, we will develop site-specific GDF designs and plans and use them to demonstrate suitability through site-specific safety cases.

In parallel, we are working closely with all producers of the most hazardous radioactive waste to ensure that waste is conditioned and managed appropriately in a way that gives confidence that it will be acceptable for disposal when a GDF is available. This is an important part of the NDA's risk-informed approach to the management of radioactive waste.

NWS's work spans England, Wales and Scotland and, as radioactive waste management policy is a devolved matter, NWS must provide safe and secure solutions for nuclear waste according to the respective policies in each of these nations. There are no nuclear facilities in Northern Ireland and no nuclear waste is stored in Northern Ireland.

Roadmap for mission delivery with a GDF



Low Level Waste Repository

NWS has more than 70 years of experience managing radioactive waste, with an outstanding safety and security record. It is the responsible Site Licence Company for the LLWR and ensures we manage low-level radioactive waste effectively across the UK by operating the site safely and securely.

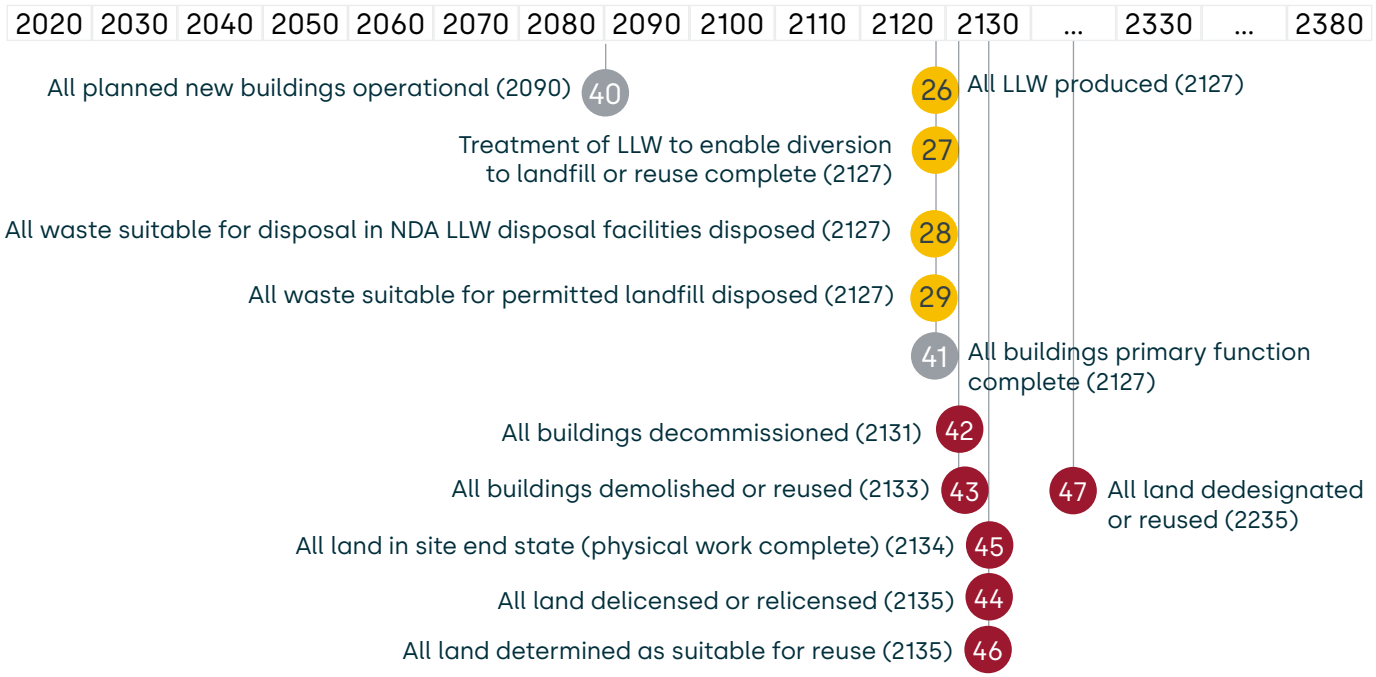
Since 2008, we have implemented new treatment and disposal operations that divert waste to preserve the repository's capacity, thereby extending its life. At NWS, we will continue our role at the LLWR site by leading the implementation of the UK strategy for the management of solid low level radioactive waste from the nuclear industry and supporting delivery of the NDA radioactive waste strategy, along with operating, optimising, capping and eventually closing the site.

Since our previous strategy, we have concluded a multiyear project, ahead of schedule, to retrieve, transport and emplace over a thousand Treated Radwaste Store drums at the LLWR site. This is a significant achievement and provided value for NRS in freeing storage capacity and diversion of waste from the GDF. NRS has also successfully diverted 98% of waste from disposal at the LLWR by reusing or recycling wastes where appropriate. In the past year alone, this has saved nearly £60 million – on top of more than £900 million saved over the past decade.

Important LLWR site activities over the next five years include:

- Working towards final closure and capping of the Vault 8 disposal area, which is important for managing waste that has been disposed of already and essential to underpinning the future disposal of waste at the site
- Completing a major review of the site environmental safety case, which will consider options for making the best use of the LLWR site, including optimisation of near-surface disposal at the LLWR site (see next section).

