The Sizewell C Project

6.14 Environmental Statement Addendum
Volume 3: Environmental Statement Addendum Appendices
Chapter 2 Main Development Site
Appendices 2.2.A-D Update to the Description of Development

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APPENDIX 2.2.A UPDATED DESCRIPTION OF PERMANENT DEVELOPMENT

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2 DESCRIPTION OF PERMANENT DEVELOPMENT

2.1 Introduction

2.1.1 This chapter ~~of the **Environmental Statement (ES)** (Doc Ref. Book 6)~~ sets out the permanent proposals for the main development site, which comprises the total area needed for constructing and operating the Sizewell C nuclear power station (Sizewell C). The site boundary of the main development site is shown on **Figure 1.1** of **Chapter 1** of ~~this volume~~**Volume 2** of the **ES**.

2.1.2 Details on the construction of Sizewell C are provided in **Chapter 3** of this volume, including a summary of the temporary development required within the main development site to facilitate construction. Details of the commissioning and operation of Sizewell C are found in **Chapter 4** of this volume. Details of decommissioning of Sizewell C are found in **Chapter 5** of ~~this volume~~**Volume 2** of the **ES**.

2.1.3 Further details of the design of permanent buildings and landscape are set out in the **Sizewell C Main Development Site Design and Access Statement** (Doc Ref. 8.1). Further details on the management of ecology and the landscape are set out in the **Outline Landscape and Ecological Management Plan** (Doc Ref. 8.2).

2.1.4 The main development site comprises five components, which are illustrated in **Figure 1.2** of **Chapter 1** of ~~this volume~~**Volume 2** of the **ES**:

- Main platform: the area that would become the power station itself.
- Sizewell B relocated facilities and National Grid land: the area that certain Sizewell B facilities would be moved to in order to release other land for the proposed development, and land required for the National Grid infrastructure.
- Offshore works area: the area where offshore cooling water infrastructure and other marine works would be located.
- Temporary construction area: the area located primarily to the north and west of the proposed site of special scientific interest (SSSI) crossing, which would be used to support construction activity on the main platform.
- Land to the East of Eastlands Industrial Estate (LEEIE): the area to the north of Sizewell Halt and King George's Avenue, which would be

used to support construction on the main platform and temporary construction area.

2.1.5 LEEIE comprises temporary development only and therefore details are set out in **Chapter 3** of ~~this volume~~**Volume 2** of the **ES**.

2.1.6 The following additional permanent developments are described in this chapter:

- Off-site sports facilities at Leiston, which would be used during the construction stage as a shared outdoor sports facility for Alde Valley School, the local community and construction workers, as shown on **Figure 1.3** of **Chapter 1** of this volume.
- Fen meadow compensation sites to the south of Benhall~~-~~, to the north of Pakenham and to the east of Halesworth, as shown on **Figure 1.4** and **Figure 1.5** of **Chapter 1** of ~~this volume.~~**Volume 2** of the **ES** (Doc Ref. 6.3) and **Figure 2.2.26** of **Volume 2** of this **ES Addendum**.

2.1.7 The marsh harrier habitat improvement area (Westleton), if required, would be temporary development and is therefore described in **Volume 2 Chapter 3** of ~~this ES~~the **ES** (Doc Ref. 6.3).

2.1.8 Other forms of associated development are described and assessed in **Volumes 3 to 9** of ~~this ES~~the **ES** (Doc Ref. 6.4 to 6.9).

2.2 Overview of the permanent development

2.2.1 Sizewell C would be located immediately to the north of the existing Sizewell B power station and would comprise two United Kingdom European Pressurised Reactor (UK EPR™) units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The new nuclear power station would represent the nationally significant infrastructure project component of the proposed development.

2.2.2 In summary, permanent development at the main development site would comprise the following building, engineering or other operations as shown in **Figure** ~~2.1~~ **2.2** of **Volume 2** of the **ES** (Doc Ref. 6.3) and **Figure 2.2**~~:~~**.41** of **Volume 2** of this **ES Addendum.**

a) Nuclear islands

- Two nuclear islands, including two UK EPR™ reactor buildings and associated annexed buildings and structures containing the safety systems, fuel handing systems and access facilities, together with the adjacent emergency diesel generator buildings.

b) Conventional islands

- Two conventional islands, each including a turbine hall and associated electrical buildings for the export and distribution of electrical power.

c) Operational building

- An operational service centre (a multi-purpose building), which allows for access into the nuclear islands, including storage areas, workshops, store rooms, laboratories, data centre, offices and associated support and welfare facilities, including the staff restaurant.

d) Cooling water pumphouses and associated buildings

- Two cooling water pumphouses with related infrastructure (one for each UK EPR™ reactor).

e) Ancillary buildings

- Plant, office/access, storage and fuel and waste management.
- National Grid 400 kilovolt (kV) substation, alterations to the existing National Grid substation and associated diversion of overhead lines.
- Relocation of several Sizewell B ancillary buildings including the outage store, training centre; administrative buildings; visitor centre; and, office, canteen and welfare facilities.
- Associated buildings, structures and plant outside of the power station perimeter.

f) Marine works and associated infrastructure

- The cooling water system and combined drainage outfall in the North Sea.

g) Other site structures, infrastructure and works, including highway works and earthworks.

- Overhead power lines and pylons connecting the conventional islands to the National Grid substation.
- Replacement of an existing National Grid pylon and power line south of Sizewell C.

- Installation of a cut-off wall and cut-off wall platform and associated deep excavations within the main platform.
- Vehicular and pedestrian crossing over the Sizewell Marshes SSSI south of Goose Hill in the form of a ~~culverted embankment~~bridge and embankments.
- A beach landing facility (BLF) proposed for freight and abnormal indivisible loads (AILs) arriving by sea.
- Relocation of certain Sizewell B infrastructure, including: outage laydown area; access roads; up to 579 operational car parking spaces (Option 1).
- Relocation of certain Sizewell B infrastructure, including: outage laydown area; up to 112 replacement car parking spaces; access roads; up to 576 outage car parking ~~space~~spaces; and, outage car park access roads (Option 2).
- Diversion and creation of rights of way including Bridleway 19.
- Power station access road, linking the SSSI crossing with a new roundabout onto Abbey Road (B1122).
- Up to 770 operational car parking spaces and up to 600 outage car parking spaces.
- Realignment of Lover's Lane, Eastbridge Road (part) and other highway works.
- Replacement vehicular access from Valley Road to adjoining farmland to the north.
- Mammal culvert under Lover's Lane between Sizewell Marshes SSSI and Aldhurst Farm.
- Realignment of the junction of the B1122 Abbey Road and Lover's Lane.
- Flood defences and coastal protection measures.
- Onshore components of the marine infrastructure.
- Water supply and drainage measures, including realignment of Sizewell Drain.

- Landscape restoration works and planting, including flood mitigation and associated wetland habitat.
- Additional parking spaces at Kenton Hills car park.
- Fencing, lighting and other security provisions.

2.2.3 In addition to the above permanent development at the main development site, the following permanent off-site developments would take place:

- New sports facilities located on existing playing fields at Alde Valley school in Leiston.
- Fen meadow compensation areas located at Halesworth, Pakenham and Benhall.

2.2.4 Details of a temporary marsh harrier habitat improvement area (Westleton), if required, are set out in **Chapter 3**, **Volume 2** of ~~this~~ the **ES**.

2.2.5 Sizewell C would result in the permanent loss of approximately ~~7.03ha~~ 6.52ha of land within the Sizewell Marshes SSSI. Further details on individual habitat losses within the SSSI, alongside proposed mitigation and compensation, are set out in **Volume 2, Chapter 14** of ~~this~~ the **ES**.

2.3 Controlled flexibility

2.3.1 SZC Co. has adopted a parameters approach which identifies defined envelopes for the permanent development within which future development would be located.

2.3.2 The reason for adopting this approach is to ensure that SZC Co. has enough flexibility to allow detailed designs to evolve and be submitted following grant of development consent.

2.3.3 The parameters are defined on ~~**Figure 2.3** to **Figure 2.6**~~ :

- **Figure 2.3** and **Figure 2.5** of the **Volume 2** of the **ES**; and
- **Figures 2.2.1, 2.2.8 and 2.2.12** of **Volume 2** of this **ES Addendum**.

2.3.4 The parameters define zones within which each of the buildings listed in **Tables 2.1, 2.2, 2.3, 2.5** and **2.7** in **Volume 2** of the **ES** would be located.

2.3.5 Parameters for marine elements described in **Table 2.6** are shown on the **Work Plans** (Doc Ref. 2.3) on **Figure 2.7** in **Volume 2** of the **ES**.

2.4 Main platform

2.4.1 The main platform is where Sizewell C would be permanently located. **Figure 2.2** indicatively shows how the main platform could be designed.

2.4.2 **Tables 2.1** – **2.3** set out the parameters for development on the main platform, which are also secured as a Requirement in Schedule 2 of the **Draft Development Consent Order** (Doc Ref. 3.1(B)).

2.4.3 The tables should be read in conjunction with the parameter plans shown on **Volume 2, Figure ~~2.4~~ 2.2.8** of this **ES Addendum** and **Figure 2.5** of ~~this volume~~ **Volume 2** of the **ES** and the text below.

2.4.4 The finished ground level of the main platform would be 7.3m Above Ordnance Datum (AOD), with minor variations as necessary to provide for adequate drainage.

Table 2.1: Parameters for buildings, plant and structures on the main platform.

