The Sizewell C Project

6.3 Volume 2 Main Development Site

Chapter 5 Description of Decommissioning

Revision:	1.0
Applicable Regulation:	Regulation 5(2)(a)
PINS Reference Number:	EN010012

May 2020

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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5. Description of Decommissioning

5.1 Introduction

5.1.1 As part of the development of any new build nuclear power plant, it is necessary to develop plans to demonstrate that the facility can be decommissioned in a safe and environmentally acceptable way. It is expected that the Sizewell C power station will have an operational lifetime of 60 years per unit, following which it will be decommissioned. This chapter outlines the overall approach that SZC Co. is adopting to decommission the proposed UK European Pressurised Reactor (EPR™) units, and the associated buildings and infrastructure at Sizewell C. This is based upon experience gained from decommissioning of other nuclear power stations, and taking into account the UK EPR™ design, and the site-specific conditions that apply at Sizewell C. The decommissioning of Sizewell B relocated facilities buildings may be undertaken as part of Sizewell B decommissioning works.

5.1.2 This chapter also provides a summary of the relevant legislation, and describes the required funding arrangements for decommissioning. An outline of the environmental effects that may be associated with the decommissioning process is also presented.

5.1.3 Before decommissioning of a new nuclear power station can take place, there is a requirement for the operator to undertake an Environmental Impact Assessment (EIA) and prepare an Environmental Statement under the relevant EIA Regulations, such as Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (Ref. 5.1) and the Marine Works (Environmental Impact Assessment) Regulations 2007. For the Sizewell C UK EPR™ units the preparation and submission of the EIA will take place in the years leading up to End of Generation[1]. The EIA performed at that time would take full account of the environmental impacts of decommissioning.

5.1.4 At this time, it is difficult to predict the specific characteristics of the environmental baseline conditions that will apply at the end of the operational life of Sizewell C. New infrastructure may be built; local communities may change in size and character; a national Geological Disposal Facility for radioactive waste should exist, but the location is not currently known; new technologies for waste treatment may be developed; appropriate site reuse options would need to be considered. These issues represent substantial uncertainties with respect to the outcome of the assessment of impacts that can be undertaken at present. These uncertainties necessitate that the EIA

[1] End of Generation is the point at which Unit 1 of the Sizewell C power station ceases operation. Unit 2 would cease generation approximately 18 months after Unit 1.

for decommissioning will need to be completed nearer to the time before work will commence.

5.1.5 Initially for the purposes of the EIA, a period of 25 years for decommissioning has been assumed. Once the reactor and other facilities have been decommissioned, the Interim Spent Fuel Store (ISFS) would remain on-site to allow for a suitable length of cooling time for fuel prior to its disposal. An additional 30 years of operation of the ISFS has been assumed prior to its decommissioning. It has been assumed that the decommissioning of the ISFS would take 5 years and would be completed within 60 years from End of Generation.

5.2 Legislation, policy and guidance

5.2.1 This section presents an outline of the regulatory framework specific to the decommissioning of nuclear sites.

5.2.2 In 1995, the Government produced a Review of Radioactive Waste Management Policy (White Paper CM2919) (Ref. 5.2). This set out the policy for decommissioning of nuclear sites and was updated following public consultation (Ref. 5.3). A further update was published in September 2004 "The Decommissioning of the UK Nuclear Industry's Facilities" (Ref. 5.4) and the 2008 White Paper "Meeting the Energy Challenge" (Ref. 5.5). Key aspects of the policy now in place include:

- each operator is expected to produce and maintain a decommissioning strategy and plans for its site(s);
- decommissioning activities should be carried out as soon as reasonably practicable, taking all relevant factors into account as provided for in the relevant operator's strategy and plan;
- sites of decommissioned nuclear facilities may represent a potentially valuable resource. The future use of the site, once decommissioning operations have been safely completed, could therefore be a significant factor in determining decommissioning operations;
- the use of best available techniques (BAT) to minimise the volumes of radioactive wastes which are created, particularly the volume of intermediate level waste (ILW). Wherever possible, wastes should not be created during decommissioning until an appropriate management solution is, or would shortly be, available for use; and
- any new facility covered by this policy should be designed and built so as to minimise decommissioning and associated waste management operations and costs.

5.2.3 Regulation of the decommissioning of a nuclear facility is carried out under essentially the same arrangements as apply to construction and operation. Under the Nuclear Installations Act 1965, the Office for Nuclear Regulation (ONR) grants a licence for the purpose of installing, operating and subsequently decommissioning any commercial nuclear power station.

5.2.4 Attached to the licence are conditions which require the operator to make, and implement, adequate arrangements relevant to safety. Site licence condition 35 specifically applies to decommissioning, and requires that when a nuclear facility reaches the end of its operational life, it is decommissioned in a safe and controlled manner, and not left to pose a hazard for current and future generations. The purpose of the licence condition is, therefore, to require the licensee to have adequate arrangements for the safe decommissioning of its facilities. These arrangements include the preparation of a decommissioning plan and schedule for the site.

5.2.5 The ONR published its Safety Assessment Principles which apply to decommissioning and which the operator's site licence arrangements are required to meet (Ref. 5.6).

5.2.6 The Environment Agency regulate the management of the generation and disposal of radioactive waste on nuclear sites via the Environmental Permitting Regulations. This includes the management of waste during decommissioning. The licensee is required to demonstrate that it has appropriate radioactive waste management arrangements to meet the requirements set out by the Environment Agency and be in line with guidance provided (Ref. 5.7), where the application of BAT is expected to be a key principle.

5.3 Funding of decommissioning

5.3.1 The costs of decommissioning, waste and spent fuel management (post End of Generation) and disposal of all higher activity waste will be funded through a Funded Decommissioning Programme (FDP), approved by the Secretary of State (Department for Business, Energy and Industrial Strategy), which the current guidance requires to have been approved before "*construction work on buildings with nuclear safety significance*" commences (Ref. 5.8). Under these arrangements, SZC Co. will ensure that it sets aside funds over the operating life of the Sizewell C power station to cover these costs in full.

5.3.2 A legal framework that implements this policy has been established through the Energy Act 2008 (Ref. 5.9) and the Nuclear Decommissioning and Waste Handling (Finance and Fees) Regulations 2013 (Ref. 5.10). Government has also published two consultations on draft FDP guidance, one in February 2008 (Ref. 5.8) and a second in December 2011 (Ref. 5.11), providing further detail on what a FDP should contain. In March 2010, Government published

a further consultation on the arrangements for taking title and liability to waste and spent fuel, and the mechanism for setting a fixed price for waste disposal (Ref. 5.12) with an updated consultation document issued in December 2011 (Ref. 5.13).