Roadmap for mission delivery at LLWR



Near-surface disposal

In 2024, a new UK policy framework for Managing Radioactive Substances and Nuclear Decommissioning *(ref 11)* was published. The policy includes the potential for wider adoption of a risk-informed approach to disposal and use of the Waste Hierarchy as a framework for decision-making for all radioactive wastes across the UK. It also includes near-surface disposal (NSD) as an option for some suitable, less hazardous ILW in England and Wales (previously in Scottish policy only). The revised policy aims to drive innovation, sustainability and improvements in the decommissioning and cleaning up of the UK's legacy nuclear sites. Greater flexibility in disposal options could lead to earlier and more cost-effective decommissioning of nuclear facilities, while maintaining the highest standards of safety, speeding up decommissioning and bringing significant savings to the taxpayer. The policy enables us to ensure the right waste is packaged in the right way and disposed of in the right place, proportionate to the risk and hazard it poses.

At NWS, we are developing plans to realise the opportunities presented by the change in policy and have initiated an NSD programme to assess the disposal of suitable waste streams in a near-surface environment. This includes investigating the feasibility of optimising the LLWR site to potentially include the disposal of some suitable, less hazardous ILW.

Site end state

The end state for designated land at the Repository site is as follows:

- Waste that has been disposed of will remain in situ as determined by the site's Environmental Safety Case
- The physical state of the repository will reflect the optimised closure engineering described in the site's Environmental Safety Case
- Access to the site will be managed in accordance with controls designed to protect people and the environment from residual hazards
- The repository will remain subject to controls for as long as required by the relevant regulatory regime to manage risks to people and the environment.

NWS regularly review these end state assumptions and consider the options for parts of the designated area where current plans do not include disposal. Discussion with the local community will be an essential part of this process.

Waste services and integrated waste management portfolio

NWS applies the Waste Hierarchy and only disposes of waste if it cannot be diverted for alternative treatment. We have greatly driven down the volume of waste going to the LLWR by working with the waste producers to ensure effective application of the Waste Hierarchy, i.e. identifying ways to avoid creating waste, better characterising materials, identifying new opportunities to reuse or recycle materials and physically reducing the volume of the remaining waste.

In 2023– 2024, just 2% of waste that we assessed and managed was classified for disposal at the LLWR. The rest has been successfully diverted (for example, reused or recycled) through our range of waste services. We have led the way in developing and offering waste services to the industry to take advantage of alternative waste management routes. By applying the Waste Hierarchy, we are protecting LLWR capacity, accelerating decommissioning, and achieving efficiencies and value for the UK taxpayer.

Collaborating with the NDA group, wider stakeholders and service providers, we work to improve radioactive waste management through a joined-up approach that addresses gaps and introduces new technologies and capabilities. Working collaboratively is crucial for delivering our ambitions, which include generating significant savings across the NDA group.

Socio-economics

The GDF siting process is specifically designed to ensure that participating communities can experience immediate positive social benefits. This will be partly through access to direct community investment funding of up to £1 million, later increasing to up to £2.5 million, per year for the duration of their involvement, and partly through indirect benefits for local businesses and service providers.

A community that ultimately hosts a GDF will secure further long-term, transformative benefits from direct employment and opportunities associated with construction and operation. In addition, the UK Government has committed to significant additional investment that will generate continuing socio-economic benefit to the area.

Over the last five years, we have spent approximately £450,000 on socio-economic projects including the Cumbria Community Foundation Winter Warmth Fund, first-aid training and provision of an emergency ambulance for Wasdale Mountain Rescue Team, and an adventure playground and community garden in Lincolnshire.

The Copeland Community Fund is a separate £1.5-million-a-year socio-economic arrangement funded by the NWS. It was established to recognise the service Copeland provides to the nation by hosting the LLWR and provides grants to a wide range of local organisations for the benefit of the local community. Further information and project examples can be found on the Copeland Community Fund website.

We are committed to ever-strengthening relationships with local communities. Further details of projects we plan to support can be found in the NDA Social Impact and Communities Strategy *(ref 41).*

The Springfields site near Preston, Lancashire, is owned by the NDA and leased to Springfields Fuels Ltd (SFL), a subsidiary of Westinghouse Electric Company (WEC). SFL operates the site and manufactures a range of fuel products for UK and international customers. The site also has historic liabilities in the form of uranium-contaminated residues and redundant facilities.

Mission delivery

SFL is the site licence holder responsible for the site. As owner of SFL, WEC sets the strategy for the site and invests for the future under the terms of a 150-year lease with the NDA and in accordance with the site designating directions.

We have contracts with SFL to provide residue processing ***(SO23)***, and decommissioning and clean-up services to address historic liabilities ***(SO42, 43 and 46)*** (see ***4. Site Decommissioning and Remediation and 6.2 Uranium***).

The processing of legacy uranium-contaminated materials, covered by a Residues Processing Agreement, will ensure that it is treated appropriately ***(SO23)*** and consolidated ***(SO22)*** in accordance with our strategy. A Decommissioning Agreement covers post-operational clean out (POCO), decommissioning and demolition of historic NDA-owned facilities on the site and associated waste disposal.

Site end state

The site end state for designated land at Springfields includes:

- Reducing radioactive and non-radioactive contamination to meet the requirements of the relevant regulatory regime for the next planned use of the site and the current use of adjacent land
- Surrendering of the site licence, where the next planned use does not require a nuclear site licence, with the management of any residual hazards subject to regulation by the Health and Safety Executive, the relevant environment agency and local planning authority
- Making the physical state of designated land suitable for the next planned use of the site, including making structures and infrastructure safe or removing them where necessary, having first explored reuse opportunities.

