



Context Plan (2017-2026)

Explaining the context of Sellafield's operations

Foreword

Given that Sellafield's nuclear activities have been a major element in the West Cumbria landscape and community for over sixty years it may seem strange to document at this point a Context Plan for the site's activities. There are however several reasons for doing so. From an external perspective there is a growing need to explain the underlying drivers behind the still very significant construction programme at Sellafield, and to recognise that in most cases each element of that programme is subject to a planning consent decision by either Copeland Borough Council or Cumbria County Council. Internally Sellafield faces probably its biggest change to date with the completion of the two reprocessing missions over the next four years. This will have far reaching implications, not just for the workforce but also for the construction programme. There are other drivers, and these are outlined in this document.

This first Context Plan for Sellafield seeks to address the above, and in particular to assist the local Planning Authorities in their assessments and decisions for the construction programme at Sellafield. The Context Plan will be updated on an event driven basis, for those events that have a material effect on the site's operating or external context. Pending this, feedback from Planning Authorities on their use of the Context Plan will be welcomed.

Rebecca Weston

Technical Director, Sellafield Ltd



We well understand the challenges of planning for the future development of the Sellafield site and that this challenge is truly unique. This context plan provides a very useful framework to understand the discussion needed to support the development of the site and the Sellafield mission.



The context plan usefully sets out the priorities and challenges for Sellafield in respect of land use and transport issues. Together with the development of a masterplan and transport strategy it will inform planning decisions and help to ensure sustainable development of the site.

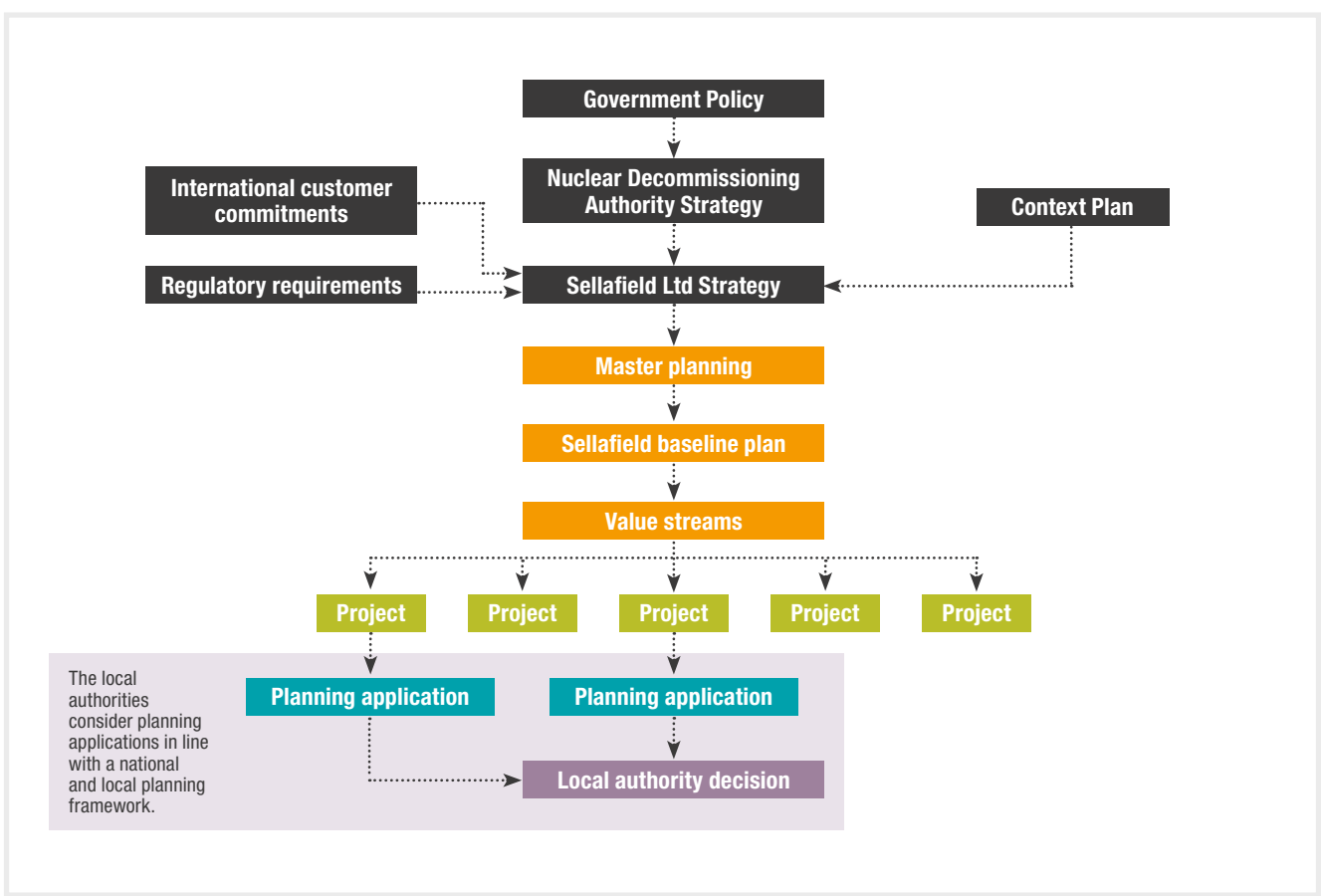


Contents

02	Foreword	12	Sellafield today
03	Purpose	16	Sellafield's role
04	Introduction	18	Community impact
06	Key considerations	20	Sellafield 2017-2026
08	Historical development	26	Conclusion
10	Nuclear life cycle	27	References / Glossary

Purpose

This context plan has been created to help the planning authorities (Cumbria County Council and Copeland Borough Council) in their assessment of our future site development and associated strategies, in relation to determining planning applications and other relevant supporting information.



The document shows the context within which development proposals form part of a logical and integrated overall land use for the Sellafield site. This is consistent with the National Planning Policy Framework and National Planning Policy Guidance and the relevant local authority planning policies, including the Cumbria Minerals and Waste Local Plan and the Copeland Local Plan 2013-2028.

As the diagram above illustrates, the work to be done at Sellafield is driven by nuclear policy set by the UK

government and supports the delivery of the strategy set by the Nuclear Decommissioning Authority as owners of the site. A natural evolution of the context plan is more detailed master planning for the site which, in turn, flows down through to the site requirements of individual projects.

The context plan covers the period 2017-2026, will be updated on an event driven basis to reflect any major change in policy, strategy or the local environment, or every three years, whichever is sooner.

Introduction

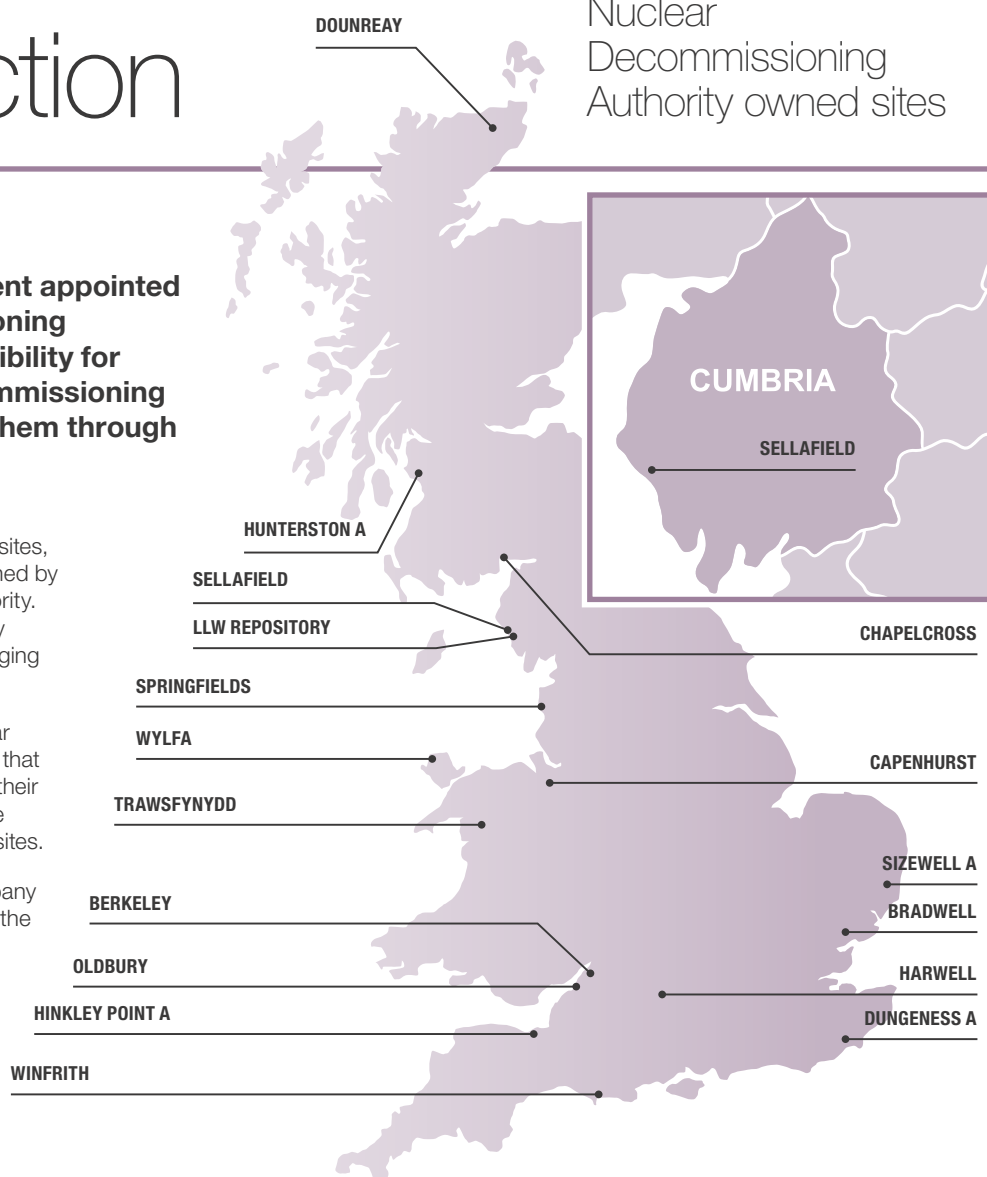
Nuclear
Decommissioning
Authority owned sites

In 2005, the UK government appointed the Nuclear Decommissioning Authority to take responsibility for developing nuclear decommissioning plans and implementing them through an estate-wide strategy.

