



Chapelcross Site

2008/09 Lifetime Plan

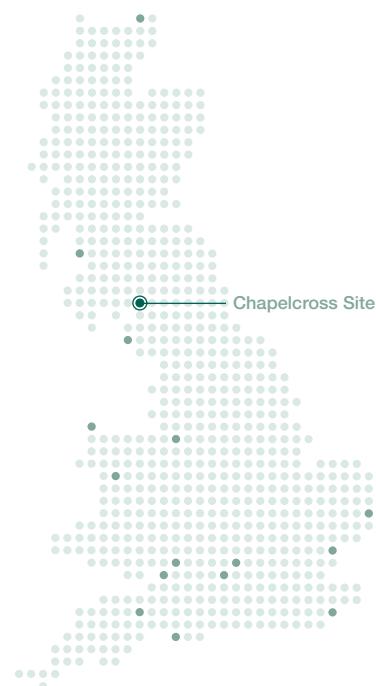
Site Summary

Site overview

Chapelcross Site has ceased generation and is in the Defuelling phase of its Lifetime Plan.

During this phase the priorities are:

- Defuelling of the four reactors of 437 tonnes of irradiated fuel and despatch for reprocessing at Sellafield Site
- Retrieval, packaging and despatch of Intermediate Level Waste, Low Level Waste and Magnox Depleted Uranium
- Asbestos abatement programme
- Preparing for entry into the Care & Maintenance phase, planned for 2022 with Final Site Clearance between 2116 and 2128



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General terms of reference

All reference to date ranges are shown in calendar years, with cost related data and scheduling qualified as financial years.

Chapelcross Site key facts

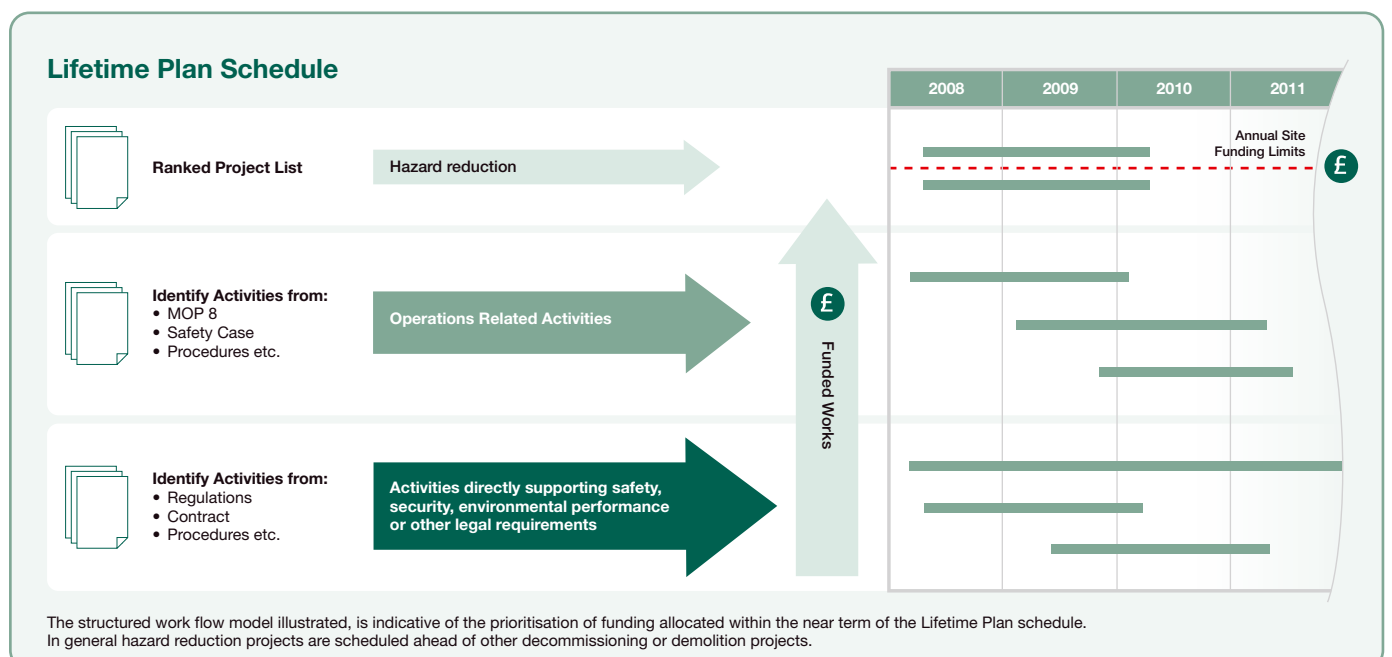
Basics	Location	Annan, South West Scotland
	Nearby towns/cities	Annan (3km), Carlisle (26km)
	Site area	92 hectares
	Number of current employees	420 staff, 50 agency
Key dates	Construction start	1955
	Construction end	1959
	Generation start	1959
	Generation end	2004
	Defuelling start	2004
	Defuelling end	2012
	Care & Maintenance Preparations start	2012 (some early decommissioning work has commenced on site)
	Care & Maintenance Preparations end	2022
Plant description	Reactor type	Magnox
	Number of reactors	4
	Number of fuel channels per reactor	1,696
	Number of fuel elements per channel	5 or 6
	Number control rods per reactor	48
	Fuel material	Natural and low enriched uranium
	Reactor coolant	Carbon dioxide
	Number of turbo generators	8
	Electrical output – design	196 MW exported to the grid
	Station lifetime output	60 TWh
	Previous operators	United Kingdom Atomic Energy Authority (UKAEA)
	Adjacent nuclear power station	None
Unique factor	Chapelcross Site was the first commercial nuclear power station in Scotland.	

Site history

Chapelcross Site was the first nuclear power station in Scotland. It was built by the United Kingdom Atomic Energy Authority (UKAEA) to produce 200 MW (Mega Watts) of electrical power to the grid system, and supply strategic materials to the Ministry of Defence. It was also used to test fuel assemblies for later Magnox reactors. Work to build Chapelcross Site began in October 1955. Reactor 1 was completed and started generating electricity in February 1959. Reactors 2, 3 and 4 entered service in the following year.

Chapelcross Site ceased electricity generation in 2004 and tritium production concluded in 2005.

Prioritisation logic



Lifetime Plan overview

1959 Site Operational

2008/09 Current Plan



The major project to upgrade the defuelling equipment to modern standards has been completed on Reactor 1 and is nearing completion on Reactors 2, 3 and 4. Between April 2008 and August 2011 all 38,075 fuel elements or 437 tonnes will be removed from the reactors and despatched to Sellafield for reprocessing. The site has used the period between operation and defuelling to carry out early decommissioning work and prepare fully for Care & Maintenance Preparations (C&M Preps). Entry into Care & Maintenance (C&M) is currently planned for 2022.

Site Summary level



Generation 1959-2004

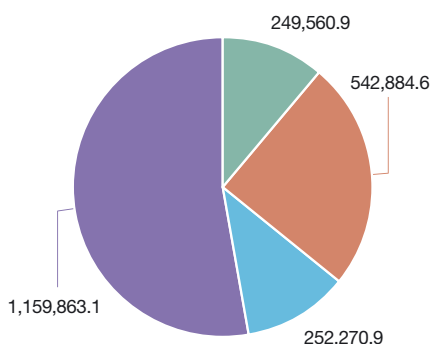
During its operational life Chapelcross Site exported 1.4-1.5 TWh of electricity (Terra Watt Hours) per year, and during that time produced in excess of 82 TWh, exporting around 60 TWh. On 29 June 2004 the site formally ceased its operational life. Over the operational life of the station enough electricity was produced to power every home in Dumfries and Galloway for 200 years.



Defuelling 2004-2012

During this phase all remaining nuclear fuel will be removed from the site and exported to Sellafield Site for reprocessing. This represents the most significant radiological hazard reduction activity on the site. The total inventory of wetted fuel (93 tonnes) has already been exported from the cartridge cooling ponds. The remaining 437 tonnes of irradiated fuel within the reactor cores will be removed during the period April 2008 to August 2011. Licence instruments are required from Nuclear Installations Inspectorate (NII) both to commence active commissioning of the fuel route and to begin routine defuelling. It is planned to defuel from 2 reactors concurrently for most of the defuelling phase. The final part of the phase is the full verification that all fuel has been removed from site.

Total cost distribution by key phases for Lifetime Plan (£k)



Key	Phase
Light Blue	Generation
Green	Defuelling
Orange	Care & Maintenance Preparations
Blue	Care & Maintenance
Purple	Final Site Clearance

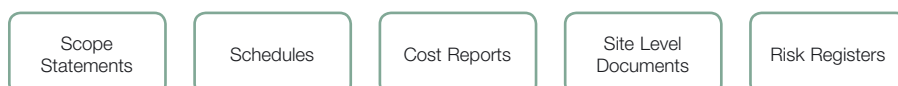
Category level

Chapelcross ceased Generation in 2004.



Detailed Volume (DV) level

DVs for all categories are supported by:



Site End-State 31/03/2128



**Care & Maintenance Preparations
2012-2022**

During this phase of work, the focus will be on deplating and demolition activities and dealing with legacy wastes. Around 60 buildings will be deplated and demolished, leaving the four reactor buildings and one Intermediate Level Waste (ILW) store on the site.

ILW will be retrieved, processed into approved packages and consigned to the site ILW store. Low Level Waste (LLW) will continue to be packaged and sent for disposal at the national Low Level Waste Repository (LLW Repository).

A major asbestos abatement programme will be completed.

There will be an ongoing requirement to maintain the ageing infrastructure on the site throughout this phase.



**Care & Maintenance
2022-2116**

The purpose of this phase (94 years) is to allow some of the residual radioactivity within the four reactor buildings and stored ILW to decay, pending Final Site Clearance (FSC). The reactor buildings, ILW store and a security lodge will be the only structures on site during this phase, the 16 Heat Exchangers having been laid horizontal. Ongoing safety, security and maintenance of the structures will remain a priority during this phase with personnel numbers matched to this requirement as derived from relevant Safety Cases. It is intended to remove the contents of the ILW store during the C&M phase in line with UK plans for permanent ILW disposal. The ILW store building will be demolished during the FSC phase.



**Final Site Clearance
2116-2128**

This phase will commence with the construction of Waste Management Facilities (WMF) and the associated infrastructure, necessary for the safe segregation and packaging of remaining hazardous wastes. The four reactor buildings will then be dismantled and demolished with all wastes packaged and exported off site for permanent disposal. The Site End-State is to have all hazardous materials removed, conduct land remediation activities and return the site to a delicensed state available for potential reuse. This work will be completed by 2128.

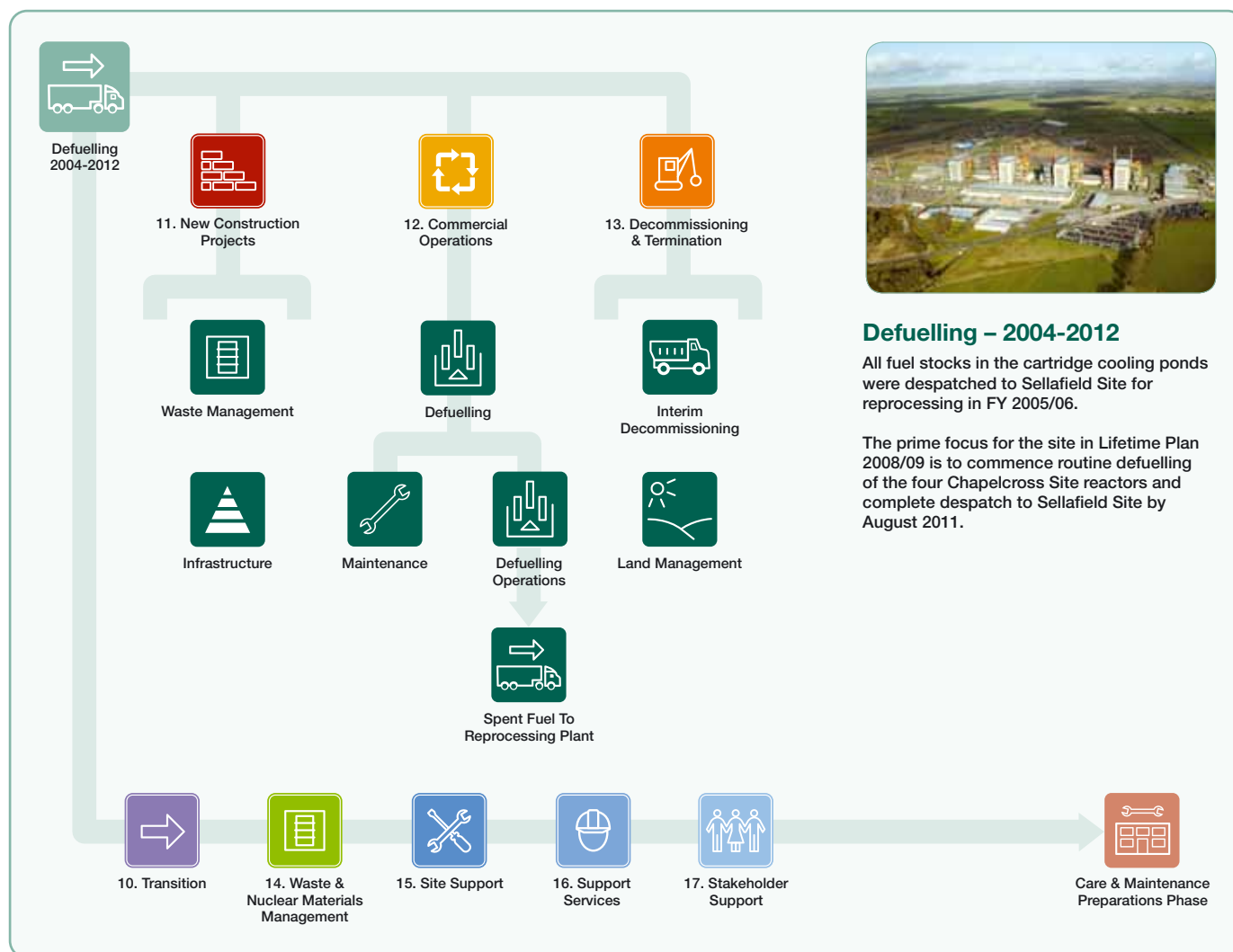


Key	Transition (33.10)	New Construction Projects (33.11)	Commercial Operations (33.12)	Decommissioning & Termination (33.13)	Waste & Nuclear Materials Management (33.14)
	Site Support (33.15)	Support Services (33.16)	Stakeholder Support (33.17)	Revenue Income (33.20)	

Defuelling

All 437 tonnes of irradiated fuel will be removed from Chapelcross Site by August 2011 and sent to Sellafield Site for reprocessing. This work is the primary hazard reduction focus of the managing contractor during the next three years of this Lifetime Plan.

Defuelling scope of work



Defuelling – 2004-2012

All fuel stocks in the cartridge cooling ponds were despatched to Sellafield Site for reprocessing in FY 2005/06.

The prime focus for the site in Lifetime Plan 2008/09 is to commence routine defuelling of the four Chapelcross Site reactors and complete despatch to Sellafield Site by August 2011.

Safely removing the irradiated fuel from the reactor cores and delivering it to Sellafield Site for safe storage and reprocessing represents the most significant reduction in nuclear hazard potential at Chapelcross Site.

A total of 437 tonnes of irradiated fuel will be shipped by road in licensed cast steel flasks, from the reactor cores over a 42 month period, with a planned completion date of August 2011.

There will be a phased start up of defuelling with initial defuelling being carried out on Reactor 1. Reactor 3 defuelling is planned to commence in late 2008. Defuelling of Reactors 2 and 4 will commence in 2009.

In parallel with defuelling a major asbestos abatement project of asbestos removal focused on Heat Exchanger and Turbine Hall lagging removal.

During this phase a new Safety Case for the site is required and work is progressing to deliver this with an implementation date of April 2009.

Throughout the period there will be significant effort to maintain the integrity of the ageing plant and equipment to ensure the safety of site personnel and the environment.

Other major hazard reduction and waste management activities will also continue through this phase.



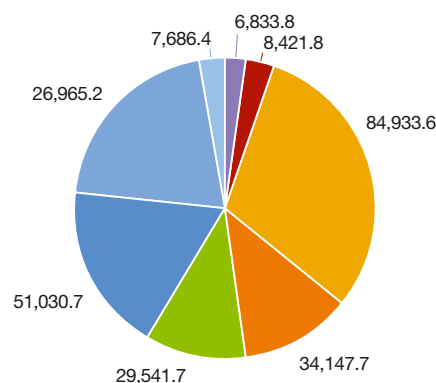
Defuelling of the 437 tonnes of irradiated fuel in the four Magnox reactors is the most significant hazard reduction activity in this Lifetime Plan. Defuelling will generate approximately 54 flasks of ILW during this period.

POCO activities at the Chapelcross Processing Plant will generate an additional 252 flasks of ILW.