Building/structure details	Maximum height (mAOD)
Parameter Zone 1A-1 (nuclear islands)	
Fuel building x 2	47
Fuel building hall x2	27
Boron storage building x 2	27
Safeguard building x 8	50
Nuclear auxiliary building x 2	47
Access tower x 2	37
Radioactive waste storage building x ~~2~~1	27
Radioactive waste process building x 1	27
Radioactive waste treatment building x 1	27
Hot laundry building x 1	27
Hot workshop, hot warehouse, facilities for decontamination x 1	27
Effluent tanks and refuelling water tanks x 1	27
Emergency diesel generator building x 4	39
Cooling water discharge weir building (type 1) x 2	27
Cooling water discharge weir building (type 2) x 2	27
Parameter Zone 1A-2 (reactor buildings)	
Reactor building x 2	72

Building/structure details	Maximum height (mAOD)
Parameter Zone 1A-3 (conventional islands)	
Turbine hall x 2	57
Sky bridges x 2	32
Conventional Island electrical building x 2	35
Power transmission platform: gas insulated switchgear building x 2	35
Power transmission platform: main transformer x 2	35
Power transmission platform: unit transformer x 4	35
Power transmission platform: auxiliary transformer x 2	35
Operational service centre x 1	47
Parameter Zone 1A-4 (cooling water pump house and associated buildings and plant)	
Cooling water pump house x 1	29
Forebay x 1	22
Outfall pond building x 1	22
Filtering debris recovery pit x 1	22
Fire-fighting water distribution building x 1	22
Parameter Zone 1A-5 (cooling water pump house and associated buildings and plant)	
Cooling water pump house x 1	29
Forebay x 1	22
Outfall pond building x 1	22
Filtering debris recovery pit x 1	22
Fire-fighting water distribution building x 1	22
Parameter Zone 1A-6 – (waste storage)	
Intermediate level waste store x 1	27
Parameter Zone 1A-7 (spent fuel storage)	
Interim spent fuel store x 1	38
Parameter Zone 1A (ancillary buildings)	

Building/structure details	Maximum height (mAOD)
Buildings, including (but not limited to): emergency equipment store; main access control building; auxiliary administration building; emergency response centre, emergency response energy centre, secondary access control building; meteorological station; demineralisation station; valve room for the demineralisation station; auxiliary boilers; hydrogen storage; oxygen storage; hydrazine storage; chlorination plant; service ventilation building; raw water & potable water storage/supply; degassed water storage tanks; cooling water discharge shaft; chemical products storage; garage for handling materials; oil & grease storage; contaminated tools store; sewage treatment plant; conventional island water tanks; nuclear island water tank; conventional waste storage; transit area for very low and low level waste; service access buildings; underground tunnel highpoints; battery load banks; warehouse; interim spent fuel store equipment storage building; other ancillary buildings.	27
Parameter Zone 1B (BLF)	
BLF x 1	6
Parameter Zones P1 – P6 (power station pylons)	
Three monopoles x 2 (Zones P1 and P6)	55
Pylon x ~~2~~ 1 (~~Zones P2 and P5~~Zone P2)	75
Pylon x 2 (Zones P3~~-~~, P4 and ~~P4~~P5)	59

~~2.1.1 Parameter Zone P5 includes provision for a 75mAOD pylon, however it is likely that a 59mAOD pylon will be constructed, subject to the outcome of further technical studies.~~

Table 2.2: Parameters for stacks on the main platform.

	Coordinates	Centre maximum radius (m)	Minimum height (mAOD)	Maximum height (mAOD)
Parameter zone S1 – nuclear auxiliary building stack x 1	X = 647201 Y = 264182	5	77	79
Parameter zone S2 – nuclear auxiliary building stack x 1	X = 647201 Y = 263952	5	77	79
Parameter zone S3 – Emergency diesel generator building stack x 3*	X = 647224 Y = 264307 / X = 647243 Y = 264307 / X = 647259 Y = 264307	5	34	39

	Coordinates	Centre maximum radius (m)	Minimum height (mAOD)	Maximum height (mAOD)
Parameter zone S4 – Emergency diesel generator building stack x 3*	X = 647224 Y = 264133 / X = 647243 Y = 264132 / X = 647259 Y = 264132	5	34	39
Parameter zone S5 – Emergency diesel generator building stack x 3*	X = 647224 Y = 264075 / X = 647243 Y = 264074 / X = 647259 Y = 264074	5	34	39
Parameter zone S6 – Emergency diesel generator building stack x 3*	X = 647224 Y = 263901 / X = 647243 Y = 263900 / X = 647259 Y = 263900	5	34	39

** Emergency diesel generator building exhaust stacks (S3 – S6) will be above the roof height of the building they are attached to.*

Table 2.3: Parameters for other development on the main platform

Details	Minimum crest height (mAOD)	Maximum crest height (mAOD)
Parameter Zone 1C (sea defence)		
~~Sea defence x 1~~Permanent HCDF x 1	~~10.2~~12.6	~~14.2~~14.6
Permanent HCDF, adapted	16.4	18.0
Parameter Zone 1D (Northern mound)		
Northern Mound x 1	~~10.2~~12.6	~~14.2~~14.6
Parameter Zone 1E (SSSI crossing)		
SSSI crossing x 1	7.3	10.5

~~2.1.2 The maximum crest heights for the sea defence and SSSI crossing shown in Table 2.3 will be constructed to 12.2mAOD and 7.3mAOD respectively at the outset of the operational phase. This is based on the planning requirement to test against a 1 in 1,000 year flood risk event.~~

2.4.5 ~~However, the~~ The Nuclear Site Licence, which is governed by the Office for Nuclear Regulation (ONR), requires flood risk to also be assessed against 1 in 10,000 and 1 in 100,000 year events for its own purposes. The **Main Development Site Flood Risk Assessment** ~~(Doc Ref. 5.2)~~ **Addendum** states that ~~by 2046~~ after 2140 the ~~maximum~~ crest height of the sea defence is likely to need to be increased to ~~14.2mAOD~~ 16.4mAOD and by 2090 the ~~maximum~~ crest height of the SSSI Crossing is likely to need to be increased to 10.5mAOD. The parameters set out in Parameter Zones 1C and 1E therefore allow for these maximum heights. The adapted permanent HCDF also includes an allowance for landscaping up to a maximum crest height of +18m AOD.

a) Nuclear islands (Zone 1A-1)

2.4.6 Each of the two nuclear islands would comprise a reactor building surrounded by its associated access, safeguard~~, waste storage, waste processing~~, diesel and fuel buildings together with auxiliary facilities including effluent tanks and discharge weirs. The following sub-sections describe the structures in more detail. The nuclear islands would share a radioactive waste storage building, a radioactive waste process building and a radioactive waste treatment building.

2.4.7 The design approach to the predominantly industrial principal buildings within the nuclear island is to express the large bold forms based on the functional and engineering requirements and materiality as pre-defined by the UK EPR™ model. This results in a neutral grey colour for the reactor buildings and other industrial buildings where the structural finish is concrete.

i. Fuel buildings and fuel building halls

2.4.8 Each UK EPR™ reactor unit would have its own fuel building. The fuel buildings each house a fuel storage pool for new and spent fuel and associated fuel handling equipment. Near to the fuel buildings are the fuel building halls which would be used for the reception of new fuel and dispatch of casks containing spent fuel.

ii. Boron storage buildings

2.4.9 Each UK EPR™ reactor unit would have its own boron preparation and storage area. Boric acid would be stored and prepared to help control the reactivity of the core.

iii. Safeguard buildings

2.4.10 There would be four safeguard buildings per UK EPR™ reactor unit, each containing safeguard systems to control and remove residual heat from the reactor in the event of abnormal operation. The four safeguard

buildings would be physically separated to prevent simultaneous common-mode failure of the safeguard systems and therefore, to provide redundancy. Each safeguard building can perform all the necessary safety functions independently.

iv. Nuclear auxiliary buildings

2.4.11 Each UK EPR™ reactor unit would have its own nuclear auxiliary building, which would house the nuclear operation support systems and the maintenance areas. The main systems installed in the nuclear auxiliary building would comprise:

- the treatment system for primary effluents;
- the spent fuel pool-water treatment system;
- the gaseous effluent treatment system;
- part of the steam generator blow-down treatment and cooling system; and,
- the operational ventilation and chilled water systems of the nuclear auxiliary building.

2.4.12 All air exhausts from the radiological controlled areas are routed, collected, controlled and monitored within the nuclear auxiliary building prior to release through the stacks on the nuclear auxiliary buildings.

v. Access towers

2.4.13 The main function of the access tower on each reactor unit is to enable controlled access to the nuclear islands. Access to the nuclear islands is strictly limited to authorised technical personnel.

vi. Radioactive waste storage, process and treatment buildings

2.4.14 The radioactive waste storage, process and treatment buildings would serve both UK EPR™ reactor unit. They would be used for the collection, storage, treatment and disposal of liquid and solid radioactive waste.

2.4.15 The waste buildings, which are made of reinforced concrete, would be divided into two sections: one for the storage of solid waste; and the other for liquid effluent and solid waste treatment.

~~i.~~vii. Hot laundry building

~~2.1.3~~2.4.16 The hot laundry building is used to launder radiologically contaminated garments or potentially contaminated garments (i.e. the protective clothing worn by employees when working in contamination-controlled areas). It would be a shared facility for both UK EPR™ reactor units.

~~ii.~~viii. Hot workshop, hot warehouse and facilities for decontamination

~~2.1.4~~2.4.17 The hot workshop, hot warehouse and facilities for decontamination are encompassed in a single structure that would be shared between both UK EPR™ reactor units. The hot workshop is the facility for engineering work on radiologically activated or contaminated plant components, such as valves, pipes and pumps.

~~2.1.5~~2.4.18 The hot warehouse is designed to store activated or contaminated tools and components such as the multi-stud tensioner or spare reactor coolant pump motors.

