National Audit Office

REPORT

Decommissioning Sellafield: managing risks from the nuclear legacy

Department for Energy Security & Net Zero, Nuclear Decommissioning Authority

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Department for Energy Security & Net Zero, Nuclear Decommissioning Authority

Report by the Comptroller and Auditor General

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Gareth Davies
Comptroller and Auditor General
National Audit Office

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The National Audit Office study team consisted of:

Matthew Conroy, Cameron Paton and Michael Slater, with assistance from James Dixon, Jamie Nicolson, Temi Odeleye and Josie Short, under the direction of Charles Nancarrow.

For further information about the National Audit Office please contact:

National Audit Office
Press Office
157–197 Buckingham Palace Road
Victoria
London
SW1W 9SP

020 7798 7400

www.nao.org.uk

@NAOorguk

Key facts

3.3mn m^3

estimate of the amount of radioactive waste that currently exists, or will be created as Sellafield is decommissioned

£136bn

forecast cost of decommissioning Sellafield (undiscounted, in 2023-24 prices)

2125

date the Nuclear Decommissioning Authority (NDA) expects all buildings at Sellafield to be demolished

£2.7 billion	Sellafield spending in 2023-24 (it earned £0.8 billion in income in the same year)
£170 million	annual financial savings from the decisions to operate the NDA's sites as subsidiaries (rather than contracting out their management)
£7.0 billion	total forecast cost of the nine major projects Sellafield currently has in progress
Green	rating from the Infrastructure and Projects Authority for two of Sellafield's largest current projects
Up to 13 years	delay retrieving all waste from four of Sellafield's oldest storage facilities, compared with the position when we last reported in 2018
546	number of boxes of waste Sellafield hopes to be retrieving each year from the Magnox Swarf Storage Silo by the mid-2030s (up from 23 boxes in 2023-24)
42%	proportion of Sellafield's most important assets that were in either 'Good' or 'Acceptable' condition in 2023-24
344	number of people recruited onto Sellafield's apprenticeship and graduate schemes in 2023-24; the NDA recruited a further 67 people onto its equivalent schemes

Summary

Background

1 Sellafield is the UK's most complex and challenging nuclear site with highly hazardous materials stored there from across the UK's nuclear industry. It also holds a legacy of contaminated buildings, untreated waste and ageing facilities. The government considers that some of these pose an 'intolerable' risk – meaning risk reduction must be the overriding factor in the decision-making of the public body in charge of Sellafield, the Nuclear Decommissioning Authority (NDA). These buildings and their contents will remain highly hazardous for many years: while workers at Sellafield have started retrieving and safely storing waste, the NDA expects full site remediation will take until 2125.

2 The NDA is an executive non-departmental public body, established in 2005 under the Energy Act 2004. It is currently responsible for operating, decommissioning and cleaning up 17 nuclear reactor and research sites in the UK and the government has arranged for it to take on seven more. Sellafield Ltd (Sellafield) is a wholly owned subsidiary of the NDA, responsible for the Sellafield site. The NDA is sponsored by the Department for Energy Security & Net Zero (DESNZ) and Scottish ministers. HM Treasury agrees funding settlements and approves major spending commitments. UK Government Investments (UKGI) oversees the NDA's governance and performance on behalf of DESNZ, while the Infrastructure and Projects Authority provides independent scrutiny and assurance to some major projects. The safety risks and environmental impacts associated with the NDA estate in England are regulated by the Office for Nuclear Regulation (ONR) and the Environment Agency.

3 Sellafield needs to complete a number of projects to ensure critical services can keep running, and enable the site to safely store and treat waste and to demolish obsolete facilities – at the same time as it carries out day-to-day operations. The cost is considerable: the NDA spent £2.7 billion at Sellafield in 2023-24 (Sellafield earned £0.8 billion in income in the same year). Sellafield depends on a highly skilled workforce and supply chain and is facing increasing competition from military and civil nuclear programmes for both. The government forecasts that the nuclear sector will need to double the current recruitment rate and recruit 40,000 more people by 2030.

4 Achieving value for money given these constraints requires effective risk and portfolio management: Sellafield needs to understand its estate's condition, how it could deteriorate over time, and the interdependencies between different parts of its complex portfolio. The very long timescales and unique nature of some of the hazards mean there is particularly high uncertainty about what will need to be built and when it will be needed. The NDA and Sellafield have been implementing a series of changes to their organisational structure to improve performance.

5 We have previously reported on the NDA's progress with reducing risk and hazard on the Sellafield site, and on the NDA's failed procurement and management of a contract to decommission 12 non-Sellafield sites. In 2012 and 2015 we reported significant delays and cost increases in Sellafield's major projects. In 2018, we found:

- an improving trend in project delivery at Sellafield, with smaller cost increases and delays than in 2015, but;
- governance and assurance around the NDA had not been optimised and there had been a reduction in clarity about the NDA's role following the decision to bring Sellafield into the NDA as a wholly owned subsidiary in April 2016; and
- slow progress with demonstrating how the NDA's current work leads to progress against its long-term mission.

Scope

6 This report examines progress since we last reported in 2018 and, in particular, the extent to which the NDA and Sellafield have improved on the issues we have previously identified. It covers the following.

- **Governance and oversight of nuclear decommissioning:** The extent to which the NDA's reforms since 2018 are securing benefits and improving governance and oversight of decommissioning risks (Part One).
- **Progress to date in managing risks from the nuclear legacy:** How well Sellafield has performed since 2018 on managing risks from the nuclear legacy and what more it needs to do (Part Two).
- **Understanding future risks and planning:** Sellafield's ability to assess and understand current and emerging decommissioning risks and to put in place short- and long- term plans to address these (Part Three).

Since DESNZ and the NDA have been aware of the particular challenges and issues at Sellafield for many years, we would expect Sellafield to be making significant progress in addressing the risks from the nuclear legacy. We therefore paid particular attention to this area in drawing our conclusions.

Key findings

Governance and oversight

7 **Since we reported in 2018 the NDA has continued to re-organise itself to address significant procurement, contractual and delivery problems.** From its creation in 2005, the NDA had used a model of contracting out sites for the private sector to manage and decommission over long periods. Costs and delays at Sellafield had escalated substantially over time under this model, which was not suitable for the level of uncertainty involved. The NDA has abandoned this approach, initially for Sellafield in 2016 and from 2018 for other sites. Much of the NDA's focus from 2018 to 2023 has been on transferring non-Sellafield sites into subsidiaries, creating a simplified group structure, and introducing ways of working to take advantage of new opportunities for greater collaboration between the NDA's subsidiaries (paragraphs 1.3 to 1.6, and Figures 1 to 3).

8 **The NDA's new organisational structure and approach has secured a range of financial and non-financial benefits to date, with the possibility of further benefits.** Across the group, the new model currently involves recurring savings of around £170 million per year, due to the discontinuation of fees to site contractors and the NDA no longer having to pay for indemnities against certain risks. The NDA also believes a further £8.2 million of annual savings have been achieved by cross-group approaches such as shared software licenses or a joint printing contract. It plans to take an increasingly group-wide approach in other areas, including supply chain management and provision of IT services, which it expects will lead to savings and improved capabilities for the group. It has placed particular emphasis on sharing people, skills and operational knowledge across different elements of the group, such as sharing knowledge of specialist decontamination and decommissioning challenges between Sellafield and Dounreay. The NDA co-ordinated 137 secondments to other sites or external organisations in 2023-24, up from 19 in 2020-21 (paragraph 1.6).

9 **Sellafield's new leadership team has more to do to improve accountability for performance improvement within the organisation.** There have been a number of indications of a problematic performance culture at Sellafield in recent years, as well as tensions between Sellafield, ONR, and the NDA. In 2023, Sellafield paid out £2.1 million more than it should have done under a staff bonus scheme – without resolving concerns expressed by members of the Sellafield Board and the NDA. The ONR also wrote to the NDA about Sellafield's performance, expressing a clear view that the NDA should do more to offer their support and hold Sellafield to account. Since 2023, several key members of the Sellafield leadership team – including the chief executive – have left the organisation. There are some signs that the culture is now starting to improve – with staff survey results improving and Sellafield's senior management demonstrating an increasing willingness to confront problems (paragraphs 1.7 to 1.13).

10 Sellafield, the NDA, DESNZ and HM Treasury have not simplified the process for approving business cases since we last reported. It is taking slightly longer – 8.6 months on average – for the largest business cases to pass through the approvals system than it did in 2018. This is likely to make delivery of some projects more challenging, and would cause particular problems where the project needs to be completed by a tight deadline. DESNZ has previously recognised the need for "more radical thinking to streamline the process", but this has not happened. However, the NDA and Sellafield do now have more mature assurance functions capable of providing better challenge and support to decision-makers (paragraphs 1.15 to 1.19 and Figure 4).

Progress to date in managing risks from the nuclear legacy

11 There is no overall measurement of progress towards full decommissioning. Sellafield currently sets a number of annual targets as well as longer-term "key decommissioning milestones" – some of which will not be achieved for decades. Sellafield's good performance against short-term targets is not consistent with the longer-term milestones, which are becoming increasingly challenging. It does not currently have an effective way of linking these to clearly communicate how current and future day-to-day performance contributes towards the overarching mission (paragraph 2.2).

12 Sellafield is taking action to address deficiencies in its management of major projects, which have suffered from cost and time overruns. Sellafield has a number of major projects which are critical to delivering its long term mission, for example to demolish obsolete facilities, or safely store and treat waste. In 2018 we reported that Sellafield was struggling to deliver its major projects to time and budget. It currently has nine major projects over £100 million in value, which are expected to cost £7.0 billion in total. The four major projects which were in progress in 2018 are now expected to cost £1.15 billion more and be delivered much later than forecast. However, most projects which started more recently (with one notable exception discussed in paragraph 14) are currently expected to be completed in line with assumptions in their business cases – though are still several years away from being completed. The Infrastructure and Projects Authority (IPA) has given two of these projects 'Green' ratings (a relatively rare rating) for each of the last two years. Sellafield is increasingly applying a new, more collaborative approach to project delivery which it and IPA believe is leading to better outcomes (paragraphs 2.3 to 2.10 and Figures 5 and 6).

13 Sellafield has demonstrated that it can remove safely the most hazardous waste, but is not progressing quickly enough to meet its plans. Sellafield has to empty waste from ageing facilities which pose an 'intolerable' risk, and store it in buildings which meet modern standards. The risk these facilities pose is illustrated by the Magnox Swarf Storage Silo, which is leaking 2,100 litres of contaminated water each day. This could continue until at least the late 2040s (Sellafield and its regulators believe that current leakage rates pose a low risk to workers and the public). As of December 2023, it has started removing waste from all four of its 'legacy ponds and silos'. However, it has made less progress than it expected to, in part because of the impact of the COVID-19 pandemic. Sellafield's milestones for substantially emptying three of the 'legacy ponds and silos' are 6 to 13 years later than its 2018 estimate of when it would achieve this. Sellafield has plans to increase significantly the pace of retrievals over the next decade. There is a risk that facilities to treat the waste will reach the end of their useful lives before all the waste is retrieved. Sellafield has made better progress addressing the risks associated with the plutonium it stores and believes these risks will continue to decline until 2060, in line with the NDA's strategy (paragraphs 2.11 to 2.16 and Figures 8 and 9).