Key ◆ Regulatory Milestone ◆ Other Milestone → Critical Path

Defuelling summary work programme

Activity/Event	Defuelling															
	2008				2009				2010				2011			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
New Construction Projects (33.11)																
Electrical Overlay 33.11.13.33230.33090	Regulator review of commissioning procedure															
Construct ILW Facilities 33.11.12.33225.33107	Project start															
Commercial Operations (33.12)																
Fuel Route Transition Project 33.12.22.33215.33023	R4 non active commissioning complete															
Reactor Defuelling 33.12.22.33215.33204	Commence routine defuelling of R1 R2 non active commissioning complete R3 defuelling complete R1 defuelling complete R2&4 defuelling complete															
Effluent Line 33.12.22.33215.33028	Effluent line cleaning complete															
Defuelling Maintenance and Compliance 33.12.22.33215.33105																
Decommissioning & Termination (33.13)																
Asbestos Containment 33.13.32.33240.33112	All heat exchangers contained															
Asbestos Removal 33.13.32.33240.33012	1st heat exchanger asbestos removed															
CXPP 33.13.32.33235.33106	Dispatch 30 flasks of stainless steel to MBGWS Dispatch 66 flasks of stainless steel to MBGWS Dispatch 66 flasks of stainless steel to MBGWS Dispatch 66 flasks of stainless steel to MBGWS															
Deplant and Demolish Site Support Buildings – 33.13.32.33230.33109	Graphite Handling Facility demolition complete															
Waste & Nuclear Materials Management (33.14)																
Nuclear Materials Storage Operations 33.14.42.33242.33068	Complete transfer of 1,800 drums to Capenhurst Site Complete transfer of 1,794 drums to Capenhurst Site Complete transfer of 12 drums to Capenhurst Site															
ILW Characterisation and Strategy Development – 33.14.41.33245.33118	Start Chapelcross pond waste sampling Start Chapelcross pond sludge sampling Complete ILW sampling Complete technical specification for solid and mobile ILW															
Support Servies (33.16)																
EHS&Q 33.16.60.33270.33927	Annual Environmental Report															
Stakeholder Support (33.17)																
PAPR 33.17.71	Complete public consultation															



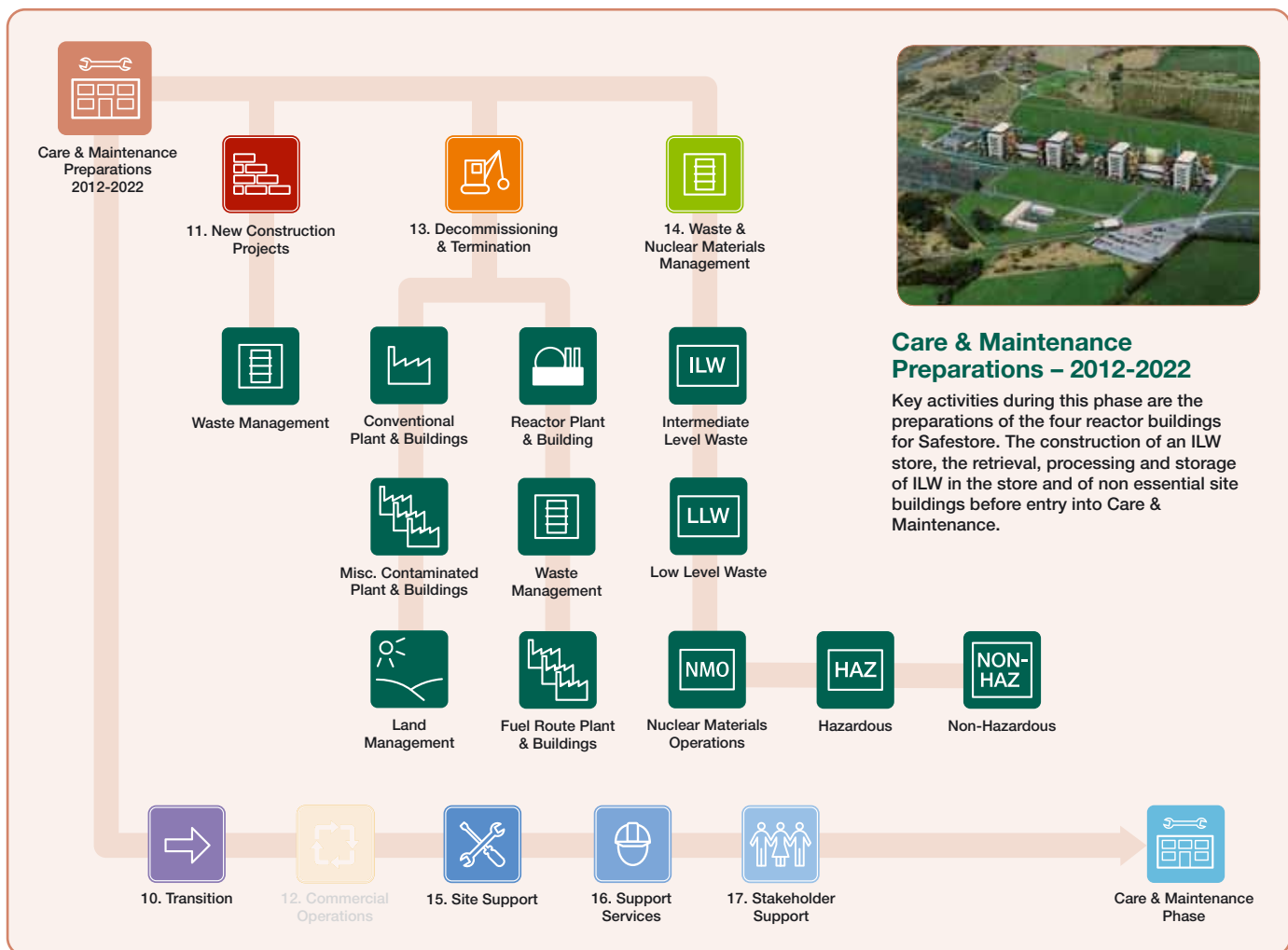
Defuelling cost distribution by category (£k)

Key ■ Transition (33.10) ■ New Construction Projects (33.11) ■ Commercial Operations (33.12) ■ Decommissioning & Termination (33.13) ■ Waste & Nuclear Materials Management (33.14) ■ Site Support (33.15) ■ Support Services (33.16) ■ Stakeholder Support (33.17)

Care & Maintenance Preparations

The focus during this phase will be on deplanting and demolition activities and dealing with legacy wastes. Around 60 facilities will be demolished. ILW and LLW will be processed and packaged for disposal or ongoing storage.

Care & Maintenance Preparations scope of work



The aim during this phase is the removal of non-essential plant and equipment from the site.

Intermediate Level Waste (ILW) will be retrieved and processed into approved packages in readiness for on site storage prior to final disposal at a national repository. This will require the design and construction of facilities for the waste processing operations and an ILW store on the site.

Low Level Waste (LLW) will be retrieved and processed into approved packages prior to despatch to the LLW Repository for final disposal.

The major asbestos abatement programme will be completed. All chemicals, oils and other hazardous materials that are no longer required will be removed for disposal or recycling.

Major deplanting of the reactor buildings, cartridge cooling pond and Chapelcross Processing Plant will take place with all non-essential plant and equipment being removed and packaged for disposal.

All redundant facilities including the pond and the processing plant will then be demolished. Each of the 16 heat exchangers will be disconnected from the reactors prior to being lowered to a horizontal position for long term storage.

All redundant infrastructure will be removed and finally the reactor cores will be overclad in preparation for the Care & Maintenance (C&M) phase.



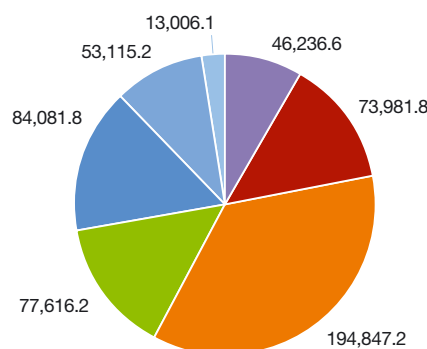
Following the completion of defuelling site focus will turn to deplanting and demolition of facilities around the site. The end state for this phase is a five box model consisting of the four reactors and an ILW store. The reactor buildings will be prepared for a period

of Care & Maintenance requiring the heat exchangers to be laid horizontal and the buildings made weathertight. An ILW store will be constructed on site during this phase for ILW on site not transferable to Sellafield Site.

Key	◆ Regulatory Milestone	◆ Other Milestone	➔ Critical Path
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Care & Maintenance Preparations summary work programme

Activity/Event	Care & Maintenance Preparations				
	2012-13	2014-15	2016-17	2018-19	2020-21
Transition (33.10)					
Workforce Restructuring 33.10.01	Transition workforce at the end of Defuelling				
Transition workforce at the end of Care & Maintenance Preparations					
New Construction Projects (33.11)					
Construct ILW Facilities 33.11.12.33225.33107	Start construction of ILW facilities				
Complete construction of solid and mobile ILW processing facility					
Complete construction of ILW store					
Decommissioning & Termination (33.13)					
Ponds Demolition 33.13.32.33220.33082	Drain ponds				
Complete demolition of the ponds					
D & D Active Effluent Pipeline 33.13.32.	Complete decommissioning at active effluent line				
Complete demolition of gate gamma monitor					
Deplant and Demolish Site Support Buildings – 33.13.32.33230.33109					
Asbestos Removal 33.13.32.33240.33012	Turbine hall asbestos removal complete				
Heat exchanger asbestos removal complete					
Reactor building asbestos removal complete					
Reactor Safestore Preparations 33.13.32.33240.33087	Heat exchangers laid horizontal				
Reactor cladding complete					
CXPP 33.13.32.33235.33106	Complete dispatch of Stainless Steel ILW to MBGWS				
Complete demolition of CXPP building					
Decommissioning Maintenance and Compliance – 33.13.32.33240.33911					
Waste & Nuclear Materials Management (33.14)					
ILW Management 33.14.41.33245.33091	Complete ILW shipments to MGGWS				
Complete transfer of ILW to ILW store					
Complete active commissioning of ILW facilities					
Site Support (33.15)					
Engineering and Nuclear Safety 33.15.52.33200.33904	Complete periodic safety review				



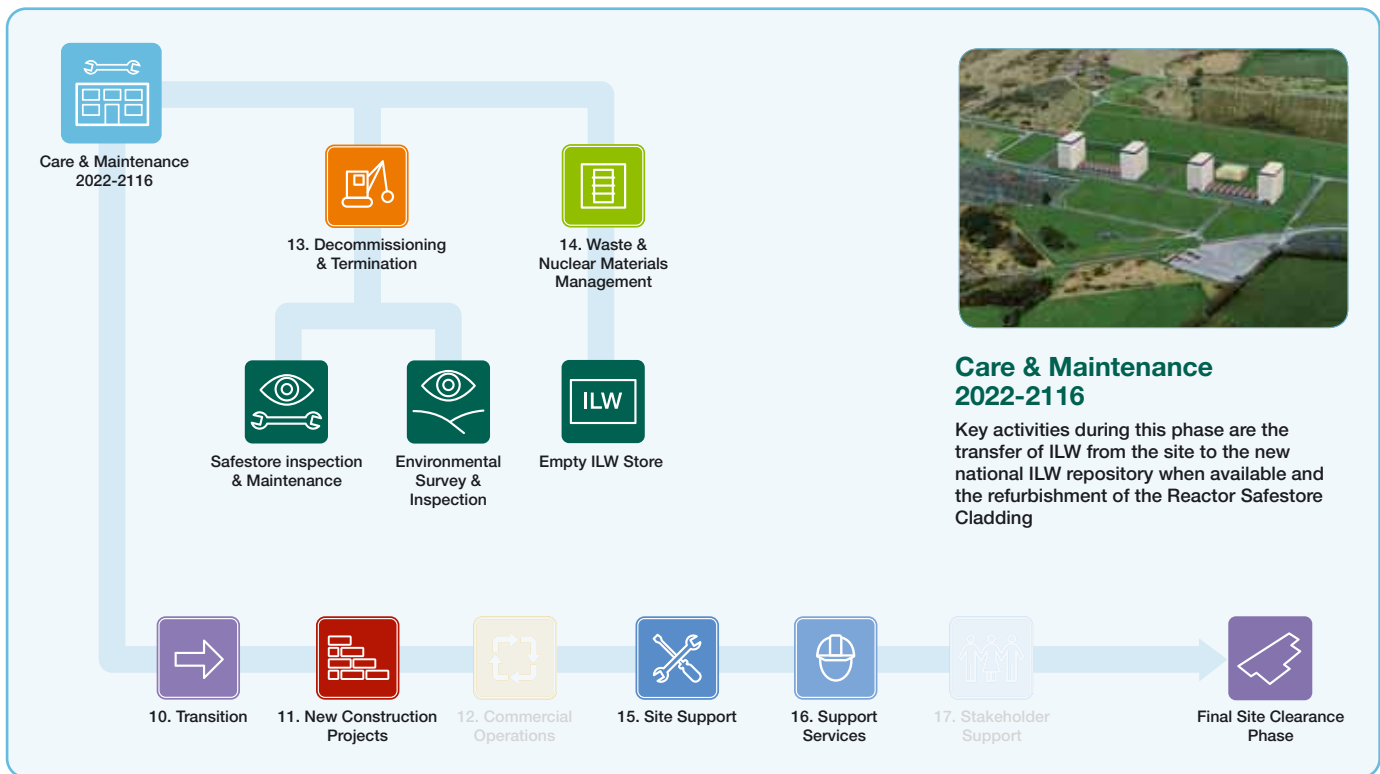
Care & Maintenance Preparations cost distribution by category (£k)

Key	Transition (33.10)
	New Construction Projects (33.11)
	Commercial Operations (33.12)
	Decommissioning & Termination (33.13)
	Waste & Nuclear Materials Management (33.14)
	Site Support (33.15)
	Support Services (33.16)
	Stakeholder Support (33.17)

Care & Maintenance

In the Care & Maintenance phase the site will remain in a quiescent state for a prolonged period during which no dismantling work will be undertaken. This will allow reactor and waste radiation levels to decay to facilitate later dismantling.

Care & Maintenance scope of work



Care & Maintenance 2022-2116

Key activities during this phase are the transfer of ILW from the site to the new national ILW repository when available and the refurbishment of the Reactor Safestore Cladding

The Care & Maintenance (C&M) phase will be split into two periods. The ‘C&M Initial’ period will last five years during which time the site will remain continuously staffed and a ‘C&M Main’ period extending for the remainder of the C&M phase. During the quiescent C&M Main Period, the staffing on site will be reduced to a level appropriate to maintain safety and security.

Buildings will be routinely maintained, inspected regularly and will undergo periodic surveys that will be conducted by Suitably Qualified and Experienced Persons (SQEP) including civil engineers. It will also be necessary to undertake ground maintenance on the site.

The extent and frequency of the inspection and maintenance programme are derived from relevant Safety Cases and the associated site Maintenance Schedule. The following indicative programme is considered representative, based on current knowledge and includes some elements

of land management around the reactor buildings and Intermediate Level Waste (ILW) store structures:

Weekly external inspections that will identify obvious damage to building fabric (such as the loss of cladding).

Monthly ground maintenance of the site.

Half-yearly external engineering inspections and minor maintenance of:

- The building fabric
- Site infrastructure

Yearly internal engineering inspections and minor maintenance of:

- Primary access routes (stairs, platform etc)
- Inside face of building fabric
- Primary building and plant structures
- Basement areas especially areas of potential groundwater ingress

External and internal engineering inspections at 25 year intervals, followed by more major maintenance, if required, including:

- Full structural inspection of primary internal access routes, with the repair or replacement of any unsafe structures
- Minor repointing of brickwork, etc as required
- Side and roof cladding repair
- Examination of primary building and plant structures
- Repair or replacement as necessary of site infrastructure

During this phase the contents of the ILW Store will be removed for disposal in line with National Policy.



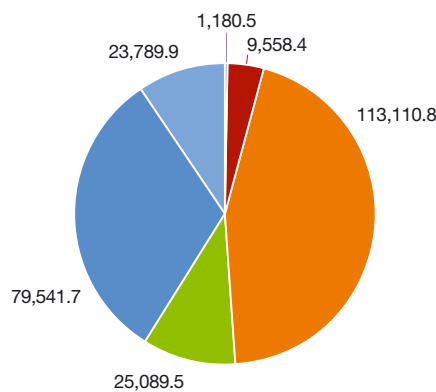
During Care & Maintenance phase ILW in the store will be transferred to the new ILW repository sometime in the 2040s. The store will be left empty for the remainder of the phase. The site will be subject to continuous monitoring and surveillance throughout.

The reactor buildings will be subject to continuous surveillance to ensure there is no degradation of the integrity of the structures with two phases of major refurbishment planned.

Key	◆ Regulatory Milestone	◆ Other Milestone	→ Critical Path
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Care & Maintenance summary work programme

Activity/Event	Care & Maintenance				
	2022-41	2042-61	2062-81	2082-2101	2102-15
Transition (33.10)					
Workforce Restructuring 33.10.01	[Bar spanning 2022-41 to 2042-61]				
Decommissioning & Termination (33.13)					
Care & Maintenance Safestore and Site Inspection and Maintenance 33.13.33.33240.36300	[Bar spanning 2022-41 to 2102-15]				
Replace Reactor Cladding 33.13.33.33240.36300	[Bar spanning 2022-41 to 2102-15]				
Care & Maintenance On and Off Site Environmental Monitoring 33.13.33.33250.36900	[Bar spanning 2022-41 to 2102-15]				
Care & Maintenance Contaminated Land Monitoring – 33.13.36.33250.36800	[Bar spanning 2022-41 to 2102-15]				
Waste & Nuclear Materials Management (33.14)					
Storage of ILW 33.14.41.33245.36600	[Bar spanning 2022-41 to 2042-61]				
ILW Store Emptying 33.14.41.33245.36600	[Bar spanning 2042-61 to 2062-81]				
ILW Transport 33.14.41.33245.36600	[Bar spanning 2042-61 to 2062-81]				
Site Support (33.15)					
Care & Maintenance Security and Surveillance – 33.15.51.33210.32100	[Bar spanning 2022-41 to 2102-15]				



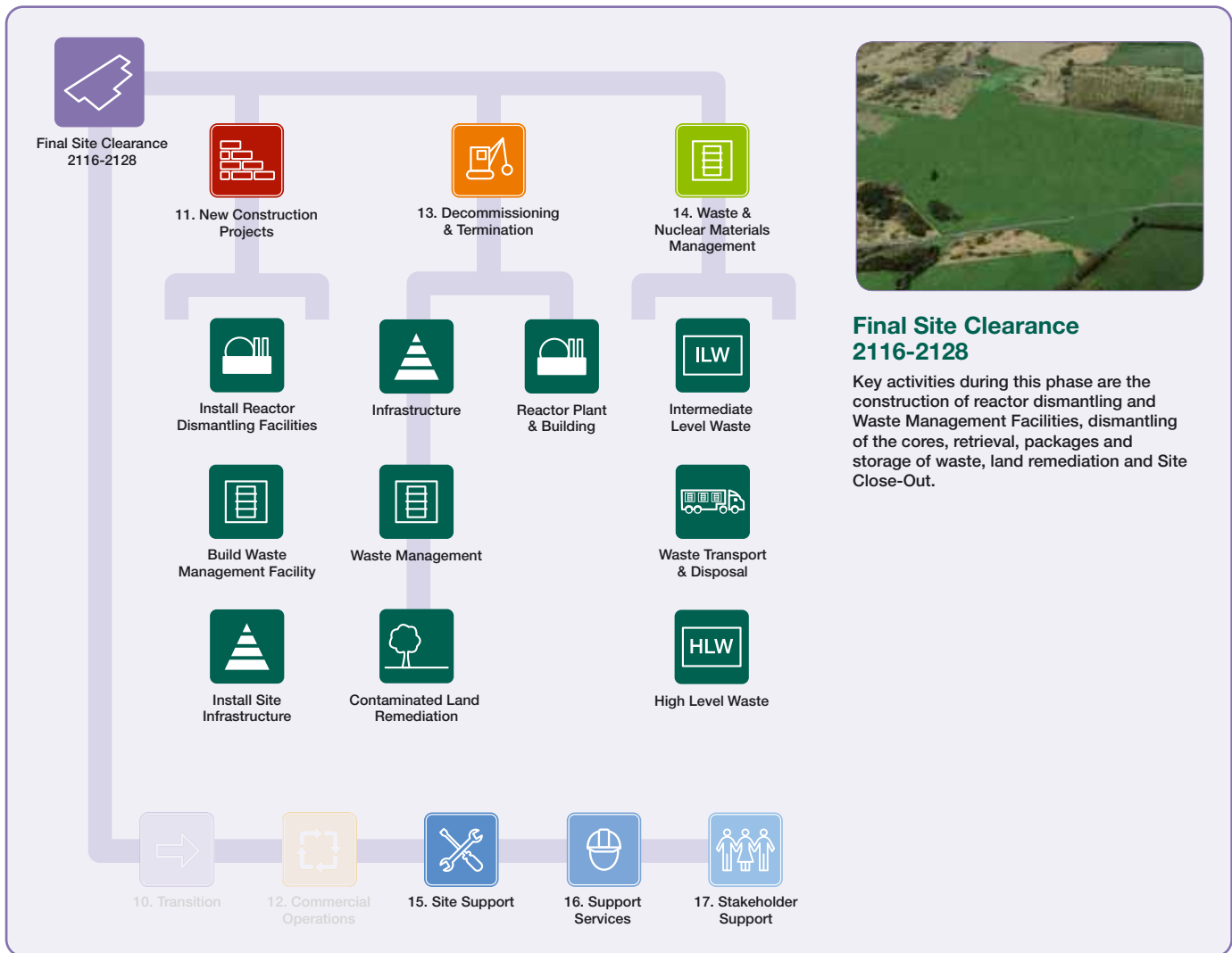
Care & Maintenance cost distribution by category (£k)

Key	Transition (33.10)
	New Construction Projects (33.11)
	Commercial Operations (33.12)
	Decommissioning & Termination (33.13)
	Waste & Nuclear Materials Management (33.14)
	Site Support (33.15)
	Support Services (33.16)
	Stakeholder Support (33.17)

Final Site Clearance

On completion of the Care & Maintenance phase, the site will be cleared of all remaining buildings, including the reactors. Following ground remediation and landscaping, the site will be delicensed to make it available for reuse.