The Capenhurst site, near Ellesmere Port in Cheshire, is home to historic and operating uranium enrichment plants and associated facilities. Most of the site is owned by Urenco UK Ltd (UUK), a subsidiary of Urenco Ltd, with the remainder owned by the NDA and leased to UUK.

UUK is the site licence holder responsible for the site and operates ongoing enrichment activities. The site also houses one of the NDA's uranium stores and has historic liabilities in the form of redundant facilities and material from previous operations.

Mission delivery

Our strategy to deliver our mission is implemented through three main contracts with Urenco Nuclear Stewardship Ltd (UNS), formerly known as Capenhurst Nuclear Services Ltd. These agreements will reduce our net liabilities for managing and clearing the NDA property.

The Tails Management Services Agreement includes the treatment and processing of 26,000 tU of NDA-owned uranium hexafluoride tails (known as 'hex'), from historic uranium enrichment, through Urenco's Tails Management Facility. This contributes to our mission by treating our hex to reduce its hazard and environmental detriment potential ***(SO23)*** and then placing it in safe and secure interim storage ***(SO24)***.

In addition, the Uranic Storage Agreement covers the ongoing safe and secure interim storage of other uranium on the site, including uranium consolidated at Capenhurst from other NDA sites ***(SO22 and SO24)***.

The decommissioning of defined legacy facilities and remediation of land leased to UUK is contracted through a Decommissioning Agreement. This contributes to our mission by decommissioning buildings and facilitating the de-designation of land ***(SO42, 43, 46 and 47)*** (see ***4. Site Decommissioning and Remediation and 6.2 Uranium***).

Site end state

The site end state for our designated land at Capenhurst includes:

- Reducing radioactive and non-radioactive contamination to meet the requirements of the relevant regulatory regime for the next planned use of the site and the current use of adjacent land
- Surrendering the site licence, where the next planned use does not require a nuclear site licence, with the management of any residual hazards subject to regulation by the Health and Safety Executive, the relevant environment agency and the local planning authority
- Making the physical state of designated land suitable for the next planned use of the site, including making structures and infrastructure safe or removing them where necessary, having first explored reuse opportunities.

NTS
Nuclear Transport Solutions

Operating company strategy

At Nuclear Transport Solutions (NTS), we have a unique opportunity to add more value to the NDA mission, support UK Government's ambitions and use our decades of experience to support customers in the UK and overseas.

Our vision is to deliver nuclear transport and logistics solutions that make the world more sustainable, safe and secure, and our mission is to be the leading provider of nuclear transport and logistics.

We are committed to six strategic objectives that underpin our work and help us achieve our vision:

- Shaping our future

- Delivering the NDA and UK Government mission

- Providing expert solutions to the global nuclear industry

- Enhancing nuclear transport and logistics through innovation

- Making the change

- A modern, dynamic and agile organisation

- A commercially successful business that provides value-for-money to customers

- A great place to work with high-performing people and teams.

Our culture is based on three guiding principles:

- Having the freedom to perform

- Working together to help each other and our customers

- Being confident, curious and innovative.

NTS is the leading global provider of safe, secure and reliable nuclear transport services, supporting the NDA's mission through its specialist transport and logistics expertise.

At NTS, we operate Direct Rail Services (DRS) and Pacific Nuclear Transport Ltd (PNTL) which deliver rail, shipping and packaging activities – building on decades of experience providing safe, secure and reliable transport solutions.

Our primary objective is to provide effective transport and technical solutions that enable the delivery of the NDA's mission. This includes transporting a range of nuclear materials, including spent fuel and waste, between NDA-owned sites operated by Sellafield Ltd, NWS and NRS. Additionally, it includes the return of reprocessing products to customers overseas, and wider packaging and licencing support to the NDA group.

We also apply our world-leading transport and logistics expertise to deliver commercial activities outside the NDA group, within the UK and overseas, including transport package design and bespoke transportation services. We use this expertise to support wider global security and threat reduction goals, and to advance the global nuclear industry by investing in innovation, influencing international nuclear transport standards and sharing knowledge of transporting dangerous cargoes.

NTS generates additional revenue to support the NDA's mission and provide UK taxpayers value for money by providing transport services beyond the nuclear sector (for example, commercial rail freight contracts). This ensures our capabilities and assets are maintained and enhanced.

NATIONAL NUCLEAR ARCHIVE

We have accountability for most of the records held within and generated by the NDA group. With our site licence companies, we are obliged by various statutes, regulatory and business-led requirements to protect and manage these records and make them available to the standards required of a responsible public authority (for example, the Public Records Act (1958 and 1967)) or an organisation subject to regulatory controls (for example, Office for Nuclear Regulation Licence Condition Handbook (February 2017)).

The need to manage many of these records beyond the lives of the organisations that created them has driven the development of a centralised long-term records management and archive service, NDA Archives Ltd (NDAAL).

In accordance with agreements with each of its customers, NDAAL provides a compliant, secure and effective system of controls to ensure appropriate access to records to support delivery of our mission. NDAAL currently discharges its operational responsibilities via a commercial partner who manages several facilities and processes on our behalf. The main archive facility (Nucleus: the Nuclear and Caithness archives) has been established at Wick in Caithness, in a purpose-built facility that has achieved Place of Deposit status, and other relevant standards and accreditations.

The NDAAL Board approves business plans submitted by the commercial partner, in accordance with our information governance strategy and interdependent projects and programmes. These business plans will form the basis of activities managed by NDAAL, including the approval, or otherwise, of plans to engage with third-party contracts. These plans will also include the management plan for the Highland Council's North Highland Archive collection, which is co-located at Nucleus.