14 Sellafield recognised in late 2023 that it did not have a coherent plan to sustain vital sample analysis capabilities. These scientific tests are essential, for example to enable safe removal and treatment of waste from ageing facilities, and to store plutonium safely. The existing testing facility is over 70 years old and in extremely poor condition, but Sellafield paused work on a project to refurbish another building (which had been expected to replace it) in 2024 (7.5 years after it started, after it had spent around £265 million) due to increasing concerns about the condition of the buildings and the delay it was likely to cause to another major project. Sellafield is now developing an alternative approach – and expects to decide whether it should cancel the original project in December 2024 (paragraphs 2.17 to 2.21).

15 Sellafield still has to address known cyber security issues. The ONR formally expressed concerns about the adequacy of Sellafield's approach to cyber security in 2021. Earlier this year it prosecuted Sellafield under the Nuclear Industry Security Regulations 2003 for three cyber security breaches which took place between 2019 and 2023. Sellafield pleaded guilty in June 2024 to all three offences and has been fined £332,500. A plan to address these issues was agreed between the regulator and Sellafield in 2023 (paragraphs 2.22 and 2.23).

Understanding future risks and planning

16 Increases in Sellafield's forecast cost of decommissioning demonstrate that it is still identifying new risks and the cost of addressing these. In 2018, we reported that the Sellafield provision (the forecast future cost of decommissioning after adjusting for inflation) had stabilised after a period of substantial increases. Over time the provision should be expected to decrease as progress towards the final objective is made. However the Sellafield provision was £136 billion in March 2024, 18.8% higher than it was in March 2019 (after adjusting for inflation). This is largely down to further increases in the cost of future work – and the time it is expected to take – and more realistic assumptions about future efficiency savings. The largest increase occurred in 2021, the last time Sellafield carried out a comprehensive review of its future plans: it is currently carrying out a similarly detailed review (paragraphs 3.3 to 3.7).

17 Sellafield still faces a great deal of uncertainty about what it needs to do, and by when, but it is making increasing use of new tools to plan and prioritise better. Some of this uncertainty comes from Sellafield's own lack of data on asset condition: it is not clear how long key assets will need to remain operational for, or whether they are likely to last long enough. Other factors are outside of Sellafield's control, for example decisions over when and whether a Geological Disposal Facility will be available to store waste from Sellafield permanently. The site for this has not been chosen yet, and the opening date has already moved from 2040 to the 2050s at the earliest. Sellafield will need to build more stores and manage waste on site for longer as a result. Sellafield is making better use of its 'Risk Based Management Framework' to identify where its current plan may not achieve the desired results. Its most recent assessment identified six such areas, and has focused senior management's attention on finding solutions. It has also developed a better understanding of how it will use land on the highly congested site for its new construction projects (paragraphs 2.21, 3.8 to 3.18).

18 Sellafield is developing a new approach to workforce planning to address issues which have affected its operation of the site in recent years. In 2021 it agreed with HM Treasury that, by 2031, it would reduce the number of people it employed by 2,500. This is a bigger reduction than could have been achieved by existing change programmes (intended to make the site more efficient). Sellafield did not develop a workforce plan that demonstrated it was on course to achieve this commitment, or that it could be achieved without negative consequences for the site. Its safety assurance team expressed serious concerns about the workforce's diminishing capability in 2022. It was increasingly common for staff shortages to result in buildings being shut down (with safety consequences), and fewer maintenance tasks were being carried out (contributing to deteriorating asset condition). Staff shortages are also affecting Sellafield's ability to carry out operational processes. In late 2023, Sellafield decided to prioritise addressing the capability of its workforce to deliver its 'mission' above achieving its commitments to HM Treasury, and is now developing a new approach to planning. Sellafield recruited 344 people onto its apprenticeship and graduate schemes in 2023-24, with the NDA recruiting a further 67 people to its equivalent schemes (paragraphs 2.14, 3.15 and 3.19 to 3.23).

Conclusion on value for money

19 It is now 20 years since the NDA was set up to manage the UK's nuclear legacy, and eight years since it brought the Sellafield site back under its direct control. However, Sellafield is still in the early stages of delivering its mission of cleaning up the Sellafield site, which it expects to take until 2125. This is an exceptionally challenging mission: Sellafield needs to build new facilities to treat and store different types of nuclear waste, while continuing to maintain ageing facilities and their supporting infrastructure until they can be emptied of waste and decommissioned.

20 Sellafield has made progress since we last reported in 2018. It has demonstrated that it is possible to retrieve the most hazardous waste from four of its oldest stores and store it in a way which meets modern safety standards, and the reorganisation of the NDA is bringing benefits. Increasingly, Sellafield is able to draw on expertise from elsewhere in the NDA group and it is taking action to improve performance on major projects. There are also some recent signs that Sellafield is more willing to confront and resolve difficult issues.

21 In spite of these improvements, we cannot yet say that the NDA and Sellafield are achieving value for money – by which we mean outcomes commensurate with the considerable expenditure on the site. Large projects are still being delivered later than planned and at higher cost. Sellafield has made slower progress in reducing site risks than it would have liked and must now significantly accelerate the pace at which it is retrieving waste from its oldest storage facilities. Simultaneously, it needs to address the deteriorating condition of key assets and develop credible plans for maintaining the analytical capabilities the site depends upon and improving (and sustaining) its workforce's capability. It still lacks a comprehensive measure to assess progress in reducing risk. If it underperforms, the cost of completing its mission will increase considerably, and 'intolerable' safety risks will persist for longer.

Recommendations

Sellafield should:

a develop an approach that demonstrates to stakeholders that effective progress is being made towards decommissioning the site. This should cover enabling activities and include progress to date at Sellafield, while also supporting future funding choices and Spending Review decisions; and

b carry out an assessment of the culture across the site and develop suitable metrics to assess and monitor whether all areas of the site and its leadership are positively contributing to creating a high performing public sector organisation.

The Nuclear Decommissioning Authority, with its group subsidiaries, should:

c develop measures to assess the operational effectiveness of its sites. In particular, it should monitor whether Sellafield is maintaining the capability needed to continue to operate safely and deliver progress with the mission.

The Nuclear Decommissioning Authority, DESNZ and HM Treasury should:

d consider what information and evidence from the NDA group would be needed to be able to demonstrate the value of longer-term settlements. In this context, the NDA should explore whether longer-term budgets for Sellafield are feasible.

Part One

The Nuclear Decommissioning Authority and oversight of the decommissioning mission

1.1 The Nuclear Decommissioning Authority (NDA) was established in 2005. It is responsible for operating, decommissioning and cleaning up 17 nuclear sites, and the government has arranged for it to take on seven more. Sellafield is the most hazardous site. There are seven former nuclear reactors on the site, as well as stores for different types of nuclear waste and the UK's entire stockpile of civilian-owned plutonium. In April 2022, the NDA estimated that the site stored 81,000 m^3 of radioactive waste, 59% of the UK total. More waste will be generated in future as the site is cleaned up – in total, Sellafield will need to handle 3.3 million m^3 of waste (most of which will be less radioactive than the current waste). Some of the buildings on the site date back to the 1940s, and do not meet modern construction standards. The Sellafield site is managed by Sellafield Ltd, a wholly owned subsidiary of the NDA. In this report, we refer to both the site and Sellafield Ltd as 'Sellafield'.

1.2 Since we last reported in 2018 the NDA has continued to reorganise itself to improve oversight and delivery of decommissioning. This part examines:

- The intended benefits of the new arrangements;
- The NDA's oversight of Sellafield and governance and cultural issues; and
- Assurance over major areas of Sellafield's spending.

The reorganisation of the NDA

1.3 The NDA originally arranged for operations and decommissioning at its nuclear sites to be delivered through long-term contracts to private-sector companies. The arrangements suffered from a number of problems which we previously reported on, including project delays and cost increases, and a "wholly inappropriate" commercial strategy for oversight of its 12 Magnox sites. In this case – as with Sellafield – there was considerable uncertainty about what work the private sector contractor would be asked to carry out. The NDA also identified a pattern under the contracts of initial high short-term value followed by diminishing benefits as the impact of initial innovation and change initiatives evolved into business-as-usual activities. Also, contractual barriers inhibited sharing of ideas and expertise between organisations.

1.4 Over a number of years, the NDA has introduced a new model whereby sites are run by NDA owned subsidiaries (**Figure 1**). The subsidiaries' boards are legally responsible for the sites and must determine how best to deliver the NDA's desired outcomes. There are also other stakeholders which have important roles (**Figure 2** on page 16).

1.5 In 2019, having taken direct control of the Sellafield site (and begun preparing to take over the Magnox sites), the NDA introduced its new 'One NDA' way of working: **Figure 3** on page 17 sets out the anticipated benefits. It gradually brought management of all the remaining sites under its control, allowing for greater collaboration.

1.6 The NDA has achieved several benefits so far from the new ways of working:

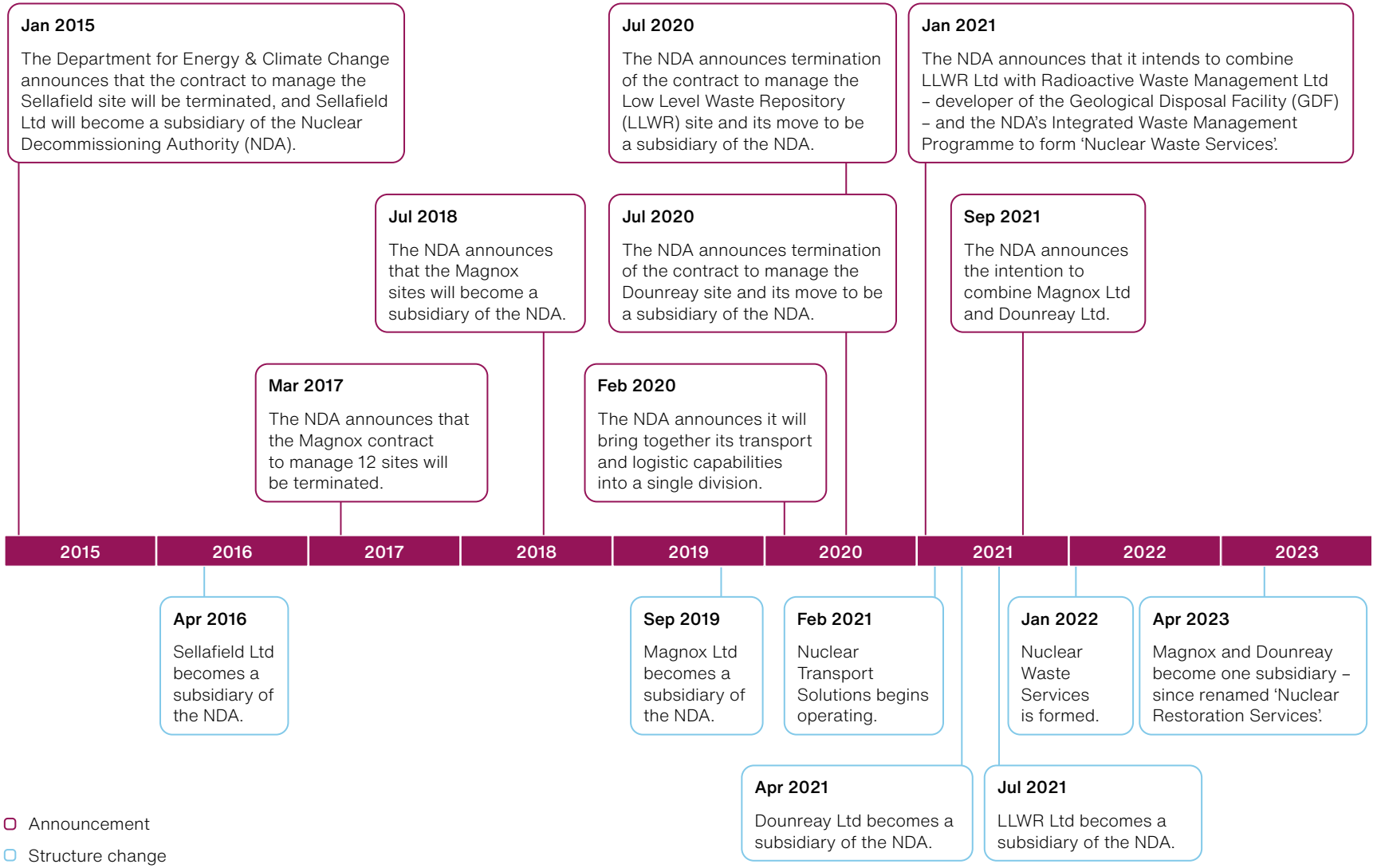
- A new graduate scheme, giving people at an early stage of their careers the chance to work across the group. This scheme expects to recruit more than 120 people in 2024-25, double the number recruited in the previous year;
- Increased secondments within the NDA group: These allow more experienced people to continue to develop their careers within the NDA group (the NDA co-ordinated 137 secondments to other sites or external organisations in 2023-24, up from 19 in 2020-21);
- Sharing knowledge between subsidiaries, such as experience of specialist decontamination and decommissioning challenges common to Sellafield and Dounreay; and
- A new 'Leadership Academy': An 18-month programme with 100 people currently participating (39 NDA employees have already completed the academy).