Final Site Clearance scope of work



Final Site Clearance 2116-2128

Key activities during this phase are the construction of reactor dismantling and Waste Management Facilities, dismantling of the cores, retrieval, packages and storage of waste, land remediation and Site Close-Out.

At an early point in the Final Site Clearance (FSC) phase site infrastructure will be reinstated and a Waste Management Facility (WMF) will be designed, constructed and commissioned.

The WMF will be established to process all waste arising during FSC. Active waste will be packaged in waste disposal boxes for off site transport and disposal.

Each reactor will be completely removed by dismantling the biological shield, mild steel pressure vessel and diagrid, removing other active concrete, dismantling the

reactor structures and removing all inactive concrete. The reactor buildings will then be demolished.

At the end of the FSC phase, all of the new infrastructure will be removed. The site end state is to have all hazardous materials removed, conduct land remediation activities and return the site to a delicensed state available for potential reuse. This work will be completed by 2128.



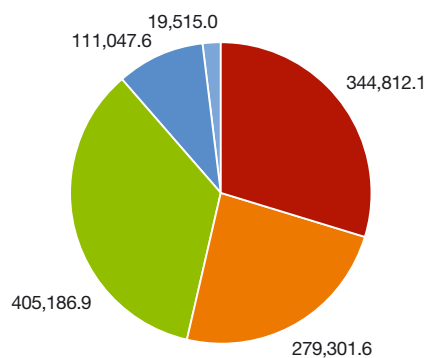
The site will need to be reconstructed to facilitate the final decommissioning of the reactor cores and buildings with new office space, waste management facilities and reactor dismantling equipment being installed. The dismantling of the reactor cores

will generate significant quantities of ILW and LLW. Following the demolition of the site structures the land will be remediated before being landscaped to enable delicensing with the site being made available for alternative use.

Key	◆ Regulatory Milestone	◆ Other Milestone	➔ Critical Path
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Final Site Clearance summary work programme

Activity/Event	Final Site Clearance					
	2116-17	2118-19	2120-21	2122-23	2124-25	2126-27
New Construction Projects (33.11)						
FSC Install Site Infrastructure 33.11.11.33240.36200	■					
FSC Build Waste Management Facility 33.11.12.33245.36400	■					
FSC Supply and Install Reactor Dismantling Equipment 33.11.11.33240.36200	➔ Reactor dismantling equipment installed ◆					
Decommissioning & Termination (33.13)						
FSC Heat Exchanger and Primary Circuit Dismantling – 33.13.34.33240.35900	■					
FSC Dismantle Reactor Pressure Vessel 33.13.34.33240.36200		■				◆
FSC Reactor Building Decontaminate and Demolish – 33.13.34.33240.36300				■		
FSC Contaminated Land Remediation 33.13.36.33250.36800					■	
FSC Remove Waste Handling Facilities 33.13.34.33245.36400						■
FSC Remove Site Infrastructure 33.13.34.33230.34300						■
Waste & Nuclear Materials Management (33.14)						
FSC ILW Disposal 33.14.41.33245.36400			■			
FSC LLW Disposal 33.14.43.33245.36400	■					
Support Services (33.16)						
FSC Project Support 33.16.60.33270.39100	◆ Obtain permission to commence FSC					



Final Site Clearance cost distribution by category (£k)

Key	■ Transition (33.10)
	■ New Construction Projects (33.11)
	■ Commercial Operations (33.12)
	■ Decommissioning & Termination (33.13)
	■ Waste & Nuclear Materials Management (33.14)
	■ Site Support (33.15)
	■ Support Services (33.16)
	■ Stakeholder Support (33.17)

Transition (33.10)



Workforce Restructuring, moving the skill base of the site through Defuelling, Care & Maintenance Preparations and Care & Maintenance will be undertaken in a systematic way that ensures site arrangements remain satisfactory for the safe operation of the site.

Transition scope of work



Workforce Restructuring
(33.10.01)

- Workforce Restructuring accounts for severance of staff as part of the existing Lifetime Partnership Agreement. This category also includes work for the assessment/implementation of transition projects to enable staff to benefit from decommissioning work after defuelling is complete.



The work under Transition category is primarily the management of workforce restructuring during the plan period and the cost associated with the redeployment, retraining or release of members of the workforce.

Major hazard removal and the reduction of liabilities in a safe and economic manner to meet Nuclear Decommissioning Authority (NDA) requirements will drive the work on the Chapelcross Site during this period.

The site lead team will not do this work in isolation. Innovation and improvement in understanding will be optimised by effective and timely use of the supply chain.

The key phases are described as follows:

Defuelling phase

This phase focuses on the removal of the remaining spent fuel in the four reactors. Work within waste management and early preparations for Care & Maintenance (C&M) will also feature. The Defuelling Organisation Structure has been fully resourced and is in place.

Work during this period will also be supported by the supply chain although mostly to provide specialist skills and services not available from the indigenous workforce.

Opportunity has been identified to restructure the resources on site to align with the extended defuelling period. Some ability to accelerate defuelling is to be retained.

Care & Maintenance Preparations phase

During this phase Post Operational Clear Out (POCO) of the site buildings will be completed and preparations to transition into C&M will be completed. It is expected that the workforce will reduce by 150 near the beginning of this phase. Throughout the phase the number of employees will vary dependent on the projects being undertaken, with a significant reduction expected once the Intermediate Level Waste (ILW) store is constructed and operational and a further significant reduction near the end of the phase. It is anticipated that at the end of the phase approximately 50 employees will be left

on site. Those people leaving will do so by age retirement, voluntary severance or early retirement where it is not cost-effective to retain and retrain personnel. People leaving will make way for an increase in the number of experienced specialist personnel from the supply chain to carry out the specialist significant demolition.

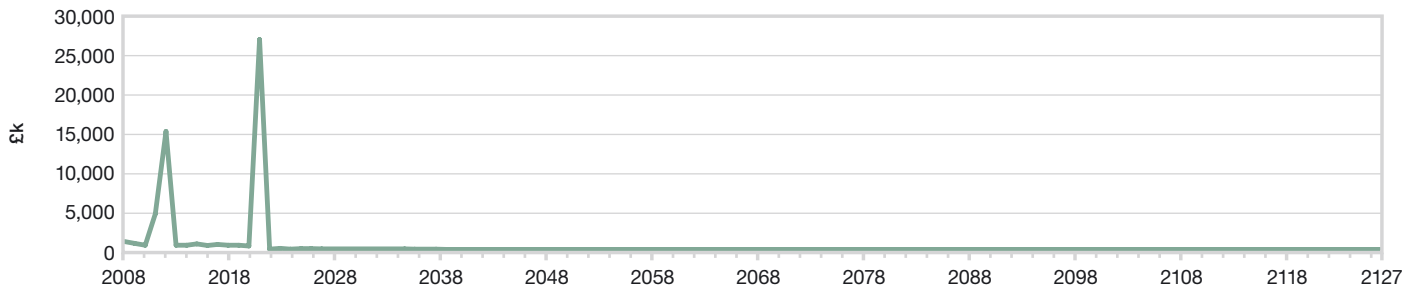
Care & Maintenance phase

During this period the site will be maintained in a safe and secure state. The Organisation Chart for the early period of this phase will have approximately 20 employees, focused mostly on security and monitoring. It is anticipated that the staffing on site will be reduced to a level appropriate to maintain safety and security.

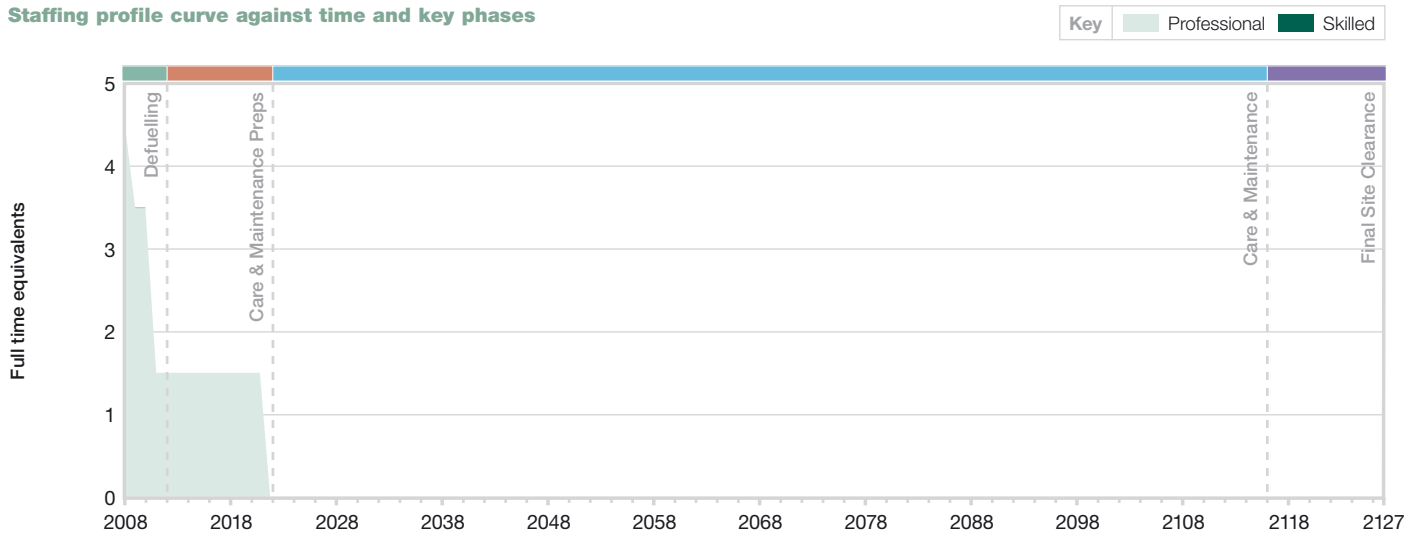
Final Site Clearance phase

The numbers of employees deployed during this period is expected to be around 100 with significant use of the supply chain to provide the services of specialists. There will be no severance payments as all employees will be assumed to be under contract for the duration of the project only.

Budgeted cost of work scheduled (BCWS) profile curve



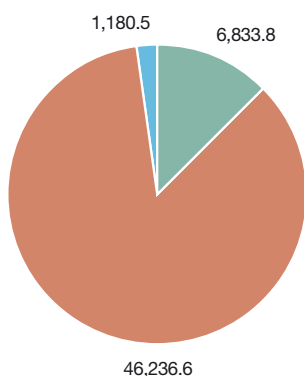
Staffing profile curve against time and key phases



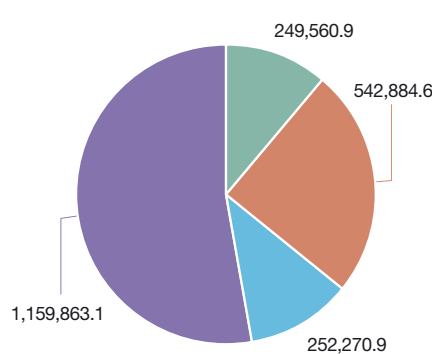
Transition summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Workforce Restructuring (33.10.01)	998.8	781.7	518.9	4,534.4	15,060.7	21,894.5	2,927.5	29,428.8	54,250.8
Contractor Changeover (33.10.02)									
Subtotal	998.8	781.7	518.9	4,534.4	15,060.7	21,894.5	2,927.5	29,428.8	54,250.8
Escalated value	998.8	805.9	551.6	4,969.3	17,016.9	24,342.5	3,635.9	44,596.6	72,575.0
Discounted value	998.8	764.8	496.8	4,247.8	13,805.2	20,313.5	2,511.2	22,011.7	44,836.4

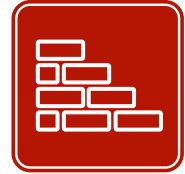
Total category cost distribution by key phases for Lifetime Plan (£k)



Total cost distribution by key phases for Lifetime Plan (£k)

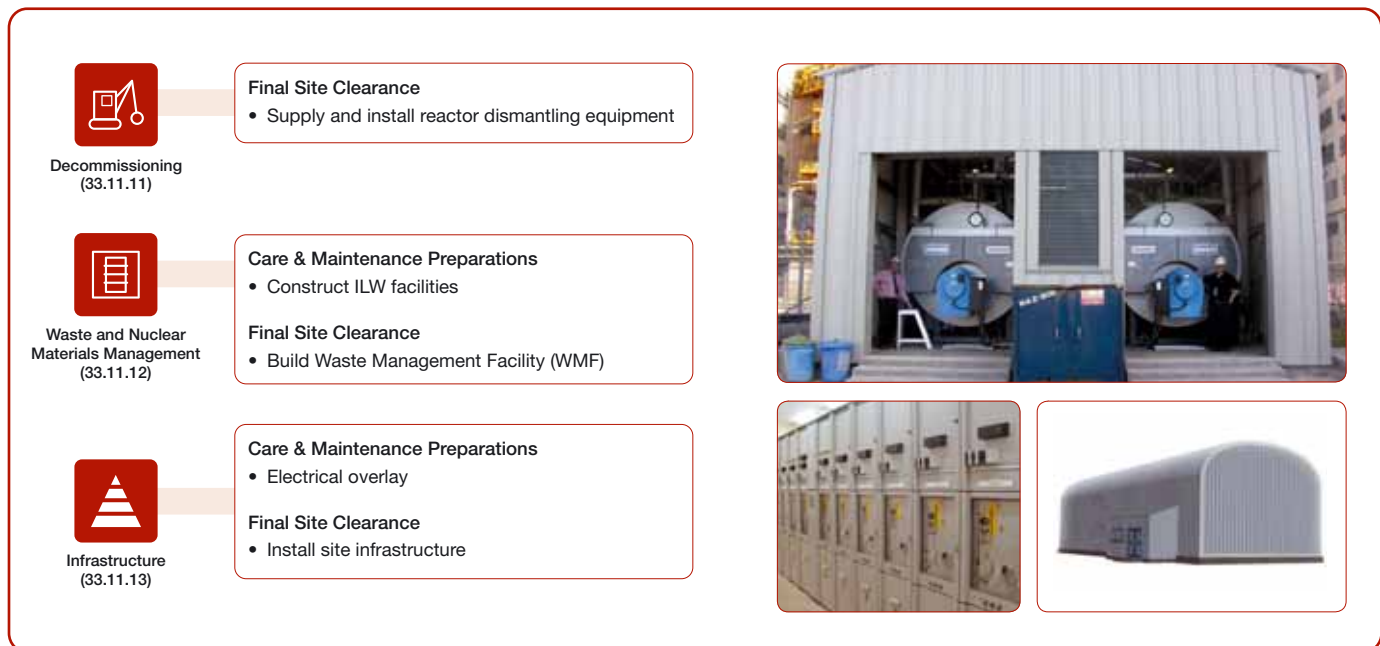


New Construction Projects (33.11)



New construction has been minimised so as to avoid creation of additional liabilities. New construction will be required to support retrieval, processing and storage of wastes during the Care & Maintenance Preparations and Final Site Clearance Phase.

New Construction Projects scope of work



Limited New Construction Projects are required to support Decommissioning and Waste Management activities.

New Construction Projects will be minimised so as to avoid creation of additional liabilities. Where new construction is required the facilities will be fit for purpose and temporary. Reuse of existing facilities will be considered where programme and financial benefit can be achieved.

All New Construction Projects will be delivered using a stage gate process to ensure an appropriate level of front-end definition is carried out and the business case remains valid. The projects will be sponsored by site staff who will manage the process through the various stages; providing the gate keeper duties and interface coordination.

It is planned that the projects will be delivered by a combination of Tier 2 contractors and Tier 3 supply chain depending on the complexity of the projects.

Chapelcross Site is currently in the Defuelling phase of its lifecycle. In parallel to the defuelling, early Care & Maintenance Preparations (C&M Preps) are continuing.

Key New Construction Projects during the four phases of this Lifetime Plan are as follows:

Defuelling phase

No construction during this phase.

Care & Maintenance Preparations phase

Feasibility Studies for Waste facilities to be conducted.

Construction of waste treatment facilities for Intermediate Level Waste (ILW) retrieval, processing and storage.

Care & Maintenance phase

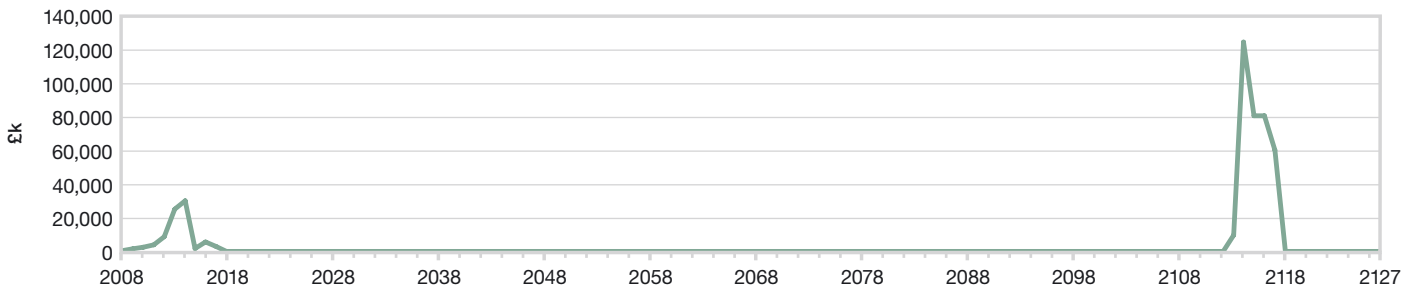
No construction during this phase.