~~2.1.6~~2.4.19 The facilities for decontamination are designed to reduce or remove radioactive contamination of tools, components or wastes. Decontamination of equipment enables reuse of tools and minimises the volume of radioactive materials requiring disposal.

~~iii.~~ix. Effluent tanks

~~2.1.7~~2.4.20 The effluent tanks, including the refuelling water storage tank, for the various liquid effluent systems would be located near to the hot laundry building and decontamination facilities and would be a shared facility for both UK EPR™ reactor units. Liquid effluent undergoes different treatment depending on its source: primary effluent treatment, spent effluent treatment or turbine hall drainage water treatment. The different types of effluent are sent to three specific types of tank for temporary storage and checking before discharge.

~~iv.~~x. Emergency diesel generator buildings

~~2.1.8~~2.4.21 In order to ensure power is always available to the safety critical infrastructure, even in the event of loss of connection or supply from the National Grid, back-up diesel generators are located on the nuclear island.

~~2.1.9~~2.4.22 Two emergency diesel generator buildings would be provided for each UK EPR™ reactor unit. Each of these buildings would house two emergency diesel generators and an ultimate diesel generator. In total, there would be twelve back-up diesel generators, comprising eight

emergency diesel generators and four ultimate diesel generators. Each building would have three vent stacks.

v.xi. Cooling water discharge weir buildings

2.1.102.4.23 The cooling water discharge weirs consist of two buildings per UK EPR™ reactor unit (type 1 and type 2). These buildings perform multiple functions in order to ensure compliance with the UK safety and fire regulations. Their primary function is to permit the discharge of essential service water.

a)b) Nuclear islands – reactor buildings (Zone 1A-2)

2.1.112.4.24 There would be a reactor building housing a reactor unit in each of the two nuclear islands. The reactor buildings would be cylindrical with a dome. The reactor building contains the UK EPR™ reactor and the main components of the nuclear steam supply system. This system produces heat to boil water in a separate secondary circuit, which drives the turbine in the adjacent turbine hall.

2.1.122.4.25 The reactor produces heat in a controlled fission reaction contained within a thick-walled steel pressure vessel, containing the nuclear fuel (reactor core) and four cooling loops, each consisting of a reactor coolant pump and a steam generator.

b)c) Conventional islands (Zone 1A-3)

2.1.132.4.26 The conventional island for each UK EPR™ reactor unit would comprise the following: turbine halls; sky bridges; conventional island electrical building and the power transmission platform.

i. Turbine halls

2.1.142.4.27 Each turbine hall is located adjacent to the reactor building for each UK EPR™ reactor unit and contains a turbine and generator set (turbo-generator) and the main condensers, together with other components.

2.1.152.4.28 The turbine halls would comprise a lightweight superstructure and metallic clad enclosure where the applied colour would be chosen to suit its context within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB).

ii. Sky bridges

2.1.162.4.29 Sky bridges are required to permit direct access between the turbine halls and the nuclear islands. They would be designed to complement the turbine halls and operational service centre.

iii. Conventional island electrical buildings

2.1.172.4.30 The electrical building (one per UK EPR™ reactor unit) houses electrical distribution panels, which provide the permanent power supplies to the nuclear island and the conventional island systems, together with the instrumentation and control system which monitors and manages these systems.

iv. Power transmission platform

2.1.182.4.31 The function of the power transmission platform (one per UK EPR™ reactor unit) is to transmit the electrical power generated to the National Grid substation. The power transmission platform houses the following key plant items: gas insulated switchgear building; a main transformer platform; two-unit transformer platforms; and an auxiliary transformer platform.

2.1.192.4.32 Electricity generated is stepped up to 400kV via the main transformer and this power is then transferred to the National Grid 400kV substation via overhead power cables.

v. Operational service centre

2.1.202.4.33 The operational service centre is a multi-purpose building for Sizewell C and a shared facility for both UK EPR™ reactor units. It accommodates access to the nuclear islands, storage areas, workshops and storerooms, laboratories, offices, a data centre, a medical centre and associated support and welfare facilities, including the staff restaurant. It also accommodates training facilities.

2.1.212.4.34 The Sizewell C training centre would be located within the operational service centre and would accommodate a full scope simulation of the reactors. It would be the primary tool for training operators and would also contain a range of classrooms.

2.1.222.4.35 The operational service centre would be designed with a courtyard arrangement, with offices arranged around an internal atrium which maximises daylight from the interior of the floorplate and reduces the extent of windows to the external façade. The centre would be in operation 24 hours a day, seven days a week.

~~c)~~d) Cooling water pump houses and associated buildings and plant (Zones 1A-4 and 1A-5)

i. Cooling water pump houses

~~2.1.23~~2.4.36 There would be one cooling water pump house for each UK EPR™ reactor unit, which would draw water from the forebays. The cooling water pump houses would contain equipment supplying seawater as coolant for:

- the nuclear and conventional islands' auxiliary and essential cooling water systems; and
- the condenser cooling system that cools the turbine exhaust steam and condenses it to liquid water for reuse as feed water within the secondary circuit.

~~2.1.24~~2.4.37 Each cooling water pump house would contain four distinct supply channels (separated into 10 'trains') fed with water from the forebay.

~~2.1.25~~2.4.38 Furthermore, each cooling water pump house would incorporate screening systems including drum and band screens specifically designed to prevent the blockage of key elements of plant further downstream within Sizewell C. The majority (approximately 91%) of the flow for condenser cooling associated with electricity generation and the band screens filter the remaining flow (approximately 9%) for the auxiliary and essential cooling water systems.

~~2.1.26~~2.4.39 Each drum screen would be made up of a horizontal axis drum whose outer circumference would be made up of panels of a smooth ('fish friendly') fine mesh. A 10mm mesh size is proposed at Sizewell C due to the high risk of clogging from jellyfish swarms. The inner circumference of each drum screen would have 'fish-friendly' elevator ledges or 'buckets', which would lift debris and marine organisms including fish. Continuous wash-water sprays would then flush the collected material into collection troughs which in turn flush into a gutter for onward flow to the filtering debris recovery pit. In normal operation, the drum screens would rotate at a low speed but if there is any indication of blockage both the rate of rotation and the flow rate of wash-water would be increased.

~~2.1.27~~2.4.40 Each of the cooling water pump houses would also have two rotating band screens to remove debris from the lateral train, prior to passage through the fine bore heat exchanger systems that follow. The band screens would be made up of a continuous belt of linked mesh plates which are rotated around two horizontal rollers, one positioned at the foot of the waterway and one above, and similarly aligned with a catch bucket

and gully for fish return that discharges into the filtering debris recovery pit.

ii. Forebays

2.1.282.4.41 There would be one forebay for each UK EPR™ reactor unit, each served by its own dedicated intake tunnel. The forebays serve to smooth the water flow into the cooling water system accounting for the tidal range of the North Sea. The forebays are also interlinked for safety reasons.

iii. Outfall pond building

2.1.292.4.42 All abstracted sea water, which has served its cooling function and would thus have been warmed, would be conveyed back to the marine environment via an outfall pond building, open to atmosphere that discharges into an outfall gallery. The outfall galleries leading from each of the outfall pond buildings (one per UK EPR™ reactor unit) would then join to form a single outfall tunnel, discharging to sea.

iv. Filtering debris recovery pits

2.1.302.4.43 Plant for managing screen debris is positioned near to each cooling water pumphouse. It would consist of a pre-discharge section and a pre-discharge basin. The pre-discharge section would involve the continuation of the washwater gulley that would run from the drum and band screens to collect fish and other marine organisms directed from the screens, together with the gutter from the forebay raking screens.

2.1.312.4.44 Recovered fish and debris would be returned to the sea under gravity via a dedicated fish recovery and return (FRR) tunnel per UK EPR™ reactor unit.

v. Fish recovery and return system

2.1.322.4.45 The FRR system would be fully integrated within the cooling water infrastructure. Its purpose would be to recover fish and other marine organisms that are entrapped in the cooling water system and caught on both the drum and band screens. The system would return them to sea.

2.1.332.4.46 Elements of the FRR system are found in the forebay (i.e. the trash racks and racking system), the pumping station (i.e. the fish 'buckets' fitted to the drum and band screens that recover fish from the pumphouse wells and filtration screens; the very low pressure wash sprays which gently wash fish and biota off the screens into the fish 'buckets'; the collection 'hopper' which receives fish and biota washed off the screens; and the collection of gutters that transfer the fish and biota to the filtering debris recovery building), the filtering debris recovery building (i.e. the fish

sampling basin) and the FRR tunnels that return the recovered fish and biota to sea.

2.1.342.4.47 The FRR system would be of very similar design as approved by the Marine Management Organisation, Environmental Agency, Natural England and Natural Resources Wales for Hinkley Point C (Ref. 2.1) with two key differences[1]:

- the fish would be discharged back to sea directly from the base of the filtering debris recovery building; and,
- each FRR system would have its own, separate return tunnel.