5.3.3 The FDP is made up of two parts and comprises a Funding Arrangements Plan and a Decommissioning and Waste Management Plan. The Decommissioning and Waste Management Plan is a summary level document setting out the decommissioning strategy for Sizewell C, and what SZC Co. plan to do to decommission the plant and manage the waste arisings and spent fuel. The Decommissioning and Waste Management Plan presents the costs of the designated technical matters, and the schedule of work to decommission the plant, manage the wastes and spent fuel.

5.3.4 A standard approach for decommissioning both Hinkley Point C and Sizewell C is proposed to remove the risk of two sites developing separate decommissioning approaches. The intent is for Sizewell C to replicate the Hinkley Point C design, where possible, noting that there will be slight differences in design that are predominantly driven by geological differences, and other site-specific considerations between the two sites. This will allow for tools, experience and skills developed during the decommissioning of Hinkley Point C to be efficiently redeployed at Sizewell C.

5.4 Design for decommissioning

5.4.1 The UK EPR™ has been designed with maintenance and decommissioning in mind, enabling radiation doses to workers and radioactive waste quantities to be minimised when decommissioning takes place. The design incorporates a number of features to achieve this objective including:

- selection of construction materials – where practicable, materials are selected, to minimise the activation of certain elements which give rise to high levels of radiation, including cobalt, silver, and antimony;
- optimisation of neutron shielding – neutron shielding is utilised between the core and reactor vessel. This will reduce the depth of irradiation of the concrete of the reactor compartment;
- optimisation of access routes to nuclear areas – the layout of the primary circuit plant takes account of the handling and access routes for decommissioning;
- reactor systems design – systems are designed to minimise activation products and circuit contamination;
- removal of major process components – major components can be removed as a single item for size reduction in purpose-built facilities;

- submerged disassembly of reactor pressure vessel – the design of the reactor compartment facilitates the flooding of the compartment for underwater dismantling of the reactor vessel;
- modular thermal insulation – the design facilitates easy removal minimising worker dose;
- fuel cladding integrity – improved fuel cladding reduces contamination of the primary circuit with fission products;
- primary circuit – careful control of primary circuit chemistry will minimise level of activity in the primary circuit;
- plant design – design facilitates decontamination during decommissioning;
- prevention of contamination spread – containment, ventilation and segregation are utilised to prevent contamination spread; and
- minimisation of hazardous materials – the use of materials which would result in the creation of hazardous waste during decommissioning is minimised as far as possible.

5.4.2 In summary, the design of the UK EPR™ includes measures which would:

- minimise the activity level of irradiated components;
- reduce worker dose during decommissioning;
- permit decontamination;
- minimise the spread of contamination;
- facilitate the access of personnel and machines for decommissioning and the removal of waste from the reactor building;
- minimise the volume of radioactive waste;
- reduce the operator intervention time; and
- minimise the chemical toxicity of the waste.

5.5 Decommissioning strategy

5.5.1 The decommissioning strategy to be employed for Sizewell C is early site clearance. This strategy means that decommissioning would commence as soon as practicable after End of Generation and would proceed without significant delay to complete the process of decommissioning of the site. The decommissioning plan for Sizewell C estimates that the decommissioning of

the site, with the exception of the ISFS, could be achieved approximately 25 years after the End of Generation.

5.5.2 The process of decommissioning would be divided into a number of activities leading to the complete decommissioning of the site. For the UK EPR™ these are as follows:

- Activity 0: Pre-Closure Preparatory Work.
- Activity 1: Spent Fuel Management.
- Activity 2: Site Operation and Plant Preparation.
- Activity 3: Management of Operational Wastes.
- Activity 4: Plant Decommissioning.
- Activity 5: Site Clearance and Release for Re-use.

5.5.3 In many cases the activities overlap significantly in time, and are not necessarily sequential. The following sections outline each of the activities.

5.5.4 It is important to note that it is currently assumed that for the two EPR™ reactor unit site at Sizewell C, Unit 2 would cease generation approximately 18 months after Unit 1.

5.6 Decommissioning activities

a) Activity 0: Pre-closure preparatory work

5.6.2 Several years before the planned closure date for a reactor unit, a programme of preparatory work would be initiated to ensure that there is no delay to commencement of decommissioning following End of Generation, and to ensure that the site is decommissioned as efficiently and economically as possible. This phase is anticipated to include the following:

- introduction of a final fuel cycle to maximise the utilisation of the nuclear fuel;
- preparation of a detailed decommissioning plan;
- undertaking an EIA and preparation of an Environmental Statement prior to the commencement of decommissioning;
- preparation of further arrangements for compliance with Nuclear Site Licence Condition 35 to ensure safe and controlled decommissioning of the site;

- preparation of a decommissioning schedule;
- revisions to outage management;
- revisions to the requirements for maintenance, inspection and testing of systems and equipment;
- revisions to radioactive substances regulation environmental permit for waste discharge and disposal; and
- revisions to site safety management arrangements.

5.6.3 Some of the activities listed above will require formal approval by regulatory bodies, therefore the preparation of these submissions will need to be commenced up to five years before the planned End of Generation.

b) Activity 1: Spent fuel management (defuelling)

5.6.4 The first major activity following End of Generation would be the defuelling of the reactors. Defuelling would proceed as soon as practicable following reactor shutdown. The process would be undertaken using the existing fuel handling equipment, safety case and operational procedures.

5.6.5 Fuel would be removed from the reactor core within a few weeks of End of Generation. The fuel would be transferred to the reactor fuel pools and remain in storage in the reactor fuel storage pools for a period of cooling (approximately three years), before the spent fuel is transferred to the ISFS.

5.6.6 It has been determined that the final load of spent fuel would need to remain in storage within the ISFS for a period of approximately 50 years after removal from the reactor, as provided in **Chapter 7** of this volume. As a consequence, there would be a need for periodic refurbishment and replacement of plant and equipment of the facility. In addition, during operation of the site a number of services are provided from the Sizewell C power station itself, (e.g. a secure electrical supply, waste treatment facilities and liquid effluent discharge). Each of these services would need to be secured via an alternative means to support the ISFS after decommissioning of the power station.

c) Activity 2: Site operation and plant preparation

5.6.7 This section describes the “operation” of the site during decommissioning and management of the fuel and wastes. The scope of activities includes:

- safe operation of the plant after End of Generation, including resources for fuel and operational waste management;
- making plant and equipment safe for subsequent dismantling;

- post operational clean out including the removal of hazardous chemicals and clean-up of radioactive materials;
- new liquid effluent discharge arrangements; and
- new alternative services (e.g. electrical supply).