Final Site Clearance phase

There are three main construction packages in Final Site Clearance (FSC):

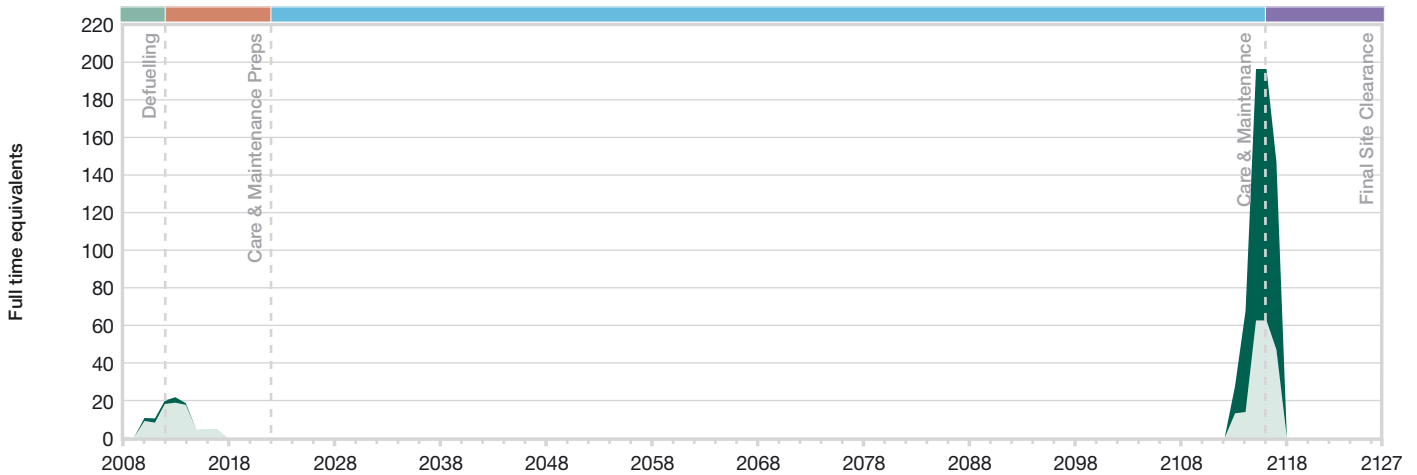
- Install site Infrastructure – the site will need to be reconstructed for the return of the people required to support the decommissioning of the site
- Install Reactor Dismantling Equipment – this project is necessary for the final deplanting and decommissioning of the reactor pressure vessel
- Build Waste Management Facilities (WMF) – for the handling, packaging, storage and disposal of LLW and ILW generated during the decommissioning in the phase

Budgeted cost of work scheduled (BCWS) profile curve



Staffing profile curve against time and key phases

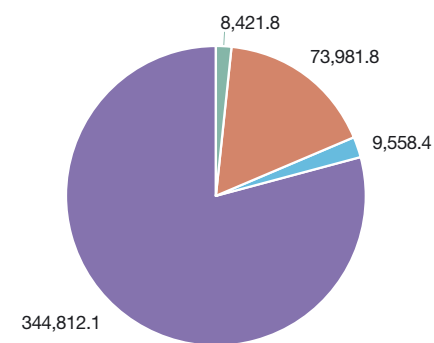
Key Professional Skilled



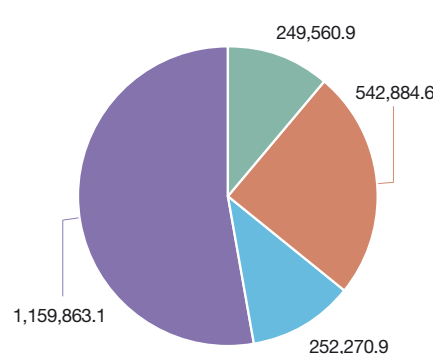
New Construction Projects summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Operations (33.11.10)									
Decommissioning (33.11.11)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	237,672.5	237,672.5
Waste & Materials Management (33.11.12)	0.0	0.0	1,415.1	2,276.9	7,242.1	10,934.2	64,832.8	90,718.1	166,485.1
Infrastructure (33.11.13)	481.2	1,582.1	994.1	1,672.3	1,442.0	6,171.7	465.0	25,979.9	32,616.6
Subtotal	481.2	1,582.1	2,409.3	3,949.2	8,684.1	17,105.9	65,297.7	354,370.5	436,774.1
Escalated value	481.2	1,631.1	2,560.9	4,328.0	9,812.1	18,813.3	78,357.6	9,932,770.3	10,029,941.3
Discounted value	481.2	1,548.0	2,306.6	3,699.6	7,960.2	15,995.7	57,377.9	32,954.9	106,328.5

Total category cost distribution by key phases for Lifetime Plan (£k)

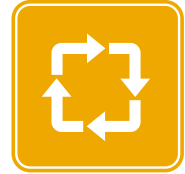


Total cost distribution by key phases for Lifetime Plan (£k)



Key Generation Defuelling Care & Maintenance Preparations Care & Maintenance Final Site Clearance

Commercial Operations (33.12)



This category is applicable only during the defuelling phase. During this phase all irradiated fuel will be removed from the four reactors and sent for reprocessing at Sellafield Site. On completion of this work verification checks will be made and a new Safety Case introduced.

Commercial Operations scope of work



Commercial Operations are focused on safely removing the irradiated fuel inventory from the Chapelcross Site and delivering it to Sellafield Site for reprocessing. This represents the most significant reduction in nuclear hazard potential at Chapelcross.

Defuelling at Chapelcross Site is coordinated with similar work at other UK nuclear reactor sites under the Magnox Operating Plan (MOP 8). This coordinates fuel shipments from all Reactor Sites to Sellafield Site ensuring that fuel shipments are managed to provide greatest value to the Nuclear Decommissioning Authority (NDA).

There will be a phased start up of defuelling with initial defuelling being carried out on Reactor 1. Reactor 3 defuelling is planned to commence in late 2008. Defuelling of Reactors 2 and 4 will commence in 2009.

As part of the defuelling work a full verification will be carried out to ensure that all fuel has been removed from the reactors.

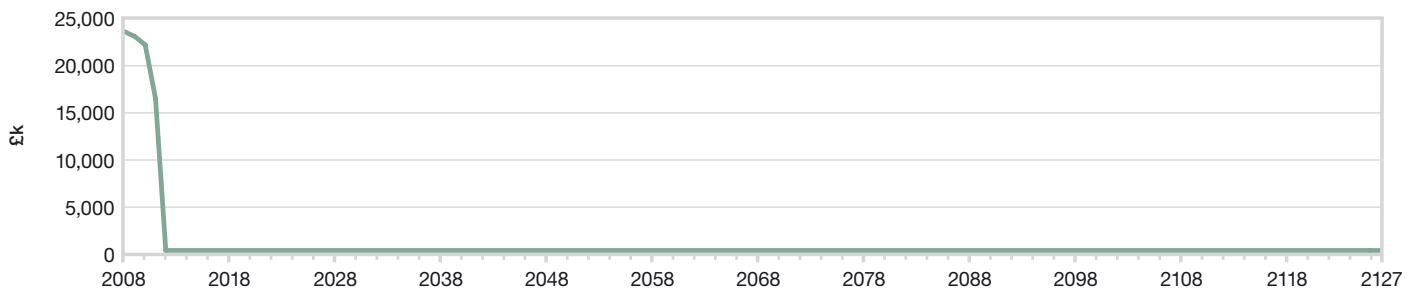
During this phase the full inventory of 437 tonnes of irradiated fuel made up of 38,075 elements will be removed from the four reactor cores and delivered to Sellafield Site for reprocessing. This work is programmed to be completed by August 2011.

This category also covers plant surveillance and maintenance which ensures safe and compliant operation and maintenance. This is required to ensure the site meets all of its statutory requirements during the period where irradiated fuel remains on site.

Other work in this category includes the effluent pipeline cleaning which is necessary to ensure safe future operation of the site's effluent discharge route and minimise the risk of active limescale being washed out of the line.

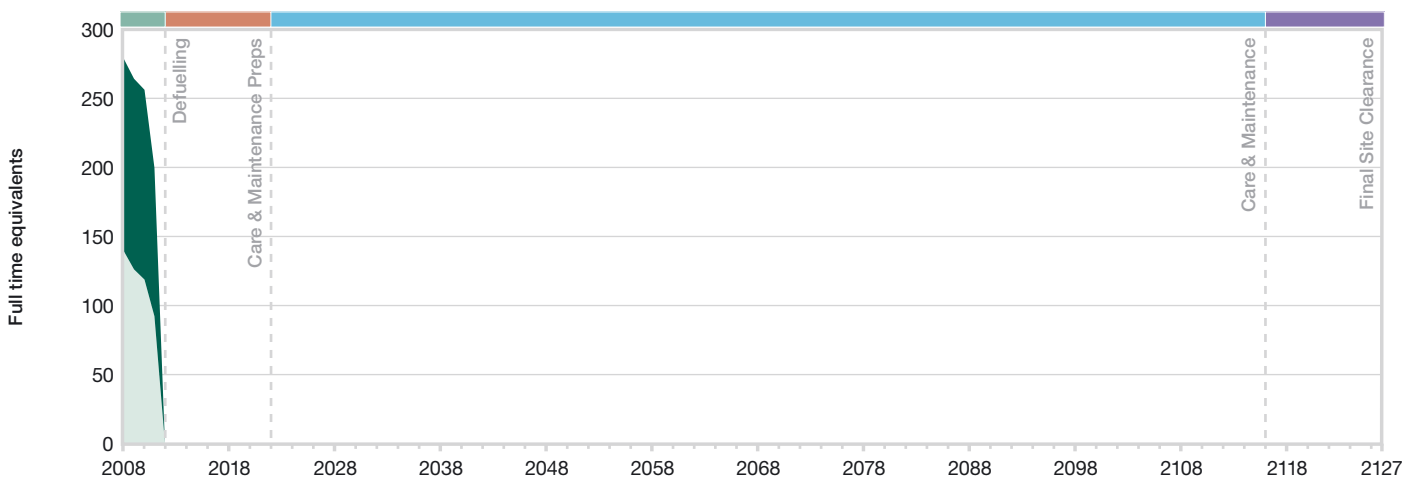
There will also be a Periodic Safety Review (PSR) of all Safety Case requirements for the site. This will supersede that required for defuelling of the reactors.

Budgeted cost of work scheduled (BCWS) profile curve



Staffing profile curve against time and key phases

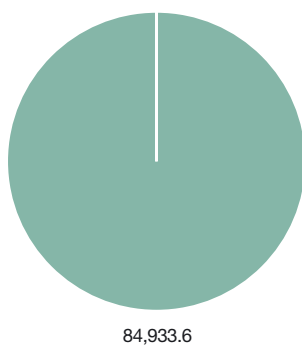
Key Professional Skilled



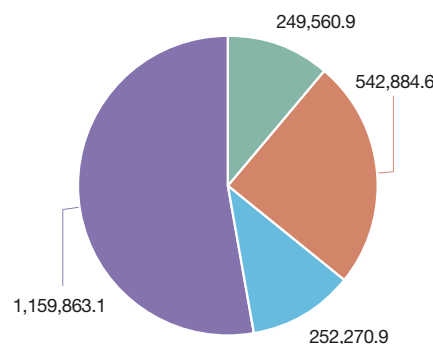
Commercial Operations summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Production Operations (33.12.20)									
Outage/Shutdowns (33.12.21)									
POCO/Defuelling (33.12.22)	23,571.7	22,950.7	22,027.0	16,384.2	0.0	84,933.6	0.0	0.0	84,933.6
Subtotal	23,571.7	22,950.7	22,027.0	16,384.2	0.0	84,933.6	0.0	0.0	84,933.6
Escalated value	23,571.7	23,662.2	23,413.9	17,955.6	0.0	88,603.4	0.0	0.0	88,603.4
Discounted value	23,571.7	22,456.6	21,088.9	15,348.7	0.0	82,466.0	0.0	0.0	82,466.0

Total category cost distribution by key phases for Lifetime Plan (£k)



Total cost distribution by key phases for Lifetime Plan (£k)



Key Generation Defuelling Care & Maintenance Preparations Care & Maintenance Final Site Clearance

Decommissioning & Termination (33.13)



This category covers the decommissioning of all facilities on the Chapelcross Site from the defuelling phase all the way through to Final Site Clearance. Waste will be removed from the facilities prior to deplanting, decontamination and finally demolition.

Decommissioning & Termination scope of work



This category includes decommissioning and removal of all facilities on the Chapelcross Site.

Defuelling phase

During this phase the major decommissioning work is the commencement of the asbestos stripping programme for the Turbine Hall and Heat Exchangers.

Care & Maintenance Preparations phase

During this phase the major decommissioning work will take place with the following facilities being deplanted, decontaminated and ultimately demolished:

- Pond
 - CXPP
 - Turbine Hall
 - Blower Houses
 - B141
 - Admin Facilities
 - Workshops
 - Waste Facilities
 - Redundant Infrastructure
- In addition the heat exchangers will be detached from the reactors and laid horizontal for long term storage.

The reactor buildings will be deplanted back to the bioshield and overclad.

Care & Maintenance phase

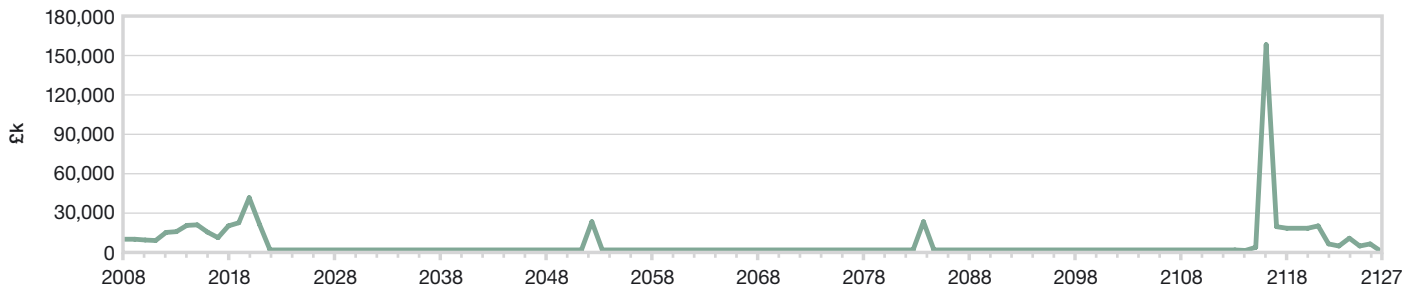
There will be no decommissioning in this phase.

Final Site Clearance phase

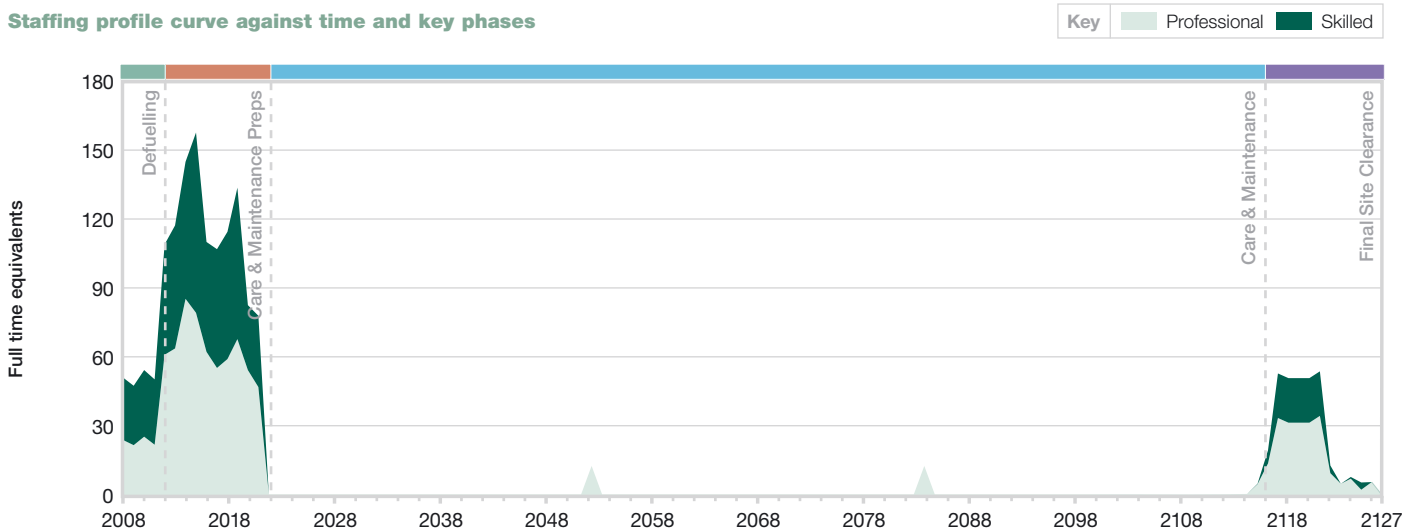
During this phase all facilities remaining on site will be deplanted, decontaminated and finally decommissioned.

On completion of this phase the site will be delicensed and made available for potential reuse.

Budgeted cost of work scheduled (BCWS) profile curve



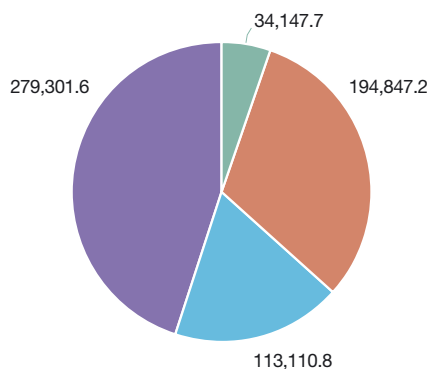
Staffing profile curve against time and key phases



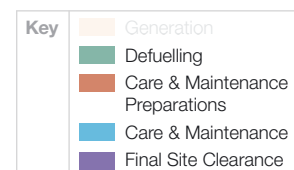
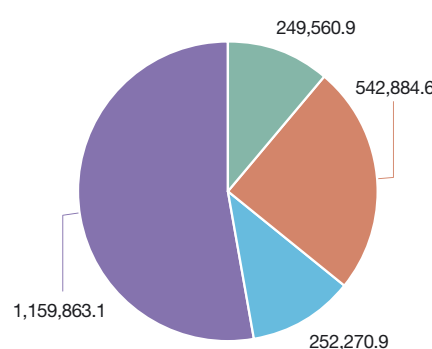
Decommissioning & Termination summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Initial Decommissioning (33.13.30)									
Surveillance & Maintenance (33.13.31)									
Interim Decommissioning (33.13.32)	8,265.0	7,432.6	7,478.0	7,415.4	13,690.5	44,281.6	77,339.8	100,598.1	222,219.5
Care & Maintenance (33.13.33)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	106,777.7	106,777.7
Final Decommissioning (33.13.34)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	263,119.7	263,119.7
Groundwater Remediation (33.13.35)	639.5	1,468.7	854.9	593.6	406.9	3,963.6	1,457.7	20,169.9	25,591.2
Contaminated Land Remediation (33.13.36)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,699.3	3,699.3
Site Close-Out (33.13.37)									
Subtotal	8,904.5	8,901.3	8,332.9	8,009.0	14,097.4	48,245.1	78,797.5	494,364.7	621,407.4
Escalated value	8,904.5	9,177.3	8,857.6	8,777.2	15,928.4	51,644.9	97,097.6	9,567,665.6	9,716,408.2
Discounted value	8,904.5	8,709.7	7,978.0	7,502.8	12,922.2	46,017.2	67,963.3	138,278.1	252,258.6

Total category cost distribution by key phases for Lifetime Plan (£k)



Total cost distribution by key phases for Lifetime Plan (£k)



Waste & Nuclear Materials Management (33.14)



The management of Waste & Nuclear materials is critical throughout all phases of the site's Lifecycle. Nuclear Materials are managed in line with National Policy. Wastes are retrieved, processed, packaged and then sent for storage or final disposal.