2.1.352.4.48 The FRR system would be in general accordance with Environment Agency science and evidence publications on fish protection at power stations (Ref. 2.2 and 2.3)

vi. Fire-fighting water distribution buildings

2.1.362.4.49 The fire-fighting water distribution buildings, one for each UK EPR™ reactor unit, would provide the fire-fighting water supply and house an emergency water provision for nuclear island facilities' cooling.

d)e) Waste storage (Zone 1A-6)

2.1.372.4.50 This section should be read in conjunction with **Volume 2 Chapter 7** of the **ES**.

i. Intermediate level waste store

2.1.382.4.51 Intermediate level waste generated during operation of Sizewell C would be placed in the intermediate level waste storage facility which would be designed for a life of about 100 years. No gaseous discharge stack is necessary. This store is a shared facility for both UK EPR™ reactor units.

e)f) Spent fuel storage (Zone 1A-7)

2.1.392.4.52 This section should be read in conjunction with **Volume 2 Chapter 7** of the **ES**.

[1] Due to the very large tidal range at Hinkley Point C the fish need to be raised to platform level using an Archimedes screw to allow discharge to sea under gravity. At platform level the flow from the two filtering debris recovery buildings combine to join one shared tunnel that returns fish and biota to sea. This is not required at Sizewell

i.ii. Interim spent fuel store

2.1.402.4.53 The interim spent fuel store is a shared facility that would provide long term safe and secure storage for spent fuel until it is removed from Sizewell C. The fuel store would be designed for a life of at least 100 years. The fuel store would be near to the intermediate level waste storage facility to facilitate security zoning during operation of Sizewell C and after decommissioning of all other buildings associated with Sizewell C.

2.1.412.4.54 The interim spent fuel store would comprise a 'dry' fuel store with spent fuel loaded into a metal canister and then welded shut, before being placed and stored in a large, leak-tight steel and concrete cask. No gaseous discharge stack or external heat sink equipment are necessary.

f)g) Sea defences (Zone 1C)

2.1.422.4.55 The permanent sea defence, known as the hard coastal defence feature (HCDF) would be in the form of a landscaped embankment built seaward of the outer security fence for Sizewell C. The baseline crest height of the embankment to protect against wave overtopping would be 10.2m 12.6m AOD. (excluding landscaping).

2.4.56 The HCDF would be comprised of rock armour placed on the seaward size of the sea defence.

2.4.57 Fill material is assumed to be placed on the landward side and the core of the sea defence, with reinforcements, as necessary. Ground improvement works are assumed to be necessary using Controlled Modulus Column (CMC) piling or similar where underlying peat is present.

2.1.432.4.58 As with Sizewell B, an artificial linear dune / sacrificial berm comprising largely of shingle would extend along the frontage of the sea defences at a level on the shore above extreme high water-level spring tides and rising to a height of approximately 5m 6.4m AOD, known as the soft coastal defence feature. The function of this feature would be to erode and release sediment to the beach face during severe storms and high water levels, thereby slowing overall erosion rates locally and maintaining the protective shingle beach in front of the HCDF.

2.1.442.4.59 The HCDF landscaping scheme would take into account landscape, biodiversity and recreational considerations. In order to create a semi-natural and less engineered appearance, and to provide additional screening of Sizewell C from certain public viewpoints along Sizewell beach, the height of the HCDF would vary along its length between 10.2m AOD and 12.2m AOD13.2m AOD and 14.6m AOD, with a typical gradient of approximately 1 in 3 on the seaward embankment. Landscaping is assumed to comprise filling the interstices of the rock armour with shingle

and sand followed by topsoil and planting as appropriate. The coast path would form part of the seaward landscaping and would typically be placed at approximately +5mOD. The feature would be similar in outward appearance to the Sizewell B sea defence, although its alignment would be further to the east. As with the frontage of Sizewell B, the artificial linear dune fronting the sea defence would be integrated into the landscaping scheme through the creation of semi-natural dune habitats.

2.4.60 The seaward toe of the HCDF would be buried to a depth of approximately +0mOD.

~~2.1.45~~2.4.61 Illustrative details of the sea defences can be found at ~~**Figure 2.8**~~ **Figures 2.2.22** and **2.2.24** of **Volume 2** of this **ES Addendum**..

Permanent HCDF, adapted

2.4.62 The Nuclear Site Licence, which is governed by the Office for Nuclear Regulation (ONR), requires flood risk to also be assessed against 1 in 10,000 and 1 in 100,000 year events at 2140 for its own purposes. After 2140 the project is assumed to enter the decommissioning phase. The permanent HCDF design retains the ability to raise the sea defence further to mitigate this risk.

2.4.63 The maximum crest height of the adaptive sea defence would be +16.4m AOD and landscaping would increase this to up to +18m AOD. The seaward toe of the sea defence would be buried to a depth of approximately -1.5mOD, south of the permanent BLF. The toe of the Northern Mound and at the permanent BLF does not need to increase in depth in the adaptive scenario.

2.4.64 As with the permanent HCDF, the subaerial beach and SCDF fronting the adapted HCDF would be maintained

2.4.65 The adaptive design would be constructed of further rock armour or similar placed on top of the seaward side of the sea defence. Additional fill material would be placed on the landward side and landscaped to create naturalistic undulations following the same approach as the permanent HCDF.

2.4.66 Indicative details of the adapted HCDF are shown on **Figure 2.2.25** of **Volume 2** of this **ES Addendum**. The parameter location of the adapted HCDF is shown at **Figure 2.2.8** of **Volume 2** of this **ES Addendum**.

~~a)~~h) Northern Mound (Zone 1D)

2.1.462.4.67 The Northern mound is an existing substantial landscape feature to the north of Sizewell beach. It is made up of spoil that was extracted during the construction of Sizewell B.

2.1.472.4.68 Due to the proximity of this area to the main platform, the Northern mound's function would be expanded from a landscape feature to a sea defence. Therefore, the Northern mound would be rebuilt to be able to withstand the unlikely event of a significant earthquake in the local area.

2.1.482.4.69 The rebuilt Northern mound would tie into the Sizewell C sea defences, which in turn would tie into the Sizewell B sea defences to provide a continuous defence structure. The toe of the Northern mound would remain at approximately +0mOD when the permanent HCDF is adapted.

2.1.492.4.70 The access road to the BLF would be incorporated into the Northern Mound.

2.1.502.4.71 A typical section of the Northern mound is shown on **Figure ~~2.9~~2.2.23** of **Volume 2** of this **ES Addendum**.

~~b)~~i) Beach landing facility (Zone 1B)

2.1.512.4.72 A permanent BLF is required for the operational phase for delivery of AILs during maintenance, such as the reactor pressure vessel. The landward termination of the BLF would be at up to 6m AOD to provide the necessary depth to accommodate the required barges. The permanent BLF would be approximately 100m in length.

2.1.522.4.73 The BLF would include a temporary deck structure that can be removed when not in use, leaving minimum visible elements.

2.1.532.4.74 Fender piles with cross beams and piled mooring dolphins would be located immediately adjacent to the BLF to aid safe berthing. A linkspan ramp, which would comprise a short steel constructed bridge would provide a connection to the cross beams. A taper section would then provide a ramp onto the barge. If required, fixed structures in the water (i.e. dolphins or lateral pillars) would be lit.

2.1.542.4.75 When not in use for extended periods of time, the modular sections of the BLF including the linkspan ramp and the taper would be removed.

2.1.552.4.76 When the BLF deck is removed for storage, several elements would remain in situ and be maintained for the operational life of Sizewell C. These would consist of 28 piling structures (spaced a minimum of 9m apart, excluding fender piles and mooring dolphins), cross beams and a ground beam connection from the BLF to the access road. The height of

pile projections, including fender piles, cross beams and mooring dolphins would be up to approximately 1m above the mean high-water water.

2.1.562.4.77 The pile and ground beam furthest into the beach would be located within the existing dunes and so would typically not be visible.

2.1.572.4.78 An associated roadway would connect the BLF to the main platform.

2.1.582.4.79 To accommodate the safe passage of barges and accompanying tugs to the BLF a navigational channel and grounding area would be required in the nearshore zone occupied by two longshore bars. Plough dredging ~~is the preferred option to~~ would create a planar surface for the barges, as the use of a plough dredge minimises sediment extraction from the area. A dredging volume of approximately 9,250m^3 is assumed to facilitate access and barge grounding. Further details on dredging are set out in **Chapter 3**.

2.1.592.4.80 Illustrative details showing how the BLF could look for the majority of the time during operation, when it is dismantled, are shown on **Figure ~~2.10~~2.2.5 of Volume 2 of this ES Addendum**.

2.1.602.4.81 The BLF is also required for the construction phase and further details are set out in **Chapter 3**.

~~c)~~j) Sizewell C pylons

2.1.612.4.82 Electrical connections from the main platform would be made via overhead lines to the National Grid 400kV substation, which in turn would connect into the National Grid high voltage transmission system. Six monopoles and four pylons would be required to make the connections between the power transmission platforms and the substation. Details of the proposed National Grid pylons are set out later in ~~this~~ the chapter.

~~d)~~i. Ancillary buildings and infrastructure (Zone 1A)

2.1.622.4.83 Several ancillary buildings would be required to facilitate the operation of Sizewell C. These would include buildings for office, access, plant, storage and other purposes and may include (but not limited to) those set out in **Table 2.4**.

Table 2.4: Description of ancillary buildings

Building details	Description
Main access control building	Primary access and control of daily entrance and exit of personnel and visitors, and vehicles on-site.

Building details	Description
Auxiliary administration building	Multifunctional building that includes ancillary facilities for operational staff and administration.
Secondary access control building	A secondary access point to and from Sizewell C.
Emergency response centre	Primary function is to house the site's emergency response centre.
Emergency response energy centre	Primary function is to host power distribution plant and fuel to run the back-up diesel generators and the on-site emergency response facilities and equipment.
Off-site delivery check point	Facility to allow vehicle searching.
Meteorological station	Facility for housing environmental monitoring and recording equipment.
Demineralisation station	Demineralised water storage building.
Valve room for the demineralisation station	Facility to house the valves necessary for the operation of the demineralisation station.
Auxiliary boilers	Provide steam for heating the deaerator and turbine gland sealing for start-up for both reactor units.
Hydrogen storage	Store hydrogen and nitrogen for the turbine generator and the nuclear island.
Oxygen storage	Store oxygen and argon for the nuclear island.
Hydrazine storage	Provided for adding to the secondary circuit water to achieve the correct potential hydrogen (pH) to minimise corrosion.
Chlorination plant	Plant for chlorinating the cooling water system.
Degassed water storage tanks.	Tanks will store degassed water from the Demineralisation Station and provide water supply for the effluent treatment which takes place in the radioactive waste storage building.
Cooling water discharge shaft	Provides an access point for a remotely operated vehicle to be sent to the outfall tunnels, to safely inspect and maintain the tunnels over the life of the power plant.
Sewage treatment plant	Provides dedicated treatment of sewage generated on-site prior to discharge.
Conventional island water tanks	Storage of water for use in the conventional island.
Nuclear island water tank	Storage of water for use in the nuclear island.
Service access buildings	Provides access to the underground network of service tunnels.
Service ventilation buildings	Provides ventilation to the underground network of service tunnels.
Battery load banks	Equipment used for testing of electrical systems.