The estate is made up of 17 nuclear sites, including Sellafield, which are all owned by the Nuclear Decommissioning Authority. Within this estate, Sellafield is the key site as it is home to the most challenging legacy facilities.

As the strategic authority, the Nuclear Decommissioning Authority ensures that government policies are reflected in their strategy and implemented by the site licence companies that operate the sites.

Sellafield Ltd is the site licence company responsible for the safe operation of the Sellafield site.



Roles and responsibilities at Sellafield



NUCLEAR DECOMMISSIONING AUTHORITY

- Legal owner of Sellafield Ltd and the Sellafield Site
- Allocates funding to Sellafield and other civil nuclear sites in their estate
- Appoints the Chair of Sellafield Ltd
- Nominates NDA non-executive directors to the board of Sellafield Ltd
- Sets governance and financial control frameworks
- Agrees performance targets and measures performance against Sellafield Ltd's operating plan

SELLAFIELD LTD

- Holds the Nuclear Site Licence for the Sellafield site
- Responsible for the safe and secure operation of the Sellafield site
- Directly accountable for the people, assets and liabilities under its control
- Creates and delivers the baseline plan for Sellafield

REGULATORS

OFFICE FOR NUCLEAR REGULATION

The Office for Nuclear Regulation's mission is to provide efficient and effective regulation of the nuclear industry, holding it to account on behalf of the public. The Office for Nuclear Regulation Transport's contribution to achieving this mission is to regulate safety and security during the transport of radioactive material by road and rail in the UK.

ENVIRONMENT AGENCY

An executive non-departmental public body responsible for the protection and improvement of the environment.

REGULATING SELLAFIELD

Sellafield site ranks as one of Europe's largest industrial complexes, managing more radioactive waste in one place than any other nuclear facility in the world. It is also home to some of the most hazardous legacy nuclear facilities in the country, our legacy ponds and silos. For more on these challenges, see page 11.

PLANNING AUTHORITIES

The statutory body or bodies responsible for producing local land use policies, allocations and guidance that are used in deciding planning applications and therefore guide future development on the Sellafield site.

The local planning authorities are:

- Cumbria County Council for all waste related matters/ development
- Copeland Borough Council for all other non-waste related matters.

FUNDING

The Nuclear Decommissioning Authority is an executive, non-departmental public body and as such its annual spending limits are set by parliament, combining government funding with income from its commercial activities. This income will reduce with the completion of reprocessing operations at Sellafield.

We recognise that there are always competing demands on public finances. This means we have to prioritise work across the site, balancing risk and hazard reduction, value for money and making progress on a broad front.

The Public Accounts Committee which is responsible for scrutinising the value for money of public spending and for holding the government and its civil servants to account for the delivery of public services, has looked at the money spent at Sellafield on two occasions. As a subsidiary of the Nuclear Decommissioning Authority and a publicly funded organisation, we can expect this level of scrutiny to continue.

SITE OPERATIONS AND PRIORITIES

Sellafield poses levels of complexity and uncertainty that are unique in the global nuclear sector.

Throughout its seventy year history, it has played a key role in the country's nuclear industry, first in defence through the production of plutonium for the atomic bomb, then in energy production, spent fuel management and nuclear waste management.

Our priorities today are:

- the safe, secure stewardship of the Sellafield site

- to make demonstrable progress in the reduction of risks and hazards at Sellafield, and in the completion of our commercial reprocessing operations
- to deliver a return on the investment that stakeholders make in the Sellafield site.

In delivering these priorities we have a duty to minimise our impact on the environment, to be a good neighbour to the communities in which we operate and to maximise the social impact of the Sellafield mission.

The site is approaching a transition point in its mission as commercial reprocessing comes to an end and resources are deployed to deliver four value streams:

- Waste retrievals
- Remediation
- Spent fuel management
- Special nuclear material management

We currently predict that this work at Sellafield will take more than a century to complete. This is as a result of prioritising risk and hazard reduction and the resources and technology available to complete the work.

In order to clean-up some of our legacy nuclear buildings we need to build new facilities that can receive, process and store nuclear fuels, sludge and waste that we will retrieve. The compact nature of the site limits the amount of space suitable for the construction of new facilities. Our current intention is to do all of this physical work within the existing site boundary, however, we may need to consider undertaking some non-nuclear activities outside of the existing site footprint.

Key considerations

This document sets out the context that drives work at Sellafield over the next ten years (2017-2026). There are a number of key considerations which are covered in more detail throughout the document. The drivers will continue to evolve.

DRIVERS FOR WHAT WE DO

Risk and hazard reduction

PAGE 13

Sellafield is home to the most hazardous nuclear facilities in the country, the legacy ponds and silos.

Reprocessing

PAGE 17

Reprocessing in the Thermal Oxide Reprocessing Plant is due for completion in 2018.

Reprocessing in the Magnox Reprocessing Plant is due for completion in 2020.

Land constraints

PAGE 24

Sellafield has evolved over seventy years and is now a very congested nuclear, industrial and chemical site.

DRIVERS THAT ARE CHANGING THE CONTEXT

There is an increased urgency to clean-up the legacy ponds and silos.

The end of commercial reprocessing will see an increased focus of resource on risk and hazard reduction.

The change in mission will require us to reorientate the reprocessing workforce.

Sellafield will continue to play a role in spent fuel management through the receipt and storage of used fuel.

There is a limited amount of land that is suitable for development within the existing site boundary.

We have to use the land that we do have available for development more effectively and efficiently.

Transport

PAGE 22

In order to maximise the available land on the nuclear licensed site, and in line with our security driver to remove people who do not need routine access to nuclear facilities, we have moved some people to off-site accommodation.

We will continue to move people to off-site accommodation, in line with NDA property guidelines.

We are also seeking to reduce the number of cars that routinely access the Sellafield site, reducing pressure on the land availability on site and on the local road network.

Government funding and NDA strategy

PAGE 5

Work at Sellafield is driven by national policy and the NDA's strategy.

The government (via NDA) invest £2bn every year in the delivery of the Sellafield mission.

Sellafield is the NDA's priority site for clean-up, high hazard reduction and the storage of wastes and spent fuels.

Sellafield is supporting the clean-up of other NDA sites through the receipt and storage of nuclear waste and fuel.

Sellafield is home to the majority of the UK's nuclear materials and waste.

The third iteration of the NDA's strategy includes further consolidation of nuclear wastes and fuels.

Sellafield must demonstrate a return on investment for the £2bn currently invested in the site every year and must be agile enough to respond in any reduction in this level of funding.

EDF Energy

PAGE 17

Sellafield's ability to receive and store used nuclear fuel is critical to EDF Energy's ability to produce electricity for the UK.

For more information on how we support EDF Energy, see page 17.

EDF Energy has confirmed that seven of their nuclear power stations will continue to operate beyond their planned closure dates. Sellafield will continue to receive and store used fuel from these stations.

Historical development

Sellafield has played a pivotal role in the UK nuclear industry since the 1940s. It is located on the site of a former munitions factory, across 2 square miles. It is Europe's largest nuclear site and has the most diverse range of nuclear facilities in the world.

Work on Sellafield site includes:

- spent fuel management including reprocessing
- waste treatment and packaging
- storage of radioactive wastes
- decommissioning

Throughout the evolution of the site, Sellafield has been a national asset.



NUCLEAR DETERRENT

Sellafield's original mission, the production of plutonium for Britain's atomic defence programme, led to the development of two reactors, a reprocessing plant, a fuel storage pond, a waste storage silo and support buildings.

ATOMIC AGE

The site pioneered commercial nuclear power generation with the construction and operation of the world's first civil nuclear power station, Calder Hall. The site also expanded its reprocessing capabilities with the construction and operation of facilities to reprocess used Magnox fuel. These facilities included a second storage pond and waste silo. The construction of the Windscale Advanced Gas-cooled Reactor was the forerunner to the 14 Advanced Gas-cooled reactors across the UK.

SPENT FUEL MANAGEMENT

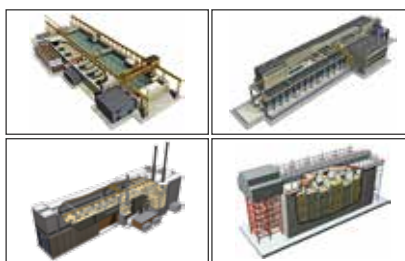
The site expanded its spent fuel management capability to include the receipt, storage and reprocessing of Oxide fuels in the Thermal Oxide Reprocessing Plant – or Thorp as it is known – for customers around the world. The construction of Thorp took 7 years and involved approximately 13,000 man-years of construction. Throughout its years of operations it has provided employment on an average of approximately 700 people each year. Thorp was, at the height of its operations, the biggest single Yen earner in the UK, bringing commercial income for UK plc.