Properties Ltd

NDA Properties Ltd (NDAPL) was created as a wholly owned subsidiary of the NDA in 2008. It is a commercial property company which owns and manages more than a quarter of NDA land (approximately 1200 hectares) and more than 100 commercial, agricultural and residential buildings. Through NDAPL, we ensure this land and property is effectively managed, including completion of property portfolio projects for repair and enhanced economic and environmental stewardship as appropriate. When we no longer need land and property to deliver our mission, we sell it for commercial and socio-economic uses.

We use some of NDAPL's commercial assets, such as offices and industrial premises, to support mission delivery.

Strategy

NDAPL's strategy is to:

- Manage its properties and complete property portfolio projects to maximise revenues, drive cost savings and minimise risk
- Collaborate across the NDA group to explore creative ways to reuse assets
- Sell surplus land and property ***(SO47)***.

Rutherford Indemnity Limited

Rutherford Indemnity Ltd's main focus is to provide competitive insurance cover for the NDA group to support our mission. It participates in NDA insurance programmes, providing protection against a variety of losses including property and general liability.

Strategy

Rutherford aims to provide an efficient and financially stable insurance facility which helps in reducing our overall cost of risk and supports our wider business objectives. It only underwrites risks which support NDA business objectives. The company retains a prudent proportion of the risks underwritten where it makes financial sense to do so and sources reinsurance protection from organisations with approved security ratings for the more volatile risks. By demonstrating a significant financial commitment to the insurance markets, Rutherford can secure appropriate, competitive financial protection for our estate.

ENERGUS

the future is with us

Energus is a wholly owned NDA subsidiary, based in west Cumbria and created in 2009 as an education, business support and events hub.

It manages our graduate programme, providing more than 100 graduates a year for the NDA group, and our prestigious sector-wide Nuclear Graduates programme which has recruited more than 400 graduates into the nuclear industry since 2008.

At Energus, we contribute to other graduate and apprenticeship programmes designed to support our skills requirements and talent pipeline. These include degree apprenticeships in skills shortage areas; cyber security, business and commercial apprenticeships; and finance audit and risk, and project management graduate programmes.

We also provide a range of early-career recruitment services, including:

- Delivering the NRS recruitment for its national apprentice schemes
- Training Sellafield Ltd apprentices for their first two years at the Energus workshop
- Hosting the University of Cumbria which operates its west-coast presence at the Energus facility, where it delivers a range of programmes including a project academy programme specifically for the NDA group and Sellafield Ltd.

We deliver a portfolio of cyber security training programmes for the civil nuclear sector, its associated supply chain and the wider business community, and also deliver health and safety training.

The state-of-the-art Energus facility hosts regional and national conferences and events and has its own events management team and in-house catering.

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Appendices

Appendix A

Summary of the Integrated Impact Assessment

The Integrated Impact Assessment (IIA) of Strategy 4 has been reviewed and updated to align with Strategy 5, to be published in 2026. The four strategic themes of Site Decommissioning and Remediation, Spent Fuel, Nuclear Materials and Integrated Waste Management have remained the same, and the Critical Enabler of Transport has also been included in the assessment. Credible options for each of the strategic themes have been revised and reassessed in line with updates to Strategy 5 in Volumes 1 and 2 of the IIA. Baseline data and the legislative context review have been updated in Volume 3.

Significant changes have been made to the NDA group since the previous Strategy and associated IIA were produced, as we have moved to the One NDA group model. The NDA group now comprises the NDA, Sellafield, Nuclear Restoration Services (NRS), NRS Dounreay, Nuclear Waste Services (NWS) and Nuclear Transport Solutions (NTS). The updated IIA has taken these changes into account. Legislative and policy updates, for example, the 'UK policy framework for managing radioactive substances and nuclear decommissioning' published in 2024, have directed the Strategy 5 update.

The IIA comprises a Strategic Environmental Assessment (SEA), Health Impact Assessment (HIA) and Socio-Economic Impact Assessment (SEIA). The methodology of the IIA has not changed from the 2021 iteration, although the topics for the environmental, health and socio-economic assessments have been refined. Sustainability is now regarded as an overarching subject/principle and is hardwired into the assessment rather than assessed as a singular topic. For the purposes of the assessment, the potential significant impacts of Strategy 5 have been assessed through generic activities involved in implementing the preferred strategic options. These are: Land – either an increase or decrease in land utilised by NDA for mission progress; Construction; Operation and Maintenance; and Transport – either an increase or decrease in transport of NDA assets or liabilities.

Land

The assessment demonstrated that an increase in land used for mission progress and new facilities may lead to various potential positive and negative environmental, health and socio-economic impacts. Examples include potentially reduced biodiversity and water resources and, particularly, potential impacts on the economy. Increased land use may be required for credible options for the safe stewardship of the NDA estate, the consolidation and interim storage of spent fuel, decommissioning, the continued safe storage of nuclear fuels, and integrated waste management.

A decrease in land used offers potential positive environmental impacts such as increased biodiversity and water resources, as well as potential positive and negative health and socio-economic impacts. Credible options for site decommissioning and remediation may potentially allow for a reduction in land use.

Construction

The assessment indicated that construction activities, such as the construction of facilities or infrastructure, or the construction of mitigation infrastructure for remediation purposes, may lead to various potential positive and negative environmental, health and socio-economic impacts. Potential significant negative environmental impacts include increased materials usage and waste and impacts on water resources and quality. Potential positive impacts focus particularly on diversity and employment. Construction was assessed as being a requirement of credible options across every strategic theme, though not for the Operational Estate Use topic or the credible options for deferred dismantling.