It is also saving around £170 million per annum from the new arrangements (around £140 million from not paying fees to site operators, and £30 million because DESNZ has indemnified the NDA against certain risks, meaning it no longer needs to buy insurance). The NDA also believes more efficient group-wide procurement and streamlining is saving a further £8.2 million each year. It plans to take an increasingly group-wide approach in other areas, including supply chain management and provision of IT services, which it expects will lead to savings and improved capabilities for the group. It recognises that it is not yet able to produce a comprehensive cross-group benefits report, underpinned by suitable data and evidence, but hopes to be able to do so by September 2025.

Figure 1

Key announcements and structural changes to the Nuclear Decommissioning Authority (NDA), 2015 to 2023

Between January 2015 and April 2023, the NDA gradually adopted its current structure

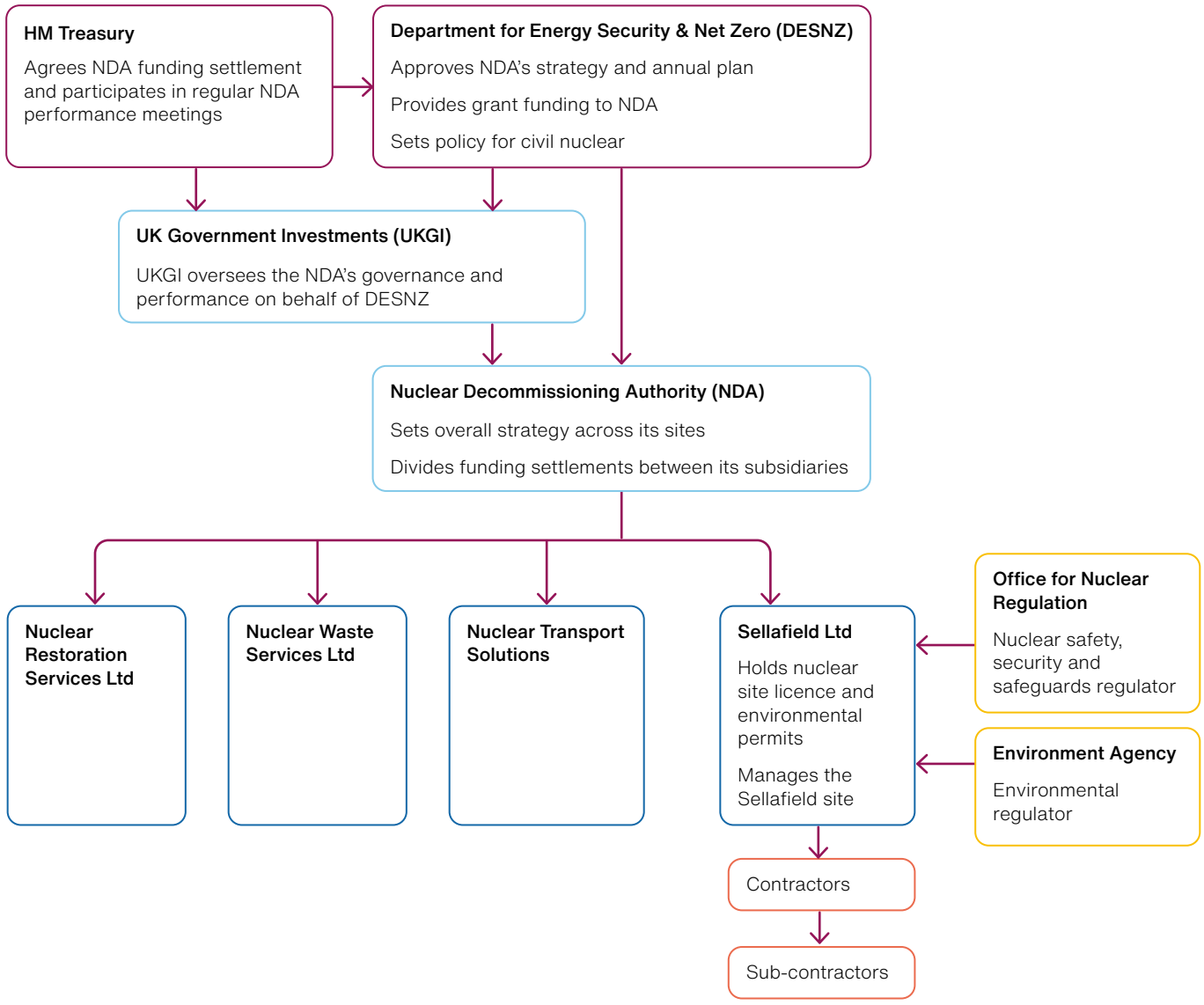


Source: National Audit Office analysis of Nuclear Decommissioning Authority documents and publicly available material

Figure 2

The key organisations involved in the decommissioning of the Sellafield site

The Nuclear Decommissioning Authority (NDA) and Sellafield manage a complex stakeholder environment



- Government departments
- Arm's-length bodies
- Subsidiaries
- Regulators
- Private sector bodies
- → Arrows show relevant relationships between bodies

Note

1 This figure does not show commercial and regulatory relationships for the NDA's other subsidiaries.

Source: National Audit Office analysis of Nuclear Decommissioning Authority documents

Figure 3

The main expected benefits and features of the Nuclear Decommissioning Authority's (NDA's) 'One NDA' model

The NDA believes there are a range of benefits from the introduction of the One NDA model

Features of the approach

- Support research and development and seek innovation
- Share expertise, good practice, innovations and technology across the group
- Greater transparency about pressures on costs/schedules
- Broader career paths and opportunities for staff, leading to improved recruitment and retention
- Bringing together subsidiaries with particular synergies between their work
- Streamlined assurance and approvals

Overarching benefits

- Enhanced performance and delivery of outcomes
- Increased value for money for the taxpayer
- Strong organisational health, including streamlined, less complex and more effective governance
- Improved stakeholder confidence and trust
- Improved culture for our people, based on values such as respect, inclusion, openness and transparency

Note

1 The 'One NDA' terminology dates from 2019; the first structural change enabling the model took place in 2016.

Source: National Audit Office analysis of Nuclear Decommissioning Authority documents

Governance and culture

The NDA's governance and oversight of Sellafield

1.7 In 2021 DESNZ reviewed the overall governance arrangements for the NDA and its oversight of the site operators. The NDA's chief executive is the Accounting Officer for the group, responsible to DESNZ and Parliament for safeguarding the public funds allocated to the NDA. DESNZ was broadly content with how the accountability and governance arrangements were working. It did however, find that the NDA and its subsidiaries were not as well aligned as they needed to be with their views on the level of autonomy subsidiaries needed to comply with their regulatory obligations – including whether the subsidiaries need to control remuneration.[1] This issue has been brought into focus by two recent events.

1 Department for Business, Energy and Industrial Strategy, *Departmental Review: Nuclear Decommissioning Authority*, June 2021.

1.8 Sellafield was too generous when calculating bonus payments for 2022-23, overpaying its employees by £2.1 million in total (around £200 per person). Its senior management chose to treat one missed target as if it had been met, and omitted another missed target from its assessment of how well the organisation had performed so it did not reduce the bonus payable. Sellafield non-executive directors and the NDA raised objections to this approach, which had not been resolved before the bonus payment was made. In addition to an independent review carried out for Sellafield itself, the NDA commissioned a review of processes and controls related to incentive payments across the group to determine whether similar weaknesses existed elsewhere. The group-wide review did not find any fundamental weaknesses although it did identify some areas for improvement. HM Treasury has agreed that Sellafield does not need to attempt to recover the overpayment from its employees.

1.9 Separately, the Office for Nuclear Regulation (ONR) has raised concerns around the NDA's oversight of Sellafield, with particular reference to whether Sellafield was responding appropriately to safety and cyber security issues. In June 2023, ONR wrote to the NDA emphasising that it believed the NDA should play a greater role in offering support and holding Sellafield to account for delivery, safety and security – not least because of its own legal duties.

1.10 Since these two events, there has been significant change in the leadership team at Sellafield. The chief executive and four other members of the executive team have all left the organisation, for example. In May 2024 the NDA announced a new chair for Sellafield's board, who had previously been a member of the NDA board (and the NDA's interim chair between September 2023 and May 2024).

Developing and maintaining an appropriate culture

1.11 Following the creation and restructuring of the group the NDA has increasingly been focused on ensuring it promotes the right culture – while recognising that the subsidiaries have different requirements. Our previous work on risk management has emphasised the importance of strong leadership.[2] Senior leaders need to set the right tone, welcome challenge and promote an open and positive culture, where individuals feel psychologically safe to challenge existing practices. The importance of improving culture has also been brought into focus by the fact that the NDA's 2023-24 annual report discloses 'special payments' of £377,200 made to one or more of its former employees to settle claims relating to employment matters.

2 National Audit Office, *Good practice guide: Overcoming challenges to managing risks in government*, December 2023.

1.12 There are a number of indications that the culture at Sellafield has not been sufficiently focused on accountability for performance improvement in recent years. Sellafield has frequently been too optimistic about how performance will improve, and has not taken decisive action to respond to serious issues. Sellafield has also struggled to improve how it handles conventional safety hazards (such as asbestos, fire protection and *Legionella*) which have recurred in a number of areas, indicating that it is not good at learning lessons on an organisational level.

1.13 There is some evidence that the culture is starting to improve at Sellafield. Its most recent staff survey found that scores were improving in almost all areas, with particularly large increases in the number of people who would recommend Sellafield as a great place to work. This followed more modest improvements between the 2021 and 2023 surveys. NDA reviews in 2022 and 2023 of how Sellafield was planning to increase the amount of waste it retrieved from two of its oldest storage ponds also found that the culture in this area had improved considerably. The safety assurance team also concluded that there were some early indications of a more realistic approach in some areas (including recognition that change would not be straightforward). Changing an organisational culture – and ensuring that the changes become the new way of working – will take time, particularly on a site as large and diverse as Sellafield.