The evolution of the Sellafield site



NUCLEAR WASTE

During the 1990s, Sellafield constructed a range of nuclear waste storage and processing buildings that could receive, treat and store low, intermediate and high level wastes. These facilities were used to treat wastes that came from our own operations and from our support to the wider nuclear industry. The suite of buildings also treats liquid and effluent wastes and ensures that we remain compliant with our radioactive discharge authorisation permits.



RISK AND HAZARD REDUCTION

The Nuclear Decommissioning Authority was established in 2004 to bring focus and a strategic approach to the clean-up of the UK's nuclear liabilities. The decommissioning of some of our buildings has started, as we complete our reprocessing mission, we will progressively move more of our resources to risk and hazard reduction work.

The clean-up of Sellafield includes the decommissioning of facilities that have supported the various stages of the site's evolution and delivery, including some of the most hazardous buildings in the country, our legacy ponds and silos. For more information on these facilities, see page 10.

To complete risk and hazard reduction we will build on our unparalleled nuclear material and waste management expertise, constructing and operating new facilities that will receive waste, fuels and sludge from the ponds and silos.



CONSTRUCTION AT SELLAFIELD

Clearing space through the decommissioning and demolition of redundant nuclear buildings does not necessarily make room for new facilities as not all ground on the site is suitable for construction. The clean-up of the site also requires a new 'ring' of facilities to process, package and store fuel, waste, sludge and materials.

In every stage of the site's life we have had to construct facilities to support the site's operations. For example, the construction of the Windscale reactors demanded storage and ancillary buildings, and Thorp required new encapsulation and effluent plants.

Our experience of major construction at Sellafield has shown that work of this nature does have an impact on local infrastructure. We seek to minimise this impact, and our impact on the environment.

Key considerations

We have to use the land that we do have available for development more effectively and efficiently.

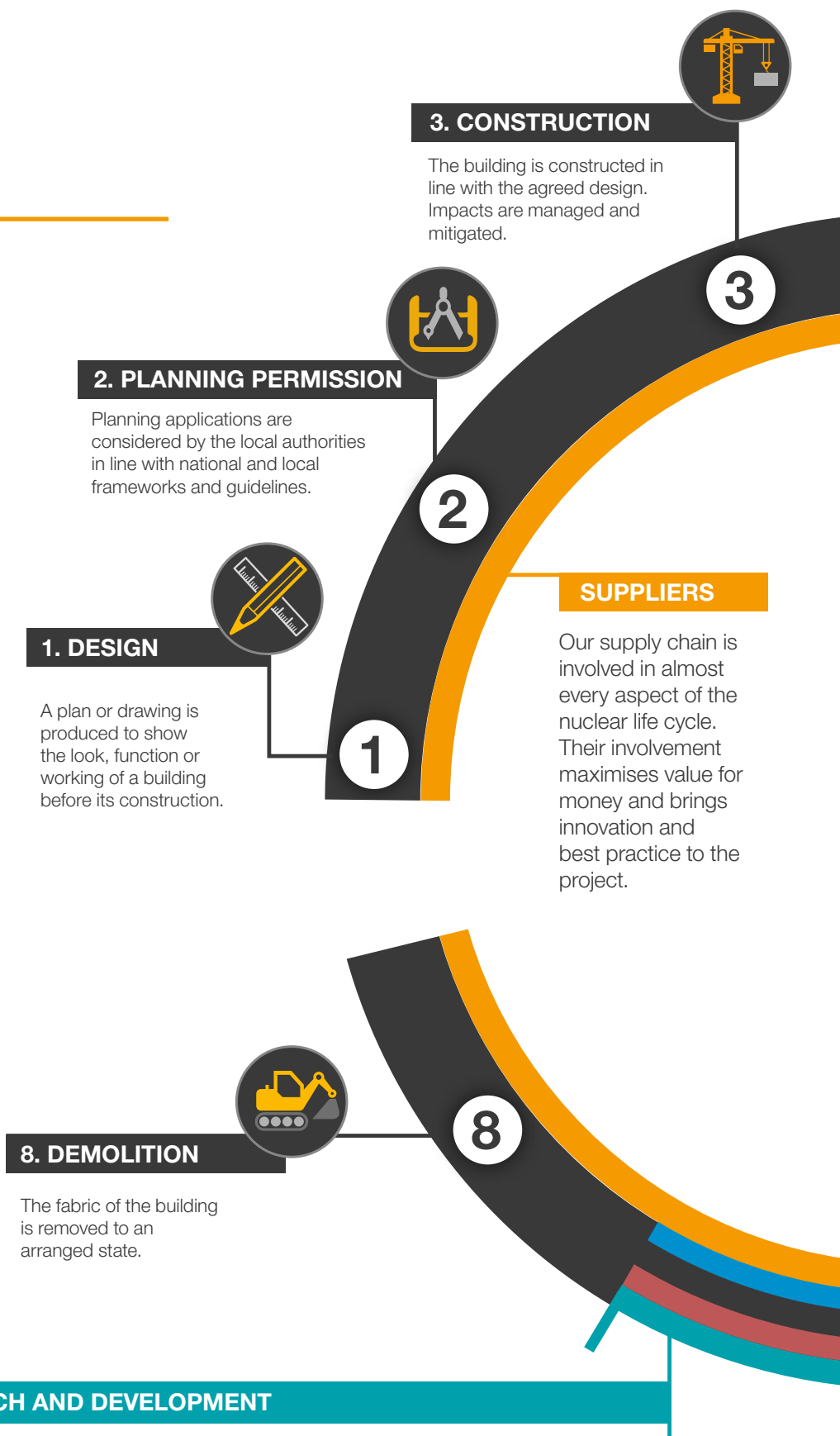
Key considerations

Sellafield is home to the most hazardous nuclear facilities in the country, the legacy ponds and silos.

Nuclear life cycle

Not every nuclear building is the same, but all of our facilities go through phases of operation, from initial design through to final demolition.

Our legacy ponds and silos also go through a phase called retrievals where we move fuels, sludge and waste from the ponds and silos into modern containment. Where we need to construct new facilities to support this retrievals work, those new buildings go through the same lifecycle. We invest in research and development and work with our supply chain partners to accelerate all stages of the life of a nuclear facility.



Tackling unique decommissioning projects requires investment in research and development, especially when dealing with risk and hazard reduction solutions.

Many of the technologies that our supply chain is developing for our mission, such as remote operated vehicles, go on to help other nuclear decommissioning projects in this country and around the world.



4. COMMISSIONING

Inactive – parts of the plant are connected and tested.
Active – nuclear material are introduced into the building.

4



5. OPERATIONS

The plant is operated on a daily basis for the purpose for which it was designed.

5

NEW BUILD

Sometimes you have to build a new facility before you can decommission an old one. For example, we need facilities that can safely process and store waste, fuel and sludge from our legacy ponds and silos so that we can empty and demolish them.

- Evaporator D
- Separation Area Ventilation
- Silo Maintenance Facility
- Box Encapsulation Plant Product Store – Direct Import Facility
- Box Encapsulation Plant
- Box Transfer Facility
- High Security Area
- Sellafield Main Control Centre
- Sellafield Retreatment Plant

RETRIEVALS

The decommissioning of our legacy ponds and silos includes the retrieval of waste, fuel and sludge.



6. POCO

Once operations have finished the bulk of the nuclear material is removed from the plant. This process is known as Post Operational Clean Out (POCO).

6



7. DECOMMISSIONING

Removal of contaminated equipment and the dismantling of internal structures to the point where the facility no longer needs to be monitored for nuclear safety.

7

Sellafield today

The safe and secure stewardship of the Sellafield nuclear site is our overriding priority. It covers everything from the safety of our employees and care for the environment through to the secure management of nuclear materials. It underpins every decision that we make. We are supported in the secure protection of the site by the Civil Nuclear Constabulary and the civil guard force.

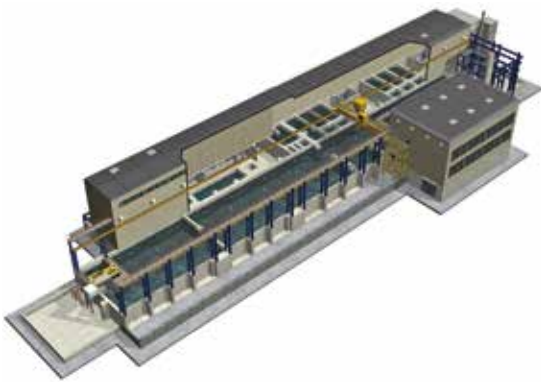
On the site, our focus is the accelerated clean-up of Sellafield's risks and hazards:

- The First Generation Magnox Storage Pond
- The Pile Fuel Storage Pond
- The Magnox Swarf Storage Silos
- The Pile Fuel Cladding Silo
- The safe management and storage of Highly Active Liquor
- The safe management and storage of Plutonium Contaminated Materials

We must also provide safe and secure management and storage for:

- Nuclear materials
- Nuclear waste





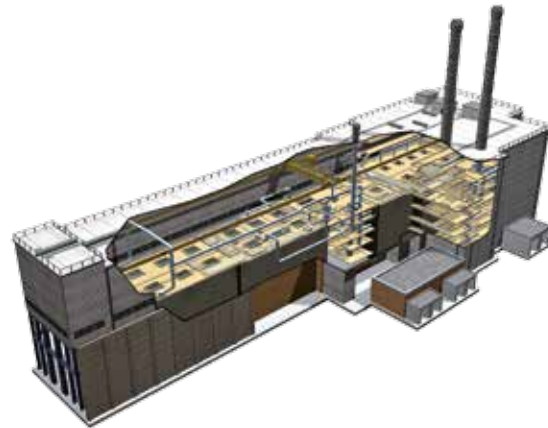
THE FIRST GENERATION MAGNOX STORAGE POND

In its 26 years of full operations, the First Generation Magnox Storage Pond processed around 27,000 tonnes of nuclear fuel – that's nearly 2.5 million fuel rods. Primarily a storage pond and 'decanning' facility, the facility was used to strip the cladding from used fuel rods so the fuel inside could be reprocessed. As well as receiving spent fuel from all of the UK's nine Magnox nuclear power stations, the facility has been used to process fuel from Italy and Japan.