Waste & Nuclear Materials Management scope of work



This Lifetime Plan covers the management of radioactive waste, non-radioactive waste and nuclear materials.

The management requirements differ significantly as the site moves from defuelling and Care & Maintenance Preparations (C&M Preps) which includes decommissioning through Care & Maintenance (C&M) and on to Final Site Clearance (FSC). Defuelling is undertaken in category 12 Commercial Operations.

Defuelling and Care & Maintenance Preparations phases

During the C&M Preps phase work is focused on dealing with arisings from operations and projects. The following arisings will be routinely dealt with:

Intermediate Level Waste (ILW) which comes from the following sources:

- Main Site Operations including defuelling
- Chapelcross Processing Plant

ILW is packaged and sent to Sellafield Site's Miscellaneous Beta Gamma Waste Store.

Some of the ILW will require treatment or conditioning prior to storage.

Low Level Waste (LLW) is removed from site as compactable and non-compactable and arises from the following sources:

- Historic operations
- Ongoing operations including defuelling
- Decommissioning in preparation for C&M phase of site

LLW is packed into International Standards Organisation (ISO) freight containers and despatched to the Low Level Waste Repository (LLW Repository).

Non-radioactive waste is and will continue to be produced from all areas of the site. This is split between non-hazardous materials that are recycled or sent to landfill and hazardous materials such as asbestos that are disposed of to specified disposal

sites.

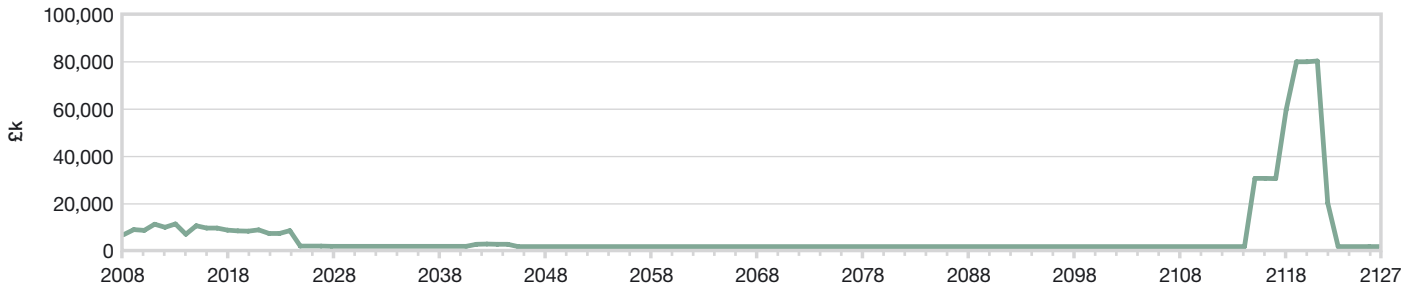
Care & Maintenance phase

The main waste operation during this phase will be the retrieval and despatch of ILW from the site ILW store for transport to the national repository. This work will take place between 2043 and 2046. During the rest of this phase small quantities of waste will be produced. It will consist of a nominal amount of LLW arisings from routine inspections and general waste produced during the re-ladding of the safestores.

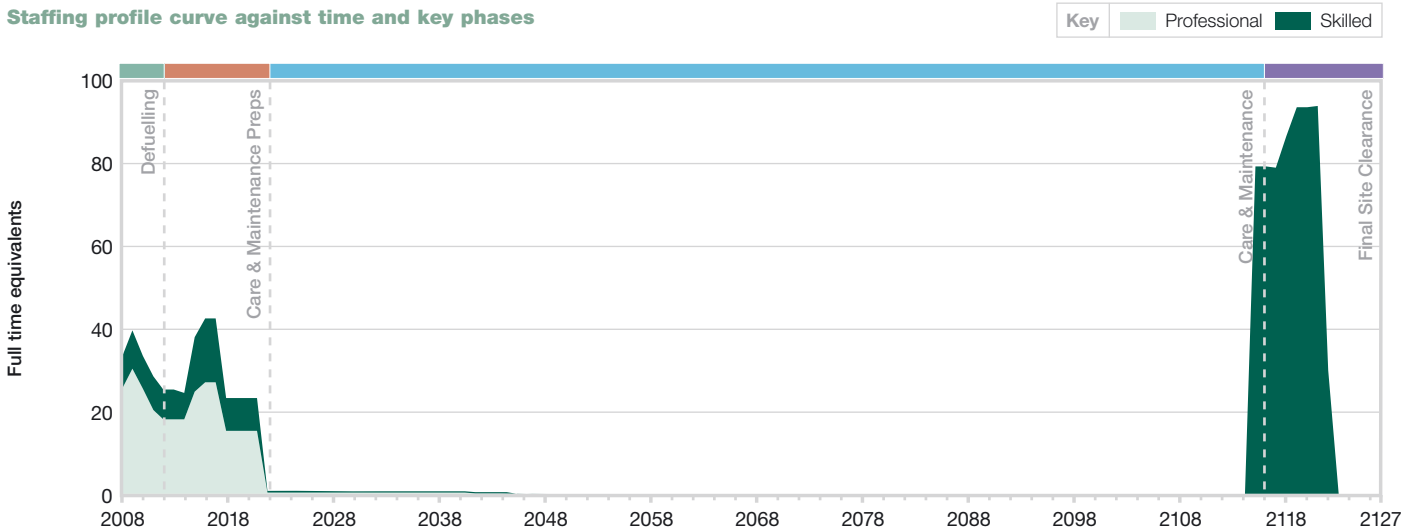
Final Site Clearance phase

Significant volumes of ILW and LLW will be produced during this phase. It will be retrieved, packaged and sent for disposal at the national waste repositories.

Budgeted cost of work scheduled (BCWS) profile curve



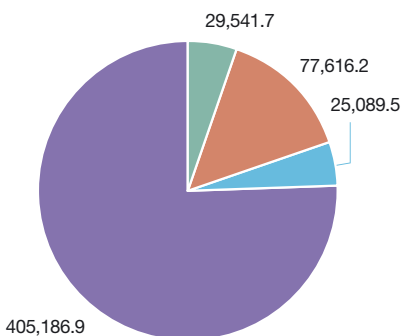
Staffing profile curve against time and key phases



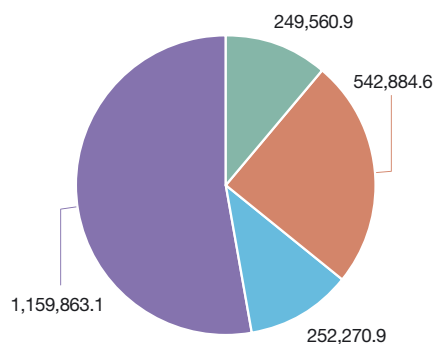
Waste & Nuclear Materials Management summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
HLW Operations (33.14.40)									
ILW Operations (33.14.41)	692.7	1,666.8	1,403.2	446.0	160.7	4,369.5	6,335.4	197,720.3	208,425.3
Nuclear Materials Operations (33.14.42)	1,764.0	1,919.2	308.1	0.0	0.0	3,991.3	0.0	0.0	3,991.3
LLW Operations (33.14.43)	1,943.1	2,965.1	4,498.7	8,434.5	7,181.4	25,022.8	28,037.5	256,775.2	309,835.6
VLLW Operations (33.14.44)									
Hazardous Operations (33.14.45)	543.6	641.7	627.6	629.7	611.1	3,053.7	3,368.1	2,980.5	9,402.3
Non-Hazardous Operations (33.14.46)	247.7	270.9	269.8	269.1	473.9	1,531.5	2,349.7	1,898.6	5,779.8
POCO/Deactivation (33.14.47)									
Subtotal	5,191.0	7,463.8	7,107.4	9,779.4	8,427.2	37,968.8	40,090.7	459,374.6	537,434.2
Escalated value	5,191.0	7,695.2	7,554.9	10,717.4	9,521.8	40,680.2	49,703.5	12,844,094.1	12,934,477.9
Discounted value	5,191.0	7,303.2	6,804.7	9,161.3	7,724.7	36,184.9	34,436.4	74,029.8	144,651.2

Total category cost distribution by key phases for Lifetime Plan (£k)



Total cost distribution by key phases for Lifetime Plan (£k)

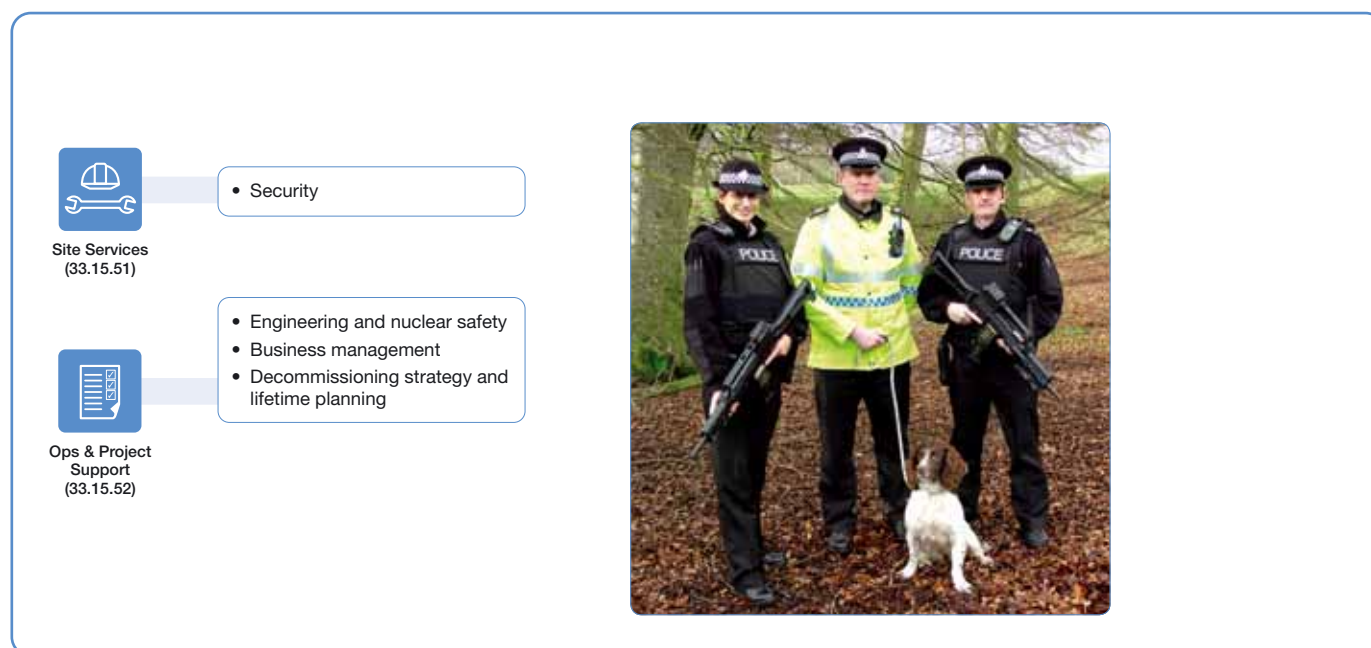


Site Support (33.15)



The primary purpose of the work within the Site Support category is the provision of support services to enable compliant, efficient and uninterrupted operations and to allow projects to proceed to their safe conclusion.

Site Support scope of work



Site Support includes key functions that provide support across the site throughout the different phases in its Lifetime Plan by providing workstreams in support of business critical activities.

Security

This category covers the overall provision of security services to the site.

Security standards must be maintained in line with standards set by the regulators and the resource and funding required to achieve this is included within this category. Also included is the funding for the upkeep of the physical security systems.

Engineering Management

This is the functional support required to ensure consistent delivery of engineering across the site in compliance with internal and external procedures.

Nuclear Safety

This is the functional support required to ensure compliance in all matters relating to nuclear safety.

Facilities Management

All facilities management charges for the site are within this category. This includes:

- Rates
- Utilities Charges
- Information Technology (IT)

Facilities management also includes for the general upkeep of the site and provision of welfare facilities.

Commercial Management

This function provides support in two main areas. Firstly the commercial interface with the customer and the management of the contract on behalf of the Site Licence Company (SLC). Secondly it provides support to the site by managing all procurement activities in line with internal and external requirements.

Decommissioning Strategy

This is the functional support required to ensure consistent delivery of all projects across the site in compliance with internal and external procedures.

Programme Management

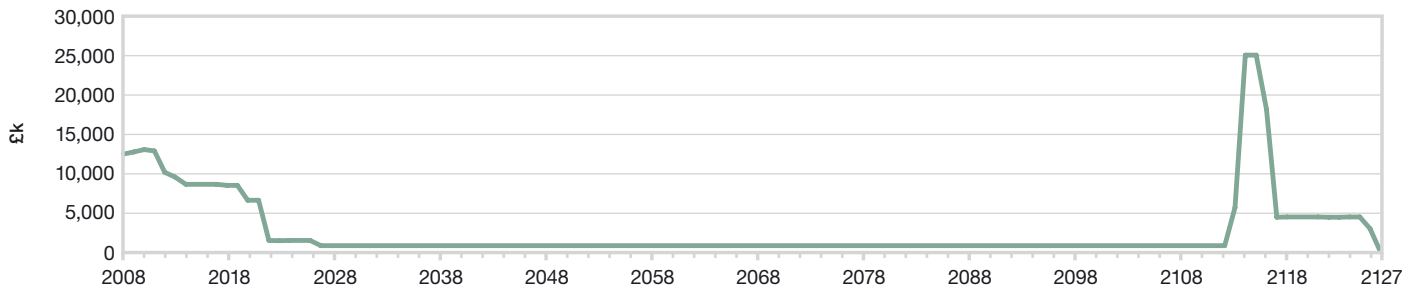
This is the functional support required to ensure compliant production and upkeep of the Lifetime Plan in line with customer requirements. This function also includes scope for continuing to enhance the quality of the plan.

The majority of this scope will continue through to the start of the Care & Maintenance (C&M) phase where costs are significantly reduced to reflect basic security and limited inspections and maintenance.

Towards the end of the C&M phase the work described within this category includes the enabling work to allow movement seamlessly into the Final Site Clearance (FSC) having the responsibility of engaging a Decommissioning Services Contractor and agreeing that work that will be required to provide the correct infrastructure for the site and their workforce.

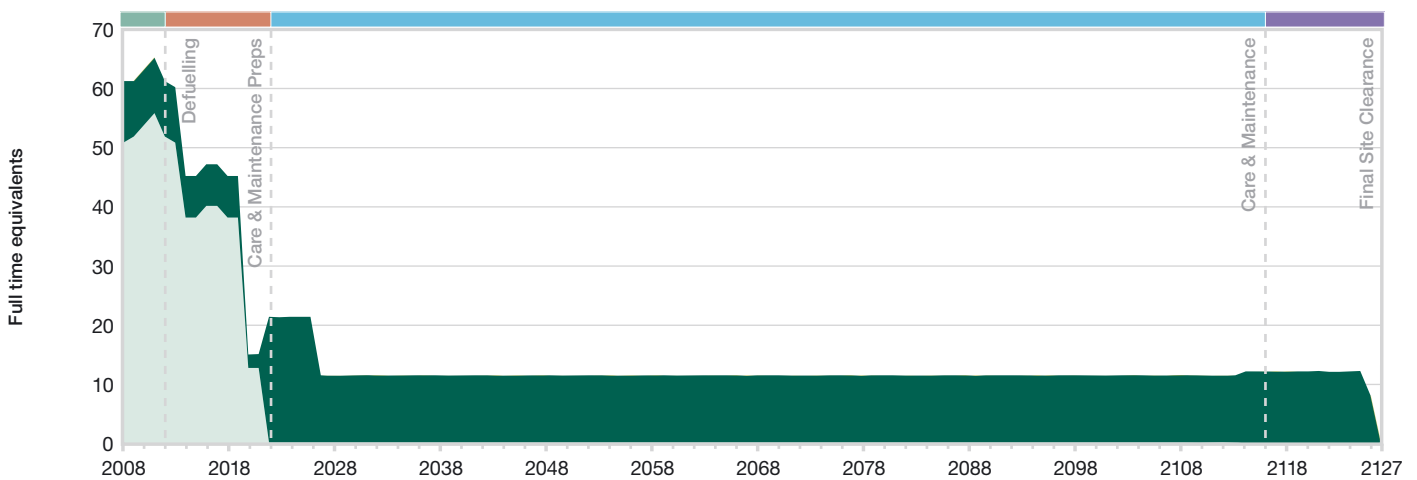
During FSC the work in this category mirrors that provided during the early stages of the remaining Lifetime Plan.

Budgeted cost of work scheduled (BCWS) profile curve



Staffing profile curve against time and key phases

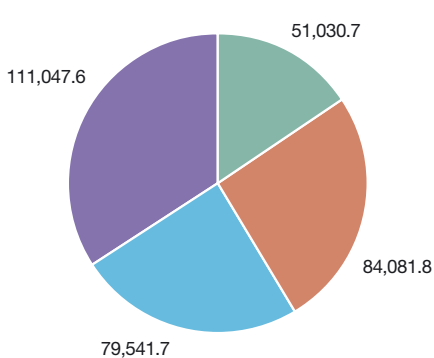
Key Professional Skilled



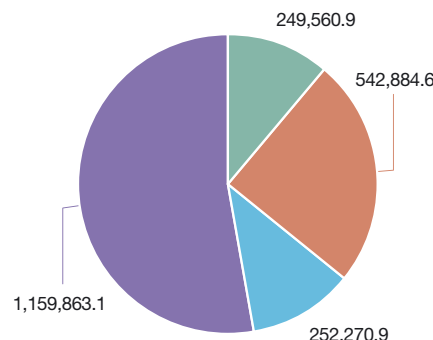
Site Support summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Research & Technology (33.15.50)									
Site Services (33.15.51)	3,778.5	3,601.6	3,754.0	4,268.5	2,265.3	17,667.8	11,171.6	181,392.7	210,232.1
Ops & Project Support (33.15.52)	8,672.9	9,107.3	9,276.8	8,571.2	7,867.1	43,495.3	32,742.3	39,232.0	115,469.6
Subtotal	12,451.5	12,708.9	13,030.7	12,839.6	10,132.4	61,163.1	43,914.0	220,624.7	325,701.7
Escalated value	12,451.5	13,102.8	13,851.2	14,071.1	11,448.4	64,925.0	54,359.1	4,150,056.6	4,269,340.7
Discounted value	12,451.5	12,435.3	12,475.8	12,028.2	9,287.7	58,678.4	37,761.7	58,773.3	155,213.4

Total category cost distribution by key phases for Lifetime Plan (£k)



Total cost distribution by key phases for Lifetime Plan (£k)



Key Generation Defuelling Care & Maintenance Preparations Care & Maintenance Final Site Clearance

Support Services (33.16)



This category includes all of the work of the site lead team. It also includes those functions that set operating standards and that work required to ensure compliance with legislation, regulators and the contract.