5.6.8 As defuelling, operational waste management and other decommissioning work proceed, various systems are required to remain operational to maintain the safe operation of the plant. These systems would continue to be operated by experienced site staff employing the same or very similar procedures to those utilised during the operational life of the plant.

5.6.9 Following final shutdown of the reactor, plant systems, electrical equipment which are not required for safety reasons would become progressively redundant. Redundant mechanical plant and systems would be taken out of service and isolated, drained, and purged, or flushed, and vented to make them safe, and potentially hazardous materials would be removed from site as soon as is reasonably practicable.

5.6.10 To facilitate decommissioning, and the removal of some of the services, alternative services need to be installed. These include, for example, a new site electrical supply and distribution system and alternative liquid effluent discharge arrangements. These would enable the decommissioning of the existing high voltage electrical systems and of the cooling water system at the appropriate time.

d) Activity 3: Management of operational wastes

5.6.11 How radioactive waste is managed depends to a large extent on how radioactive it is. There are three main categories of radioactive waste defined in UK legislation; these are defined in **Table 5.1**.

5.6.12 Some waste which contains very little radioactivity is exempted from regulatory requirements related to radioactive waste. Exempt waste may not require a specific permit for disposal.

Table 5.1: Radioactive waste categories.

Waste Type.	Description
High Level Waste.	Waste containing high concentrations of alpha/beta/gamma emitting radionuclides. In the UK, High Level Waste is defined as waste in which the temperature may rise significantly as energy is released by radioactive decay, so this factor has to be taken into account in designing storage or disposal facilities. A small proportion of waste from the UK EPR™ will be High Level Waste and will consist of items from within the reactor.

Waste Type.	Description
Intermediate Level Waste (ILW)	Waste containing higher concentrations of beta/gamma contamination and sometimes alpha emitters. There is little heat output from this category of waste. These wastes usually require remote handling. Such waste comes from routine power station maintenance operations, for example used ion exchange resin and filter cartridges. ILW generated during power station operations would be stored in purpose-built facilities which may if necessary incorporate shielding to protect operators from radiation. Some ILW is treated as it arises to put it into a more inert, passively safe, form. This is known as conditioning. In the UK, ILW is defined as waste with a radioactive content exceeding that of low level waste (LLW) but which does not require heat dissipation to be taken into account in the design of storage or disposal facilities.
Low Level Waste (LLW).	This comprises materials from routine operations and decommissioning with primarily low concentrations of beta/gamma contamination, but may include small amounts of alpha contaminated material. In the UK, LLW may be treated and disposed of through a variety of routes including the national LLW Repository, via commercial incinerators, other treatment facilities, or in certain cases to specific approved landfill (see below). Some LLW which is not suitable for disposal within the LLW Repository would be stored until the national Geological Disposal Facility is available. In the UK, Radioactive LLW: waste that has a radioactive content not exceeding 4GBq (giga becquerels) per tonne of alpha activity, or 12GBq per tonne of beta/gamma activity.
Very Low Level Waste.	Under certain conditions disposal of solid radioactive waste may fall under the exemption provision for the disposal of low volumes of solid radioactive waste (Ref. 5.14). Prior to 2011, this included the category of waste termed very LLW. Post 2011, the term very LLW was superseded by this provision. Waste falling under this Exemption Provision will be disposed of at available licensed disposal sites. very LLW from nuclear power stations would be classed as high-volume very LLW and could be disposed of at available licensed disposal sites. The waste would be subject to controls on its disposal which would be specified by the Environment Agency.

5.6.13 Operational wastes held in the operational vessels (e.g. ion exchange beds, and filters utilised in effluent treatment), will need to be retrieved and processed after the End of Generation. Additionally, there would be some operational type wastes that continue to be produced after the End of Generation as some essential systems would remain in service for a short period after End of Generation. These operational wastes would be retrieved and processed at the earliest practicable opportunity after End of Generation. These wastes may either be ILW or LLW and will be disposed of via the appropriate route.

5.6.14 It is assumed that the Geological Disposal Facility will be available to take ILW at End of Generation, so the packaged waste arising from the ILW processing plants would be consigned directly to the Geological Disposal Facility with no requirement to transfer packages to the on-site ILW Interim Storage Facility. Furthermore, it is also assumed that the packaged waste in

storage can be retrieved from the ILW Interim Storage Facility, and despatched to the Geological Disposal Facility for disposal at this time.

5.6.15 The Radioactive Waste Management Ltd, a subsidiary of the Nuclear Decommissioning Authority (NDA), has indicated in its 2010 document "Geological Disposal – Steps towards implementation March 2010" (Ref. 5.15), that a UK Geological Disposal Facility could be available to accept ILW for disposal by 2040.

5.6.16 In early 2019, Radioactive Waste Management Ltd started the process to find a site for a Geological Disposal Facility which will provide safe, and secure long-term solution for the disposal of higher activity waste.

5.6.17 For the purposes of decommissioning planning, it is assumed that the scheduling of transfer waste to the Geological Disposal Facility can be optimised to allow transfer of packaged ILW during the main site decommissioning phase. However, if optimisation requires a further period of interim storage, the life of the on-site ILW Interim Storage Facility may need to be extended until the Geological Disposal Facility is available.

5.6.18 The strategy for the remaining operational LLW is identical to that for waste generated throughout electricity generation operations (i.e. it would be disposed of as soon as reasonably practicable following treatment to minimise volumes in line with the Sizewell C Integrated Waste Strategy, as described in **Chapter 7** of this volume).

5.6.19 As with LLW, SZC Co. expect the ILW remaining in operational vessels at End of Generation would be processed in the same manner as ILW managed during the nuclear power plant operations subject to demonstrating this remains BAT. ILW would be retrieved and processed to ensure the waste is in a passively safe final form to be transferred from the site to the Geological Disposal Facility.