Operation and Maintenance

The assessment demonstrated that operation and maintenance of existing or new buildings and facilities could lead to potential negative environmental and health impacts, such as reduced air quality and an increase in noise and vibration. However, these activities may lead to potentially significant positive socio-economic impacts, particularly in relation to diversity and the economy. Operation and Maintenance was assessed as being a requirement of credible

options of every topic across every strategic theme, the only exceptions being the credible options to divest NDA land freehold, remove hazards completely for site end-states and declare all fuels as waste today.

Transport
It is noted that a change in transport requirements associated with the location and number of new facilities could offset some of the significant impacts of Strategy 5 through reduced construction, and operation and maintenance activities. The increased use of rail transportation is a desirable and preferred option to reduce the impacts associated with the distribution of materials such as construction products and soil from our sites.

The assessment concluded that an increase in transport may potentially lead to negative environmental, health and socio-economic impacts, such as reduced air quality and increased risk of respiratory disease. However, there is also the potential for positive socio-economic impacts, such as an increase in local and national assets, and employment. Increased transport was assessed as being a requirement across Integrated Waste Management and site end states.

A decrease in transport may lead to positive impacts across several environmental and health topics. Examples of these are potentially improved air quality and increased life expectancy. A decrease in transport can also lead to potentially positive and negative socio-economic impacts, particularly on the economy and population. A decrease in transport was assessed as being potentially likely as a result of the credible options for the consolidation of spent fuel and the on-site or in-situ disposal of waste.

Cumulative Effects
An assessment of the cumulative effects of strategic themes concluded that the two strategic themes with the highest probability for cumulative effects are Site Decommissioning and Remediation and Integrated Waste Management. It is recognised that the Spent Fuels and Nuclear Materials themes may also interact at certain sites. The timing of the anticipated transfer of the Defence Nuclear Organisation's nuclear liabilities, the new nuclear build programme and advanced nuclear technologies relative to the implementation of Strategy 5 is uncertain. Consequently, this makes it difficult to accurately predict potential cumulative effects.

Mitigation
In line with the requirements of an SEA, potential measures have been identified to mitigate adverse effects and enhance positive effects that may result from implementing Strategy 5. We are required to comply with a wide range of legislation and codes of practice applied at international, European, national and local government level, such as the Environmental Permitting Regulations and Planning Regulations. In addition to external regulations, our activity is governed internally in accordance with our strategies, plans, programmes and frameworks, such as the NDA Business Plan and the NDA group Socio-Economic Grant Funding Programme.

A new framework of monitoring has been proposed, recognising that we, the NDA, and government bodies collate information, such as mission reporting and the sustainability review, in addition to relevant Environment Agency data regarding water resources and pollution releases.

Conclusions
There are several general conclusions that can be drawn from the IIA of Strategy 5. The most significant impacts were in relation to the acquisition of land for the construction, operation and maintenance of new facilities. The adverse impacts of construction can be mitigated by reusing existing facilities and by complying with already existing legislation and best practice. The implementation of a number of the preferred options may put pressure on the existing nuclear skills base. This pressure will be increased if or when aligned with any future demand from the UK's new nuclear build programme. Health risks associated with options are linked to environmental and socio-economic changes. There is considerable uncertainty regarding how options will be implemented at a future time and at site level by Site Licence Companies. The results of this assessment should therefore be viewed as being indicative of potential trends.

Appendices

Appendix B

Summary of Expected Expenditure and Income 2023/2024

	£ million				
	Decom & Clean-up Costs	Total Operations Costs	Commercial Revenue	Net Running Cost	Government Funding
Sellafield	70,720	2,803	(5,848)	(3,045)	67,675
NRS	24,097	0	0	0	24,097
NWS	7,570	4,926	(4,926)	0	7,570
NTS	66	0	0	0	66
Total	**102,453**	**7,729**	**(10,774)**	**(3,045)**	**99,408**

Glossary

As Low As Reasonably Achievable (ALARA)

The ALARA principle is contained in the Euratom Basic Safety Standards Directive 96/29, which is transposed into UK law. Essentially, it means that all reasonable steps should be taken to protect people. In making this judgement, factors such as the costs involved in taking protection measures are weighed against benefits obtained, including the reduction in risks to people.

As Low As Reasonably Practicable (ALARP)

To satisfy this principle, measures necessary to reduce risk must be taken until the cost of these measures whether in money, time or trouble, is disproportionate to the reduction of risk. (Edwards v National Coal Board [1949]).

Best Available Technique (BAT)

BAT is defined as the most effective and advanced stage in the development of activities and their methods of operation, which indicates the practical suitability of particular techniques for providing, in principle, the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and impact on the environment as a whole.

Best Practicable Means (BPM)

BPM is a term used by the Environment Agency and Scottish Environment Protection Agency in authorisations issued under the Radioactive Substances Act (1993) (ref 50). Essentially, it requires operators to take all reasonable practicable measures in the design and operational management of their facilities to minimise discharges and disposals of radioactive waste, so as to achieve a high standard of protection for the public and the environment. BPM is applied to such aspects as minimising waste creation, abating discharges, and monitoring plant, discharges and the environment. It takes account of such factors as the availability and cost of relevant measures, operator safety and the benefits of reduced discharges and disposals.

If the operator is using BPM, radiation risks to the public and the environment will be ALARA.

Beyond reach

Material is placed in a form which reduces the enduring security risks and burden during storage.