Building details	Description
Warehouse	To support the operational logistics of the site and would be used as a workshop and warehouse throughout the life of the power station.
Garage for handling facilities	Fenced compound used for the garaging of special handling equipment and vehicles.
Chemical products store	Store for process of chemicals for use in the plant.
Oil and grease storage	Building for the storage of oil and grease during operation. The building would also accommodate the vehicles for the transfer of the oil to the required locations.
Raw water and potable water storage/supply building	Facility which provides a balancing (buffer tank) for the raw water supply from the local water company and would also supply raw water to downstream users.
Contaminated tools storage	Fenced compound for contaminated tools.
Conventional waste storage	Store for conventional waste.
Transit area for very low-level waste and low-level waste	Fenced compound for sorting and interim storage before collection and removal off-site.
Interim spent fuel store equipment storage building	Storage for transportation and handling equipment used to transfer the spent fuel to the interim spent fuel store.

~~2.1.63~~2.4.84 In addition to the buildings set out above, there is a network of underground service tunnels within the main platform, which enable cabling, pipework and other services between buildings and plant.

~~2.1.64~~2.4.85 A perimeter fence would enclose most of the main platform. Additional high security area fencing would be provided around the nuclear island.

~~2.1.65~~2.4.86 The main road access within the main platform would be provided by a ring road around most buildings (the main circulatory road). This would be supplemented by additional roads to service ancillary buildings and secondary roads for vehicle access to buildings. All pedestrian routes would be segregated from vehicular access.

~~2.1.66~~2.4.87 The cut off wall installed during the construction period would be retained for the permanent development as seen in **Chapter 3** of this volume which provides construction details. The realignment of Sizewell drain would be retained, as illustrated in the typical section shown on **Figure 2.13**.

~~2.2~~2.5 Sizewell B relocated facilities and National Grid land

~~2.2.1~~2.5.1 A number of existing Sizewell B facilities would need to either be relocated from the main platform or relocated within Sizewell B because of relocation from the main platform. These facilities have a broad range of functions including industrial, workplace, education, cultural and infrastructure; some of which would need to be upgraded to comply with current standards and regulations.

~~2.2.2~~2.1.1 Planning permission under Town and Country Planning Act 1990 (application ref. DC/19/1637/FUL) for the Sizewell B relocated facilities has been granted by East Suffolk Council's (ESC) Strategic Planning Board. The **ES** for that application is appended to ~~this~~ the **ES** at **Volume 1 Appendix 2A.**

~~2.2.3~~2.5.2 **Chapters 8 to 28** in this volume typically cross-refer to the relevant chapter within **Volume 1 Appendix 2A** of the **ES** (Doc Ref. 6.3) for a detailed assessment of effects and description of mitigation associated with the Sizewell B relocated facilities, where relevant. Impacts arising from the Sizewell B relocated facilities are also summarised in the above chapters directly, where applicable, together with an explanation of the implications of relevant project design changes made since the preparation of the Sizewell B relocated facilities ES. These design changes include the removal of the previously proposed footpath between the outage car park on Pillbox Field and the Coronation Wood development area and an alternative junction arrangement for the new access road to the outage car park on Pillbox Field and Sizewell Gap.

2.5.3 As part of SZC Co.'s commitment to continue to engage with stakeholders and explore the possibility for re-using previously developed land within the existing Sizewell power station complex, an area of land within the Sizewell A complex has become potentially available for use by the Sizewell B relocated facilities project, subject to the completion of a land agreement. Further design development has also led to a revised layout of the relocated facilities to facilitate easier and more efficient construction.

2.5.4 Together this results in two options for the delivery of the Sizewell B relocated facilities, of which one would be delivered through this Application. The environmental implications of the further changes shown in each option are set out in **Chapter 2** of this **ES Addendum**.

2.5.5 Details of the changes are set out below.

a) Option 1: Sizewell B relocated facilities proposals, including Sizewell A land

2.5.6 As shown in **Figure 2.2.7** of **Volume 2** of the **ES Addendum,** the design changes for Option 1 comprise:

- *Removal of the replacement Sizewell B outage car park and associated access road from Pillbox Field.* If the Sizewell B outage car park were relocated from Pillbox Field to the existing Sizewell B west car park, there would also be no need for the demolition of Rosery Cottages garage or the connection for pedestrians between Pillbox Field and the Coronation Wood development area. Therefore, only mitigation planting would be proposed in Pillbox Field.

- *Relocation of the administration building.* Originally proposed with welfare facilities within the Sizewell B power station perimeter, this building would be moved to the Coronation Wood development area to facilitate easier construction. The welfare facilities, along with replacement storage and refurbished canteen, would still be located within the Sizewell B station perimeter.

- *Revised design of the training centre.* The width of the building would be increased and the height reduced from three storeys to two storeys to reduce the visual impact of the building

- *Revised layout of the Coronation Wood development area*, as shown in **Figure 2.2.9** of **Volume 2** of the **ES Addendum**: the laydown area would be moved to the Sizewell A land; changes would be made to the arrangement/ location of replacement operational car parking; and, the visitor centre would be relocated to the southern part of the Coronation Wood development area.

- *Redesign of the landscaping scheme on Pillbox Field*. This would provide ecological enhancement and mitigation planting for trees lost from Coronation Wood. The redesigned landscaping scheme is illustrated on **Figure 2.2.10** of **Volume 2** of the **ES Addendum**.

2.5.7 A separate planning application was submitted to ESC under the Town and Country Planning Act 1990 in November 2020, reflecting this revised approach to relocating certain Sizewell B facilities. As per the (now revised version of) the original scheme, it also features in this Application.

b) Sizewell B relocated facilities proposals, excluding Sizewell A land

2.5.8 As shown in **Figure 2.2.11** of **Volume 2** of the **ES Addendum,** the design changes for Option 2 comprise:

- *Revised design of the training centre.* The width of the building would be increased and height reduced from three storeys to two storeys to reduce the visual impact of the building.

- *Relocation of the administration building.* Originally proposed with welfare facilities within the Sizewell B power station perimeter, this building would be moved to the Coronation Wood development area, to the north of the training building, to facilitate easier construction. The welfare facilities, along with replacement storage and refurbished canteen, would still be located within the Sizewell B station perimeter

- *Revised layout of the Coronation Wood development area:* relocation of the visitor centre to the southern part of the Coronation Wood development area; and, utilisation of the remaining central area between the proposed buildings, within the Coronation Wood development area for the outage laydown.

~~2.2.4~~2.5.9 Parts of the Sizewell B relocated facilities and National Grid land require flexibility to allow detailed designs to evolve and be submitted following grant of development consent. **Table 2.5** sets out the parameters for this flexibility and should be read in conjunction with the parameter plan shown on **Figure ~~2.6~~ 2.2.12** of **Volume 2** of the **ES Addendum** and the text below.

Table 2.5: Parameters for Sizewell B relocated facilities and National Grid land.

Building/structure name	Maximum height (mAOD.
Parameter zone 1G (National Grid substation)	
Substation	27
Unspecified amount of associated plant, buildings and infrastructure	22
Parameter zones 1H~~,~~ 1I and ~~1I~~ 1J (Sizewell B relocated facilities)	
~~Offices~~Storage, canteen and welfare facilities~~*~~ (1H)*	29
Administration building (1I)**	29
Visitor Centre (1J)***	29
Parameter zone P7 (National Grid pylon)	
National Grid pylon	67
Parameter zone P8 (National Grid pylon)	
National Grid pylon	67

** Maximum floorspace of new development: ~~11,500m²~~ 4,500m2 GEA.*

*** Maximum floorspace of new development: ~~2,000m²~~ 5,000m2 GEA~~.~~*

*** Maximum floorspace of new development: 1,000m2 GEA.*

~~i.~~a) Sizewell B relocated facilities offices, canteen and welfare facilities (Zone 1H)

~~2.2.5~~2.5.10 The Sizewell B relocated facilities proposed development also includes relocated facilities for storage, welfare and canteen: ~~office accommodation~~ canteen facility for operations and outage staff ~~and an associated mess facility; canteen~~; general storage; a civils store and workshop; a general store and changing facilities~~; and a 'front of house' for staff and visitors to the Sizewell B power station~~.

~~2.2.6~~2.5.11 Outline parameters have been identified for the proposed uses (see **Table 2.5**). The detailed design of the zone would respond to the functional requirements and consider the extent of existing facilities currently located within this zone.

~~2.2.7~~2.5.12 Building materials and appearance would be in keeping with the existing ancillary buildings. The buildings would be operational for seven days a week, on a 24-hour basis.

~~2.2.8~~2.5.13 Foundations for these proposals would likely only require ground bearing solutions.

~~ii.~~b) ~~Visitor centre~~ Administration building (Zone 1I)

2.5.14 The administration building would seek to re-provide office accommodation for operations and outage staff. The proposed administration building would be located in the north-east corner of the Coronation Wood development area, outside of the Sizewell B power station site perimeter as it is a building that needs to be readily accessible by its intended users.