Oversight and assurance of major spending decisions

1.14 Any spending by Sellafield in excess of £100 million has to be approved through the HM Treasury business case approvals process (**Figure 4** overleaf), covering both large projects and framework contracts.

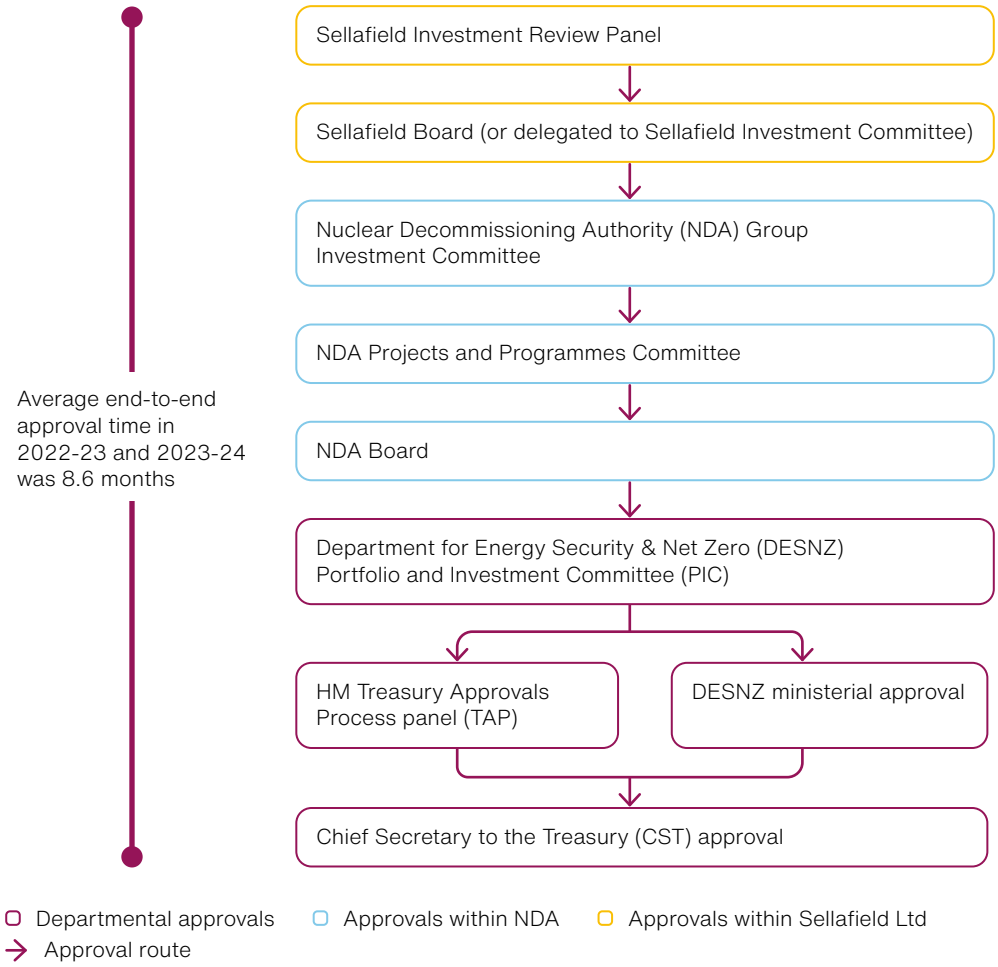
1.15 In early 2018 the Committee of Public Accounts found that the oversight of the NDA needed to be made more effective, and that this did not mean simply adding more layers of oversight, which would risk harming the NDA's ability to function effectively.[3] Later that year we reported that the approvals process for large Sellafield projects typically involved eight formal decisions and took around seven months – and that Sellafield believed the level of scrutiny from government was harming project delivery.[4]

3 Committee of Public Accounts, *The Nuclear Decommissioning Authority's Magnox contract*, Twenty-first report of Session 2017–2019, HC 461, February 2018.
4 Comptroller and Auditor General, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield*, Session 2017–2019, HC 1126, National Audit Office, June 2018.

Figure 4

Approval route for Sellafield business cases with a value of £100 million or more

On average it took 8.6 months to approve Sellafield's largest business cases in 2022-23 and 2023-24



Notes

1 The figure represents the approval process as at September 2024. There have been two changes to the process since the start of 2022-23. Firstly, elements of DESNZ and HMT approval started to run in parallel rather than DESNZ ministerial approval being required before Treasury Approvals Process (TAP) consideration started. Secondly, in mid-2023, Sellafield Limited introduced a Board sub-committee, the Sellafield Investment Committee, with authority to approve submissions in place of the full Sellafield Board. Before this, Sellafield Board approval was required.

2 The NDA Projects and Programmes Committee is an advisory sub-committee of the NDA Board; business cases are considered by this Committee in addition to consideration by the whole Board. The NDA Group Investment Committee has members from the NDA and each of its subsidiaries.

3 Treasury officials have awareness of business cases from when they are under consideration by DESNZ's Portfolio and Investment Committee (PIC). UK Government Investments (UKGI) plays a part in scrutiny of business cases by the NDA, for example a UKGI official is a member of the NDA Board. UKGI also supports government consideration of business cases, such as by attending PIC.

4 The end-to-end approval time is the time between approval of the business case by the Sellafield Investment Review Panel and approval by the Chief Secretary to the Treasury (CST). We used the 12 business cases that required CST approval and received this in in 2022-23 or 2023-24. The business cases were for projects or contracts at either Outline Business Case or Full Business Case stage. The average (mean) time taken to approve these was 8.6 months. There was no substantial difference in overall duration between the two years, each of which saw six business cases approved.

Source: National Audit Office analysis of Nuclear Decommissioning Authority documents and data

1.16 We found that approvals are now taking slightly longer than in 2018, even though a 2021 DESNZ review of the NDA had recommended "more radical thinking to streamline the process".

- Five Sellafield business cases approved between March 2019 and September 2020 had taken an average of 9.4 months to pass through the required approvals process (including an additional stage added by the NDA).
- Twelve Sellafield business cases approved in 2022-23 and 2023-24 took an average of 8.6 months to complete (with the quickest approval taking 4.1 months and the longest 11.9 months).

1.17 All the organisations that we spoke to in the approvals chain identified deficiencies with how it worked from their own perspective. At the moment, HM Treasury's (HMT's) formal involvement comes at the end of the approvals process. HMT told us that it is not always clear how Sellafield had taken decisions. Sellafield and the NDA could do more to involve HMT at earlier stages of a project's development, or in existing governance forums. This would mean HMT had more visibility of Sellafield's emerging thinking, and would allow it to raise concerns at an earlier point. This would be particularly useful where projects are time-critical. For example, Sellafield has not sought to involve HMT yet as it develops a new Analytical Services strategy, despite this being a strategically vital and high-risk programme for successful decommissioning.

1.18 For many Sellafield projects, there is relatively little flexibility about whether or how they are delivered: there is frequently a pressing need to carry out a project, while the constraints of the site limit delivery options. Additionally, nuclear infrastructure projects – particularly those on a site like Sellafield – need to be planned particularly carefully. This means that Sellafield projects typically spend a very high proportion of the total cost before the Full Business Case stage (for example, the Outline Business Cases for two recent projects both authorised Sellafield to spend 48% of the anticipated total cost). DESNZ and HMT could therefore consider a lighter-touch approvals process if a project's forecast cost and schedule at Full Business Case were within a certain tolerance of those approved at the Outline Business Case stage.

1.19 The NDA and Sellafield both have internal assurance functions which support their organisations' business case review processes and monitor ongoing performance of projects and programmes. Both functions assess their maturity on an annual basis, to determine whether they are providing effective assurance and challenge which is useful to their organisations. These assessments show that both have developed their capabilities over recent years, and are now at or above the target levels of performance.

Part Two

Progress to date in managing risks from the nuclear legacy

2.1 Sellafield Ltd (Sellafield) spent £2.7 billion in 2023-24, around two thirds of the Nuclear Decommissioning Authority's (NDA's) total spend (Sellafield earned £0.8 billion in income in the same year). The NDA's current strategy envisages that decommissioning Sellafield will continue until 2125. As assessing overall progress in risk reduction is challenging, we have assessed Sellafield's performance both across its own performance measures, and in key areas of high risk. This part covers Sellafield's:

- performance against its own short- and long-term measures, and challenges in measuring progress towards its long-term plan to decommission the site;
- delivery of its largest and most risky projects;
- progress in reducing the risk posed by its most hazardous facilities; and
- online systems' security.

Sellafield's performance metrics

2.2 Sellafield assesses its performance against a set of short-term targets that cover the next financial year. It also has a number of "key decommissioning milestones" – some of which will not be achieved for decades. Over the last three years it has achieved 76% to 82% of the short-term targets, which form part of its bonus scheme calculations. However while it typically performs well against most areas of its annual plan, it has performed poorly against the targets which have the biggest impact on hazard reduction, such as retrieving nuclear waste from ageing buildings. Sellafield has not developed more sophisticated metrics, which could demonstrate to its stakeholders how much closer it is getting to completely decommissioning the site (or reducing all risks to a tolerable position) – or that place greater weight on the most important areas. Sellafield told us that it believes that the most appropriate way of assessing progress for the time being is whether the new capabilities it will require (such as the ability to move waste between facilities) will be available when they are needed. In the future, output metrics (such as the volume of waste removed from older facilities) will become more important.

Performance on major projects

2.3 Alongside its day-to-day operations, Sellafield needs to complete a number of projects to ensure critical services keep running, enable the site to safely store and treat waste, and demolish obsolete facilities. It currently spends around a third of its annual budget on projects. Sellafield currently has nine major projects which are each expected to cost over £100 million: these are expected to cost £7.0 billion in total.

2.4 Sellafield's projects often have significant complicating factors, such as new or untested technology, challenging objectives, tight delivery timescales and extremely demanding quality requirements. However we identified major shortcomings in our 2018 report.[5]

2.5 We divided Sellafield's major projects into two groups based on timing: projects underway in 2018 but not near completion; and projects started after 2018.[6]

Projects underway in 2018 and expected to take at least two years to complete

2.6 The forecast cost of the four projects underway in 2018 has risen by a combined total of £1.15 billion since 2018 (**Figure 5** overleaf), and delivery has slipped by between 58 and 129 months. £546 million of the overspend was caused by a combination of poor planning – which led to the complexity of the projects being underestimated – and poor performance by contractors (Sellafield attributed a further £43 million to the cost estimates becoming more mature). Furthermore, none of the budgets for these projects accounted for optimism bias: our 2012 report recommended the NDA should require this of Sellafield, in line with HM Treasury's expectations of government projects. The NDA did not require business cases to apply optimism bias adjustments until December 2018. Sellafield also considers that the COVID-19 pandemic caused delays to projects and around £148 million of cost increases and attributes a further £43 million to inflation being higher than forecast.

5 Comptroller and Auditor General, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield*, Session 2017–2019, HC 1126, National Audit Office, June 2018.