Broadly acceptable

Risks falling into this region are generally regarded as insignificant and adequately controlled. The level of risk below which, so long as precautions are maintained,

it would not be reasonable to consider further improvements to standards if these involved a cost.

Brownfield land

Land that has been previously developed is known as Brownfield land. Previously developed land is defined in Planning Policy Guidance Document 3 “Housing” (2000) PPG3 as land which “is or was occupied by a permanent structure (excluding agricultural or forestry buildings), and associated fixed surface infrastructure.

Business case

Provides evidence and rationale to support decision-making, and gives assurance to stakeholders that the NDA has acted responsibly. The process involves close scrutiny of all relevant financial and non-financial aspects of a proposed project, ensuring an optimal solution is selected for a given set of circumstances and that the identified benefits can be realised.

Circular economy

The elimination of waste and reduction in natural resources by design through the reuse, repair, repurposing and recycling of assets.

Continuous Improvement (CI)

An industry proven systematic approach to ensure businesses maintain control when delivering their outcomes having the added benefit of improving safety, quality, reducing costs and enabling quicker delivery.

Decarbonisation

The process of reducing the amount of greenhouse gas emissions made.

Deferred decommissioning

Comprises one or more periods when the plant/facility/installation is purposely kept in a state of quiescence as part of the programme for achieving the site end state.

Designation / de-designation

This is a shortened expression which means Designating Direction or a Revocation / Modification of it. Designations are made by the Secretary of State and for sites in Scotland by the Secretary of State in conjunction with the Scottish ministers and laid before the UK Parliament and as appropriate in the Scottish Parliament.

Disposition

Consignment of, or arrangements for the consignment of, material to some specified (interim or final) route or form.

Down-blended

The process by which the percentage composition of the uranium-235 isotope (written 235U) in uranium, also referred to as its enrichment, has been decreased by mixing it with uranium of lower enrichment.

Environmental safety case

A set of substantiated claims concerning the environmental safety of disposals of solid radioactive waste. It will be provided by the developer or operator of a disposal facility and should demonstrate that the health of members of the public and the integrity of the environment are adequately protected.

Geological disposal

A long-term management option involving the emplacement of radioactive waste in an engineered underground Geological Disposal Facility or repository, where the geology (rock structure) provides a barrier against the escape of radioactivity and there is no intention to retrieve the waste once the facility is closed.

Geological Disposal Facility (GDF)

A highly engineered facility capable of isolating radioactive waste within multiple protective barriers, deep underground, to ensure that no harmful quantities of radioactivity ever reach the surface environment.

Greenfield land

Refers to land that has not yet been built on.

Hazard

Hazard is the potential for harm arising from an intrinsic property or ability of something to cause detriment.

Hazardous waste

Hazardous waste is essentially waste that contains hazardous properties that may render it harmful to human health or the environment. The European Commission has issued a Directive on the controlled management of such waste (91/689/EEC) and hazardous waste is defined on the basis of a list drawn up under that Directive. Examples include asbestos, lead-acid batteries, oils and solvents.

Health Impact Assessment (HIA)

Assesses the potential effects of the NDA Strategy upon public health. HIA is undertaken as part of the Integrated Impact

Assessment to understand the potential risks for health effects associated with implementation of NDA Strategy.

High Level Waste (HLW)

High Level Waste (HLW) is waste where the temperature may rise significantly because of the radioactivity. The design of waste storage or disposal facilities has to take this into consideration.

Higher Activity Waste (HAW)

Higher activity radioactive waste comprises a number of categories of radioactive waste – High Level Waste (HLW), Intermediate Level Waste (ILW), and Low Level Waste (LLW) that is not suitable for near-surface disposal in current facilities.

Integrated Impact Assessment (IIA)

The Integrated Impact Assessment of the NDA Strategy comprises the combined assessment results of a strategic environmental assessment (SEA), health impact assessment (HIA) and socio-economic impact assessment (SeIA).

Interim state

An interim state describes the condition of a site or facility (including land) at specific points en route to the site end state. It is a natural milestone or decision point in the decommissioning and remediation programme that typically represents a significant reduction in risk or hazard. An interim state does not automatically infer a period of quiescence; it can be followed by further decommissioning activities or a period of deferral.

Institutional control

Institutional control is a legal or administrative tool or action taken to reduce the potential for exposure to hazardous substances. Institutional controls may include, but are not limited to, land use restrictions, environmental monitoring requirements, and site access and security measures.

Intermediate Level Waste (ILW)

Waste with radioactivity levels exceeding the upper boundaries for Low Level Waste (LLW), but which does not need heating to be taken into account in the design of storage or disposal facilities. ILW arises mainly from the reprocessing of spent fuel, and from general operations and maintenance of radioactive plant. The major components of ILW are metals and organic materials, with smaller quantities of cement, graphite, glass and ceramics.

Irradiated fuel

Fuel assemblies taken out of a nuclear reactor after a period of energy production.

Intolerable risk

Above a certain level, a risk is regarded as intolerable and cannot be justified in any ordinary circumstance.

Lead and learn

Lead and learn is associated with undertaking the decommissioning of sites or installations in a planned sequential manner designed to realise specific aspects of learning, such as decommissioning techniques, which can then be applied to subsequent sites or installations.

Lower Activity Waste (LAW)

Comprises both Lower Level Waste and Very Low Level Waste.