Our inventory estimates for the pond include:

- 14,000m³ of water
- 1,500m³ of radioactive sludge – this varies in depth around the facility. Around two-thirds of the sludge is in the pond and the other third in the 'wet bays' which were originally used for decanning fuel rods, but then became waste storage areas.
- 500 tonnes of solid nuclear fuel.
- Waste contents consist of sludge, fuel, miscellaneous intermediate level waste and low level waste.

The pond is classed as the second highest hazard at Sellafield (Magnox Swarf Storage Silo is the highest hazard).



THE MAGNOX SWARF STORAGE SILOS

The Magnox Swarf Storage Silos building was constructed for the underwater storage of this so-called swarf waste which is the external cladding removed from Magnox nuclear fuel.

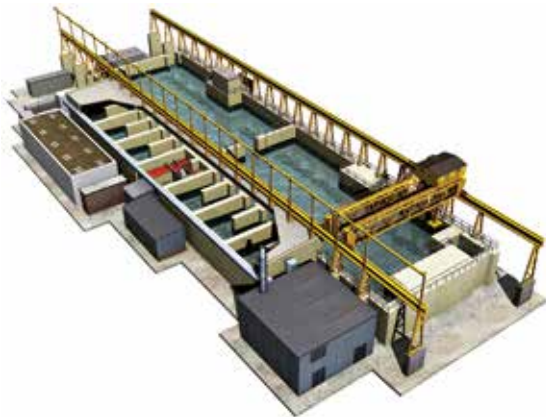
Originally constructed in the 1960s, three further extensions were added in the 1970s and 1980s providing in total twenty two individual compartments within the silo.

It received swarf from the First Generation Magnox Storage Pond and the Fuel Handling Plant, along with a range of other metal items of intermediate level waste.

In 1992, swarf from the Fuel Handling Plant was routed to the Magnox Encapsulation Plant where it was encapsulated into drums. The final waste was tipped into the silos in June 2000.

Our priority is to empty the store of its estimated 10,000 cubic metres of nuclear waste as soon as possible.

Sellafield today



THE PILE FUEL STORAGE POND

Built and commissioned between 1948 and 1952, the pond and adjoining decanning building originally provided the storage and cooling facility for irradiated fuel and isotopes from the two Windscale reactors. The pond processed 2,100 tonnes of pile fuel and 300 tonnes of Magnox fuel.

All operations in the pond stopped in the 1970s. The plant was left in a care and maintenance regime, whilst operations were then transferred to more modern facilities. Extensive refurbishment and re-equipping took place in the 1980s and decommissioning started in the 1990s.

The pond is 100 metres long, 25 metres wide and 7 metres deep, containing over 15 million litres of water. In total there were around 180 metal skips in the pond each holding up to 6m³ of fuel and waste.

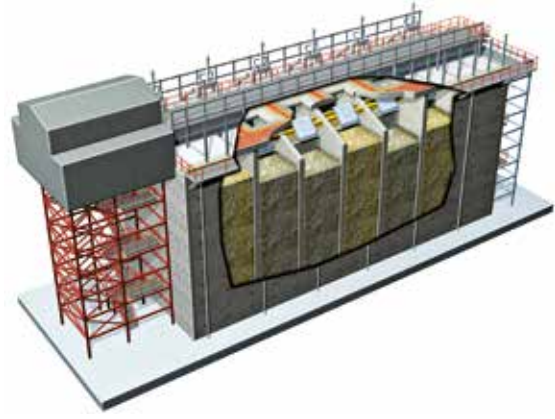
The pond contains over 15,000m³ of radioactive water, more than 300m³ sludge, various nuclear wastes and legacy spent nuclear fuel in 180 metal skips in the pond.

Key considerations

Sellafield is home to the most hazardous nuclear facilities in the country, the legacy ponds and silos.

There is an increased urgency to clean-up the legacy ponds and silos.

The end of commercial reprocessing will see an increased focus of resource on risk and hazard reduction.



THE PILE FUEL CLADDING SILO

The silo is 21m high and its six individual waste containment compartments hold over 3,400 cubic metres of intermediate level waste, the equivalent of 30 double decker buses.

It has been storing radioactive waste since 1952 – the same year that Queen Elizabeth II ascended to the throne.

Originally, the silo had no dedicated personnel assigned to it, and the facility sending the waste would arrange for its own personnel to tip the waste. This means there are big variances in the quality of information on what has been put there and we have conducted scores of interviews with now-retired staff to build intelligence on its contents.

It is situated in a highly congested area of the Sellafield site, surrounded by a maze of active pipelines and similarly sensitive buildings. This makes it very challenging to carry out decommissioning work. Even the installation and use of a crane is a highly-detailed project requiring extensive safety assessments.

The business plan used in the current Sellafield Plan from 2014 predicts that retrievals will start in 2022 and the overall cost of the programme will be £904 million. However, a new plan currently being agreed hopes to bring forward the start of retrievals significantly and also reduces costs.

THE SAFE MANAGEMENT AND STORAGE OF HIGHLY ACTIVE LIQUOR

Highly Active Liquor is classed as high level waste and is a by-product of reprocessing spent nuclear fuel. It is treated at Sellafield in the vitrification plant where it is converted into a solid stable form for transport and long term storage.

The vitrified waste is placed into a specially engineered Vitrified Product Store pending final disposal in the UK or return to its country of origin.

Returning this waste to overseas customers fulfils contractual obligations and also UK government policy, which states that the waste from reprocessing contracts signed since 1976 should be returned to the country that benefited from the reprocessed fuel.

THE SAFE MANAGEMENT AND STORAGE OF PLUTONIUM CONTAMINATED MATERIALS

Tools and equipment that come into contact with plutonium during operations are classed as being 'plutonium contaminated materials'. These are treated at Sellafield as a form of intermediate level waste and as such are grouted in cement which makes the material suitable for long term storage.

NUCLEAR MATERIALS

On completion of reprocessing there will be around 140 tonnes of civil separated plutonium in the UK, with the majority of it at Sellafield. We must maintain the facilities and capability to safely and securely store these materials.

SPENT FUEL MANAGEMENT

Sellafield reprocesses spent nuclear fuel in the Thermal Oxide Reprocessing Plant for UK and overseas customers, generating income for the UK and offsetting the cost of the clean-up of Sellafield. Income is also generated through the reprocessing of spent nuclear fuel from the UK's Magnox fleet of reactors and from EDF Energy's Advanced Gas-cooled Reactors. Thorp will finish its reprocessing mission in 2018 and Magnox reprocessing will be completed in 2020.

WASTE

The UK Radioactive Waste and Materials Inventory is the latest national record on radioactive wastes and materials in the UK.

The Inventory contains information about:

- radioactive wastes that exist now
- radioactive wastes that will arise in the future
- radioactive materials – these are radioactive items that are not classed as waste now but may be in future if no further use can be found for them.

The Inventory is updated every three years. It is a snapshot of wastes and materials at a specific point in time, called the 'stock date'.

The inventory for Sellafield, recorded on 1 April 2016, is set out below.