5.6.20 Further detail on the management and disposal of operational radioactive waste is set out in **Chapter 7** of this volume of the **ES**.

e) Activity 4: Plant decommissioning

5.6.21 This activity covers the complete decommissioning of all plant, equipment, buildings and facilities at the Sizewell C power station site, and the management of the wastes arising from decommissioning activities. The activity includes the removal of all permanent buildings and facilities on the site with the exception of the ISFS and its supporting infrastructure.

5.6.22 The scope of this activity includes the decommissioning of the reactor and primary circuit and all other plant and equipment in the nuclear islands, the

processing of the wastes arising, and their packaging for disposal or recycling as appropriate.

5.6.23 The decommissioning of the conventional islands includes all power generation plant, ancillary plant and offices and welfare facilities. It is envisaged that the offshore structures would be demolished and removed to sea bed levels and on shore sections of the cooling water tunnels would be made safe.

5.6.24 All structures including roads, hard standings, cable and pipe trenches would be removed to 1 metre (m) below ground. Basements would be adapted to permit free flow of groundwater, and would be backfilled with suitable infill material originated on-site from the demolition of buildings, supplemented, if necessary, with imported material.

i. Management of decommissioning wastes

5.6.25 The end of the lifecycle for Sizewell C is when the site is released from radioactive substances regulation allowing the site to be released for reuse. The Guidance on Requirements for Release from Radioactive Substances Regulation (Ref. 5.16) provides guidance over what is needed to release a site from Radioactive Substances Regulation. An optimised waste management approach, in conjunction with an environmental safety case, will be required to ensure that all decommissioning waste is managed, and disposed of appropriately whilst minimising the impact on people and the environment.

5.6.26 During decommissioning, waste would be generated as a result of removing plant, equipment and structures, buildings and facilities at the Sizewell C power station site. The largest volume of this waste would be non-radioactive and suitable for reuse, recycling or disposal at suitably authorised sites. LLW generated during the decommissioning process would be disposed of to a suitably authorised site, this may include disposal of very LLW to an available licensed disposal site where this represents BAT.

5.6.27 The full range of waste minimisation methods will be used to reduce the amount of waste produced during decommissioning to as low a level as practicable, including decontamination, volume and size reduction, and appropriate segregation of the waste to enable:

- the maximisation of materials recycling;
- minimal production of waste which is difficult to dispose of, particularly, long-lived, high activity waste and chemically hazardous wastes;
- minimal production of 'secondary' waste (equipment and materials used for the decommissioning); and

- maximum re-use of safe, radiologically exempt and chemically inert crushed and graded demolition material, such as brick and concrete, for backfilling voids, thus minimising the import of clean backfill material onto the site, subject to an appropriate waste disposal license.

5.6.28 Estimates of the volume and characteristics of radioactive waste generated during decommissioning have been developed as a basis for the development of the site decommissioning plan and the costs that will need to be covered by the FDP. The types of wastes expected to be generated during decommissioning are presented in **Table 5.2**, with estimated quantities set out in **Table 5.3**.

ii. Management of Radioactive Wastes during Decommissioning

5.6.29 Waste generated during decommissioning would consist of primary and secondary wastes. Primary waste varies widely in terms of type, activity, size and volume, and consists of both activated and contaminated components. Estimates of the quantities and characteristics of decommissioning high level waste and ILW, have been developed based on modelling of the neutron flux (a measure of the radiation field within the reactor capable of causing activation), the projected power history, and material composition data for the core of a UK EPR™ reactor unit. Activated components would have both short lived and long-lived radionuclides resulting from the activation of the reactor material.

Table 5.2: Types of radiological wastes generated during decommissioning.

Waste Type.	Description
Activated Waste.	Activated products are created when stable chemical elements are bombarded by neutrons and turned into radioactive versions (isotopes) of the element. Typically, these are produced from elements, such as cobalt, which are incorporated in the steel structure of nuclear reactors.
Contaminated waste.	Radioactive contamination is caused by radioactive material being deposited on the surface of, or within, objects. The radioactivity may be deposited from gaseous sources, from liquid sources, or from physical contact. Radioactive contamination is generally located on or near the surface of materials like metal or high-density concrete or painted walls. Radioactive contamination can usually be removed from surfaces by washing, scrubbing, spraying, or by removing the outer surface of the contaminated objects.
Primary waste.	Primary decommissioning waste refers to waste generated during dismantling activities. Primary waste will include plant system components; such as the pressure vessel and associated internal components, primary circuits, steam generators and the concrete shield that surround the vessels. Typically, primary waste consists of construction materials, such as steel and reinforced concrete.
Secondary waste.	Secondary waste refers to waste generated during various decontamination and dismantling activities (e.g. decontamination of metallic components or flushing of systems to reduce the amount of primary waste). Secondary waste consists of liquid waste, spent ion exchange resins, spent filters, and dry active waste.

5.6.30 In addition to the activated waste, some surfaces, including building materials and process equipment, and components would be contaminated by radioactive deposits. These deposits result from the transport of activated corrosion products, which occurs to a small extent in normal operation, and of fission products which may, in exceptional circumstances, be released from the fuel assemblies during reactor operation.

5.6.31 The strategy for the main components of the primary circuit, such as steam generators and pressurisers, is to remove them intact from their operational location, and to cut them up and package the wastes in a dedicated facility. This facility will also process, assay and package the other radioactive decommissioning wastes arising from the decommissioning of both reactor units. This facility is the Decommissioning Waste Management Facility.

5.6.32 Following deplanting and backfilling of Unit 1 turbine hall, it would be converted into the Decommissioning Waste Management Facility for:

- processing of primary circuit and other large components requiring radiological precautions;
- receipt and buffer storage of raw LLW and ILW;
- further processing of LLW and ILW as necessary; and
- assay, packaging and buffer storage of packaged waste for disposal.

5.6.33 Other wastes would be generated during various decontamination and dismantling activities (e.g. decontamination of metallic components or flushing of systems to reduce the amount of primary waste). This waste would consist of liquid waste, spent ion exchange resins, spent filters, and dry active waste such as personal protective equipment, paper, and plastic. This waste will be managed and processed through the existing Sizewell C waste management facilities, or through the Decommissioning Waste Management Facility.

5.6.34 **Table 5.3** presents an estimate of the amount of waste produced by the two UK EPR™s proposed at Sizewell C during decommissioning, based on an operational life of 60 years, and a decommissioning strategy of early site clearance (note these figures do not include waste arising from the decommissioning of the ISFS).

Table 5.3: Estimated Sizewell C decommissioning radiological waste quantities (based on two UK EPR™ units).