Low Level Waste (LLW)

Low Level Waste which includes metals, soil, building rubble and organic materials, arising principally as lightly contaminated miscellaneous scrap. Wastes other than those suitable for disposal with ordinary refuse, but not exceeding 4 GBq/tonne (gigabecquerels) of alpha or 12 GBq/tonne of beta/gamma activity. Metals are mostly in the form of redundant equipment. Organic materials are mainly in the form of paper towels, clothing and laboratory equipment that have been used in areas where radioactive materials are used e.g. hospitals,

research establishments and industry. The National Repository for LLW is near Drigg, Cumbria.

Monitored Natural Attenuation (MNA)

Monitored Natural Attenuation is an important, common groundwater remediation technology used for treating some dissolved groundwater contaminants.

NDA Value Framework

The NDA Value Framework comprises factors that stakeholders have told us they value in relation to the NDA's mission. These factors are considered when assessing the performance of alternative options in order to identify which option offers the greatest value. The NDA Value Framework captures the 3 pillars of sustainability and social value: the economy, society and environment.

Net zero greenhouse gas emissions

Net zero is achieved when the total greenhouse gas emissions made are equal to or less than the emissions removed from the environment.

Nuclear site licence

A formal notification of the authorised body which can operate a nuclear operation under the Nuclear Installations Act (1965) (ref 51).

Oslo-Paris Conventions (OSPAR)

Oslo-Paris Conventions which established requirements on the level of nuclear and non-nuclear discharges to the marine environment of the North East Atlantic, the North Sea and the Irish Sea.

Parent Body Organisation (PBO)

Entities, competitively selected by the NDA, that own the SLCs for the duration of their PBO contract, responsible for bringing improvement in SLC performance.

Place of Deposit

A place of deposit is a facility, which has been approved by the Lord Chancellor, as being a suitable place for the storage and management of public records (under s4(1) of the Public Record Act).

Post Operational Clean Out (POCO)

An important part of the transition from operations to decommissioning involving hazard reduction activities (e.g. removing fuel) that are undertaken immediately after cessation of operations. POCO minimises future radiological and chemotoxic challenges during decommissioning.

Radioactive decay

Radioactive Decay occurs when an unstable atom loses energy. This decay occurs at a constant, predictable rate that is referred to as half-life.

Site End State

A site end state is the condition of an entire site (including the land, structures and infrastructure) once decommissioning and clean-up activities have ceased. It may be appropriate to define end states for components of the site, which must be brought together and assessed as a whole to determine the site end state.

Site Licence Company (SLC)

The term applied to operators of nuclear installations where NDA has been designated as having responsibility for decommissioning and has tasked the operator with carrying out the required decommissioning.

Site Strategic Specification (SSS)

Site Strategic Specifications define the required high level outcomes based on the NDA Strategy so that there is a clear link between NDA Strategy and what is delivered by the SLCs.

Small and Medium Enterprise (SME)

Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361 (ref 52).

Socio-economic Impact Assessment (SeIA)

Assesses the potential socio-economic effects of NDA Strategy. SeIA is undertaken as part of the IIA to understand the socio-economic effects associated with implementation of NDA Strategy.

Sophisticated attack

The NDA defines sophisticated cyber attacks as those conducted by advanced persistent threats (APTs). An APT is a stealthy threat actor, typically a nation state or state sponsored group which gains unauthorised access to a computer network and remains undetected for an extended period. These groups typically utilise traditional espionage vectors including social engineering, human intelligence and infiltration to gain access to a physical location to enable network attacks to install custom malicious software.

Strategic Environmental Assessment (SEA)

SEA refers to the type of environmental assessment legally required by the Environmental Assessment of Plans and Programmes Regulations (2004) (SI 2004/1633) (ref 53) and the Environmental Assessment (Scotland) Act (2005) (ref 54). SEA for NDA Strategy is undertaken as part of the IIA to understand the significant environmental effects of implementing NDA Strategy.

Strategy Management System (SMS) (ref 6)

The SMS is a management tool used to develop, control and communicate our Strategy for decommissioning and cleaning up the UK's civil public sector nuclear sites. It also provides the basis for the periodic review of our Strategy which summarises the current strategy at the time that it is published.

Sustainability

Meeting the needs of the present without comprising the ability of future generations to meet their own needs.

Very Low Level Waste (VLLW)

A sub-category of LLW, comprising waste that can be safely disposed of alongside municipal, commercial or industrial waste, or can be disposed of to specified landfill sites, subject to limits on radioactivity content.

Waste Hierarchy

A hierarchical approach to minimise the amounts of waste requiring disposal. The hierarchy consists of non-creation where practicable; minimisation of arisings where the creation of waste is unavoidable; recycling and reuse; and, only then, disposal.