2.5.15 The proposed administration building would be situated in a prominent position on the current entrance route into the Sizewell power station complex. It would be located alongside the main approach road and south-west of the main Sizewell B power station security perimeter entrance. This location is directly opposite the Sizewell B power station dry fuel store and east of the partially removed Sizewell A power station reservoirs, disused electrical substation and associated fence.

2.5.16 The layout and access design would consider pedestrian access to and from the proposed replacement operational car park and the outage car

park as well as to the Sizewell B power station security perimeter entrance.

2.5.17 Whilst the design of the administration building is still in development, similar principles as for the training centre would be utilised to minimise the impact of the building on the surrounding environment.

c) Visitor centre (Zone 1J)

~~2.2.9~~2.5.18 The existing Sizewell B visitor centre would be replaced with a permanent, modern educational facility for visitors, including school groups. It is proposed that the new visitor centre would be located ~~at~~ in the ~~north-east~~ south-east corner of the Coronation Wood development area, adjacent to the ~~proposed Sizewell B training centre~~junction of the main Sizewell B power station approach road and the proposed western access road. This prominent location allows the building to be easily found by its users who are less likely to be acquainted with the Sizewell power station complex.

~~2.2.10~~2.5.19 The design of the facility would use some of the same elements, materials and form of the existing ancillary buildings, but would articulate these differently to reflect the public facing function of the building and its location.

~~2.2.11 The internal lighting of the building would be designed to minimise light spill to the external area, with further mitigation measures such as motion sensors and blinds considered as part of the detailed design process. The design of the building would seek to minimise any windows to the western façade to reduce light spill into the adjacent Sizewell Marshes SSSI. The upper floors of the building would be mostly solid, with openings limited to the north façade, primarily to gain views of Sizewell B and Sizewell C.~~

2.5.20 Both the training centre and administration building have been orientated so that their shorter facades face the western site boundary where they are in closest proximity to the site boundary and Sizewell Marshes SSSI boundary, and also likely to be more prominent in off-site viewpoints regarding light impact. The western façade of the training centre has been designed without windows, thus eliminating the potential for light spill. The design for the administration building and the visitor centre is still in development, however similar principles would be utilised to minimise their impacts on the surrounding environment. Suitable mitigation measures, such as use of automated internal lighting control, automated blinds or louvres would be employed in the design to minimise effects to the extent required.

~~2.4.16~~2.5.21 The visitor centre would typically operate the same hours as the existing visitor centre, typically being 09:00 to 16:00 hours from Monday to

Saturday but may extend beyond these hours for specific events. The occupancy of the building would vary daily, depending on visiting groups and events. It is anticipated that the total maximum occupancy would be approximately 135 people. Groups would be predominantly pre-booked to visit, however the facility would also be open to walk-in visitors.

~~b)~~d) Sizewell B relocated facilities development where the design is fixed

~~2.4.17~~2.5.22 Where designs for the Sizewell B relocated facilities are at an advanced stage, details are submitted in full.

i. Sizewell B outage store

~~2.4.18~~2.5.23 The outage store would be used for the storage of general and specialist plant, equipment and materials for use during outage periods. Office space would be provided for staff to carry out work both during and outside of outage periods. DRAFT

~~2.4.19~~2.5.24 The outage store would be relocated within the existing Sizewell B station perimeter ~~at the current location of a general store~~. The location is directly opposite the Sizewell B power station turbine hall (the largest adjacent structure) to the north and adjacent to the Sizewell B power station security perimeter fence separating Sizewell A and Sizewell B power stations to the south.

~~2.4.20~~2.5.25 The outage store would include inspection areas for contamination and radiation.

~~2.4.21~~2.5.26 The building would be accessed by pedestrians through a main entrance on the north side of the building. Vehicular access is provided through two vehicle doors on the north façade.

~~2.4.22~~2.5.27 The outage store would be slightly taller than the neighbouring facilities at an elevation of 35m AOD, though lower than the Sizewell B turbine hall and in keeping with the overall building heights at Sizewell B power station.

~~2.4.23~~2.5.28 The design of the outage store would be in keeping with the existing ancillary buildings and consist of grey profiled aluminium cladding.

~~2.4.24~~2.5.29 The foundations for the outage store would be based on a ground bearing solution, with no permanent piles required.

~~i.~~ii. Sizewell B laydown area

~~2.2.12~~2.5.30 The laydown area comprises a general storage facility and working area for use primarily during outages. It would be located either on an area of redundant Sizewell A land (Option 1), or at the southern end of the Coronation Wood Development Ar[2]ea[2] ~~and~~ (Option 2). It would be used for the storage of plant and equipment. Use of the area would also require mobile workshops, temporary office accommodation and the storage of shipping containers, which would be limited to a maximum height of 6m. Any fabrication that would take place within the laydown may require temporary cover. Certain activities would be constrained by the presence of the 400kV overhead lines running over its western side.

~~2.2.13~~2.5.31 When Sizewell B is not in an outage, the area would be used flexibly for operational activities including maintenance work and storage, as required.

2.5.32 If located on an area of redundant Sizewell A land (Option 1), it would be designed to maximise the flexibility of the space to accommodate the wide range of activities (i.e. minimising obstructions such as lighting columns).

~~2.2.14~~2.5.33 ~~The~~ If located at the southern end of the Coronation Wood Development Area (Option 2), the laydown area would require a secure perimeter and would be attended by a yardsman, with accommodation provided in a yardsman's hut up to 3m high.

~~2.2.15~~2.5.34 ~~The~~ Each option for the laydown area has been designed so that it can be accessed by vehicles from the existing site access road (primary access), where the yardsman would be stationed (Option 2), with a secondary access from the western access road which would be gated (Option 2). Pedestrian access to the laydown area would be segregated from vehicle access (Option 2), or limited as a means to segregate vehicles and pedestrians (Option 1).

~~2.2.16~~2.5.35 The laydown area would be used all year round, with peak activities occurring on a 24-hour basis during outages. Accordingly, the area would be lit by asymmetric 8m lighting columns with shorter columns underneath the overhead lines (Option 2). The lighting arrangements would provide localised lighting of up to 100 lux when needed for certain tasks as provided in **Appendix 2B** of ~~this chapter~~**Volume 2** of the **ES**. When lighting is not needed in an area, the lights can be switched off to minimise the overall lighting levels.

~~[2] The Coronation Wood Development Area comprises the proposed western access road, Sizewell B training centre, Sizewell B laydown area and replacement Sizewell B car park.~~

[2] The Coronation Wood Development Area comprises the proposed western access road, Sizewell B training centre, Sizewell B laydown area and replacement Sizewell B car park.

~~ii.~~iii. Sizewell B replacement car park

Option 1

2.5.36 As part of the Coronation Wood development area, replacement operational car parking would be provided. The proposed replacement operational car park would form the majority of the Coronation Wood development area with the proposed training centre and administration building to the north-east, the proposed visitors centre to the south east and the proposed western access road to the west.

2.5.37 This location provides easy pedestrian access to the proposed training centre, administration building and visitor centre and avoids the need for pedestrians to cross any roads. The proposed replacement operational car park would be located beneath the overhead power lines, but it is considered the height restriction will not adversely affect the car parking in service.

2.5.38 The proposed replacement operational car park would provide 579 spaces over an area of approximately 14,004m^2.

2.5.39 Vehicular access to the proposed replacement operational car park would be through a dedicated entrance from the proposed western access road. A new pedestrian link would be through the replacement operational car park to access the main entrance of the proposed training centre and the rest of the Sizewell B power station. Provision for deliveries would be from the proposed western access road to the north-west of the site. This area is segregated from the main car park.

2.5.40 Although the use of permeable paving offers a number of benefits, the long-term function is reliant on regular maintenance that would require periodic closing of the car park. This would have an operational impact on the power station that is to be avoided. Therefore, permeable paving is not proposed for the replacement operational car park. The proposed replacement operational car park is to be constructed using impermeable paving with catch pits, oil separators and infiltration trenches for surface water drainage.

2.5.41 The lighting for the proposed replacement operational car park would comprise asymmetric lanterns on 4-6m columns. The lux levels would meet the minimum required for safety/ security in car parks (20 lux) and would only be used in the hours of darkness.

Option 2

2.2.172.5.42 The Sizewell B replacement car park would be located to the west (and north) of the Sizewell B training centre and would provide approximately 112 car parking spaces. It would replace the existing 63 spaces at the technical training and 'pool car' car park, the existing 16 spaces at the existing visitor centre car park and the existing 21 spaces to the north of Coronation Wood. An additional six enlarged spaces and six accessible spaces would be provided to comply with current standards.

2.2.182.5.43 Vehicular access would be provided from a dedicated entrance off the proposed western access road, with a new pedestrian link created from the replacement car park to access the Sizewell B training centre, Sizewell B power station main entrance and neighbouring facilities. Eight charging points for electric vehicles would be provided.

2.2.192.5.44 The replacement car park would be surfaced with a heavy-duty permeable block paving and/or provided with catchpit soakaways that would allow full infiltration of surface water run-off into the subsurface, thereby negating the need for an independent drainage network. Oil/ hydrocarbon/ silt interception systems (e.g. as permeable paving or an oil separator) would be provided to avoid the pollution of controlled waters from surface water run-off.

2.2.202.5.45 The car park would be lit by asymmetric 4m lighting columns. Lighting levels would be at the minimum required for car parking areas (20 lux).

iii.iv. Sizewell B training centre

Option 1

2.5.46 The proposed training centre would be located in the north-east corner of the Coronation Wood development area, south of the proposed administration building. The replacement operational car park is proposed to the south and west of the training centre, which would include car parking provision for the facility.