	High Level Waste (t).	ILW (t).	LLW (t).	Very LLW (t).
Heavy reflector and in-core instrumentation.	87	-	-	-
Primary Nuclear Island decommissioning waste.	-	1,559	8,885	14,438
Clean-up waste (secondary waste from the decontamination, decommissioning and clean-up of the plant).	-	129	320	1,966
Process waste (filters and ion exchange resins arising from decommissioning activities).	-	-	642	-
Induced waste (waste produced by equipment and material used in decommissioning).	-	-	-	1,642
Technological waste (waste plant and equipment used in decommissioning).	-	-	532	4,790
Total (t)	87	1,688	10,379	22,836

5.6.35 Surface treatment of contaminated materials can substantially reduce the amount of waste which has to be sentenced for final disposal as radioactive waste. In particular, the use of chemical cleaning or blasting of the surface, and melting of metallic material can increase the amount of material suitable for unrestricted or restricted release. The use of these methods will be balanced against possible liquid and gaseous discharges arising from their use.

5.6.36 Appropriate segregation and decontamination procedures would be implemented to reduce, as far as is reasonably practicable, the volume of radioactive materials requiring treatment, or disposal.

iii. Disposal of high level waste generated during decommissioning

5.6.37 In accordance with Government policy (Ref. 17), SZC Co. plans to store high activity radioactive waste on-site at Sizewell C, using safe and secure interim storage until a Geological Disposal Facility is developed, and available for long-term disposal. Interim storage of radioactive waste is an established way of managing radioactive waste. These stores are subject to stringent regulatory approval and control, which address safety, environmental protection and security.

5.6.38 A small proportion of high level waste will be generated from the UK EPR™ which will arise from components held within the Reactor Pressure Vessel, and will be subjected to the Letter of Compliance process ensuring compliance with Radioactive Waste Management Ltd's disposal criteria. These components include the Heavy Reflector or Neutron Shield which

protects the rest of the reactor from becoming activated, and a small number of the non-fuel core components (in-core instrumentation). Further information on the latter can be found in **Chapter 7** of this volume. Should the Geological Disposal Facility not be available at the time of decommissioning, there is an opportunity to decay high level waste to ILW. Selecting direct disposal at this stage does not foreclose the decay option and offers flexibility for a more informed and optimal decision to be made closer to decommissioning.

iv. Disposal of intermediate level waste generated during decommissioning

5.6.39 The views of Radioactive Waste Management Ltd were sought on the likely acceptability for disposal in a Geological Disposal Facility of packaged primary ILW generated during decommissioning of the EPR™s. Radioactive Waste Management Ltd indicated that, in principle, any of the proposed waste packages would be acceptable for disposal. SZC Co. would continue to work with Radioactive Waste Management Ltd to ensure that packaged ILW from Sizewell C would be acceptable for disposal in a Geological Disposal Facility (Ref. 5.18).

5.6.40 ILW arising during decommissioning from decontamination and dismantling activities (i.e. secondary waste), would have similar characteristics to those wastes generated during the operation of Sizewell C, therefore SZC Co. is confident that all wastes would be acceptable for disposal. SZC Co. is developing its decommissioning plans with due consideration of the potential disposability of any waste produced.

v. Management of non-radioactive waste during decommissioning

5.6.41 Decommissioning activities will create large quantities of non-radioactive wastes during the de-planting and demolition of the non-radioactive and ancillary buildings and during final site clearance. It is anticipated that clean concrete and brick rubble from demolition of building structures would be crushed and retained on-site. It is planned to re-use as much of this material as possible on-site as infill for basement voids. This would minimise the environmental impact by reducing the amount of waste that has to be transported off-site for reuse, recycling or disposal to a landfill site.

5.6.42 Other non-radioactive wastes would be segregated and sent off-site for reuse or recycling (e.g. steelwork from building structures and redundant plant would be segregated, and may be sold for recycling if a route is available). Materials unable to be reused or recycled would be disposed of to landfill.

5.6.43 Hazardous wastes would similarly be identified, segregated and securely stored on-site before transfer to permitted treatment or disposal facilities.

5.6.44 During the preparatory work stage, hydrocarbon fuels, refrigerants, oil and other chemical systems would be drained down and tanks emptied. Where possible, these materials would be reused on-site, or sent off-site for re-use or recycling.

vi. Final decommissioning of Interim Spent Fuel Store

5.6.45 The ISFS would be utilised on the site to store the full operational lifetime arisings of spent fuel from the reactors. The current assumptions regarding availability of a Geological Disposal Facility for spent fuel, and the length of cooling time before the fuel is suitable for disposal mean that a period of storage on the site would be required after the decommissioning of the reactors and other facilities.

5.6.46 The process of transfer from the site could be completed in about 8.5 years. Further detail on the management and disposal of spent fuel is set out in **Chapter 7** of this volume: Radioactive Waste and Spent Fuel Management. On completion of transfer of the spent fuel from site for disposal, the ISFS would be decommissioned.

5.6.47 The decommissioning of the ISFS would be a relatively simple project. The techniques for decommissioning of dry spent fuel storage facilities, are well developed internationally. The decommissioning process is anticipated to include:

- dismantling of the auxiliary systems;
- decontamination and radiological clearance monitoring of the storage facility; and
- demolition of the storage facility and remediation of the site.

5.6.48 Appropriate radiological precautions would be employed throughout the process to prevent the spread of contamination, and minimise the quantities of radioactive waste, so as to ensure the safety of the public and workforce. All radiological and hazardous wastes would be packaged and disposed of appropriately, with clean non-radioactive waste reused or recycled wherever possible.

f) Activity 5: Site clearance and release for re-use

5.6.49 The current assumption for completion of the decommissioning process is the complete radiological clearance and de-licensing of the site.

5.6.50 Site clearance monitoring, remediation, landscaping and de-licensing would be undertaken in two phases. The first and largest phase would be undertaken following completion of the decommissioning of the Sizewell C

power station plant and ILW Interim Storage Facility. At this stage the ISFS would still be operational. The second phase would be undertaken on completion of emptying and decommissioning of the ISFS.