Abbreviations

AECL	Atomic Energy of Canada Limited
AGR	Advanced Gas-Cooled Reactor
AGROP	AGR Operating Programme
ALARP	As Low As Reasonably Practicable
AP	Additional Protocol
ARC	Alpha Resilience and Capability
ASLEF	Associated Society of Locomotive Steam Enginemen and Firemen
AWE	Atomic Weapons Establishment
BAT	Best Available Technique
BNFL	British Nuclear Fuels Limited
BPM	Best Practicable Means
CCFE	Culham Centre for Fusion Energy
CFP	Cavendish Fluor Partnership
CNC	Civil Nuclear Constabulary
CNCSS	Civil Nuclear Cyber Security Strategy
CNSRP	Caithness and North Sutherland Regeneration Partnership
CoRWM	Committee on Radioactive Waste Management
CS	Client Specification
CSRP	Cyber Security Resilience Programme
CTR	Cooperative Threat Reduction
DFR	Dounreay Fast Reactor
DIT	Department for International Trade
DRS	Direct Rail Services Limited
DSRL	Dounreay Site Restoration Limited
DTRA	Defense Threat Reduction Agency
EC	European Commission
EDF	EDF Energy
EDRAM	Environmentally Safe Disposal of Radioactive Material
Euratom	European Atomic Energy Community
FGMSP	First Generation Magnox Storage Pond
FHP	Fuel Handling Plant
GDF	Geological Disposal Facility
GMB	General Municipal & Boilermakers
GNS	Global Nuclear Security
GRI	Global Reporting Initiative
GRR	Guidance on Requirements for Release from Radioactive Substances Regulation
HAL	Highly Active Liquor
HAW	Higher Activity Waste
HEU	High Enriched Uranium
Hex	Uranium Hexafluoride Tails
HIAL	Highlands and Islands Airports Limited
HIP	Hot Isostatic Pressing
HLW	High Level Waste
HSE	Health and Safety Executive
IAEA	International Atomic Energy Agency

IIA	Integrated Impact Assessment
IIND	Integrated Innovation in Nuclear Decommissioning
ILW	Intermediate Level Waste
INS	International Nuclear Services Limited
INS Japan	International Nuclear Services Limited Japan
IPT	Integrated Project Teams
ISF	Interim Storage Facility
IT	Information Technology
IWM	Integrated Waste Management
IWS	Integrated Waste Strategy
LAW	Lower Activity Waste
LEU	Low Enriched Uranium
LLW	Low Level Waste
LLWR	Low Level Waste Repository
LP&S	Legacy Ponds and Silos
LTP	Lifetime Plan
LWR	Light Water Reactor
M3	Office of Material Management and Minimisation
MDU	Magnox Depleted Uranium
MEP	Magnox Encapsulation Plant
MHDG	Mental Health Delivery Group
MOD	Ministry of Defence
MOP	Magnox Operating Programme
MOU	Memorandum of Understanding
MOX	Mixed Oxide Fuel
MSSS	Magnox Swarf Storage Silo
MTR	Materials Test Reactor
NAO	National Audit Office
NATO	North Atlantic Treaty Organisation
NCSC	National Cyber Security Centre
NDA	Nuclear Decommissioning Authority
NDAAL	NDA Archives Limited
NDAPL	NDA Properties Limited
NDARB	NDA Research Board
NDF	Nuclear Damage Compensation and Decommissioning Facilitation Organisation of Japan
NDPB	Non-Departmental Public Body
NGO	Non-Government Organisation
NIF	National Inventory Forum
NIGLQ	Nuclear Industry Group for Land Quality
NIST	National Institute of Standards and Technology
NNL	National Nuclear Laboratory
NNSA	National Nuclear Security Administration
NPL	National Physical Laboratory
NPT	1968 Treaty on the Non-Proliferation of Nuclear Weapons
NSAN	National Skills Academy for Nuclear
NSIP	Nationally Significant Infrastructure Project
NSSG	Nuclear Skills Strategy Group
NTS	Nuclear Transport Solutions
Nucleus	NDA Archive Facility
NuLeAF	Nuclear Legacy Advisory Forum
NWDRF	Nuclear Waste and Decommissioning Research Forum
OECD-NEA	Organisation for Economic

	Co-operation and Development – Nuclear Energy Agency
ONR	Office for Nuclear Regulation
OSPAR	Oslo and Paris Conventions
PAC	Public Accounts Committee
PBO	Parent Body Organisation
PCM	Plutonium Contaminated Material
PFCS	Pile Fuel Cladding Silo
PFR	Prototype Fast Reactor
PFSP	Pile Fuel Storage Pond
PIE	Post Irradiation Examination
PLC	Public Limited Company
PNTL	Pacific Nuclear Transport Limited
POCO	Post Operational Clean Out
QMS	Quality Management System
R&D	Research and Development
RD&I	Research, Development and Innovation
RSS	Radioactive Substances Strategy
RWM	Radioactive Waste Management Limited
SAR	Security and Resilience
SCCORS	Scottish Councils Committee on Radioactive Substances
SED	Safety and Environmental Detriment
SEPA	Scottish Environment Protection Agency
SFL	Springfields Fuels Limited
SGHWR	Steam Generating Heavy Water Reactor
SIMRS	Safeguards Information Management and Reporting System
SLC	Site Licence Company
SLMWG	Strategic Land Management Working Group
SME	Small and Medium Enterprises
SMS	Strategy Management System
SPRS	Sellafield Product and Residue Store
SRP	Sellafield Product and Residues Store Retreatment Plant
SSAC	State System for Accountancy and Control
SSG	Site Stakeholder Group
SSS	Site Strategic Specification
STEM	Science Technology Engineering and Maths
T&LWG	Transport and Logistics Working Group
THORP	Thermal Oxide Reprocessing Plant
TPU	THORP Product Uranium
TR&S	THORP Receipt and Storage
TSSA	Transport Salaried Staff Association
UAV	Unmanned Autonomous Vehicles
UKRWI	UK Radioactive Waste Inventory
UKSRD09	2009 UK Strategy for Radioactive Discharges
UN SDG	United Nations Sustainability Development Goals
UNS	Urenco Nuclear Stewardship
UO3	Uranium Trioxide
US DOE	United States Department of Energy
UUK	Urenco UK Limited
VLLW	Very Low Level Waste
WANO	World Association of Nuclear Operators

WEC	Westinghouse Electric Company
Y-12	Y-12 National Security Complex (Y-12)