2.5.47 The proposed training centre would be the main facility where Sizewell B power station employees and contracting staff receive training/inductions on numerous site-related activities. The proposed training centre would accommodate a diverse range of facilities including; training rooms, cellular and open plan offices, staff and student facilities, including locker and mess facilities, workshops, specialist training rooms and their associated facilities.

2.5.48 The assumed average occupancy for the proposed training centre would be 150 people, with a peak occupancy of 350 people (in the lead up to

and during outages). The building would be open 7 days a week 08:00-17:00 hours on regular days and 24 hours during outage periods, and when otherwise required.

2.5.49 The primary vehicle access route to the proposed training centre is via the proposed western access road. Service vehicles would access the training centre either from the proposed replacement operational car park or a service road to the north west corner of the building. The main entrance to the proposed training centre would be to the south of the building adjacent to the accessible and primary parking area. The key driver for the ground floor level of the proposed training centre is to ensure accessibility to the entrance while maintaining access to the proposed administration building.

2.5.50 The orientation for the proposed training centre was chosen to be east-west. This orientation makes the best use of the existing site topography to accommodate the facility requirements and reduces excavation. It also offers the advantage of orientating the building such that the shorter western façade which looks out to the Sizewell Marshes SSSI and the wider AONB is blank, i.e. windowless. This reduces light spill towards the SSSI from the proposed building. It also improves accessibility, as pedestrian and vehicle access can be easily separated.

Option 2

~~2.2.21~~2.5.51 The Sizewell B training centre would combine the existing Sizewell B training arrangements into a single building. It would be located between the proposed laydown area to the south, the proposed visitor centre to the north, and replacement car park to the west.

~~2.2.22~~2.5.52 The three-storey training centre would be the main facility where Sizewell B staff would receive inductions and training for site related activities.

~~2.2.23~~2.5.53 The training centre has been designed for an average occupancy of 150 people, with a peak occupancy of 350 people. The building would be open seven days a week, from 07:00 to 19:00 hours on non-outage days and 24 hours a day during outage periods and when otherwise required. The main entrance is on the northern façade, to ensure connection with the visitor centre and rest of Sizewell B.

~~2.2.24~~2.5.54 The design of the training centre would be in keeping with the existing ancillary buildings, although the materials chosen would ensure a softer appearance to the more industrial buildings of Sizewell B station. The building is orientated such that the shorter western façade facing the

wider AONB and Sizewell Marshes SSSI is windowless, thereby minimising light spill in this direction.

2.2.252.5.55 Shallow, pad foundations would be provided under columns, with a suspended ground floor slab spanning between pads. Foundation depths would typically be 1-2m below ground level.

iv.v. Sizewell B western access road

2.2.262.5.56 A western access road is proposed on the western edge of the Coronation Wood Development Area, either surrounding the proposed replacement operational car park (Option 1) or adjacent to the proposed laydown area and replacement car park (Option 2). The road would follow the alignment of an existing access track to the south of Coronation Wood Development Area and then head north to join the existing Sizewell B approach road and roundabout.

2.2.272.5.57 The western access road would reduce interfaces between pedestrians and vehicles on the main access road to Sizewell B during both construction and operation, and thus improve safety.

2.2.282.5.58 The proposed two-way western access road would be 355m 275m long and 6m 7.3m wide and surfaced with asphalt. The road would be lit by 4m lighting columns at minimum lighting levels required for roads, with lighting fixtures directed away from the Sizewell Marshes SSSI.

v.vi. Sizewell B outage car park (Option 2 only)

2.2.292.5.59 The Sizewell B outage car park would be relocated to the northern end of Pillbox Field (outside of the existing Sizewell B power station site perimeter) for use during outages only (both scheduled and unscheduled). It would provide 576 car parking spaces, which is the same as the existing provision. Vehicular access to the outage car park would be via a new junction from Sizewell gap into Pillbox Field. During outage periods, the car park would be in use 24-hours a day to meet Sizewell B's operational requirements. In line with the planning conditions attached to the Sizewell B relocated facilities planning permission, a pedestrian access route from the outage car park on Pillbox Field to the Sizewell B power station is to be agreed with ESC prior to the first use of the outage car park facility.

2.2.302.5.60 The car park would be a surface level car park constructed with a grass reinforcement system base (a rigid system of interlocking plastic reinforcement cells that allow the growth of grass under intensive vehicular and/or pedestrian traffic). The grass reinforcement system would provide a high strength structure of which a large proportion of the surface could be infilled, enabling the system to be visually unobtrusive and contribute towards achieving a sustainable urban drainage system.

~~2.2.31~~2.5.61 Cars would access the outage car park from Sizewell Gap road via a new junction.

~~2.2.32~~2.5.62 The outage car park would be lit to allow for adequate coverage across the car park given the types of vehicles anticipated. Directional lighting would be installed to minimise obstructive light. The car park would not be lit when not in use.

~~2.2.33~~2.5.63 The ground levels of the outage car park have been designed to deliver a solution that balances earthworks volumes against the potential visual impact of the car park upon the surrounding environment. Reprofiling of the field to extend the existing ridgeline to the east, as well as planting around the southern and south-eastern edges of the car park, is proposed to provide screening. Planting is also proposed along the eastern edge of the outage car park access road for this purpose.

2.5.64 Under Option 1, the Sizewell B outage car park would be located elsewhere on Sizewell B land (an area known as the west ca park) – no works are required for this, with the exception of a new pumping station.

e) National Grid land

i. National Grid substation (Zone 1G)

~~2.2.34~~2.5.65 An extension to the existing National Grid 400kV substation would be required to accommodate the additional generation output of Sizewell C. The overhead lines that currently terminate at the existing National Grid 400kV substation would be diverted into a new substation building built alongside and interconnected with the existing substation building, so that the electricity generated by both the existing Sizewell B and new Sizewell C power stations can be exported to the National Electricity Transmission System.

~~2.2.35~~2.5.66 The National Grid substation may include the key equipment listed below. The final equipment to be utilised will be determined during detail design of the National Grid substation:

- gantries (up to 6): which are structures that support electrical conductors as they transition from the overhead line pylon to the National Grid substation allowing them to connect to the busbars and other equipment within the National Grid substation;
- cable terminations/sealing ends: used where high voltage underground cable joins onto busbars allowing their connection to equipment within the National Grid substation;

- switchgear (air insulated or gas insulated): which includes circuit breakers, disconnectors, earth switches and other equipment (some of which is described below), which switches, controls and protects the high voltage electrical circuits and equipment within the National Grid substation;
- circuit breakers: an automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. Its basic function is to clear a fault condition by breaking the electrical circuit which would immediately discontinue electrical flow;
- disconnectors: which allow a physical break in the electrical circuits to be introduced which isolates the substation during periods of maintenance;
- earth switches: which allows safe maintenance of the National Grid substation equipment;
- busbars, connectors and post insulators: air insulated or gas insulated, which form the high voltage electrical circuit to allow the flow of electricity around the National Grid substation;
- current and voltage transformers: which convert electrical current and voltage to levels which can be safely measured by the National Grid substation's control and protection equipment;
- surge arresters: which protect key equipment by providing a path to earth when triggered by an abnormal voltage condition such as a lightning strike;
- series reactors/inductors: an item of wound plant forming part of the electrical circuits which limits electrical current during a fault condition to ensure switchgear can operate safely within its design capability,
- emergency generator: which provides standby low voltage electricity supply to the National Grid substation in the event of a failure of the local electricity supply;
- earthing system: which provides a grounding mat below the earth surface at the National Grid substation which equipment is connected to, protecting equipment and personnel from voltage surges and lightning strikes by safely transferring current to ground;
- ancillary buildings: which may include a small workshop/store, welfare, control room, incoming power and protection/telecom/metering room(s); and

- security fence: which will comprise a perimeter fence with an electrified fence installed along its inner boundary to maintain security of the National Grid substation.

2.2.362.5.67 External lighting would also be installed at the substation which may entail:

- general lighting around the perimeter fence and within the National Grid substation for the purposes of security and to provide adequate lighting levels for access and inspection of equipment; and
- task related flood lighting within the National Grid substation which may be necessary from time to time during repair/maintenance activities.

2.2.372.5.68 Whilst the above lighting is provided, the substation would not normally be lit during hours of darkness.

iii.ii. National Grid pylons (Zones P7 and P8)

2.2.382.5.69 The National Grid substation will connect into each of the four circuits on the National Grid 400kV overhead lines. To facilitate these connections, modifications to the existing overhead lines will be required which will include a new pylon (Zone P7), modification of an existing pylon (Zone P8), removal of an existing pylon and the permanent realignment of a short section of the overhead line to connect to the new National Grid substation.

2.32.6 Offshore works area

2.3.12.6.1 Parameters for the offshore works area are set out in **Table 2.6** and should be read in conjunction with **Figure 2.7** of **Volume 2** of the **ES** and the text below.

Table 2.6: Coordinates for offshore works.

Headworks	Coordinates	Headworks centre max. radii
Intake headworks (Work Nos. 2B) (Two of three positions to be selected)	X = 650722 Y = 263320 X = 650525.76 Y = 263359.68 X = 650624.00 Y = 263341.00	25m

Headworks	Coordinates	Headworks centre max. radii
Intake headworks (Work Nos. 2D) (Two of three positions to be selected)	X = 650726.00 Y = 264261.94 X = 650826.00 Y = 264264.00 X = 650925.98 Y = 264266.06	25m
Outfall headworks (Work No. 2F)	X = 651080.00 Y = 264125.00 X = 651155 Y = 264125	25m
FRR headworks (Work Nos. 2H and 2J)	X = 647980 Y = 264000 X = 647980 Y = 264300	25m
Combined drainage outfall headwork (Work No. 2L)	X = 647980 Y = 264340	25m

2.3.22.6.2 Seawater for cooling would be abstracted via a series of intake structures and tunnels. Approximate dimensions identified below are assumed for the purposes of environmental assessment.