5.6.51 It is assumed that the original site licence and licensed area would be reduced to that required for the ISFS during the first phase of decommissioning. For the area to be cleared and de-licensed in the first phase a radiological and chemical survey would be undertaken and any necessary remediation carried out. On completion of this, the site would be clearance monitored to check that all radioactive materials of regulatory concern have been removed from the site. Subject to the ONR being satisfied that there is no danger from any radioactivity on-site, and the Environment Agency being content that requirements within The Guidance on Requirements for Release from Radioactive Substances Regulation (Ref. 5.16) have been met, it would then be de-licensed and released from radioactive substances regulation. Upon completion of spent fuel transfer and decommissioning of the ISFS, a further radiological and chemical survey would be undertaken and any necessary remediation carried out followed by de-licensing of the ISFS land.

5.6.52 The final stage of decommissioning would be the removal of the nuclear licensing requirements and radioactive substances regulation from the site. The ONR has published a policy statement setting out its criteria for de-licensing (Ref. 5.19) and the Environment Agency has similarly issued guidance on the requirements for a site to be released from Radioactive Substances Regulation permit (Ref. 5.16).

5.6.53 A licensee's period of responsibility does not end until there is no longer any danger from radioactivity on the site. Therefore, in seeking to end the licensee's period of responsibility, a safety submission would need to be made for the ONR's agreement. To de-license the site, the ONR would establish that the site represents no danger to future site users from:

- licensee's evidence;
- ONR's own independent assessment; and
- evidence provided by the Environment Agency.

5.6.54 Once the criteria for "no danger" set by the ONR is met, the ONR would be able to de-license all or part of the site, thus ending the licensee's period of responsibility. The Environment Agency's The Guidance on Requirements for Release from Radioactive Substances Regulation (Ref. 5.16) stipulate that to release a site from Radioactive Substances Regulation, the operator must demonstrate that either:

- no radiological hazard remains on a site; or

- that all the requirements set out in The Guidance on Requirements for Release from Radioactive Substances Regulation (Ref. 5.16) are met.

5.6.55 An important factor in site clearance would be the demonstration that the site has been cleared of all man-made sources of radioactivity originating from the operation of the reactors on the site to below an appropriate risk level.

5.6.56 The decommissioning EIA process would require significant consultation with statutory and non-statutory bodies, and their views would need to be considered before reinstatement proposals can be finalised.

5.6.57 For planning purposes, it is assumed that the site is reused for industrial purposes but it is also assumed that landscaping of the site and return to grassland will be an interim measure.

5.7 Environmental assessment of decommissioning

5.7.1 As stated previously, in order to decommission a nuclear reactor, it is necessary to obtain consent from the ONR and undertake an EIA under the Nuclear Reactors Environmental Impact Assessment for Decommissioning) Regulations 1999 and Marine Works (Environmental Impact Assessment) Regulations 2007 or equivalent EIA Regulations at the time of submission (Ref. 5.1). This would require the submission of an ES, and a period of public consultation prior to gaining approval for the commencement of decommissioning.

5.7.2 The EIA would determine and describe the baseline conditions for the decommissioning works as they exist at the relevant time. This would be informed by any specialist surveys that may be necessary. The EIA would identify changes to the baseline conditions that would occur as a result of the decommissioning works and determine the scope, duration, magnitude and significance of the resultant effects. The EIA would consider the relevant legislation in place at that time.

5.7.3 There are substantial uncertainties with respect to the characteristics of the future baseline conditions. In addition, the technology which may be available to assist with the decommissioning works may change relative to current knowledge and capability. The location of the Geological Disposal Facility is also not known at present, and thus off-site impacts relating to the transportation of waste materials that may be disposed at the Geological Disposal Facility cannot be fully assessed. Despite these uncertainties, the types of environmental impacts that may occur during decommissioning and their broad scope have been identified and summarised below. The summary is based on the assumption that the decommissioning activities would largely be confined within the boundaries of the Sizewell C permanent development site.

5.7.4 At the end of the decommissioning phase, there would be a significant reduction in the amount of land occupied by buildings and other structures. The end state of the land following decommissioning is not certain at present, but is currently assumed to be re-used for industrial purposes with return to grassland as an interim measure.

a) Socio-economics

5.7.5 Towards the end of the operational phase in the lead-in to decommissioning, the operational workforce will decrease after End of Generation. The phasing and duration of the run down in operational workforce numbers is not fully known at present.

5.7.6 There will, however, be an increase in employment for contractors completing decommissioning activities across a range of contract packages, skill levels and types of roles including specialist technology services. The procurement of this range of contracts will support jobs in the local area through direct recruitment, supply chain and indirect activities, and knowledge transfer.

5.7.7 Some more specialist employment during decommissioning may generate demand for local accommodation where workers are non-home-based. A proportion of employment will be home-based, and where practicable the recruitment of local workers and use of local supply chain will be encouraged. Supply chain demand during the decommissioning activities will include materials, plant and equipment supplies, and services by the decommissioning workforce personnel.

5.7.8 Further to this, induced employment will be generated through the spending of the workforce themselves, supporting sectors that already exist in the area outside of the decommissioning sector.

5.7.9 The assessment would determine the social and economic impacts related to the works and the deployment of the workforce. Potential effects on accommodation sectors and any potential requirements for worker accommodation, and effects on community facilities, public services (such as health, education and emergency services) and community cohesion would be evaluated relative to the socio-economic environment in the local area at the time.

b) Transport

5.7.10 With the change in the workforce profile, there will be a change in the pattern of worker trips to and from the site. It is likely that the decommissioning workforce numbers will be substantially less than the construction workforce. There will also be a change in the pattern of worker journeys to and from the site relative to the operational phase.

5.7.11 There will be an increase in traffic movements relative to the operational phase associated with the delivery of materials, plant and equipment required to facilitate the decommissioning works and the export of certain waste arisings. Vehicle trip generation is likely be substantially less than for the construction phase and will take place over a prolonged period of time.

g) Noise and vibration

5.7.12 Noise levels may be temporarily increased at the nearest sensitive receptors during the decommissioning phase relative to the operational phase. Noise levels will vary according to the particular activities being undertaken at any given time. There may be short-term peaks in noise levels associated with certain activities such as demolition of above ground structures.

5.7.13 It is considered that the noise impacts to local residents from decommissioning are likely to be of lower magnitude than during construction, due to the substantial separation distance between the activities and residential dwellings.

5.7.14 The assessment would predict noise levels at sensitive receptors (principally residential dwellings) resulting from the decommissioning works on-site using appropriate predictive techniques. It is likely that noise modelling would be undertaken. In addition, an assessment would be undertaken of noise related to traffic associated with the works.

h) Air quality

5.7.15 Air emissions during decommissioning will primarily comprise emissions from vehicles on the highway network and dust from demolition, and site clearance activities.