WASTE CATEGORY	VOLUME (M ³)		
	Reported 1st April 2016	Estimated future arisings	Lifetime Total
HIGH LEVEL WASTE	1,960	-820*	1,150
INTERMEDIATE LEVEL WASTE	99,000	191,000	290,000
LOW LEVEL WASTE	30,100	1,320,000	1,350,000
VERY LOW LEVEL WASTE	935	2,860,000	2,860,000
TOTAL	132,000	4,360,000	4,490,000

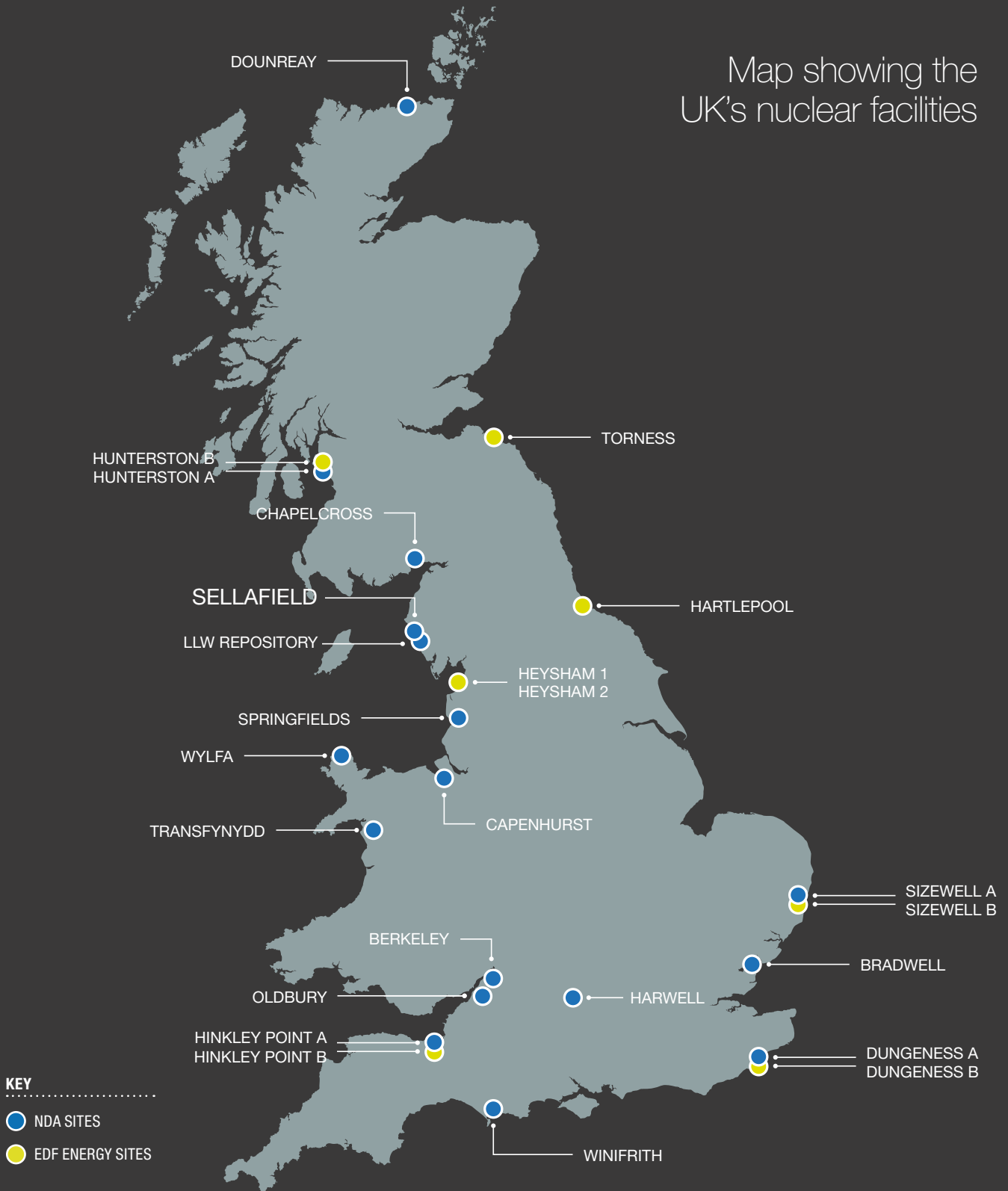
* The negative figure reflects our progress in vitrifying stocks of Highly Active Liquor at Sellafield.

Key considerations

Sellafield is home to the majority of the UK's nuclear materials and waste.

Sellafield's role

Map showing the UK's nuclear facilities



NATIONAL ROLE

The Nuclear Decommissioning Authority supports the government's policy objective for the UK to act as a global leader in the civil nuclear industry, as stated in their Nuclear Industrial Strategy.

The Sellafield site continues to play a national role, supporting the Nuclear Decommissioning Authority sites as they remove fuel from their reactors and undertake decommissioning.

We are also critical to the operations of EDF Energy's Advanced Gas-cooled Reactors, which continue to generate electricity for the UK today. If Sellafield were unable to receive this fuel, the stations would have to stop generating electricity. EDF Energy has declared that they will operate their seven stations for as long as it is safe and economic to do so. The current scheduled closure dates for the stations are:

STATION	SCHEDULED CLOSURE
HUNTERSTON B	2023
HINKLEY POINT B	2023
HARTLEPOOL	2024
HEYSHAM 1	2024
DUNGENESS B	2028
HEYSHAM 2	2030
TORNESS	2030

The Nuclear Decommissioning Authority states in its strategy that nuclear materials from Dounreay and Harwell will be consolidated at Sellafield. This consolidation is under way and we must maintain the facilities and capabilities to continue to offer this service to the estate. To meet national decommissioning objectives, further consolidation is expected at Sellafield.

In line with the national Magnox Operating Programme, all used fuel from Magnox stations, including Calder Hall, is treated in the Magnox Reprocessing Plant on site. This programme of work is due to be complete in 2020.

Operations in our second reprocessing plant – the Thermal Oxide Reprocessing Plant, or Thorp as already stated – are due to be complete in 2018. We will re-use the receipt and storage facility within Thorp to support EDF Energy by receiving and storing Advanced Gas-cooled Reactor fuel.

We will also continue to receive and manage irradiated fuels on behalf of the Ministry of Defence.

INTERNATIONAL ROLE

Sellafield's commercial reprocessing mission comes to an end in 2020 but the site will continue to honour contracts for waste and material management and returns.

Overseas owned nuclear materials are the responsibility of the owners. These materials are managed in line with UK and the foreign government policy requirements, contractual commitments and customer requirements.

Key considerations

Work at Sellafield is driven by national policy and the NDA's strategy.

Sellafield is supporting the clean-up of other NDA sites through the receipt and storage of nuclear waste and fuel.

Key considerations

Sellafield's ability to receive and store used nuclear fuel is critical to EDF Energy's ability to produce electricity for the UK.

Community impact

Sellafield Ltd leads on socio-economic delivery within the Sellafield system on behalf of and in compliance with Nuclear Decommissioning Authority statutory requirements. We are obliged to provide a three year socio-economic plan to the Nuclear Decommissioning Authority and to report the impact of our activities on an annual basis.

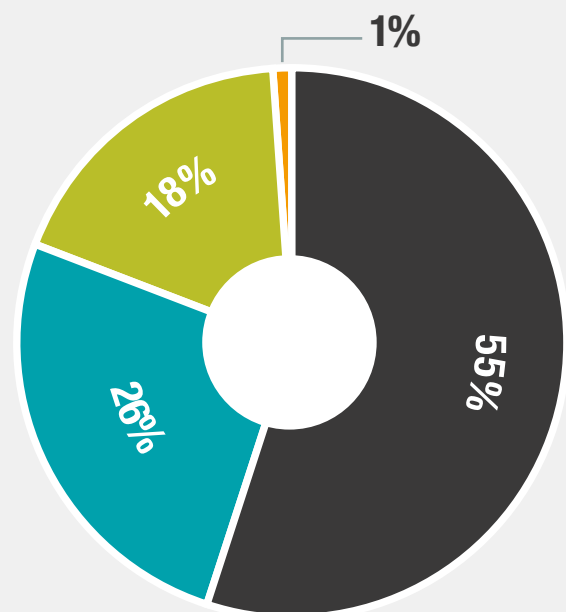
The Energy Act 2004 gave the Nuclear Decommissioning Authority supplementary responsibilities to ensure that there is a sustainable workforce for the long-term clean-up and decommissioning mission, while mitigating the impacts that decommissioning may bring on the economies of local communities close to their sites. The Nuclear Decommissioning Authority's approach to meeting these responsibilities is set out in their strategy.

The graphics on the right shows our current financial investment via salaries and supply chain spend.

Employment

The Sellafield mission continues to provide thousands of jobs both directly to Sellafield Ltd and indirectly via our supply chain. Our current employment figures are approximately 11,500 Sellafield Ltd employees and a further 2,160 supply chain roles (for further detail, please see page 21).

The total salary bill for 2015/16 was £780.2 million, with the majority of that retained in Copeland.



2015/16
wage bill split:

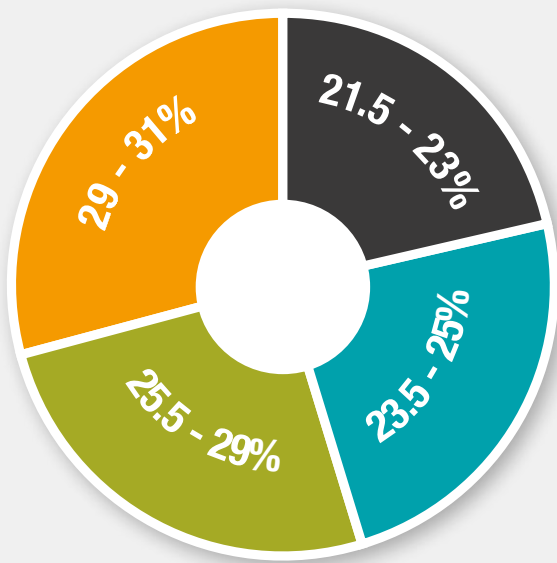
- COPELAND ~55% = £429.1 million
- ALLERDALE ~26% = £202.85 million
- OTHER ~18% = £140.4 million
- WARRINGTON ~1% = £7.8 million

Supply chain spend

Our total supply chain spend in the 2015/16 financial year was £1.225 billion.

A key factor in the UK's economic growth is small and medium sized enterprises that bring innovation and long term skills. The government sets targets for the amount of supply chain spend that should be carried out by small and medium sized enterprises and the Nuclear Decommissioning Authority track the estate's performance against these targets.