6 There were also four projects near completion in 2018 which were completed at a total cost of £1,256 million (slightly below the £1,268 million they were expected to cost in 2018). We have not included one current major project, Chimney Decommissioning Phase 2F, in our analysis. This project is currently expected to cost over £100 million but was expected to cost less than £100 million (and not treated as a major project) in 2018. Sellafield now treats two tranches of the Magnox Swarf Storage Silo programme as separate projects: we have combined them for consistency with our 2018 report.

Figure 5

Sellafield major projects that were ongoing in 2018 and were at least two years from completion

All four of these projects will be delivered much later than planned in 2018 and will cost much more

			Schedule changes between February 2018 and June 2024			Cost changes between January 2018 and June 2024		
Project	**Purpose**	**Date of most recent business case**	**Forecast completion date as at February 2018**	**Forecast completion date as at June 2024**	**Schedule slippage between February 2018 and June 2024**	**Forecast cost as at January 2018**	**Forecast cost as at June 2024**	**Cost growth between January 2018 and June 2024**
					(months)	**(£mn)**	**(£mn)**	**(£mn)**
Site Security Architecture Upgrade (SSAU)	Enhance security across the site	January 2020	July 2020	March 2026	68	197	313	116 (59% increase)
Box Encapsulation Plant Product Store Direct Import Facility (BEPPS DIF)	Store waste retrieved from the Pile Fuel Cladding Silo and MSSS	February 2022	February 2020	December 2024	58	291	458	167 (57% increase)
Box Encapsulation Plant (BEP)	Treat and package waste from MSSS and other buildings	February 2022	February 2022	February 2027	60	769	1,398	629 (82% increase)
Magnox Swarf Storage Silo (MSSS)	Install three Silo Emptying Plant machines to retrieve waste from MSSS	April 2023	March 2023	November 2027 (first tranche)[1] December 2033 (final tranche)	56 (first tranche)[1] 129 (final tranche)	777	1,019	242 (31% increase)

Notes

1 Sellafield has split the scope of the MSSS project into two tranches. The second tranche, which includes less mature elements of the project, will deliver the full scope envisaged in 2018. The June 2024 cost forecast for the MSSS project includes the forecast cost of the second tranche (£146 million).

2 All cost and schedule information shown here is at the P50 confidence level. This means that Sellafield has assessed that the programme is as likely to be delivered more quickly/at lower cost than as it is to exceed these dates/cost.

3 All costs are expressed in nominal terms.

4 This figure updates information presented in Figures 15 and 16 of our 2018 report: Comptroller and Auditor General, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield,* Session 2017–2019, HC 1126, National Audit Office, June 2018. This figure does not include projects which did not have an approved FBC in 2018.

5 Sellafield currently has another major project, the Chimney Decommissioning Project (currently forecast to cost £135 million) which had started in 2018. However it was expected to cost less than £100 million, and so was not a major project at that time.

Source: National Audit Office analysis of Sellafield Ltd information

2.7 There are some signs that Sellafield's performance on these projects has improved more recently. The forecast cost and schedule of the four projects in Figure 5 have been more stable since their most recent business case reapproval. One project is forecasting a 10% increase above the reapproved P50 cost[7], but the other three are forecasting smaller increases (inflation in the wider economy has been high over this period). Sellafield also now uses 'reference class forecasting'[8] to create a more realistic range of outcomes which recognises the particularly high challenge and complexity of delivering projects on the site.

Projects started after 2018

2.8 Sellafield's performance on more recent major projects has shown signs of potential improvements (**Figure 6** on pages 26 and 27). Four of the five projects started since 2018 are slightly behind where they should be at this point but the work completed has cost less than expected. Additionally, the Infrastructure and Projects Authority has given two of these projects[9] 'Green' ratings (a relatively rare rating) for each of the last two years.[10] The exception to this performance is the Replacement Analytical Project which has performed very poorly (see paragraphs 2.17 to 2.21).

Improving delivery of major projects

2.9 Sellafield has recognised it needs to improve performance on major projects and, in May 2019, fundamentally changed its approach. Under the 'Programme and Project Partners' (PPP) model, it is working with four commercial partners over a 20-year period on a series of major projects. Each partner has a particular area of responsibility, and is bound by an 'Aligned Incentive Agreement' to incentivise collaboration and performance across the whole project portfolio. Sellafield holds the four contractors to account, and provides people with particular skills and experience to work in the joint project teams. Previously, Sellafield carried out the initial design stages itself, while contracting for projects one at a time. This did not give contractors incentives to develop the capacity and capability future projects would need in their own organisation or in the supply chain.

2.10 The PPP contract covered three major projects in its first year, and employed 1,586 people in March 2024. Long-term contracts (which will involve working on several projects) have also now been awarded to a number of subcontractors. Sellafield and the Infrastructure and Projects Authority believe that the PPP model has contributed significantly to strong performance on two of its first three projects, and external reviews have also identified a strong internal culture that is adding value to Sellafield. The partnership is now developing additional projects, with the greatest potential being where it is used from the start.

7 The P50 confidence level means that Sellafield has assessed that the programme is as likely to be delivered more quickly/at lower cost as it is to exceed these dates/cost.
8 This uses historic cost and schedule data about its own projects, nuclear projects delivered by other organisations and other major projects to create a range of outcomes. It provides an alternative forecast which can be used to challenge cost estimates at Full Business Case stage.
9 These are the Sellafield Product and Residue Store Retreatment Plant (SRP) and SIXEP Continuity Plant (SCP).
10 A 'Green' rating means that "successful delivery of the project to time, budget and quality appears highly likely".

Figure 6
Sellafield major projects approved since 2018

Most newer major projects are being delivered broadly in line with their business cases

			Schedule changes between Full Business Case (FBC) approval and June 2024			Cost changes between FBC approval and June 2024			
Project	**Purpose**	**Date of business case**	**FBC approved completion date**	**Forecast completion date as at June 2024**	**Schedule slippage between FBC and June 2024**	**FBC approved cost**	**Forecast cost as at June 2024**	**Cost growth between FBC and June 2024**	**Percentage of work completed**
					(months)	**(£mn)**	**(£mn)**	**(£mn)**	**(%)**
Projects with an approved Full Business Case (FBC)									
Sellafield Product and Residue Store Retreatment Plant (SRP)	Repackage and retreat plutonium so it can be safely stored	April 2021	August 2029	October 2029	2	1,330	1,441	111 (8% increase)	52
SIXEP Continuity Plant (SCP)	Continue to treat radioactive liquid beyond the point at which the existing facility is likely to fail	July 2021	January 2031	January 2031	–	1,007	1,081	74 (7% increase)	51
Electricity Distribution Network Upgrade Project (EDNUP)	Increase capacity of the site's electricity network and improve its resilience	May 2022	September 2029	April 2030	7	379	375	-4 (1% decrease)	54
Projects with an approved Outline Business Case (OBC) but which do not have an approved FBC									
Replacement Analytical Project (RAP)	Continue to analyse samples of radioactive material – which is essential for the safe operation of the site and hazard reduction activities	OBC approved in January 2020. The programme was 'strategically paused' in February 2024.	The OBC forecast date was January 2028.	When it 'paused' RAP, Sellafield believed it could take until December 2034 to deliver the full capability.	83	The OBC forecast was £680 million.	When it 'paused' RAP, Sellafield believed it could cost £1.5 billion to complete the project.	820 (121% increase)	N/A
Box Encapsulation Plant Product Store 2 (BEPPS 2)	Continue to retrieve waste from the Pile Fuel Cladding Silo and Magnox Swarf Storage Silo after the existing facility (BEPPS DIF) is full	OBC approved in September 2023. FBC approval expected in 2026-27.	The OBC forecast date was June 2035.	June 2035	–	The OBC forecast cost was £776 million.	741	-35 (4% decrease)	6

Notes

1 All cost and schedule information shown here is at the P50 confidence level. This means that Sellafield has modelled that the programme is as likely to be delivered more quickly / at lower cost as it is to exceed these dates/cost.

2 All costs are expressed in nominal terms.

Source: National Audit Office analysis of Sellafield Ltd information

Progress addressing the highest hazards

2.11 When we reported in 2018, the highest hazards at Sellafield included four 'legacy ponds and silos' (nuclear waste stores which date to the 1950s and 1960s and do not meet modern construction standards) and two facilities that deal with plutonium. Plutonium is extremely toxic: failure of a single container of plutonium could contaminate an entire building creating a significant hazard and clean-up liability. The NDA has a clear framework for prioritising how Sellafield and other sites should respond to risk (**Figure 7**). For the most significant ('intolerable') risks, addressing the risk is the overriding factor in decision-making.

Figure 7
The Nuclear Decommissioning Authority's (NDA's) approach to prioritising risk

The NDA has three categories of risk and responds to each differently

The NDA's categorisation of risk	'Broadly acceptable'	'Tolerable'	'Intolerable'
	Increasing RISK to people and the environment →		
Definitions and actions	These risks are generally regarded as insignificant and are adequately controlled. If precautions are maintained it would not be reasonable to consider further improvements to standards if these involved a cost.	Even when risks are tolerable, the NDA's approach still focuses on reducing risk. Existing risk levels are monitored, and proportionate actions are taken to ensure that the net level of risk does not increase in the long term.	Risks above a certain level are regarded as intolerable and cannot be justified in any normal circumstance. The NDA might make a conscious decision to accept appropriate near-term increases in risk to achieve long-term risk reduction. It would work closely with its subsidiaries and regulators to manage this balance safely.
Factors determining timing of work	Where risks are reduced to the 'Broadly acceptable' level, the driver for further work is mission completion (reaching the point where sites no longer requires a nuclear licence and land can be reused). Options appraisals balance a broad range of factors.	Risk and hazard reduction are key considerations. However, options appraisals would consider a broad range of factors, including lifetime cost.	Where risks are intolerable, urgent actions are taken to reduce them. Risk is the overriding factor in decision-making.
	← Increasing FLEXIBILITY over timing of remedial actions		

Source: National Audit Office analysis of the Nuclear Decommissioning Authority Strategy

2.12 Sellafield has made good progress since 2018 in addressing risks associated with its plutonium stockpile. Since 2019, it has put new packaging around 916 containers which were corroding and has finished emptying one of its older stores. Progress and satisfactory compliance has allowed the Office for Nuclear Regulation (ONR) to close two of the three most significant regulatory concerns it had relating to plutonium storage. The risk is still above Sellafield's risk appetite, but it believes it can reduce it to an acceptable level by 2060, in line with the NDA's strategy. In the longer term, the Department for Energy Security & Net Zero (DESNZ) needs to determine what should be done with the plutonium: this decision does not affect Sellafield's plan to reach a 'tolerable' risk position.

2.13 Sellafield has also had some other significant achievements in demonstrating that waste can be removed safely:

- In April 2022 it retrieved waste from the Magnox Swarf Storage Silo for the first time.
- In December 2023, it retrieved waste from the Pile Fuel Cladding Silo for the first time.
- In March 2024 it removed a 'zeolite skip' from the First Generation Magnox Storage Pond for the first time (it had started removing other types of waste previously).

It has now therefore started retrieving waste from all four legacy ponds and silos. Sellafield told us that it believes the information it is gaining from these early retrieval activities is giving it a much clearer picture of the challenges that lie ahead.