5.7.16 Dust emissions will be controlled through the implementation of best practice construction/ demolition practices similar to those set out in the **outline Dust Management Plan** in **Appendix 12A** of this volume and the **Code of Construction Practice** (**CoCP**) (Doc Ref. 8.11) that have been developed to manage the construction effects of the proposed development. Since decommissioning activities will be focussed on the Sizewell C power station buildings and infrastructure, it is not anticipated that dust generation will be a significant issue to off-site receptors, e.g. residential dwellings, or ecological habitats, and they will be comparable or lower than dust impacts associated with the construction of the proposed development.

5.7.17 The assessment will provide predictions of air pollutant concentrations at sensitive receptor locations and will determine the scope, magnitude and significance of effects on this basis. It is likely that air quality modelling would be undertaken.

c) Landscape and visual

5.7.18 During the decommissioning phase, there would be some adverse landscape and visual effects, due to the presence of construction plant, equipment and activity within the site. Effects, whilst extending over a duration extending to approximately 25 years for the decommissioning of the main site and a further 30 years for the decommissioning of the ISFS, would be temporary. The nature and significance of effects would vary over this time, dependent on the nature of decommissioning activity being undertaken, and it is anticipated that the greatest effects would occur when tall cranes, and plant are in operation or activities are in close proximity to receptors, such as users of the coastal path and Sizewell beach.

5.7.19 The landscape setting would differ from both the present baseline and the baseline at the End of Generation when both Sizewell A and Sizewell B are likely to have completed decommissioning. The decommissioning and removal of structures at Sizewell A and Sizewell B may increase the visibility of decommissioning activity at Sizewell C. It is expected that there would be an interim period while the ISFS is still present before the site is fully cleared. The removal of Sizewell C is likely to increase the visibility of decommissioning and removal of the ISFS in views from the east, including along Sizewell beach.

5.7.20 After the decommissioning is complete all above ground structures would be removed, providing the opportunity for the restoration of the area to reflect prevailing conditions and other considerations at the time of restoration, including the provision of public access and opportunities for habitat creation. This has the potential to deliver positive landscape and visual effects. Consideration would be given to the contemporary built environment baseline when preparing landscape proposals for the restoration of the site.

i) Terrestrial ecology and ornithology

5.7.21 The design and execution of the works will avoid adverse effects on protected species and habitats, such as the Sizewell Marshes Site of Special Scientific Interest, Minsmere to Walberswick Special Protection Area and Ramsar site, Minsmere to Walberswick Heaths and Marshes Special Areas of Conservation, and other nearby sites of nature conservation importance. Species and nearby habitats which are currently afforded protection are described in detail in **Chapter 14** of this volume. Furthermore, consideration would be given to the contemporary ecological baseline when preparing landscape proposals for the restoration of the site.

5.7.22 At this time, it is not proposed to remove the Sizewell C coastal defence and thus, there should be no requirement for substantial decommissioning works in the intertidal area and hence **no significant** adverse effects on ecological

receptors in this area would be anticipated. However, this would be confirmed within the EIA submitted in accordance with the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations (Ref. 5.1) prior to the End of Generation.

j) Amenity and recreation

5.7.23 During the decommissioning phase, there would be some adverse impacts on amenity and recreation receptors due to views of decommissioning activities and traffic, and changes to the noise environment. There is also potential for effects due to an increase in the number of people at recreational resources caused by displacement of people who wish to avoid the area around the decommissioning site, and by decommissioning contractors who are additional to the area and who may use recreational resources in their free time. Effects due to changes in air quality caused by decommissioning works are unlikely to affect amenity and recreation assuming that suitable control measures are put in place. It is not known whether there would be any physical changes to recreational resources, such as temporary or permanent stopping up or diversions of Public Rights of Way (PRoW), but any adverse changes would be minimised and opportunities to provide improvements would be considered. Permanent new resources such as the new off-road bridleway from Sizewell Gap to Eastbridge Road created during the construction and operational phases would be retained during the decommissioning phase.

5.7.24 Impacts, whilst extending over a duration up to approximately 25 years for the decommissioning of the main site and a further 30 years for the decommissioning of the ISFS would be temporary. The nature and significance of effects would vary over this time dependent on the nature of decommissioning activity being undertaken and it is anticipated that the greatest effects would occur when plant are in operation or activities are in close proximity to receptors, such as users of the coast path (the England Coast Path, Suffolk Coast Path, Sandlings Walk and PRoW E-363/021/0) and the coastal margin at Sizewell beach.

5.7.25 After the decommissioning is complete all above ground structures would be removed, providing the opportunity for the restoration of the area to reflect prevailing conditions and other considerations at the time of restoration, including the provision of public access and opportunities for habitat creation. This has the potential to deliver positive amenity and recreation effects.

k) Terrestrial historic environment

5.7.26 Any disturbance, and or removal of archaeological heritage assets within the site, would have occurred during the construction of the proposed

development. No further direct effects are anticipated during the decommissioning phase.

5.7.27 Other British nuclear and conventional power stations have become considered as heritage assets during their operational lives, although this usually requires the site to hold a specific historic association or embody a particular architectural approach. It is possible that, by the end of its operational life, Sizewell C may be considered as holding limited historic interest as representative of a particular epoch of power generation. Consequently, it is possible that its decommissioning may be construed as an adverse effect.

5.7.28 Construction plant and equipment may be visible or audible at times during the decommissioning phase. However, the impacts will be temporary and after the decommissioning is complete all above ground structures will be removed. The restoration process would likely reverse or enhance any perceptual change to the setting of heritage assets and no effect would arise.

l) Soils and agriculture

5.7.29 Impacts on soils and agriculture will be limited to any areas of the Sizewell C development site that may be temporarily required for decommissioning activities. The spatial extent of potential impacts would be much reduced compared to that related to the construction phase of Sizewell C. Areas which are subject to impact during the works would be subject to appropriate restoration to enable use after completion of decommissioning. **No significant** adverse effects on soils and agriculture are therefore anticipated.

m) Geology, land quality and groundwater

5.7.30 Decommissioning works may require the excavation of below ground services and structures. These works are **not** considered to result in **significant** physical effects to soils and geological receptors. The works will be undertaken to manage, and minimise physical impacts to soils and geological receptors arising from changes in soil erosion, soil compaction and ground instability issues.