Our direct spend with these enterprises in 2015/16 was £72 million. Based on data gathered from 68% of our supply chain spend, we estimate the indirect spend with small to medium sized enterprises to be £216 million. As a result, the Nuclear Decommissioning Authority verified that we had achieved the 2015/16 small to medium size enterprise spend target.



SME yearly target figures:

- 2015/16 = 21.5-23%
- 2016/17 = 23.5-25%
- 2017/18 = 25.5-29%
- 2018/19 = 29-31%



Supply chain spend:

- 2015/16 SME SPEND = £288 MILLION**
- DIRECT = £72 MILLION**
- INDIRECT = £216 MILLION**

¹ We calculate our spend with small to medium sized enterprises against an annual spend of £1.146 billion, which is our total spend minus uncontrollable costs, for example, the cost of the Civil Nuclear Constabulary.

Sellafield: The Next Ten Years 2017-2026

Sellafield provides an essential public service in the safe reprocessing, management and storage of nuclear waste.

We have a legal obligation to the government as well as a moral duty to the public to deliver hazard reduction as quickly and safely as possible. It currently takes too long and costs too much to get work done at Sellafield and we need to improve performance. Government has been very clear on this point.

In the next ten years we will complete our reprocessing mission in Thorp (2018) and Magnox (2020) and will be retrieving fuel, sludge and waste from our legacy ponds and silos.

Once reprocessing is complete, government will have options on the rates of decommissioning and funding and the size of our future order book will be subject to our ability to demonstrate strong performance and value for money.

We have the opportunity to improve substantially the rate of hazardous waste and risk reduction while delivering value for money to the British taxpayer and continued economic opportunity in our local communities and beyond.

In making the transformation we want to ensure that one of its characteristics is a strengthened and internationally competitive supply chain. This will not only serve our needs but also make a much wider contribution to our local economies as they continue to develop as centres for nuclear expertise.

ENVIRONMENT

- Care for the environment is one of our core values and is embedded in all of our activities from design through to operations and decommissioning. We have set out to achieve the highest appropriate standards in environmental performance, health of our employees and quality of operations.
- Our priority is to reduce any risk to the environment from nuclear discharge and to ensure that our waste management strategies align with the UK government's discharge strategy. As such we apply the waste management hierarchy of avoid, minimise, reuse, recycle, and use disposal as the last option.
- The site is generally protected from coastal flooding by Ehen shingle spit and a railway embankment, which is maintained by Network Rail. However, coastal erosion and sea level rise has the potential to affect the southern end of the Sellafield site within the next 100 years if existing defences not under Sellafield control are not maintained.

- There is an estimated 1,600m³ of soil contaminated to intermediate level waste levels, as well as just over 1 million m³ of soil contaminated to low level waste levels. There is also an estimated 11.8 million m³ of soil contaminated with radioactive material, classified as very low level waste.
- The site discharges to the air and sea are in line with strict limits set by the Environment Agency.

PEOPLE

We currently have approximately 11,500 employees, of whom around 7,000 require non-plant based accommodation. This means that they are neither based in or need access to nuclear facilities.

As part of our commitment to the safety and security of the Sellafield site, we have taken action to start to reduce the number of people based on the nuclear licensed site. As a result, we now have teams based in Whitehaven town centre and Workington in addition to our established off-site offices at Westlakes and in Warrington.

This accommodation is split between:

OFFICE LOCATION	EMPLOYEE NUMBERS	TYPES OF ACTIVITY
OFFICES ON THE LICENSED SITE	CIRCA 3,000	VARIOUS SUPPORT FUNCTIONS
WHITEHAVEN	CIRCA 1,280	ENVIRONMENT, HEALTH, SAFETY AND QUALITY; FINANCE; PROJECT SUPPORT; CORPORATE CENTRE
WESTLAKES	CIRCA 264	COMMERCIAL; STAKEHOLDER RELATIONS; STRATEGY; HUMAN RESOURCES
WORKINGTON	CIRCA 180	FINANCE
WARRINGTON	CIRCA 2,160	ENGINEERING; HUMAN RESOURCES; STAKEHOLDER RELATIONS; FINANCE; COMMERCIAL; PROJECT SUPPORT; STRATEGY

Further developments to support moving people away from the nuclear site, if they do not need to be there, are expected.

Our operations impact a broad range of towns and communities around Cumbria and our socio-economic responsibility and objectives are key drivers in determining our strategies, in particular transport and accommodation. We work closely with the Nuclear Decommissioning Authority to ensure that all accommodation meets our requirements.

We have certain constraints when sourcing accommodation, in line with government guidance. We are required to use Nuclear Decommissioning Authority owned or other government assets before privately owned assets.

Accommodation is also provided for contractors on the site, where appropriate.

As we deliver the anticipated new construction projects on site, it is anticipated that, although Sellafield Ltd will shrink in size, the number of people delivering the site mission will increase to 15,000 people by 2021.

There is very little space to provide new office facilities on site. Our objectives are to:

- Configure an appropriate mix of accommodation to maximise business efficiency and prioritise the use of the nuclear licensed site for direct workforce activities. This will be supported by staff relocation off site, where appropriate, based on a principle of location need.

- Provide a balanced portfolio of short and long term Sellafield Ltd and contractor accommodations to meet our requirements through consolidation and maximising the space in existing accommodations. This will reduce the emphasis on intra-site movements by managing the location of Sellafield Ltd employees and contractors, and will facilitate emergency evacuation. It will also reduce the number of small outlying facilities to clear space for our operational activities.
- Use evidence based forecasting of Sellafield Ltd and contractor people numbers to support the more efficient use of accommodation and strategic planning.

To achieve these objectives, we have set ourselves the following targets:

- Increase our workforce in Cumbria not on the licensed site from a current 1,800 to 2,200 by the end of 2016 and up to 3,500 in 2020 and set targets for our suppliers to locate staff off site.

Key considerations

In order to maximise the available land on the nuclear licensed site, and in line with our security driver to remove people who do not need routine access to nuclear facilities, we have moved some people to off-site accommodation.

We will continue to move people to off-site accommodation, in line with NDA property guidelines.

We are also seeking to reduce the number of cars that routinely access the Sellafield site, reducing pressure on the land availability on site and on the local road network.

Sellafield: The Next Ten Years 2017-2026

Although focused on 2017-2026, these are things that will continue beyond that time period.

TRANSPORT

People

The most prominent mode of transport for people is by car, used by approximately 92.7% of staff going on to the licensed site. The remainder is rail (3.5%), cycling (2.2%), by motorbike and foot (both 0.7%) and bus (0.2%). Car parks are located at various locations across the site, offering a total of circa 4,000 spaces. Monthly spot checks on parking indicate >95% peak occupancy of the car parks.

In addition, there are several car parks located outside the secure boundary primarily at Yottenfews but also including the Visitor Centre and North Group. These car parks offer approximately 1,600 spaces which are generally around 90% occupied during the peak periods. Yottenfews also acts as the site's bus interchange whereby staff and contractors can park and catch the scheduled site shuttle and distribution bus onto and around the site.

The Cumbrian Coast railway line runs to the south-west of the site with rail services operated by Northern Rail (changing to Arriva Trains Northern under the new franchise in April 2016) calling at Sellafield rail station. The services run from Carlisle in the north to Barrow-in-Furness in the south.

The internal road system provides the required operational connectivity around the site and is designed to Department of Transport standards.

Sustrans National Cycle Network route No. 72 from Egremont to Seascale railway stations passes alongside the Sellafield complex, past the Sellafield railway station.

In recognition of the importance of sustainable travel, Sellafield Ltd has developed a Green Travel Plan. The plan includes options for increasing healthy modes of transport such as walking and cycling to work.

Freight

The Cumbrian Coast route is also used by freight trains and in particular regular nuclear flask movements to and from Sellafield from nuclear stations around the country, and internationally via the Port of Barrow. The transport of used nuclear fuel to Sellafield is critical in support of the decommissioning of the other sites within the Nuclear Decommissioning Authority's estate, and in the ongoing operation of EDF Energy's nuclear power generation.

Low level waste is moved daily by rail from Sellafield to the Low Level Waste Repository in specialised half-height shipping containers on a dedicated fleet of flat wagons.

All traffic is handled on the main line by rail freight operator Direct Rail Services, a wholly owned subsidiary of the Nuclear Decommissioning Authority. It is received in the extensive and private on-site sidings and from there dealt with by the dedicated on-site rail team.

OTHER CONSTRAINTS

We recognise that the operation and decommissioning of the Sellafield site, including the construction of new waste facilities, will occur in the same time period as the planned Moorside development near Sellafield, improvement works to the national grid and the BAE Successor programme. As such, we will contribute to an aggregated level of development and dependency on the local infrastructure.

Any material change to plans at Sellafield as a result of these developments would be reflected in an updated version of this context plan.

Key considerations

There is a limited amount of land that is suitable for development within the existing site boundary.

Key considerations

We will continue to move people to off-site accommodation, in line with NDA property guidelines.

We are also seeking to reduce the number of cars that routinely access the Sellafield site, reducing pressure on the land availability on site and on the local road network.

UTILITIES

The provision of utilities to our facilities is essential and the site relies on reliable and resilient connections to services, such as water, electricity and steam, for its day to day operations and nuclear safety.