2.14 However, Sellafield's milestones for substantially emptying three of the legacy ponds and silos are six to 13 years later than its 2018 estimate of when it would achieve this (**Figure 8** overleaf).[11] This milestone is the point when the risk reduces most significantly – although the buildings will still need to be cleaned out and dismantled. Furthermore, since 2020 Sellafield has retrieved much less waste than it had planned to (**Figure 9** page 31), because of both starting later than planned and a lower pace of retrieval than expected. This has been caused by the deteriorating condition of key buildings and facilities, restrictions on working during the COVID-19 pandemic and resourcing challenges (affecting both the teams who operate the facilities and those who carry out maintenance tasks). There have been a number of significant outages in individual facilities and the infrastructure that supports them, caused by essential equipment breaking down.

11 These 'milestone' dates are the latest dates within a range of dates agreed by Sellafield and the ONR for completion of the activity.

Figure 8

Future milestones for removing waste from Sellafield's 'legacy ponds and silos'

The key milestones for emptying the 'legacy ponds and silos' have slipped by up to 13 years since 2018

Name of pond or silo	2011 milestone	2018 forecast	Current agreed milestone	Sellafield assessment of performance (September 2024)
Magnox Swarf Storage Silo (MSSS)	2036	2046	2059	Activities are being delivered in line with the agreed plan.
First Generation Magnox Storage Pond (FGMSP)	2034	2033	2045	Activities are not currently being delivered in line with the agreed plan. A recovery plan needs to be implemented to achieve the milestone.
Pile Fuel Cladding Silo (PFCS)	2023	2030	2036	Activities are not currently being delivered in line with the agreed plan. A recovery plan needs to be implemented to achieve the milestone.

Notes

1 The milestones are for the completion of 'bulk retrieval' of waste from the ponds and silos. The risks associated with the ponds and silos will be much lower after this point, although some waste may remain in the pond or silo. They are the latest dates agreed by Sellafield and the Office for Nuclear Regulation for completion of this activity. The 2018 forecast was Sellafield's best estimate of when it would complete the work.

2 MSSS, FGMSP and PFCS all pose an 'intolerable' risk. There is another 'legacy pond' – the Pile Fuel Storage Pond – which is less hazardous. 'Bulk retrieval' of fuel from this pond was completed in March 2016.

3 We previously reported the 2011 and 2018 data in our 2018 report Comptroller and Auditor General, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield*, Session 2017–2019, HC 1126, National Audit Office, June 2018.

Source: National Audit Office analysis of Sellafield Ltd information

Figure 9

Progress addressing the risks posed by highly hazardous waste at Sellafield, 2019-20 to 2023-24

Sellafield has missed the majority of its most important hazard-reduction targets since 2020-21

Actual performance in year

(actual performance as a percentage of the performance deemed 'Acceptable' in that year's Sellafield Operating Plan)

	2019-20	2020-21	2021-22	2022-23	2023-24
Magnox Swarf Storage Silo (boxes removed)	Not applicable – Sellafield did not plan to start retrievals in 2019-20 or 2020-21		0 boxes (0%)	19 boxes (211%)	23 boxes (100%)
Pile Fuel Cladding Silo (boxes removed)			0 boxes (0%)	0 boxes (0%)	1 box (13%)
'Units' of waste removed from the First Generation Magnox Storage Pond and Pile Fuel Storage Pond[1]	501 units (156%)	385 units (70%)	144 units (64%)	65 units (45%)	Not applicable[2]
'Units' of Waste Vitrification Plant throughput[3]	167 units (119%)	63 units (45%)	12 units (10%)	80 units (69%)	142 units (137%)

- 'Excellent' performance
- 'Good' performance
- 'Acceptable' performance
- Below 'Acceptable' performance

Notes

1 For the First Generation Magnox Storage Pond and Pile Fuel Storage Pond, a 'unit' refers to a transfer of waste out of the pond. This could be either one skip, or a container filled with sludge.

2 Sellafield did not set a target for the amount of waste to be retrieved from the First Generation Magnox Storage Pond and Pile Fuel Storage Pond in 2023-24.

3 Until March 2022, a Waste Vitrification plant 'unit' was defined as throughput of 1m³ of Highly Active Liquor (HAL). For operational reasons, Sellafield now uses a different definition to measure its performance which includes other waste. The throughput shown in this figure includes 41 m³ of HAL processed in 2022-23 and 100m³ processed in 2023-24.

4 Waste is being removed from the four 'legacy' ponds and silos as they do not meet modern construction standards (three pose an 'intolerable' risk). The Waste Vitrification Plant processes hazardous waste into a more stable form so it can be stored safely.

5 Sellafield produces an 'Operating Plan' each year, which sets targets for the year ahead (informed by performance in the previous year). For each performance metric, there are three different levels of target, 'Excellent', 'Good' and 'Acceptable'.

6 Performance in 2020-21 was affected by the COVID-19 pandemic. The Sellafield board signed off the 2020-21 Operating Plan (including these targets) in February 2020. In March 2020 Sellafield deliberately reduced activity to a minimum in order to limit the number of people on site in line with national regulations.

7 From 2023-24, Sellafield changed how it describes performance levels. It now uses the terms 'Stretch', 'On Target' and 'Threshold' instead of 'Excellent', 'Good' and 'Acceptable'. For consistency, we have used the earlier terms in this figure.

Source: National Audit Office analysis of Sellafield Ltd data

2.15 Sellafield has plans to significantly accelerate the pace of retrievals over the next decade. It plans to install new machinery, introduce a performance-focused culture, and reduce the number of occasions where it has to pause operational processes because of staff shortages (focusing in particular on reducing sickness absence and providing mandatory training more effectively). It is also seeking to improve the efficiency of its retrieval processes: recent work has demonstrated that it is possible to safely pack more waste into each box removed from the Magnox Swarf Storage Silo (MSSS) than initially assumed. Sellafield expects to use around 1,500 fewer boxes as a result, which would let it complete retrievals around 3.5 years quicker than would otherwise have been the case (potentially saving around £1 billion). In the most optimistic scenario, by the mid-2030s it will be retrieving 546 boxes of waste from MSSS each year (24 times as much as it did in 2023-24). If it achieves this pace, Sellafield would be confident it would achieve its milestone of completing retrievals by 2059. To achieve this Sellafield will also need to address the deteriorating condition of its assets.

2.16 The slow pace of retrievals has significant safety and financial consequences. For example, MSSS has been leaking contaminated water into the ground since 2019; the rate is currently estimated at around 2,100 litres per day. Sellafield is unable to fix the leak, meaning it may continue until this part of the silo is emptied in the late 2040s or early 2050s. Sellafield and its regulators believe that current leakage rates pose a low risk to workers and the public (Sellafield is exploring options to further reduce the consequences of the leak, overseen by its regulators). There is an ongoing financial cost of maintaining the buildings and workforce during retrievals, and a risk that the waste treatment facilities could become obsolete before all the waste is retrieved. In the worst case scenario, new facilities would be needed to treat a relatively small quantity of waste at a cost of hundreds of millions of pounds, causing further delays. The Waste Vitrification Plant needs to process 130m^3 of 'Highly Active Liquor' (HAL) each year (as well as other waste) to finish processing by 2039, in line with the 'strategic tolerance'. It will be increasingly hard for Sellafield to maintain the necessary infrastructure beyond this point. The plant has not processed this much HAL since 2019-20 (Figure 9): in 2023-24 it processed 100m^3, but in the three previous years the average throughput was only 39m^3 per year.

Sustaining vital analysis capabilities

2.17 Sellafield's biggest single risk to its current and future operations is that its Analytical Services function will fail, disrupting other site operations; this is both 'very likely' to happen and could have a 'very high impact' on its activities if it does. This risk is so high because Sellafield needs to be able to carry out many different scientific tests to determine the physical, chemical and radioactive properties of waste to operate the site. Some activities – such as retrieving waste from its facilities in 'intolerable' condition – cannot take place at all if Sellafield is unable to carry out these tests, and other treatment processes cannot be done efficiently. Sellafield currently depends on an on-site laboratory that is over 70 years old, does not meet modern construction standards and is in extremely poor (and deteriorating) condition. This laboratory is not technically capable of carrying out the analysis required to commission the Sellafield Product and Residue Store Retreatment Plant (SRP). Commissioning of the SRP – which will treat and repackage plutonium – is currently due to start in 2028.

2.18 In 2016, Sellafield decided to convert another laboratory on the site (itself, more than 25 years old) to provide the analysis capabilities Sellafield needs until 2070. The 'Replacement Analytical Project' (RAP) Outline Business Case was approved in 2019 with an estimated cost of between £486 million and £1,000 million (after allowing for potential 'optimism bias'), and expected completion by February 2029 (with the capabilities needed to support commissioning of the SRP completed by October 2027).[12] Sellafield was aware that this requirement meant achieving the planned completion date was particularly important.

2.19 By 2021 the programme was in serious difficulty and likely to cost more and take longer than the worst case estimates in the Outline Business Case. Both the current laboratory building and the one which the RAP is refurbishing are in much worse condition than expected. The condition of the current building means that Sellafield will need to spend much more on maintenance regardless of whether it continues to use the building – which potentially makes a life extension more cost-effective. The condition of the second building made completing the RAP design much more challenging and increased the work the project would need to carry out.

2.20 In late 2023, Sellafield determined that it did not have a coherent plan to deliver analytical services. Sellafield's latest estimate is that completing the RAP could cost between £1,500 million and £1,800 million (£265 million has been spent to date), and the capabilities the SRP requires would not be available until November 2033 at the earliest – five years after they are likely to be needed.

12 These dates are both at P80 confidence level, meaning Sellafield considered that there was only a 20% chance that the project would be delivered later.

2.21 In early 2024, Sellafield paused the programme and started developing a new strategy for Analytical Services, including detailed assessment of alternative options. This action has freed up resources and limited potentially unnecessary spending (compared to attempting to develop a new approach while also proceeding with the RAP). However, the new approach will mean Sellafield will rely on the existing building for even longer. Sellafield is gathering the information it needs to decide whether to proceed with the new approach or restart the RAP, and expects to make a decision in December 2024. As of September 2024, it continues to believe that the new approach may be feasible (the work to confirm this is ongoing). However it is not yet clear that this new approach will allow Sellafield to start commissioning the SRP any earlier than would be the case if it had continued with the RAP. If Sellafield decides that it has no alternative and needs to restart the RAP, the completion date is likely to be delayed even further. If the RAP is cancelled, Sellafield would need to develop a long-term plan to ensure it has the capability to carry out analysis beyond 2040.

Sellafield's online security

2.22 Sellafield has a number of online systems that need to be protected and secured from external threats. ONR has paid particularly close attention to Sellafield's cyber security arrangements for a number of years: in 2021 it required Sellafield to develop short-term and medium-term strategies to show how it would improve cyber security.

2.23 Earlier this year ONR prosecuted Sellafield for three offences under the Nuclear Industries Security Regulations 2003. Two charges related to Sellafield's failure to carry out annual tests on its computer systems between 2019 and 2023 as promised in the security plans it had agreed with ONR. The third charge was that Sellafield had not done enough to protect sensitive information on its networks. ONR did not find evidence that vulnerabilities had been exploited. Sellafield pleaded guilty to all three charges in June 2024 and has been fined £332,500. A plan to address these issues was agreed between the regulator and Sellafield in 2023. Sellafield is aware that the overall level of risk is currently outside its corporate appetite: it intends to continue to scrutinise this area closely, as will ONR. Like other organisations Sellafield is facing an increasing threat and finds it hard to recruit people with the skills it needs.