5.7.31 Decommissioning works are also **not** considered to result in **significant** loss, damage or sterilisation of mineral resources, given that there are limited valuable mineral resources located within the study area, and the works will be reinstating access to the land.

5.7.32 It is not anticipated that extensive contaminated soils would be present on-site, or that extensive contaminated groundwater would be encountered during decommissioning works. A ground investigation would be undertaken as part of the decommissioning phase to provide further information on the ground conditions at the site following operation. In the unlikely event that

soil or groundwater contamination is identified, it will be subject to appropriate management and remediation prior to commencement or during the execution of the decommissioning works.

5.7.33 Waste soils may be generated during decommissioning works through the removal of services and infrastructure and the re-profiling of the site. Materials would be managed to allow the re-use of suitable soils/materials as part of the decommissioning phase. Soil/material required for the backfilling of voids would be generated on-site as far as is practical.

5.7.34 It is unlikely that groundwater dewatering would be required during decommissioning, therefore **no significant** effect on groundwater level and flow is anticipated.

n) Surface water and flood risk

5.7.35 When the operational site's cooling water outfall and associated infrastructure are no longer available during decommissioning, the surface water run-off that flows into the outfall would need to be managed as necessary in the interim period during the works by diverting flows to suitable discharge locations which may include surface watercourses and/or the intertidal zone.

5.7.36 Best practices will be implemented during the works to avoid the discharge of sediment laden water off-site and to control the flow rate of discharges into surface watercourses.

5.7.37 **No significant** effects on surface water receptors are anticipated as a result of the decommissioning works. Furthermore, no change to flood risk as a result of the decommissioning activities is likely to occur.

o) Marine environment

5.7.38 During decommissioning, the need for cooling water discharge from the reactors to the marine environment will cease and hence no impacts related to thermal discharges will occur. The generation of operational effluents will come to an end, thus the discharge of chemical and radiological substances will reduce over time. The cessation of cooling water intake will result in beneficial effects with respect to a reduction of the entrainment of fish and other marine organisms.

5.7.39 It is proposed to remove the intake and outfall structures but these works would be very limited in spatial scale and of limited duration. The effects associated with the removal of the intake and outfall structures would be no worse than those identified for the construction of these effects in the coastal geomorphology and hydrodynamics, marine water quality and sediments, marine ecology, and navigation assessments. This is provided in **Chapters**

20, 21, 22 and **24** of this volume respectively. Therefore, **no significant** effects upon marine environment receptors are anticipated as a result of these works. Further information on the future shoreline development and mitigation proposals throughout the lifetime of the Sizewell C power station are presented in **Chapter 20** of this volume.

5.7.40 No effects on marine historic environment receptors are considered to occur as a result of the decommissioning activities.

p) Radiological effects

5.7.41 During decommissioning radiological discharges are expected to be within the limits proposed for the operation of Sizewell C and as such are bounded by the operational radiological impact assessment presented in **Chapter 25** of this volume. Adverse effects have therefore been identified as **not significant**.

q) Climate change

5.7.42 The climate assessment of the decommissioning phase of the proposed development would be undertaken within the EIA submitted in accordance with the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations (Ref. 5.1) prior to the End of Generation of Sizewell C. This would consider both the impact of:

- Greenhouse gases from decommissioning on the climate.
- Climate change on the decommissioned site and other receptors in the surrounding environment.

5.7.43 Decommissioning may result in greenhouse gas emissions during the initial decommissioning process and after the site has been decommissioned. Greenhouse gas emissions will likely be calculated and reported over this duration to understand the impact of the proposed development on the climate. Possible emission sources would include, but not be limited to:

- Fuel use by vehicles and plant used for demolition activities.
- Grid electricity use during the decommissioning process.
- Treatment and transportation of demolition and other waste.
- Transportation of demolition workers to/from the site.
- Provision of potable water and treatment of wastewater.

5.7.44 It should be noted, however, that if the UK remains on course to achieve net zero carbon emissions by 2050, some of these activities may have low or

zero emissions depending on the available technology. Grid electricity for example may be completely decarbonised by 2050.

5.7.45 Effects associated with future climate change impacts would be assessed, based on available climate change projections at the time. Any future assessment would consider the impacts of climate change during both the decommissioning process and on the site and surrounding environment for approximately 100 years following decommissioning.

r) Major accidents and disasters

5.7.46 Risks during the decommissioning phase of the proposed development are likely to be similar to those identified for the construction and removal and reinstatement (where necessary) phases, as activities are expected to be largely similar. Over a period of time the site will be de-fuelled, hazardous substances removed from site and the operational emissions and discharges would be stopped, contributing to reduced risks. However, the site would still be susceptible to natural disaster hazards and major accident hazards from off-site sources. The assessment would take into consideration any hazards or threats identified in the National Risk Register or Suffolk Community Risk Register (or other local risk register) available at the time, to reflect any changes to what is consider as a relevant natural disaster or major accident.

5.7.47 The activities undertaken during the decommissioning phase would be governed by legislation, policies, procedures and processes which would mitigate major accident and disaster risks. It is expected that all major accident and disaster risks can be mitigated to be tolerable, or tolerable if as low as reasonably practicable, and therefore, **no significant** residual risks would likely remain during the decommissioning phase of the proposed development.

s) Health and wellbeing

5.7.48 The decommissioning phase will be comparable to the construction phase, with similar environmental effects with the potential to influence local community health. Any decommissioning activities would comply with strict environmental objective thresholds set to be protective of health, and include engagement with statutory consultees, key health stakeholders and local communities to tailor activities, policy, mitigation, and community support initiatives to minimise disruption.

t) Transboundary effects

5.7.49 During the decommissioning phase of the proposed development, potential transboundary effects may arise where the Zone of Influence for a particular decommissioning activity extends beyond UK borders. As identified in **Volume 10, Chapter 5** of the **ES**, the closest territorial waters include

Belgium, France and Germany. Upon decommissioning, the cooling water system would ultimately cease resulting in the termination of any operational impacts to fisheries and marine ecology arising from the cooling water system. Effects associated with decommissioning activities are therefore not considered likely to extend out of the Greater Sizewell Bay and out of UK territorial water. As a result, **no significant** transboundary effects within the marine environment are likely to occur.

5.7.50 It is considered that terrestrial effects associated with the decommissioning activities would be localised and limited to the Zones of Influence within UK borders identified within the relevant assessments of this **ES**. Therefore, **no significant** transboundary effects would likely arise during the decommissioning phase of the Sizewell C Project.

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