The key utilities are:

- **Power distribution** – we are connected directly to the 132kV grid and use an 11kV network to supply the site. For increased resilience our construction activities are usually connected to a separate grid than our operations.
- **Steam** – we have a high pressure and low pressure network on site, supplied from the Fellside Central Heat and Power plant for process and heating use.
- **Water** – our water supply and distribution system is owned by the Nuclear Decommissioning Authority and is one of the largest privately owned systems in the UK. We use four types of water; wastewater, raw water, domestic potable water and demineralised water for our site operations. Five water sources are used to supply these water types which will provide sufficient capacity for our long term requirements.
 - Wastewater
 - River Calder
 - River Ehen
 - Beckermeth Mine
 - Browtop Boreholes
- **Pipe bridges** – this is our network of elevated shielded pipe bridges used to move active liquid effluent and gaseous effluent to common ventilation stacks. They also usually have non active services supported on them.

Other utility systems include communications, railway signalling, drainage, package management, compressed air, analytical services, change rooms, laundry and inactive tank farm.

WASTE RETRIEVALS

In order to deliver its historic roles Sellafield built and operated two storage ponds to store and cool used nuclear fuel from the Windscale, Calder Hall, Magnox stations and Advanced Gas-cooled reactors, and two silos that could store intermediate level nuclear waste. The clean-up of these high hazard facilities will continue beyond the period of this context plan.

THE MANAGEMENT AND STORAGE OF NUCLEAR WASTE AND MATERIALS

Sellafield has unrivalled expertise in the management and safe storage of plutonium and uranium products, sometimes referred to as special nuclear materials. The products are mainly generated here on the Sellafield site because of the reprocessing operations that have taken place here since the early 1950s.

On completion of the reprocessing operations in 2020 there will be around 140 tonnes of civil separated plutonium stored safely and securely in the UK. The vast majority of this material is held here on the Sellafield site, with a very small amount currently at Dounreay. However, a decision has been taken to consolidate all the UK's plutonium stock in custom-built stores on the Sellafield site, to ensure long-term safe and secure storage of the UK's plutonium stockpile.

The uranium produced on the site is also held in safe and secure stores on the site. We manage this material in-line with UK government policy and our contractual obligations.

SPENT FUEL RECEIPT AND STORAGE

Sellafield must maintain the capability to receive and manage Advanced Gas-cooled Reactor fuel from the EDF Energy fleet of reactors for as long as their seven stations continue to operate safely and economically.

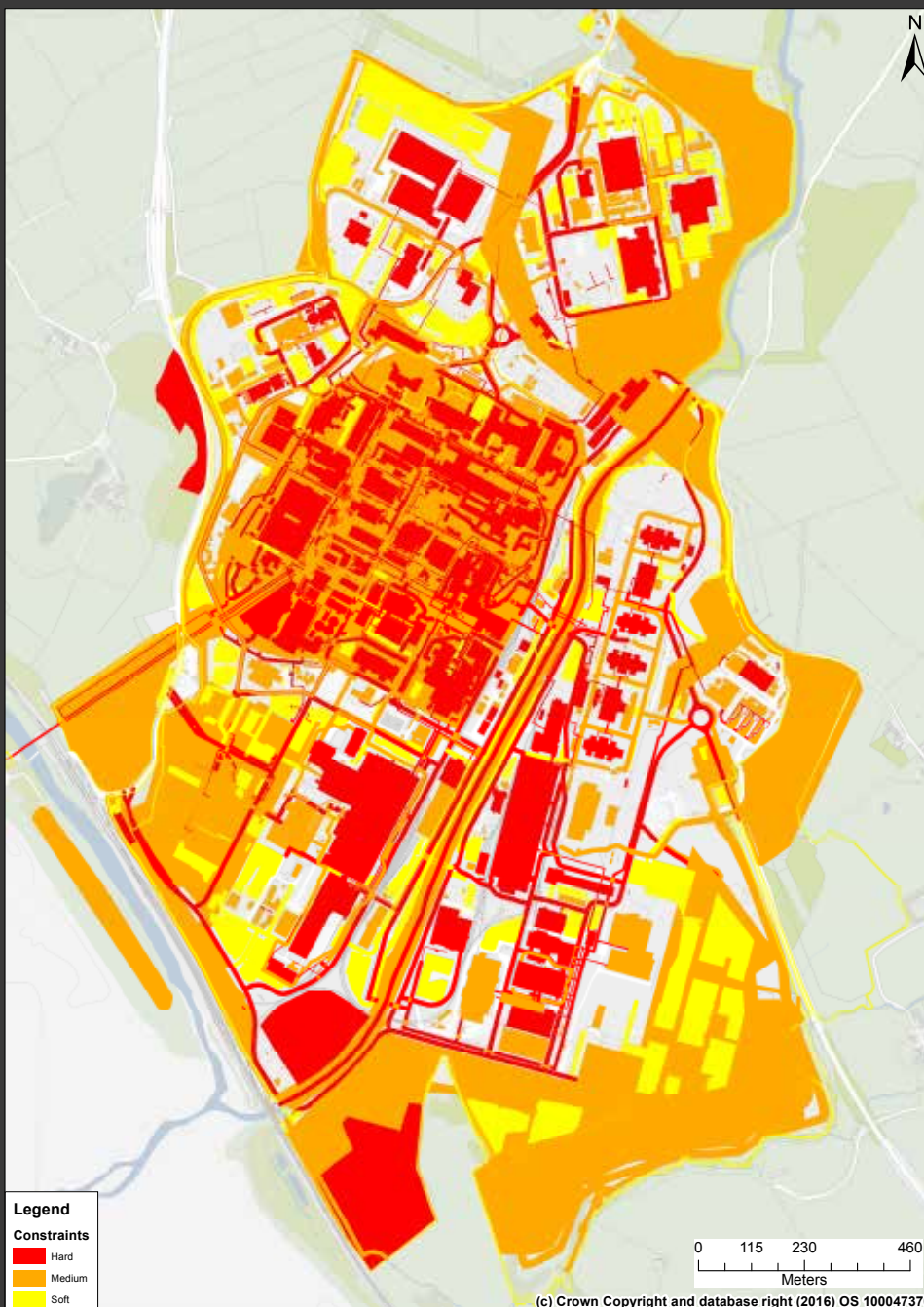
To enable us to do this at minimum cost to the tax payer and without a major capital build we will use the existing Receipt and Storage facility within the Thorp complex and continue to accept Advanced Gas-cooled Reactor fuel until 2039. The fuel will be stored here on an interim basis up until the 2080s, pending packaging and disposal in a Geological Disposal Facility.

RESEARCH AND INNOVATION

Our continued drive to identify safer, quicker and more cost-effective solutions that we can use to clean up the Sellafield site seeks to identify alternative solutions. For example, in 2015, following an extensive study into the behaviour of nuclear materials within the Magnox Swarf Storage Silos led to the development of an alternative approach for the management of intermediate level waste from the facility. This new approach meant that we no longer needed a planned encapsulation plant. Any discoveries or innovations that have an implication for existing or planned facilities would be brought forward for discussion as appropriate.

Sellafield: The Next Ten Years 2017-2026

Areas where we have complex, challenging or readily achievable redevelopment opportunities.



LAND MANAGEMENT

Land availability is significantly constrained on site because of the types of development that have taken place over the lifetime of the site.

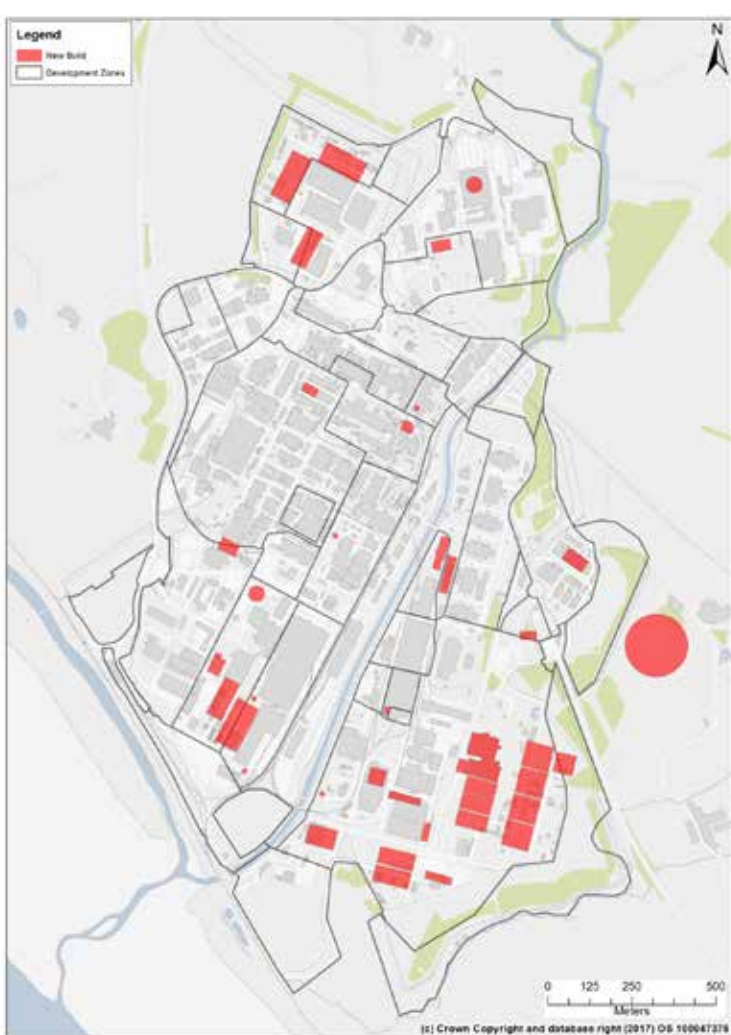
Hard – there are a large number of facilities that are extremely difficult to physically move, such as nuclear facilities, pipe bridges, and the River Calder.