Support Services scope of work



Ops & Project
Support
(33.16.60)

- Site Management
- Finance
- ESS&Q
- HR Services



Support Services cover key management and functional activities that will ensure safe, compliant and efficient delivery of the Lifetime Plan for Chapelcross Site.

Site Management

This covers the work provided by the site lead team, who provide the workforce with governance and direction in delivering the Lifetime Plan.

The functions of Environmental, Security, Safety & Quality (ESS&Q), Finance, and Human Resources (HR) are also covered within this category. These functions provide the site contractor with the ability to comply with legislation in the appropriate areas, provide information and assistance to allow completion of activities defined in the Lifetime Plan safely, to schedule and to cost and an interface with the Nuclear Decommissioning Authority (NDA) with regard to the contract between the NDA and the contractor.

Through all the phases of the site's Lifetime Plan safety of the workforce and the public is the primary consideration.

Environment, Security, Safety & Quality

A strong safety function if provided for within this category is to help ensure compliance with the Site Licence and other Regulations.

This includes the adoption of best practice for radiological dose and contamination control, provision of site dosimetry and radiochemical analysis services. Also provided and just as important are all aspects of industrial safety management and environmental management.

A robust quality management system is maintained to underpin all site activities and includes document control, records management and an ongoing audit programme.

Internationally accredited standards have been achieved in these areas and these standards continue to be maintained.

Also contained within ESS&Q is scope to manage an appropriate emergency response capability for the site and routinely demonstrate this to the regulators.

Human Resources

An effective and reactive occupational health service is provided, which, coupled with proactive health assessment and improvement support, delivers a comprehensive service to the workforce.

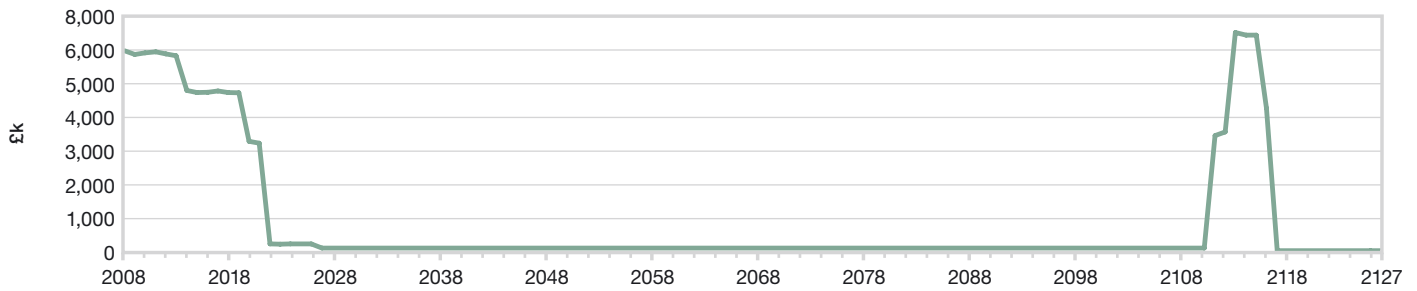
This function also supports on all contractual issues with the workforce and supports the site's performance management system and resource management process. Also included is the management of all training delivery for the site.

The HR function is particularly critical in supporting the workforce through times of transition.

Finance

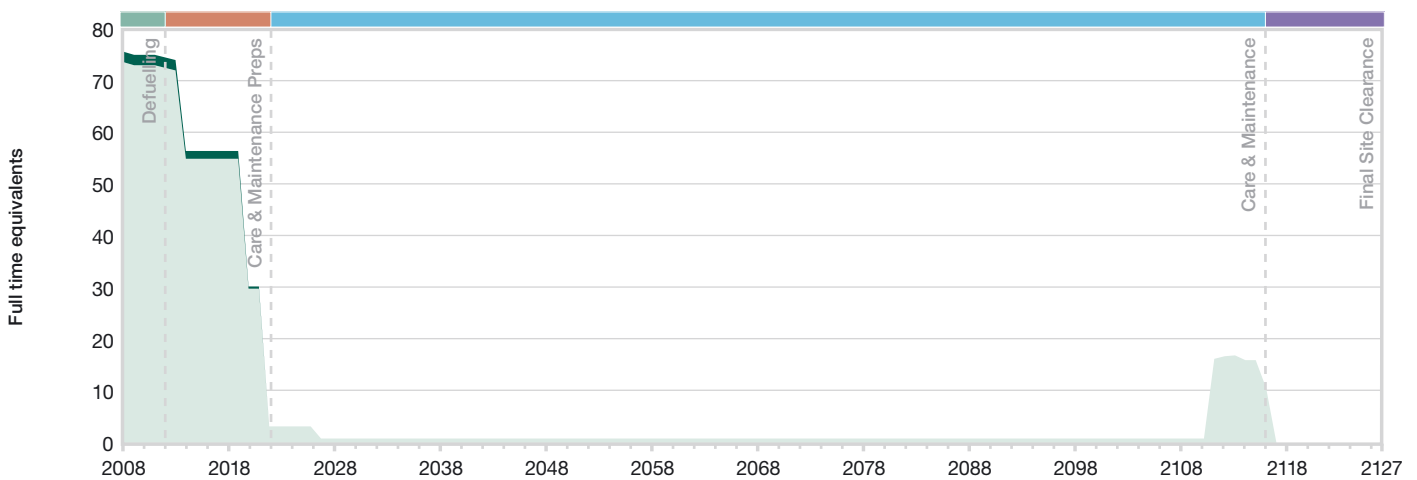
The finance function provides financial data to the projects and departments to support efficient delivery. In addition the function provides a corporate governance role in ensuring financial compliance and provision of auditable accounts.

Budgeted cost of work scheduled (BCWS) profile curve



Staffing profile curve against time and key phases

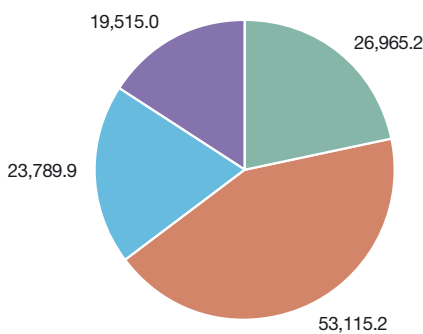
Key Professional Skilled



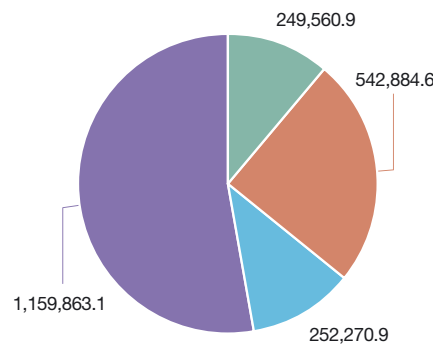
Support Services summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Functional Support (33.16.60)	6,799.3	6,673.9	6,727.6	6,764.4	6,691.1	33,656.3	28,295.7	61,433.3	123,385.3
Corporate Support (33.16.61)									
Subtotal	6,799.3	6,673.9	6,727.6	6,764.4	6,691.1	33,656.3	28,295.7	61,433.3	123,385.3
Escalated value	6,799.3	6,880.8	7,151.2	7,413.2	7,560.2	35,804.7	34,978.3	1,025,863.4	1,096,646.4
Discounted value	6,799.3	6,530.2	6,441.1	6,336.9	6,133.3	32,240.8	24,355.7	20,528.7	77,125.3

Total category cost distribution by key phases for Lifetime Plan (£k)



Total cost distribution by key phases for Lifetime Plan (£k)



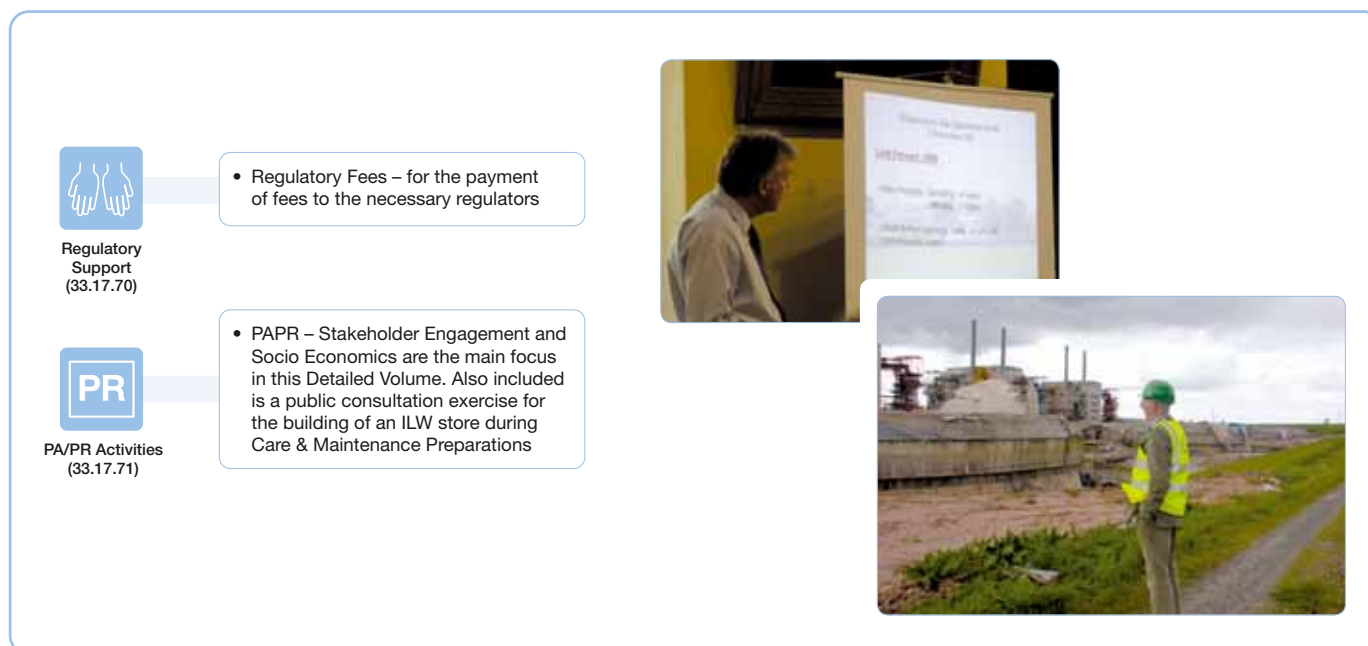
Key Generation Defuelling Care & Maintenance Preparations Care & Maintenance Final Site Clearance

Stakeholder Support (33.17)



Active stakeholder engagement will be vital to the successful delivery of the Lifetime Plan. Regulators will be engaged to allow early consultation and resolution of issues which could impact on the plan progress.

Stakeholder Support scope of work



The support of the local community and the regulators is essential to the operation of the site over the period of the plan.

The Lifetime Plan initially covers a period of tremendous change for the site impacting on the regulators, the local community and the workforce. During this time effective communication and active stakeholder engagement is essential.

The regulators have been engaged in the development of this Lifetime Plan. This engagement will continue throughout the life of the site. The regulators will be kept informed of progress on issues of specific relevance to them.

The requirements for regulatory consents will be identified at the start of the plan and discussion instigated to allow for the resolution of any identified issues. By engaging the regulators in this interactive manner the confidence in the safe operation of the site will be built upon. In this way the risk of delays to the programme due to regulatory concerns will be minimised.

Support of the local community will continue to help maintain the high levels of support for the site.

The local community has been a strong advocate of the site and the nuclear industry in general. The site lead team is committed to continued involvement in the local community. This will not only cover keeping the local population informed of developments on the site but being actively involved in supporting community activities.

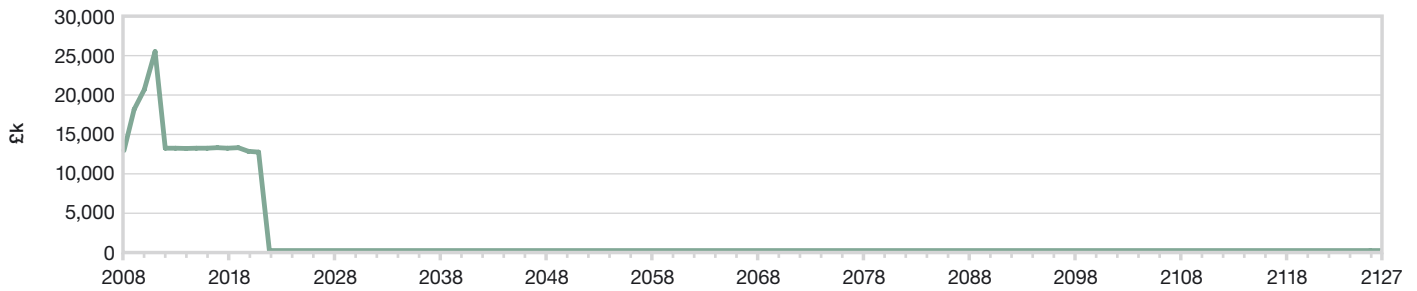
The site lead team will also engage the workforce and ensure they are provided up to date information on the organisational changes.

The provision of information in an open and transparent manner will be the hallmark of all stakeholder engagement undertaken to promote acceptance and support for the delivery programme.

The guiding principles underpinning our approach in addressing the socio-economic impact in the local community are to take a strategic perspective with the goal of securing sustainable longer term solutions to expected challenges and operate as a partner with stakeholders such as Scottish Enterprise, local councils and local politicians in seeking clarity of purpose, raising awareness of challenges/opportunities and joint ownership of solutions/interventions.

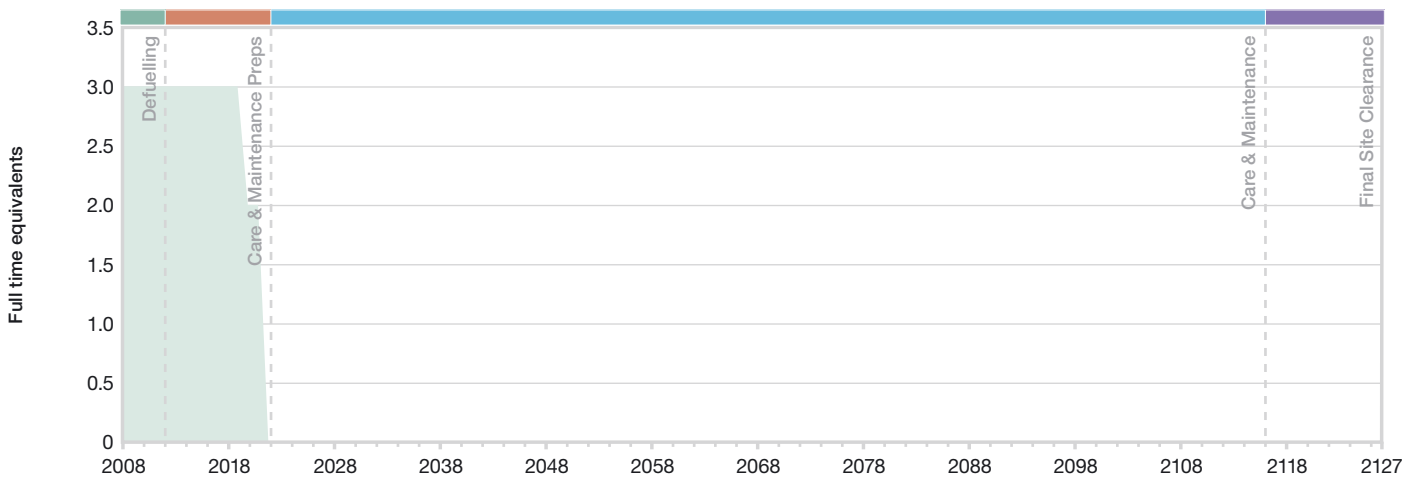
The site will run a minimum of four Site Stakeholder Groups (SSG) each year up to the point where the site enters the Care & Maintenance (C&M) phase. A similar level of engagement is anticipated in the lead up to and during the Final Site Clearance (FSC) phase.