Part Three

Planning for future risk and uncertainty

3.1 Sellafield's history of being at the forefront of the nuclear industry's development means it now faces unique challenges. Many of the buildings and facilities were not designed with decommissioning or long-term storage of nuclear waste in mind, and it requires a specialist and highly trained workforce. The Nuclear Decommissioning Authority (NDA) and Sellafield Ltd (Sellafield) are therefore having to deepen their understanding of the existing and emerging risks of running the site, and develop a decommissioning plan which they are confident can be delivered and is flexible enough to incorporate changing priorities and external developments. Sellafield has three interrelated plans covering the short (three years), medium (20 years) and longer terms (100 years). These plans seek to balance the need for detailed planning in the short term with the very high uncertainty in the long term.

3.2 This Part assesses:

- how the NDA's assessment of the cost of decommissioning Sellafield has changed since 2018;
- Sellafield's work to improve its understanding of physical site risks, and significant areas of uncertainty; and
- Sellafield's understanding and management of its workforce risks.

The forecast cost of decommissioning Sellafield

3.3 The NDA's accounts include an estimate of the future cost of decommissioning its sites – the 'nuclear provision'. The forecast cost of decommissioning Sellafield, £136 billion, makes up 68% of the total NDA provision of £199 billion.[13] This is inherently a highly uncertain estimate – Sellafield has to make assumptions about what the task involves, how it expects to clean up the site and forecast costs a hundred years in the future. The NDA believes the cost of decommissioning Sellafield could range from £116 billion to £253 billion.

13 In this report, information about the nuclear provision is presented on an 'undiscounted' basis. This means that no adjustment has been made to the anticipated costs to account for the time value of money. We have done this because changes in the discount rates set by HM Treasury have affected the 'discounted' value of the provision very considerably in recent years.

3.4 Movements in the provision for decommissioning can indicate how the NDA's understanding of its task has changed. In our 2018 report we reported that the value of the Sellafield provision had been stable since 2014-15 (after allowing for the impact of inflation). This was because additions to the provision (the result of additional scope or higher cost estimates) were broadly equivalent to the amount of work assumed to have been carried out, which reduced the future liability. In the long run, we would expect the value of the nuclear provision to fall as progress towards the final objective is made.

3.5 Since March 2019, additions to the provision (additional scope and higher cost estimates) totalled £25.1 billion (in 2023-24 prices): this is much higher than the amount of work assumed to have been carried out since 2019 (which reduces the outstanding value of the provision). Most of this increase occurred in 2021-22, when Sellafield carried out a more detailed review of its plans than it does in most years. It is currently in the process of carrying out a similarly detailed review.

3.6 Separately, in 2023-24, the NDA made more realistic assumptions about the efficiency savings Sellafield will make in future (which reduce the cost of decommissioning) for the purposes of calculating the provision. It now assumes efficiencies at Sellafield will be £9.1 billion lower (in undiscounted 2023-24 prices) than it assumed in 2021-22 (which was the last time it reviewed its approach to efficiency savings). Sellafield told us that it is still committed to maximising opportunities to deliver significant savings.

3.7 The net effect of these changes (after taking into account the work assumed to have been carried out on the site and differences in the treatment of inflation) is that the provision has grown by £21.4 billion (in 2023-24 prices) since March 2019, an increase of 18.8%.

Physical site risks and areas of uncertainty

Improved understanding of site risks

3.8 Since we last reported, Sellafield has improved its tools and processes for understanding the range of onsite risks it needs to manage and the relationship between these, principally through its 'Risk Based Management Framework'. This is an annual qualitative assessment of the level of risk within each of Sellafield's areas of activity, and whether these are being managed in accordance with an acceptable level of risk. Where this is not the case, Sellafield uses the framework to review whether there is a robust plan to bring the risk down to an acceptable level (even if this will not happen for several decades).

3.9 In the most recent assessment, Sellafield identified six workstreams of concern, which means management's attention can be directed to these priority areas (we discuss these in Part Two). Sellafield's internal safety assurance team concluded that the framework discussions were open and collaborative, and the overall picture of the site was more realistic as a result. For example, they also concluded that the redesignation of Analytical Services was already leading to better decision-making.

3.10 Sellafield has also developed new techniques to improve its understanding of the risks posed by the site's spatial constraints, and how it should use space within the site boundary, which is important for longer-term planning. The Sellafield site is already highly congested, with operational facilities, buildings awaiting decommissioning and other infrastructure closely packed together (**Figure 10** overleaf). Much of the land on site that is not currently in use is already allocated for new buildings or unsuitable for development – for instance, because it is contaminated or located close to high-security buildings.

3.11 While Sellafield does not know precisely how much land it will need, it considers that its current plans to demolish buildings will not free up enough space to meet its future needs. The NDA and Sellafield told us that they are exploring using land outside the current site boundary to ease this constraint. The NDA owns this land, but using it to support Sellafield's activities would mean that some of it is no longer available for other purposes (the area outside the boundary has been identified by the Department for Energy Security & Net Zero as a potential site for a new nuclear power plant).

Continuing areas of uncertainty

Asset condition

3.12 Sellafield has recognised since 2021 that the number of buildings beyond their design life is placing an increasing burden on its maintenance teams – and that it needs to understand better the aggregate impact on risk for the site as a whole. Our previous work has highlighted the importance of good data for asset management: organisations need to know what condition their assets are in, the consequences of this, and the relative importance of assets.[14]

14 Comptroller and Auditor General, *Making public money work harder: Learning from recent NAO work*, Session 2024-25, HC 131, National Audit Office, July 2024.

Figure 10
The Sellafield site

The Sellafield site is highly congested, limiting options for new construction

— Site boundary

Notes

1 The yellow line represents an approximation of the current boundary of the Sellafield nuclear licensed site. This is the area within which Sellafield is permitted by the Office for Nuclear Regulation to install or operate nuclear installations – including those to process or store radioactive waste.

2 Credit: Sellafield Ltd.

Source: National Audit Office analysis of Sellafield Ltd documents

3.13 Sellafield classifies its assets into five categories based on the consequences if they were to fail (which indicates their importance relative to each other), and also has information about their current condition. However, because of the number of assets and the way the data are aggregated, interrogating this information to understand the overall risk and emerging trends is not straightforward. Sellafield told us that this is possible, but typically requires detailed discussions with those responsible for individual facilities. Sellafield's internal safety assurance team has also formally expressed concerns about the transparency of asset data and the consequences this has for strategic decision-making and prioritisation.

3.14 In September 2021, Sellafield rated the condition of 70% of its most important ('Critical') assets as either 'Good' or 'Acceptable' (**Figure 11** overleaf).[15] However, it now believes only 42% are in these condition states. Sellafield told us that it believed there are a number of causes, not all of which indicate a genuine deterioration in the quality of the assets.

- Some assets in poor condition are now deemed to be 'Critical' assets (while other assets in better condition are no longer treated as 'Critical').
- In some cases the condition rating reflects Sellafield's assessment that the asset will be increasingly challenging to support in future (due to obsolescence), rather than its current condition.
- Sellafield also told us that it takes a deliberately conservative approach, which can mean that a 'Critical' asset appears to deteriorate if a less important component is in worse condition than previously.

Around 18% of 'Critical' assets were recorded as being in 'Unknown' condition in March 2024. Sellafield told us that this was largely down to resourcing challenges in its central team, which meant that it had not entered all the relevant information into its central database, and that only 9% of 'Critical' assets are currently in 'Unknown' condition.

3.15 Across the whole population of assets (including non-'Critical' assets), many older assets have continued to deteriorate. This was, in part, due to restrictions on working during the COVID-19 pandemic which limited the number and nature of maintenance activities that could be carried out. In 2023-24, 12% fewer maintenance tasks were carried out than in 2018-19, resulting in a slowly increasing backlog.

Resourcing flexibility

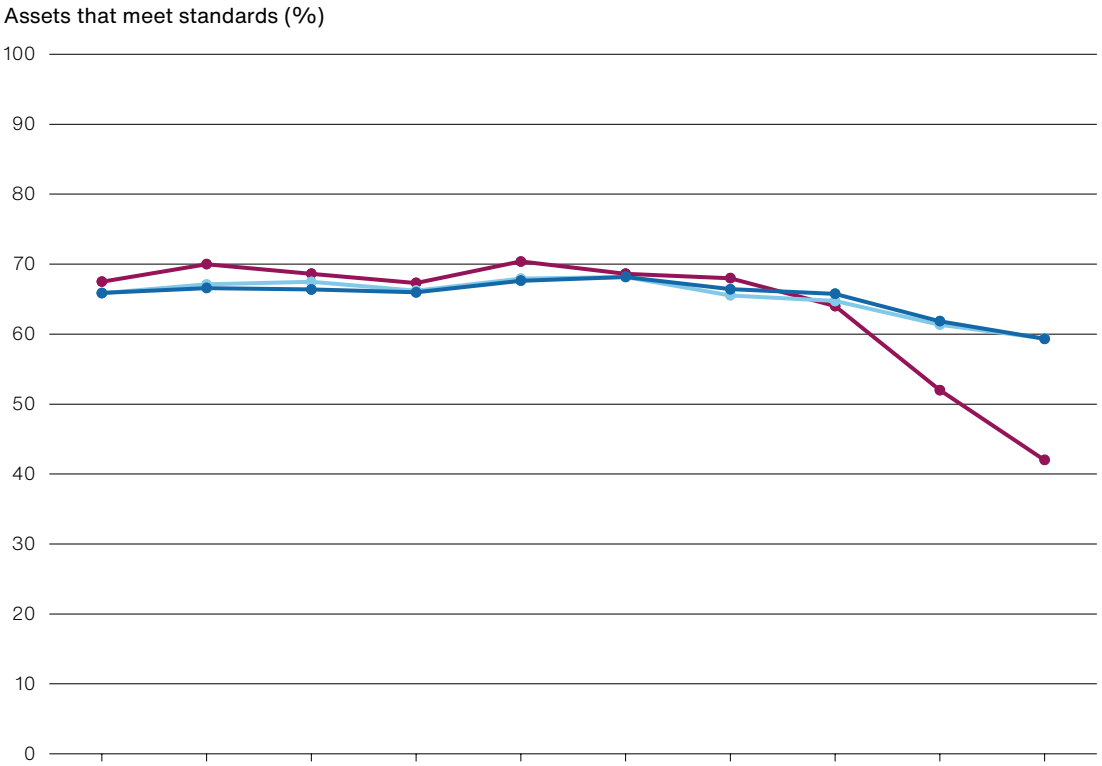
3.16 Sellafield spends the majority of its current funding on meeting legal obligations and reducing the highest hazards. When reviewing its spending plans for 2022-23, it determined that approximately £129mn (5%) of the work it planned to carry out could potentially be deferred or cancelled if required. However, even this reduction would have led to reduced value for money and a higher level of risk (and would have further reduced flexibility in future years). It spends relatively little on decommissioning and demolishing buildings: just £107 million in 2023-24. This potentially constrains its ability to plan more flexibly to address risks: spending more on demolishing buildings earlier could allow it to complete its mission at lower cost and it would negate the need to continue to maintain the buildings in a safe condition.

15 This is the proportion of assets in these condition states, as a percentage of those assets where Sellafield knew the asset's condition. Assets in 'Unknown' condition were removed from the analysis.