Medium – the site has a number of facilities that could be moved but at a significant cost, such as the above and underground electrical cables, category 1 tip, security features and embankments.

Soft – these are facilities that can be moved at a lower cost, such as contractor compounds, tertiary roads and open car parks.

As a result, there are a limited number of areas on the site which are appropriate for development. These are the south east corner, the north west corner, and the south of site.

Areas that have potential for new development



The development area illustrated by a circle to the right of the map is the area of land adjacent to the site that has been proposed for the management/ disposal of Low Activity Low Level radioactive waste, as identified in the draft Cumbria Minerals and Waste Local Plan.

Key considerations

There is a limited amount of land that is suitable for development within the existing site boundary.

- High level list of major developments at Sellafield over the next ten years
- SIXEP Contingency Plant
 - Steam Generation Plant
 - Sellafield Repackaging Plant
 - Large Items Handling Store
 - Sellafield Product and Residue Store Plutonium Retreatment Facility
 - Decommissioning Encapsulation Plant
 - Engineered Drum Store 4
 - Box Encapsulation Product and Packaging Store 2
 - SIXEP Waste Retrieval
 - Low Level Waste Metal Treatment Facility Replacement
 - Sludge Packaging Plant 1 Process and Export
 - Future Plutonium Contaminated Material Treatment
 - Extension to Sellafield Product and Residue Store
 - Box Encapsulation Product and Packaging Store 3

Major developments at Sellafield would also require significant supporting infrastructure.

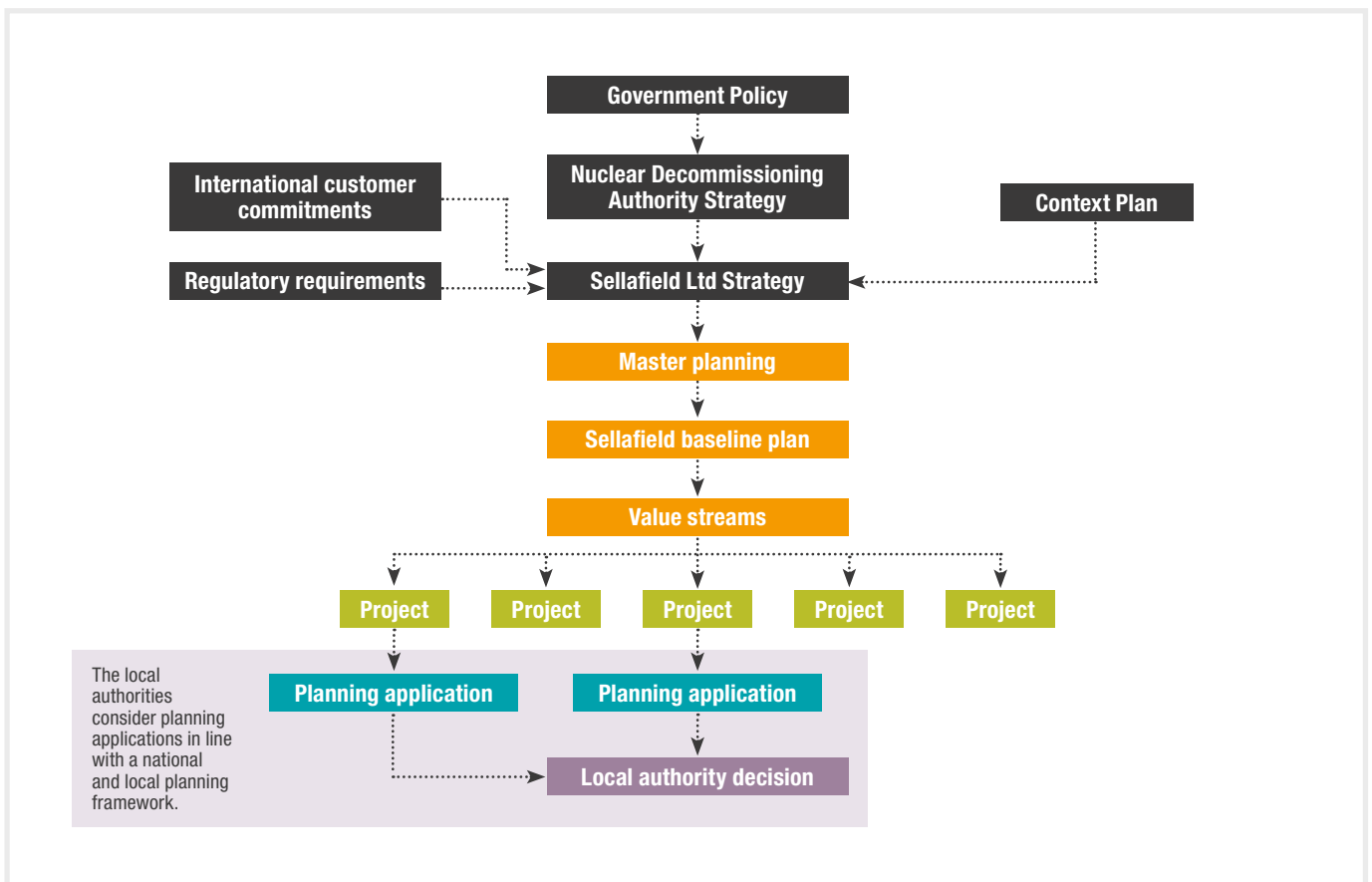
Conclusion

This document describes the environment in which Sellafield operates, the priority challenges that we face on the site and the role that the site is expected to fulfil on behalf of the UK. It sets out the national role of the site and the work that we must complete while recognising the challenges ahead.

It represents the first step in strengthening our approach to planning at Sellafield and in our approach to working with Copeland Borough Council and Cumbria County Council as the planning authorities.

This context plan will be supported by topic area strategies that flow through to a master planning process. This will address the challenge of delivering our nationally important work within a congested footprint, and reflect a balanced view of stakeholder needs.

We will engage with the planning authorities on the detail of the master planning process. We will work collaboratively to achieve more effective planning so that there are no surprises when planning applications are brought forward for a decision.



References

- Nuclear Decommissioning Authority Strategy (effective 1 April 2016)



- Nuclear Decommissioning Authority Business Plan



- UK Radioactive Waste Inventory
- Sellafield Plan (please note that this document should only be referenced to provide an overview of our facilities. The delivery dates have been updated since publication in 2011)
- Office for Nuclear Regulation Annual Plan 2015/16

Glossary

EDF Energy

EDF Energy operates nuclear, gas and coal power stations across the UK, producing around one fifth of the nation's electricity. Fuel that has been used in their Advanced Gas-cooled nuclear reactors is managed at Sellafield.

High level waste

Highly active liquor is classed as high level waste and is a by-product of reprocessing spent nuclear fuel. The liquor is turned into a solid stable form for transportation and long-term storage through a process called vitrification.

UK liquor is vitrified and stored at Sellafield while overseas vitrified residue is returned to the county of origin.

Intermediate level waste

Intermediate level waste includes materials such as fuel element cladding, contaminated equipment and radioactive sludge. It comes from current commercial activities, historical operations and risk and hazard reduction work.

The waste is placed into high integrity stainless steel drums, which are then in-filled with cement grout before being placed into special above-ground storage facilities at Sellafield.

Low level waste

Low level waste makes up the largest physical volume of radioactive waste and is only slightly radioactive. Low level waste drums are compacted at Sellafield and placed in half-height ISO freight containers before being sent to the Low Level Waste Repository for long-term storage.

Nuclear Decommissioning Authority

The Nuclear Decommissioning Authority owns both Sellafield and Sellafield Ltd. It is responsible for implementing policies set by government to safely, securely and cost-effectively decommission the UK's civil nuclear sites.

Sellafield Ltd

Sellafield Ltd is a Nuclear Decommissioning Authority company and is responsible for the safe and secure operation of the Sellafield nuclear site.

Sludge

Nuclear materials that have corroded over time and settled at the bottom of the legacy ponds and silos.

Special nuclear material management

The safe and secure management and storage of nuclear radioactive, including plutonium and uranium.

Spent fuel

After 3 to 4 years in a reactor, nuclear fuel becomes less efficient so is removed and replaced with new fuel. The used fuel is known as spent fuel and is currently reprocessed at Sellafield.

Spent fuel management

Spent fuel management covers the process of receiving, storing and processing fuel that has been used inside a nuclear reactor. This fuel is currently reprocessed in either Thorp or Magnox, depending on the type of fuel. When these plants close in 2018 and 2020 respectively, spent fuel from EDF Energy stations will be stored at Sellafield.

Value streams

The way that we organise and prioritise our work to deliver greatest value for our customer.

Waste retrievals

In order to clean-up and ultimately demolish our highest hazard facilities, the legacy ponds and silos, we must first move the waste, fuel and sludge that are inside the buildings into new stores. This process is referred to as retrievals.



Nuclear
Decommissioning
Authority

Herdus House
Westlakes Science & Technology Park
Moor Row
Cumbria CA24 3HU



Sellafield Ltd

Sellafield site
Sellafield
Seascale
Cumbria CA20 1PG
www.sellafieldsites.com