Budgeted cost of work scheduled (BCWS) profile curve



Staffing profile curve against time and key phases

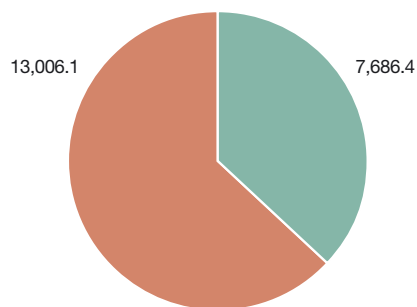
Key Professional Skilled



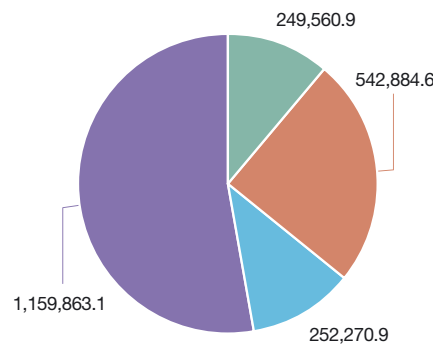
Stakeholder Support summary of costs

Type	FYs 2008-12					Subtotal years 1-5 (£k)	Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total Lifetime Plan costs (£k)
	Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)				
Regulatory Support (33.17.70)	989.3	1,006.3	1,013.1	1,006.5	1,006.6	5,021.8	5,043.7	4,042.2	14,107.7
PAV/PR Activities (33.17.71)	290.1	798.2	1,044.0	1,538.9	301.7	3,972.9	1,507.7	1,104.1	6,584.7
Subtotal	1,279.3	1,804.5	2,057.1	2,545.4	1,308.4	8,994.8	6,551.4	5,146.3	20,692.5
Escalated value	1,279.3	1,860.4	2,186.6	2,789.5	1,478.3	9,594.3	8,120.5	7,310.9	25,025.7
Discounted value	1,279.3	1,765.6	1,969.5	2,384.5	1,199.3	8,598.4	5,628.1	4,009.7	18,236.2

Total category cost distribution by key phases for Lifetime Plan (£k)



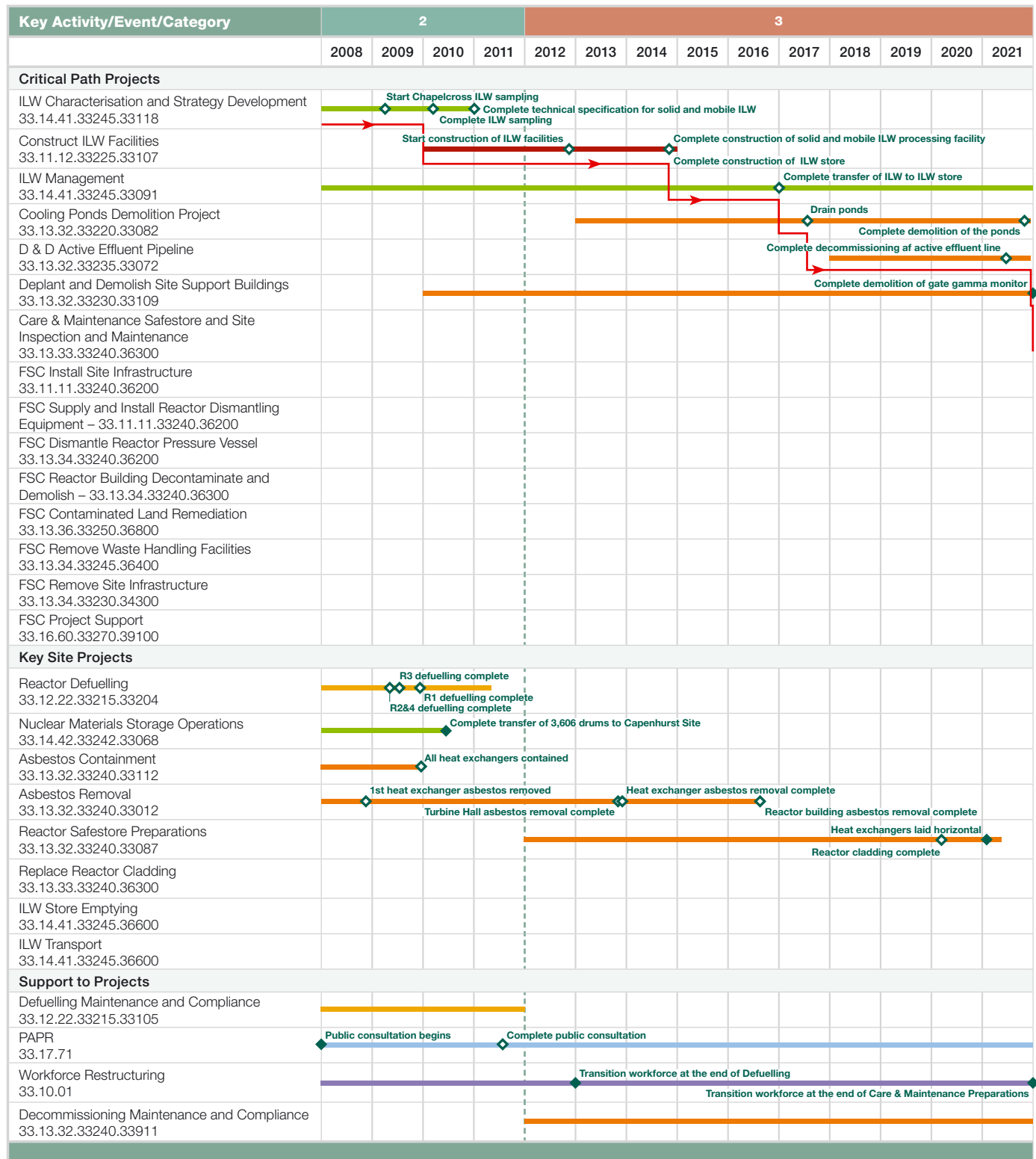
Total cost distribution by key phases for Lifetime Plan (£k)



Key Generation Defuelling Care & Maintenance Preparations Care & Maintenance Final Site Clearance

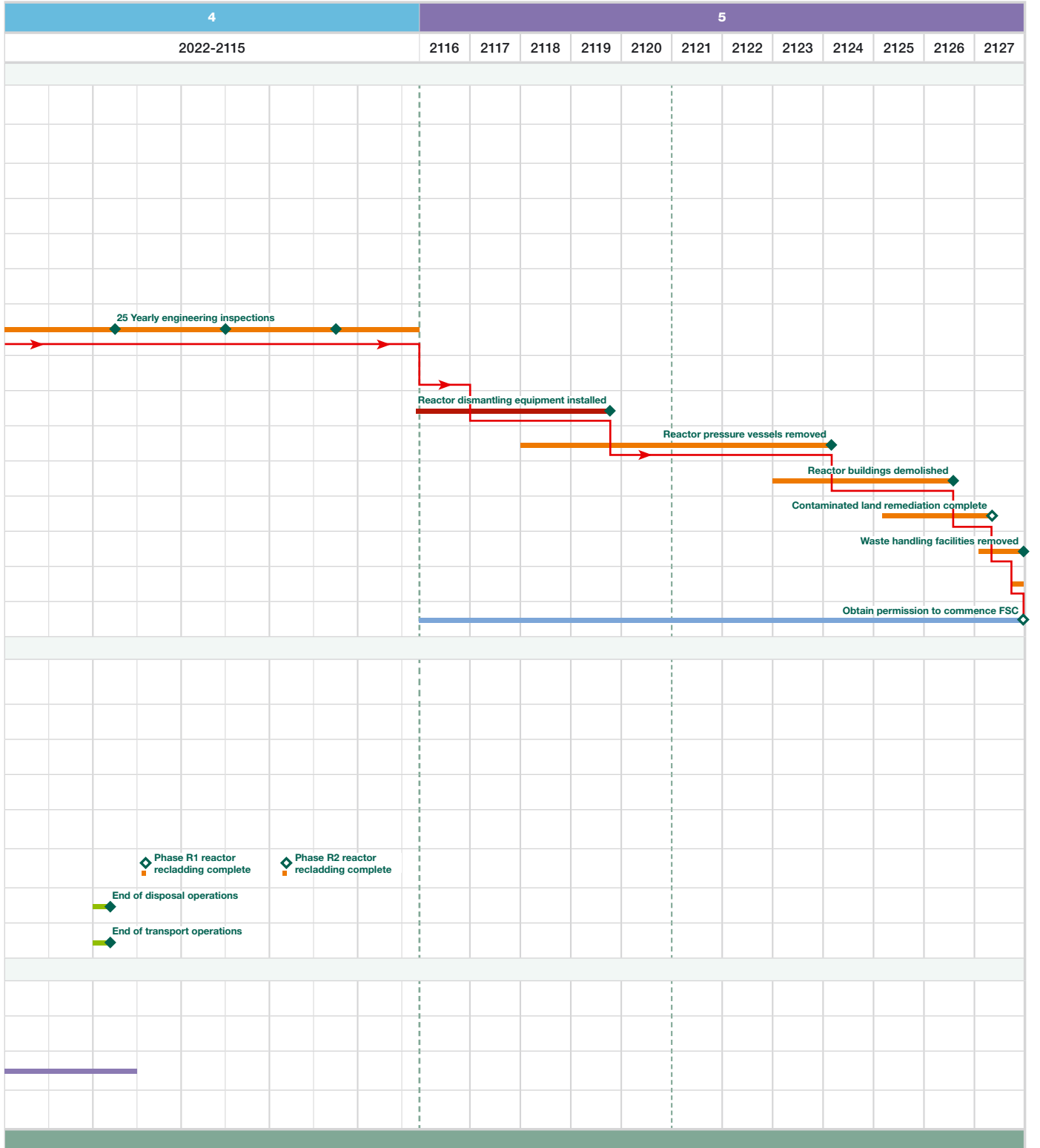
Summary milestone schedule

Lifetime Plan milestone schedule



Key ◆ Regulatory Milestone ◆ Other Milestone ➔ Critical Path

2. Defuelling 3. Care & Maintenance Preparations 4. Care & Maintenance 5. Final Site Clearance



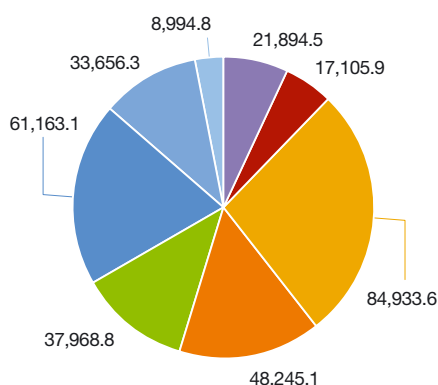
Lifetime Plan costs and staffing curve

The Lifetime Plan is delivered by assessing the scope of work to be delivered, followed by estimating the time in which it will be performed, the schedule. From this an estimate of the cost to deliver the Lifetime Plan can be derived. Staff resource requirements are subject to rigorous planning and critical analysis.

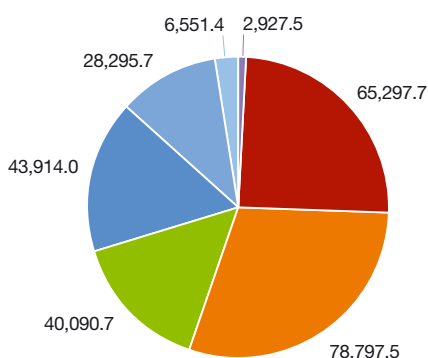
Summary of costs

Category	Prior years cost to date (£k)	FYs 2008-12				
		Year 1 (£k)	Year 2 (£k)	Year 3 (£k)	Year 4 (£k)	Year 5 (£k)
Transition (33.10)	2,987.0	998.8	781.7	518.9	4,534.4	15,060.7
New Construction Projects (33.11)	2,033.3	481.2	1,582.1	2,409.3	3,949.2	8,684.1
Commercial Operations (33.12)	81,573.5	23,571.7	22,950.7	22,027.0	16,384.2	0.0
Decommissioning & Termination (33.13)	13,729.4	8,904.5	8,901.3	8,332.9	8,009.0	14,097.4
Waste & Nuclear Materials Management (33.14)	14,205.4	5,191.0	7,463.8	7,107.4	9,779.4	8,427.2
Site Support (33.15)	37,162.2	12,451.5	12,708.9	13,030.7	12,839.6	10,132.4
Support Services (33.16)	17,660.4	6,799.3	6,673.9	6,727.6	6,764.4	6,691.1
Stakeholder Support (33.17)	3,428.5	1,279.3	1,804.5	2,057.1	2,545.4	1,308.4
Total	172,779.7	59,677.5	62,866.8	62,211.0	64,805.6	64,401.2
Escalated value		59,677.5	64,815.7	66,127.9	71,021.3	72,766.1
Discounted value		59,677.5	61,513.5	59,561.5	60,710.0	59,032.4
Revenue Income (33.20)						

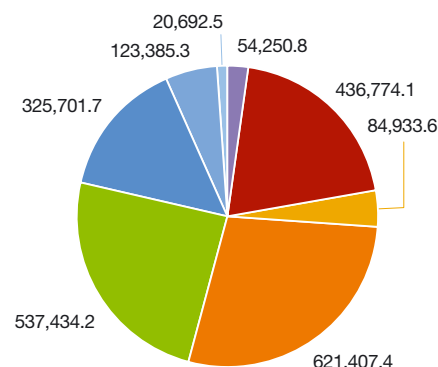
Years 1-5 cost distribution by category (£k)



Years 6-10 cost distribution by category (£k)



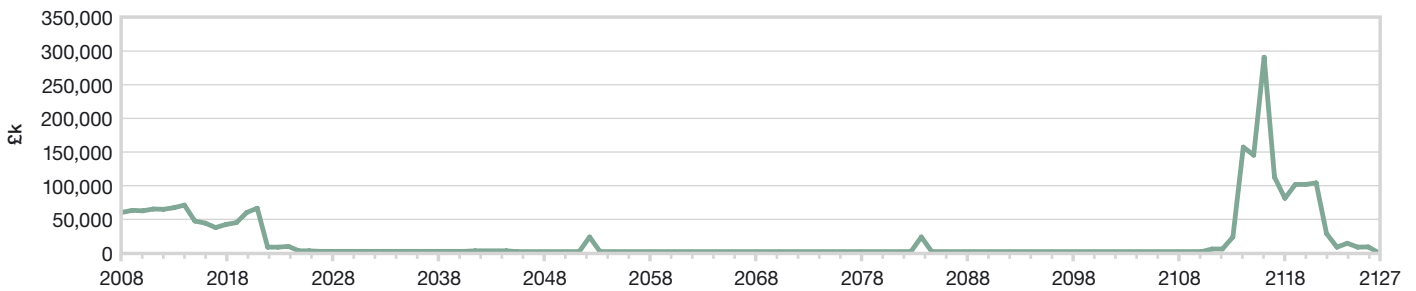
Lifetime Plan cost distribution by category (£k)



Key	Category	Category
■	Transition (33.10)	■ Waste & Nuclear Materials Management (33.14)
■	New Construction Projects (33.11)	■ Site Support (33.15)
■	Commercial Operations (33.12)	■ Support Services (33.16)
■	Decommissioning & Termination (33.13)	■ Stakeholder Support (33.17)

- Present day value is based on current prices
- The escalation value rate used is 3.1%
- Discounted value rate used is 2.2% per annum

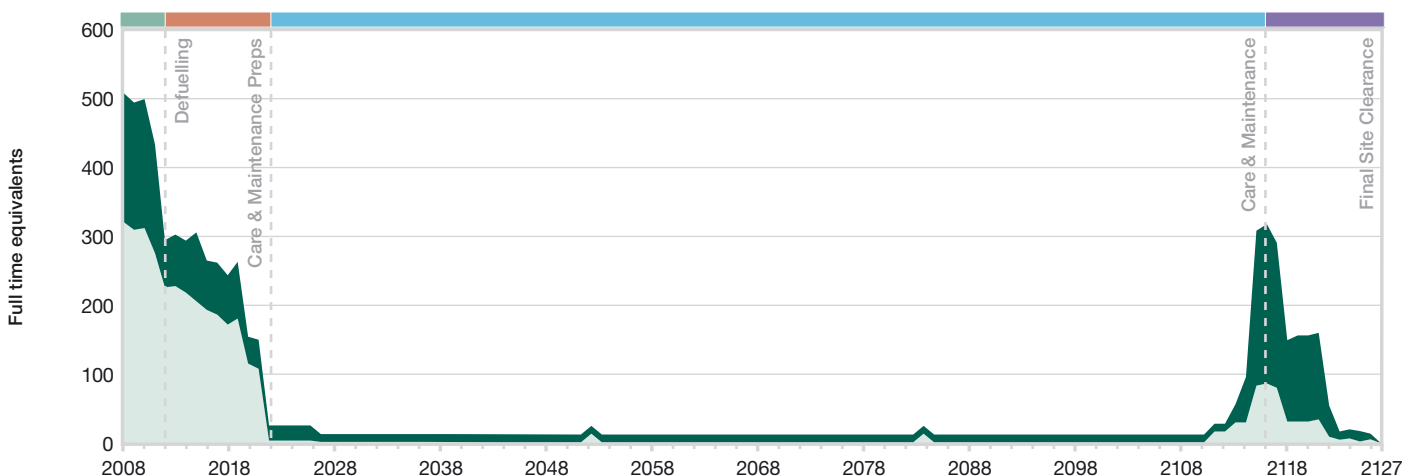
Budgeted cost of work scheduled (BCWS) profile curve



Subtotal years 1-5 (£k)	FYs 2013-17					Subtotal years 6-10 (£k)	Balance years 11+ (£k)	Total cost Lifetime Plan (£k)
	Year 6 (£k)	Year 7 (£k)	Year 8 (£k)	Year 9 (£k)	Year 10 (£k)			
21,894.5	537.4	521.3	716.7	506.1	645.9	2,927.5	29,428.8	54,250.8
17,105.9	24,962.3	30,016.8	1,659.9	5,669.0	2,989.7	65,297.7	354,370.5	436,774.1
84,933.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84,933.6
48,245.1	14,782.0	19,587.8	19,957.2	14,358.1	10,112.4	78,797.5	494,364.7	621,407.4
37,968.8	9,254.2	5,350.2	9,335.8	8,095.2	8,055.5	40,090.7	459,374.6	537,434.2
61,163.1	9,524.7	8,591.9	8,591.1	8,606.6	8,599.6	43,914.0	220,624.7	325,701.7
33,656.3	6,637.0	5,451.2	5,379.1	5,393.8	5,434.5	28,295.7	61,433.3	123,385.3
8,994.8	1,309.6	1,306.3	1,309.7	1,309.4	1,316.4	6,551.4	5,146.3	20,692.5
313,962.2	67,007.3	70,825.5	46,949.5	43,938.1	37,154.1	265,874.5	1,624,742.9	2,204,579.6
334,408.5	78,057.6	85,063.2	58,135.6	56,093.3	48,903.0	326,252.6	37,572,357.5	38,233,018.5
300,494.9	60,099.0	62,156.2	40,315.8	36,917.7	30,545.6	230,034.3	350,586.2	881,115.4

Staffing profile curve against time and key phases

Key Professional Skilled



There will be a general decline of staff numbers as the site moves towards Care & Maintenance (C&M). There will also be changes in the skill mix required, with increases and decreases of some staff grades to meet the changing site requirements.

Under the current strategy during the C&M phase, the site will remain in a passive state. During this time staff will be provided to sustain the security, monitoring and routine maintenance functions with the exception of occasional small increases to perform major activities such as building recladding.

The Final Site Clearance (FSC) phase will see a rapid increase of staff numbers initially to install the site infrastructure. An additional increase for final decommissioning followed by a gradual reduction to zero is likely, as the site progresses towards removal of site infrastructure, landscaping and site delicensing.

Cost variance to previous plan

The table below compares the 80% confidence values for the Lifetime Plan with values from the Lifetime Plan 2006/07 submission over the same period uplifted to September 2007 money values.