Figure 11

The condition of Sellafield assets, October 2019 to March 2024

The percentage of 'Critical' assets that meet Sellafield's standards remained above 67% between October 2019 and October 2022, however this has since decreased to 42% as at March 2024



	Oct 2019	Mar 2020	Sep 2020	Mar 2021	Sep 2021	Apr 2022	Oct 2022	Apr 2023	Nov 2023	Mar 2024
Critical assets	67.5	70.0	68.6	67.3	70.4	68.6	68.0	64.0	52.0	42.0
Important assets	65.9	67.1	67.5	66.2	67.9	68.1	65.5	64.7	61.3	59.4
Significant assets	65.9	66.6	66.4	66.0	67.6	68.2	66.4	65.8	61.8	59.3

Notes

1 The assets shown on this graph are those which deliver a process or function for a facility at Sellafield. These include buildings and items of equipment.

2 Sellafield uses four grades to assess the condition of its assets. In descending order, these are; 'Good', 'Acceptable', 'Poor' and 'Unacceptable'. For this chart we have chosen to present 'Good' and 'Acceptable' as a single category.

3 Sellafield does not know the condition of some assets; it lists these as being in 'Unknown' condition. This figure does not include these assets. Percentages have been calculated excluding these assets.

4 Sellafield also categorises its buildings into five categories based on their importance. In descending order, these categories are 'Critical', 'Important', 'Significant', 'Marginal' and 'Negligible'. This figure only includes assets categorised as 'Significant' or higher.

5 'Critical' assets are those where failure of the asset could mean that Sellafield is unable to safely manage a large quantity of stored material which poses a very high hazard. Failure of 'Important' assets could mean Sellafield is unable to safely manage large quantities of material which poses a moderately high hazard, or smaller quantities of hazardous material undergoing processing. It could also cause environmental damage or mean Sellafield would not achieve short-term productivity objectives or respond to a sitewide incident. Failure of 'Significant' assets could impact productivity objectives in the medium-term or Sellafield's ability to respond to a building incident.

6 Sellafield graded 943 assets in October 2019 and 1,070 assets in March 2024 as either 'Critical', 'Important' or 'Significant'.

Source: National Audit Office analysis of Sellafield Ltd data

Asset life requirements

3.17 A major area of continuing uncertainty is the Geological Disposal Facility (GDF). This will permanently store waste off-site, deep underground, and is the responsibility of Nuclear Waste Services Ltd (NWS), another part of the NDA. Sellafield's 2017 Corporate Plan assumed it would be able to start transferring waste to the GDF in 2040. The GDF will not now be ready until the 2050s at the earliest (NWS is currently advising where in England it should be located). Unless alternative solutions can be developed, each decade of delay will force Sellafield to build another store at a cost of approximately £500 million to £760 million.

3.18 There are also other factors outside its control which affect how long Sellafield will need to operate assets – and how it should plan to do so. It may need to keep the facilities which manage spent nuclear fuel operational for longer, as the Advanced Gas-cooled Reactor fleet is expected to generate electricity for longer than previously planned – potentially delaying their eventual defueling. Additionally, as the site is by the coast, climate change (in particular, an increased risk of coastal and groundwater floods) is expected to pose an increasing threat to the site and its transport links – though Sellafield is currently not able to assess the potential impact.

Sellafield's workforce risks

3.19 As part of HM Treasury's 2021 Spending Review (SR21), Sellafield agreed to reduce the number of people it employed from 11,600 to 9,100 by March 2031, to be achieved through more efficient working. However even if its existing change programme had achieved the 'best-case' outcome, Sellafield would have needed to find further efficiencies to reduce its workforce by around another 1,200 posts. At the end of 2021-22 and 2022-23 its workforce was slightly smaller than its indicative SR21 target for those years, which it attributed in part to an increase in resignations and retirements following the end of the COVID-19 pandemic.

3.20 Sellafield's safety assurance team expressed serious concerns in 2022 about the workforce's capability to safely operate facilities and maintain assets. In their view, the site was becoming increasingly unsafe as the 'barriers' which, between them, prevent serious accidents were becoming weaker. The factors they identified included the deteriorating condition of assets (partly caused by the growing backlog of maintenance tasks) and inadequate numbers of suitably trained staff. Buildings frequently had to be shut down, as there would not have been enough people available to operate them safely: this had been a very rare occurrence before the COVID-19 pandemic, but had since become 'normalised'. Sellafield is aware that its buildings are often more hazardous when they are in the process of being shut down or restarted than when they are operating normally. Efforts to address these issues had not been successful.

3.21 In 2023 Sellafield's internal auditors found that there were fundamental weaknesses in Sellafield's business planning. They identified considerable differences between the SR21 workforce commitment and Sellafield's internal plans, with limited supporting documentation. Business areas could not show how they had calculated their resource requirements, or how initiatives to enable more efficient delivery were achieving results. When combined with the identified capability issues across the site and the declining number of maintenance tasks completed, it is clear that the headcount reductions were not accompanied by improvements in efficiency.

3.22 In October 2023 the Sellafield board decided to prioritise addressing workforce capability above achieving SR21 commitments, recognising that previous Operating Plans were not credible. The board decided to increase the authorised headcount from 11,200 to 12,000. It did not discuss this with HM Treasury – even though this decision meant that Sellafield was no longer trying to achieve its SR21 commitment. In March 2024, Sellafield employed 11,521 people. It recruited 1,145 people in 2023-24, while 782 people left the organisation. These include 344 people recruited onto its graduate and apprenticeship schemes (the NDA recruited a further 67 people to its equivalent schemes).

3.23 Sellafield is now developing a new approach to strategic workforce planning to support future decisions, including how it responds to higher turnover than it experienced before the COVID-19 pandemic. A third of its workforce will be eligible to retire in the next 10 years. It recognises that it will need to understand how this – and changes in staffing requirements as new facilities become operational – affects individual work areas and to make sure that its remaining workforce gains the experience the site will need in future. Sellafield expects the new approach will support future Operating Plans and Spending Review submissions by giving it a single source of information about workforce trends.

3.24 Sellafield is also seeking to improve the productivity of the existing workforce, including by streamlining training (so people are trained to fill key roles more swiftly) and improving how it utilises maintenance engineers. Achieving genuine workforce efficiencies is particularly important as the nuclear industry continues to face skills shortages. The Nuclear Skills Delivery Group – which brings together the principal employers in the sector (including the NDA) – estimates 83,000 people are currently employed in the nuclear sector. The age profile of the workforce and increased demand from military and civilian nuclear projects (including the aspiration to generate 24 GW of electricity by 2050, as announced in 2022) means the sector will need to recruit 40,000 more people by 2030 – double the current recruitment rate.

Appendix One

Our audit approach

Our scope

1 This report examines progress since our 2018 report on risk and hazard management at Sellafield[16] and, in particular, the extent to which the Nuclear Decommissioning Authority (NDA) and Sellafield Ltd (Sellafield) have addressed the issues we identified in our previous work. It covers:

- **Governance and oversight of nuclear decommissioning:** The extent to which the NDA's reforms since 2018 are securing benefits and improving governance and oversight of decommissioning risks.
- **Progress to date in managing risks from the nuclear legacy:** How well Sellafield has performed since 2018 on managing risks from the nuclear legacy and what more it needs to do.
- **Understanding future risks and planning:** Sellafield's ability to assess and understand current and emerging decommissioning risks and put in place short and long term plans to address these.

Since the Department for Energy Security & Net Zero (DESNZ) and the NDA have been aware of the particular challenges and issues at Sellafield for many years, we would expect Sellafield to be making significant progress in addressing the risks from the nuclear legacy. We therefore paid particular attention to this area in drawing our conclusions.

Our evidence base

2 In examining these issues, we drew on a variety of evidence sources, including interviews, site visits, document review and data analysis.

16 Comptroller and Auditor General, *The Nuclear Decommissioning Authority: progress with reducing risk at Sellafield*, Session 2017–2019, HC 1126, National Audit Office, June 2018.

Interviews

3 We undertook 40 interviews with representatives of 8 different organisations. Most interviews were conducted between April and June 2024. We used information from these interviews to build our understanding of the relevant topics and to inform further interview and document requests and follow-up questions. We identified the topics we wanted to explore. Interviewees were often identified by the organisations themselves and were selected based on the fit between their job role and expertise and the focus of each interview.

4 Around half of the interviews were conducted wholly using Microsoft Teams. The rest were conducted at the offices of participating organisations, mainly the NDA and Sellafield, sometimes with some participation by Teams. Over one-third of interviews were with more than one person: we often held one interview with representatives of both NDA and Sellafield to discuss a topic. Interviews were not recorded, but we took notes during each interview.

People we spoke to

5 We interviewed key individuals from DESNZ, the NDA and Sellafield. Topics of these interviews included: governance, funding, performance measurement, delivery, and risk and workforce management.

6 We also interviewed HM Treasury (HMT) officials to understand how the NDA and Sellafield's decommissioning work is funded in both the short and long term. In addition, we discussed with individuals at HMT the approvals process, and the various factors for major project spending approval.

7 We spoke to officials from UK Government Investments (UKGI) to understand the role UKGI plays in supporting DESNZ and HMT oversight of the NDA and Sellafield.

8 We spoke to officials from the Office for Nuclear Regulation and the Environment Agency. Both are responsible for regulating nuclear-licenced sites in England.

9 We also spoke with individuals from the Infrastructure and Projects Authority. This was to understand the work it has done, including its assessments of those Sellafield projects which are included within the Government Major Projects Portfolio.

Site visit

10 We undertook a site visit to the Sellafield site to better understand the nature of the decommissioning challenge, the particular constraints Sellafield faces and the work that is being conducted on a day-to-day basis. Some interviews were conducted as part of the same visit.

Document review

11 We reviewed a very large number of documents provided by DESNZ, the NDA and Sellafield Ltd. Documents included:

- Board and committee minutes and papers to understand key decisions and how progress and risks were monitored;
- Business cases, implementation plans and progress reports;
- Risk management frameworks, to understand how Sellafield and the NDA approach risk management;
- Risk registers, to understand what Sellafield and the NDA saw as their most significant risks and how these assessments changed over time;
- Organograms and formal Terms of Reference, to understand the organisational structure and roles and responsibilities;
- Information prepared to support the 2021 Spending Review;
- Assurance reviews (including both internal audit reports and reports commissioned from external organisations); and
- Information about the 2024 prosecution of Sellafield by the Office for Nuclear Regulation.

Data analysis

12 We analysed data provided by DESNZ, the NDA and Sellafield, including data about:

- The condition of key assets and how this has changed between 2019 and 2024;
- The total number of people employed by Sellafield Ltd on a full-time basis between 2021 and 2024;
- Sellafield's major projects (those with a forecast cost of £100 million or more). This includes the forecast cost and schedule of the projects at approval points, at the point we last reported on Sellafield (where applicable) and at June 2024;
- Sellafield's total annual spending;
- Staff survey data, to understand how the views of employees at Sellafield have changed over time; and
- The forecast cost of decommissioning Sellafield.

13 To show how the forecast cost of decommissioning Sellafield has changed, we used the same data that has supported the calculation of the nuclear provision recognised in the NDA's financial statements. However we presented this information differently. In this report:

- We used undiscounted data, as the nuclear provision is highly susceptible to changes in the discount rate due to its very long duration.
- We converted the provision estimates to 2023-24 prices using GDP deflators (as published by the Office for Budget Responsibility in June 2024). This shows the information in a consistent way, stripping out the impacts of inflation.

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