Cost variance to previous plan

Category	Lifetime Plan 2008/09 (£k)	Lifetime Plan 2007/08* (£k)	Variance (£k)	Justification
Transition (33.10)				
Workforce Re-structuring 33.10.01	54,250.8	44,501.6	9,749.2	Re-estimation of Severance Costs.
New Construction Projects (33.11)				
Decommissioning 33.11.11	237,672.5	189,037.6	48,634.8	FSC-Supply/Install Reactor Dismantling Equip repricing & estimate improvement.
Waste & Materials Management 33.11.12	166,485.1	80,346.6	86,138.5	New Scope for Modular Effluent Treatment Plant and FSC-Build Waste Management Facility.
Infrastructure 33.11.13	32,616.6	31,601.9	1,014.7	New Scope for Electrical Overlay System offset by scope deferral and Final Site Clearance (FSC) Install Site Infrastructure estimate improvements.
Commercial Operations (33.12)				
POCO/Defuelling 33.12.22	84,933.6	33,356.4	51,577.2	Impact of extended Magnox Defuelling programme plus scope deferrals.
Decommissioning & Termination (33.13)				
Interim Decommissioning 33.13.32	219,781.7	140,296.8	79,484.8	Impact of extension to Care & Maintenance Preparations (C&M Preps) phase plus estimate improvements.
Care & Maintenance 33.13.33	106,777.7	89,171.4	17,606.3	Estimate improvements and repricing impact on Care & Maintenance phase (C&M).
Final Decommissioning 33.13.34	265,557.6	135,623.9	129,933.7	New scope re FSC Reactor Graphite work offset by FSC estimate improvements.
Groundwater Remediation 33.13.36	25,591.2	24,617.3	973.8	C&M estimate repricing and estimate improvements.
Contaminated Land Remediation 33.13.37	3,699.3	3,430.7	268.7	FSC estimate repricing and estimate improvements.
Waste & Nuclear Materials Management (33.14)				
ILW Operations 33.14.41	208,425.3	150,696.1	57,729.2	Mainly new scope in C&M and FSC phases plus some estimate repricing.
Nuclear Materials Operations 33.14.42	3,991.3	3,155.6	835.6	Estimate improvement.
LLW Operations 33.114.43	309,835.6	160,137.7	149,697.8	New scope and estimate improvements for Low Level Waste (LLW) Management entering C&M phase, plus new scope and estimate improvements for FSC LLW Transport & Disposal.
Hazardous Operations 33.114.45	9,402.3	6,345.2	3,057.1	Estimate improvement.
Non-Hazardous Operations 33.114.46	5,779.8	3,670.1	2,109.7	
Site Support (33.15)				
Site Services 33.15.51	172,731.5	170,980.0	1,751.5	Repricing and estimate improvements in C&M and FSC phases.
Ops & Project Support 33.15.52	152,970.3	94,787.9	58,182.4	Extra costs to support extended defuelling phase and extension to C&M Preps phase.
Support Services (33.16)				
Functional Support 33.16.60	123,385.3	94,775.2	28,610.1	Extra costs to support extended defuelling phase and extension to C&M Preps phase.
Stakeholder Support (33.17)				
Regulatory Support 33.17.70	14,107.7	8,664.7	5,443.1	Estimate improvement.
PA/PR Activities 33.17.71	6,584.7	4,563.2	2,021.5	

Major assumptions and exclusions

Assumptions are made to move from a position where uncertainty exists to one that provides a firm basis for the work, allowing it to be fully scoped and with schedules and costs estimated.

Major assumptions and exclusions by category

Assumptions	Justification
Site – Cross-Category (33)	
The assumption is that there will be a single Management & Operations (M&O) contractor across the Magnox North Fleet during Final Site Clearance (FSC).	Planning Assumption.
the assumption is that reactor defuelling will align with the schedule requirements of Magnox Operating Programme (MOP 8).	The Lifetime Plan is based on the current MOP strategy for the Magnox fleet of reactor sites, any changes to MOP will impact the scope of work across all Programme Summary Work Breakdown Structure (PSWBS) categories.
Transition (33.10)	
It is assumed that the Lifetime Partnership Agreement (LPA) remains in place and available until the end of the Care & Maintenance Preparations (C&M Preps) phase.	This aligns with the declared site policy and Magnox North guidance.
New Construction Projects (33.11)	
The assumption is that current strategy for site waste management facilities for Intermediate Level Waste (ILW) remain valid.	Planning Assumption consistent with the Quinquennial Review (QQR).
Commercial Operations (33.12)	
Spent fuel flask deliveries to site will meet the numbers defined in MOP 8 and no external factors will prevent despatches from the site.	Planning Assumption consistent with MOP 8 requirements.
Defuelling will commence April 2008.	This planning assumption is based on Lifetime Plan 2007/08 schedule and current knowledge of progress.
Decommissioning & Termination (33.13)	
Deferred site clearance remains the policy for Magnox Sites.	Current national strategy.
FSC is to brownfield only.	Current national strategy. This is currently under review by the Site Stakeholder Group (SSG) through public consultation process.
Waste & Nuclear Materials Management (33.14)	
The assumption is that a deep waste repository for ILW will be available in 2040 and remain available through to the end of FSC.	Planning Assumption based on current guidance issued from the Nuclear Decommissioning Authority (NDA) and Magnox North.
The assumption is that waste packages prepared for disposal but retained on site prior to the ILW repository becoming available will not require re-work prior to shipment.	Planning Assumption.
The National Low Level Waste Repository (LLW Repository) or an equivalent facility remains available for the duration of this Lifetime Plan.	This aligns with current NDA guidance.
Site Support (33.15)	
The assumption is that the security alert status does not increase from 'heightened' for significant periods.	Any increase in security alert status for significant periods would result in additional security measures to be implemented with consequent increase in cost and potential extension to schedule.
Support Services (33.16)	
There are no changes to current Government policy, legislative and regulatory environment remain that significantly impact the scope of work for the site during this Lifetime Plan.	The Lifetime Plan is based on existing policies and legislation.
Regulators continue to adopt a consistent and proportionate approach and all necessary approvals, consents and authorisations are obtained in the time scheduled.	The site will continue to work closely with all regulators.
Stakeholder Support (33.17)	
No changed regulatory or legislative requirements are imposed which impact on the scope of work in PAPR.	The scope of this Lifetime Plan is based on the progression of the agreed strategy.
Exclusions	Justification
Site – Cross-Category (33)	
All costs relating to national grid plant and equipment on the Chapelcross Site are to be excluded from the Chapelcross Site Lifetime Plan.	Contract.
Force majeure events are excluded.	
Acts of God are excluded.	
Emergent events which would be considered ultra vires of a reasonable and prudent M&O contractor are excluded.	Planning Exclusion.
Contractor change over costs are excluded.	Financial Planning exclusion.

Risk management and opportunities

Risks are activities which, if they occur, could have an effect on the scope, schedule and/or cost of the Lifetime Plan. An opportunity is a risk with positive consequences.

Risk summary

	Risk – Descriptions
	33.13.31 – Asbestos Lagging Deterioration
Description	The risk is that the condition of the asbestos lagging deteriorates leading to an increased frequency of falls.
Possible Impact	Delays to Defuelling Preparations, Reactor Defuelling, Intermediate Level Waste (ILW) & Low Level Waste (LLW) Shipments, and other operations on site due to restrictions put in place for the site to carry out clean-up operations after a significant asbestos fall. Site stand down for causing schedule delays for clean up operations per significant fall for up to four instances per year adding significant costs to the programme. Possible regulatory action.
Mitigation Activities	33/20112 – Asbestos weather containment – project to erect weather containment over heat exchangers. 33/20012 – Asbestos removal – project to remove asbestos .
	33.12.22 – Possible Effluent Line Regulatory Action
Description	There is a risk that further Caesium contaminated particles are found on the foreshore as a result of plant breakdown or extreme weather conditions.
Possible Impact	Potentially leading to regulatory enforcement action and/or prosecution.
Mitigation Activities	33/20028 Effluent Line Improvements – Project to remove the limescale from the line.
	33.13.31 – Condition of Site Land
Description	The risk is that as a result of higher levels of contamination than currently predicted, further decontamination/remediation will be required.
Possible Impact	Increased costs and extended programme site level, it is thought that if this risk were to occur, the site would also be exposed to 6 months slippage to new building works which fall into the line of building works which fall 1 metre below surface which exposes contaminated soil leading to potential soil replacement and new plinth builds delaying actual new building works (eg: Ponds, Reactor Buildings, Asbestos Holding Area).
Mitigation Activities	33/20001 Land Quality Management – sampling programme to determine the condition and extent of contaminants.
	33.12 – Increase in Age Related Electrical Distribution, Building & Infrastructure Failures
Description	The risk is that as a result of the age of site electrical distribution system, Buildings & Infrastructure, there is an increase in failures.
Possible Impact	Possible delays to defuelling and significant increase in cost.
Mitigation Activities	33/20090 Electrical Overlay System – Implementation of the new Electrical Overlay System. 33/29004 Engineering Management and Nuclear Safety – Engineering Substantiation & Asset Management process.

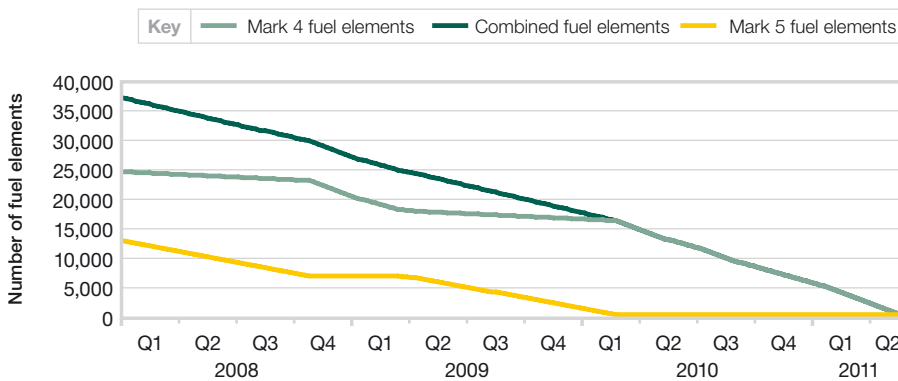
Opportunities by category for 2008/09

	Opportunities
	New Construction Projects (33.11)
Description	Optioneering Studies may identify the potential to utilise existing buildings and facilities therefore reducing the scope of New Construction Projects for Intermediate Level Waste (ILW) Process and Storage.
Benefit	Potential cost savings with regards to de-scoping the need for new build and the use of existing infrastructure.
	Decommissioning & Termination (33.13)
Description	Transitioning of site personnel from a defuelling structure to a project delivery focused structure.
Benefit	Retention of key personnel would reduce severance costs and through retraining programmes personnel could undertake roles to facilitate Decommissioning projects when defuelling is complete.
	Decommissioning & Termination (33.13)
Description	Coordination and sharing of learning between sites.
Benefit	Chapelcross has the opportunity to learn from the experiences of Trawsfynydd Site and Hunterston A Site in undertaking Decommissioning of the site and also Calder Hall, sister station at Sellafield, offering the opportunity to realise synergies due to the direct comparisons of the issues likely to face both stations.
	Waste & Nuclear Materials Management (33.14)
Description	There is an opportunity to raise the tritium release criteria.
Benefit	Significant reduction of Low Level Waste (LLW) to free release.

Key metrics and quantity curves

The following charts and tables represent key summary metrics and quantities for Chapelcross Site applicable throughout the Lifetime Plan. Key metrics identify deliverables associated with defuelling and decommissioning.

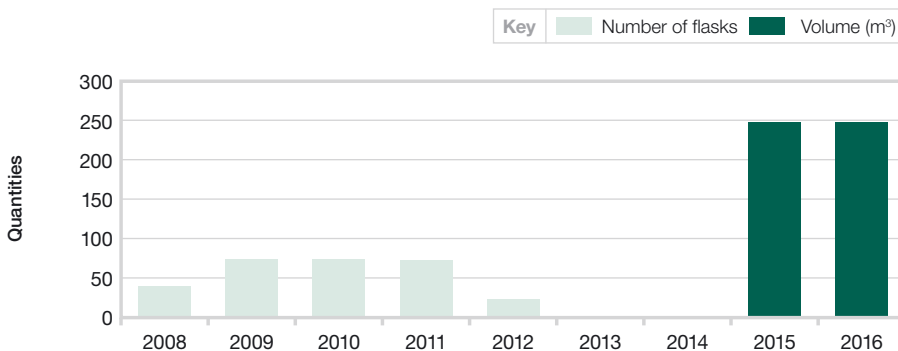
Reactor fuel inventory



Reactor fuel inventory

This metric demonstrates the reduction in site irradiated fuel inventory as the schedule for defuelling progresses. This is the main focus for the site over the next four years with 38,075 fuel elements or 437 tonnes, to be defuelled and transferred to Sellafield Site for reprocessing.

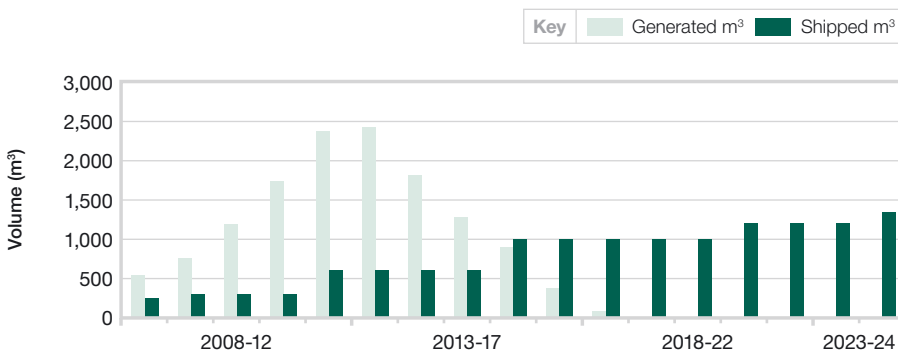
ILW quantities by year to Care & Maintenance



ILW quantities

This metric demonstrates the number of flasks to be shipped off site to Miscellaneous Beta Gamma Waste Store (MBGWS) at Sellafield Site. The waste will be taken from the Chapelcross Processing Plant and the reactors during defuelling. Other Intermediate Level Waste (ILW) on site will be retrieved, processed and packaged on site for temporary storage in the new ILW store, yet to be constructed.

LLW volumes by year to Care & Maintenance



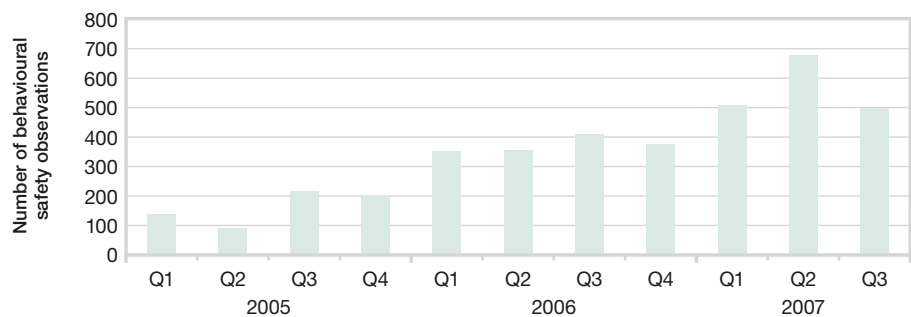
LLW volumes

This metric is indicative of the quantities of Low Level Waste (LLW) that will be generated during the C&M Preps phase. The challenge facing the waste management teams is to maximise the amount of this waste that can be reclassified to free release to minimise the burden on the LLW Repository.

Behavioural safety observations

This metric demonstrates the increasing site focus on safety through the Behavioural Safety Observation scheme. During the last year, the site achieved in excess of two million man hours without a lost time accident. The carrying out of these observations and acting on them is one way of contributing to this achievement.

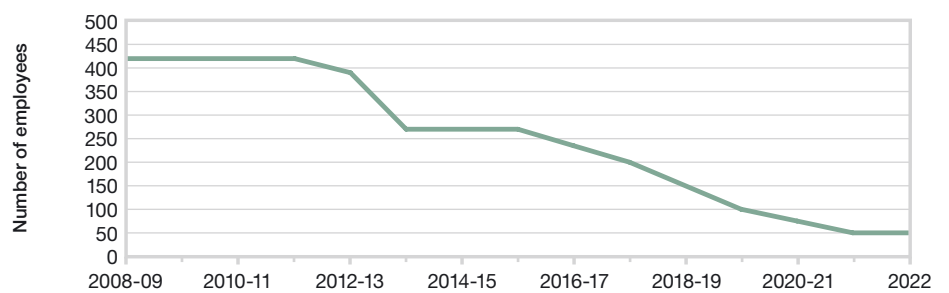
Behavioural safety observations



Number of employees

This metric is intended to be indicative of the number of full time staff employed on the site during C&M Preps phase. Transitioning of the site workforce to benefit from the opportunities that exist in decommissioning projects is one of the key drivers for change in this Lifetime Plan.

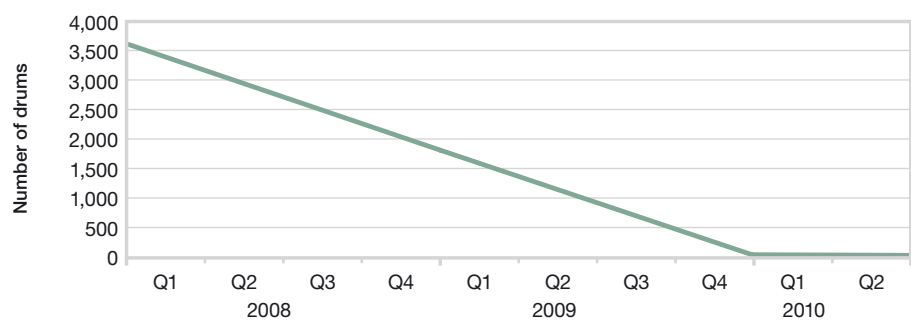
Head count to Care & Maintenance



Remaining Magnox Depleted Uranium (MDU) drums

This metric indicates the remaining site inventory of MDU drums required to be overpacked before transfer to Capenhurst Site for storage. It is anticipated that there will be approximately 3,600 drums remaining in the store at the start of this Lifetime Plan.

Chapelcross Magnox Depleted Uranium (MDU) Inventory



Conclusion

By working in partnership with customers and stakeholders the purpose of this Lifetime Plan is to decommission the Chapelcross Site safely, cost-effectively and with due respect for the workforce, the public and the environment.

Value for money will be achieved by utilising the unrivalled nuclear sector experience of Magnox North.

This Lifetime Plan contains the scope, schedule and costs to fully decommission the Chapelcross nuclear licensed site from its current status, through to Final Site Clearance (FSC).

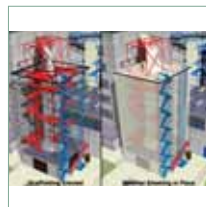
The key theme running through the plan is one of safe, secure and environmentally compliant hazard reduction and risk mitigation, whilst offering value for money solutions to achieve FSC.

The plan fully aligns with current UK policy in terms of deferred FSC and waste disposal concepts.

The Lifetime Plan takes into account the continued need for the significant support received from, and given to the local community and stakeholders.



The major radiological hazard will be removed from the site over the next three years. All 437 tonnes of irradiated fuel currently on site will be despatched for reprocessing. While the site progresses with defuelling and decommissioning safety continues to be of the utmost priority.



Asbestos removal is the major hazard reduction project being undertaken with approximately 4,500 tonnes of asbestos to be removed from the heat exchangers, Turbine Hall and reactor buildings. Work has commenced on the heat exchangers to protect them from the weather and prevent further falls of asbestos, two heat exchangers will be contained by the start of this Lifetime Plan.



Waste management is critical during the Care & Maintenance Preparations (C&M Preps) phase. Significant quantities of Low Level Waste (LLW) will be sent for disposal. Intermediate Level Waste (ILW) will be retrieved, processed and packaged for interim storage on site pending final disposal. Other hazardous wastes will continue to be managed and disposed of at appropriate disposal facilities.



Safety performance is of the highest priority in all that we do at Chapelcross Site. During the last year the site achieved in excess of two million man hours of work without a lost time accident. The site continues to improve its record in the area of behavioural safety. The last year has seen a record number of safety observations being undertaken.



Maintaining the ageing site infrastructure is a major effort during this Lifetime Plan. The Electrical Overlay project includes the installation of a new electrical ring main for the supply of electricity to site buildings. It will mean the site can remove from service the ageing transformers that have been in service for in excess of fifty years.



Over the full lifecycle of the site there are a number of critical transition phases. The site will provide full support to the workforce and the community to ensure transitions are as smooth as possible and do not compromise the safety or welfare of individuals concerned.



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