2.3.32.6.3 Each UK EPR™ reactor unit would have a single dedicated 6m internal diameter intake tunnel that connects to the forebay on the main platform (Work Nos. 2A and 2C). At the seaward end of each tunnel two vertical shafts would extend upwards to provide a connection to the sea via a seabed-mounted intake head (one head per shaft).

2.3.42.6.4 Each intake tunnel would terminate in two concrete headworks with dimensions of approximately 8m (height) x up to approximately 50m (length) x 10m (width), protruding approximately 4m above the seabed (Work Nos. 2B and 2D). The coordinates stated in **Table 2.6** relate to the centre-point of each headwork.

2.3.52.6.5 A single 8m internal diameter outfall tunnel serving both UK EPR™ reactor units would return the cooling water to the sea from the outfall pond buildings (Work No. 2E), with a pair of vertical shafts at its seaward end, each leading upwards to a single outfall headworks, again mounted on the seabed. The outfall headworks are likely to be 8m (height) x 16m

(length) x 16m (width), protruding approximately 3m above initial seabed level (Work No. 2F). The coordinates stated in **Table 2.6** relate to the centre-point of each headwork.

2.3.62.6.6 The intake and outfall tunnels would extend approximately 3km from the shore, at depths of approximately up to 30m below ordnance datum (Newlyn).

2.3.72.6.7 The Fish Recovery and Return (FRR) outfall headworks would comprise a concrete block approximately 4.5m (height) x 3m (width) x 3m (depth). They would be buried approximately 2m into the sediment (Work Nos. 2H and 2J). The coordinates stated in **Table 2.6** relate to the centre-point of each headwork.

2.3.82.6.8 The two fish return tunnels (Work Nos. 2G and 2I), with an internal diameter of approximately 0.65m, would commence at the filtering debris recovery pits and be tunnelled below the seabed level before rising to the seabed to connect with the FRR outfall headworks. The coordinates stated in **Table 2.6** relate to the centre-point of each headwork.

2.3.92.6.9 The combined drainage outfall tunnel, with a diameter of approximately 1.2m (Work No. 2K) would be connected to a concrete outfall headwork structure (Work No. 2L), anticipated to be of similar dimensions to the FRR headworks. The coordinates stated in **Table 2.6** relate to the centre-point of the headwork.

2.42.7 Temporary construction area, including Upper Abbey Farm

2.4.12.7.1 Parameters for permanent development in the Upper Abbey Farm area, forms part of the temporary construction area, are set out in **Table 2.7** and should be read in conjunction with the parameter ~~plan~~ plans shown on **Figure 2.5** and **Volume 2, Figure 2.2.1** of the **ES Addendum**, as well as the following text.

Table 2.7: Parameters for buildings, plant and structures in the Upper Abbey Farm area.

Building details	Maximum height (mAOD)
Parameter zone 1F (access control)	
Off-site delivery checkpoint	18
Parameter zone 1G (bat barn)	
Bat barn	8
Parameter zone 1M (emergency equipment storage and associated plant)	
Emergency equipment store	32

Back-up power generation plant	36 (plus 3.5m tall stack)
Parameter zone 1N (ancillary substation compound)	
Ancillary substation compound	27

a) Power station access road, junction with the B1122 and car park

~~2.4.2~~2.7.2 A permanent two-lane access road, with a segregated route for cyclists and pedestrians would be provided. A corridor similar in character to a country road would be established, while maintaining safe access/egress. The access road would be a private thoroughfare for Sizewell C operations only. Lighting would be present at the junction with the B1122 and at the operational car park and at associated facilities in this area as necessary.

~~2.4.3~~2.7.3 The access junction to the B1122 would become part of the adopted highway and would comprise a four-arm roundabout as shown in **Figure ~~2.1~~2.2.41** of **Volume 2** of the **ES Addendum**, reduced from five-arms during the construction stage.

~~2.4.4~~2.7.4 A car park would be provided at the eastern end of the access road and would accommodate up to 1,370 spaces divided between permanent parking spaces for day-to-day operation and the training facilities (approximately 770) and spaces required during outage periods (approximately 600), as shown in **Figure 2.2** of the **ES**. Cycle parking and electric vehicle charging points would be provided.

~~f)~~b) Off-site delivery checkpoint (Zone 1F)

~~2.4.5~~2.7.5 The primary function of the off-site delivery checkpoint is to accept deliveries to the site at a secure central location for sorting prior to onward site-wide distribution, as shown in **Figure 2.2** of the **ES**.

a) Bat barn (Zone 1G)

2.7.6 The height of the bat barn would be up to 8 metres AOD and the footprint would be up to 25m^2. The structure would be made out of wood or masonry brick, with a steep pitched roof and dark coloured tiles for ecological purposes. The location is confirmed in the Operational Parameter Plan (**Figure 2.2.1** of **Volume 2** of the **ES Addendum**).

~~g)~~b) Vehicular and pedestrian ~~causeway~~ bridge crossing Sizewell Marshes SSSI

~~2.4.6~~2.7.7 The SSSI crossing provides an essential pedestrian and vehicular connection across Sizewell Marshes SSSI, linking Sizewell C with the new access road. The design comprises an ~~embankment with a culvert~~approximately 40 metre long bridge and embankments, through

which the Leiston drain would flow. The total distance between the walls being approximately 24m. The bank and channel of Leiston Drain would continue to remain intact.

~~2.4.7~~2.7.8 Following the completion of the construction phase, the western-most access route across the causeway would be maintained to provide operational access to the power station. The easternmost part of the causeway would be appropriately landscaped, helping to create a landscape boundary between the power station development and its surroundings, as shown in **Figure ~~2.11.~~2.2.16** of **Volume 2** of the **ES Addendum**. The carriageway would have an approximate width of 12m and require approximately 3m high safety barriers on either side

~~2.4.8~~2.7.9 ~~The width of the embankments at road level would be up to approximately 35m~~ The width of the bridge over the Leiston Drain would be approximately 40m and the overall width of the crossing at its base would be up to approximately ~~65m~~70m.

~~2.4.9~~2.7.10 The ~~culvert~~ bridge would be of sufficient size to leave the bank and channel of the Leiston drain completely intact. A ledge would be installed to enable passage by otters and artificial bat roosts would be included within or on the bridge abutments. Splayed wing walls would be provided over the Leiston Drain to increase daylight under the bridge.

2.7.11 The gradient of the slope on the eastern (seaward) side would be approximately a 1:3 gradient. The landward slope, which is generally less visible in views, would be approximately a 1:1 gradient. Soft landscaping would be provided on both sides of the embankment, with more substantial planting on the seaward side.

~~h)~~c) Emergency equipment store and backup generator at Upper Abbey Farm (Zone 1M)

~~2.4.10~~2.7.12 An emergency equipment store would be required close to Sizewell C to enable a rapid response to an emergency event. It would be approximately located adjacent to Upper Abbey Farm farmhouse in the location of an existing building.

~~2.4.11~~2.7.13 The design of the emergency equipment store would be driven by engineering requirements as this building would be required to withstand extreme external hazards. Consideration would be given to the setting within the Upper Abbey Farm complex.

~~2.4.12~~ ~~A backup power source to the emergency equipment store would be provided.~~provided.

~~i)~~d) Electrical substation south of Upper Abbey Farm (Zone 1N)

~~2.4.13~~2.7.14 A new substation is proposed to provide an electrical supply during the construction phase. The substation would be retained during the operational phase to complete the electrical connection between the Leiston substation at Sizewell Wents and certain site buildings.

~~2.4.14~~2.7.15 The location for the substation is to the south of Upper Abbey Farm within a field west of Bridleway 19. The facility would be surrounded by secure fencing accessed by a road extending south from the power station access road, as shown in **Figure 2.2** in the **ES**.

~~2.4.15~~2.7.16 The substation design would be based on a standard UK Power Networks 132/11kV outdoor substation. It would be enclosed by security fencing. The compound would contain:

- a switch house;
- outdoor transformers, switchgear, and busbars; and
- internal roads, footpaths, parking spaces, ancillary cabinets and equipment enclosures.

~~2.4.16~~2.7.17 The electrical supply cable from this substation would be installed during the construction period as detailed in **Chapter 3** of ~~this volume~~**Volume 2** of the **ES**, and retained during the operational period.

~~j)~~a) Kenton Hills car park

~~2.4.17~~2.7.18 The car park and access into Kenton Hills woodland would be improved to enhance the visitor experience. The development would comprise:

- provision of up to 15 additional parking spaces;
- additional signage and picnic tables; and
- selective vegetation removal.

~~k)~~b) Lover's Lane junction realignment and associated works

~~2.1.1~~2.7.19 To provide the necessary amount of space between the level crossing and other road junctions during construction as detailed in **Chapter 3** of this volume, the junction of the B1122 (Abbey Road) and Lover's Lane would be moved approximately 100m to the south of its

current location. This would be a permanent re-alignment of Lover's Lane, to improve visibility at this junction for all road users. A right turn lane would also be provided for traffic travelling from the south into Leiston Recycling Centre.

2.7.20 SZC Co. intend to improve connectivity between the two sites by providing a new mammal culvert located in close proximity to the existing culvert at Lover's Lane north of Leiston Recycling Centre. It would be designed with features to encourage use by mammals including otters and water voles. Otter fencing would also be installed to guide animals to the culvert.

~~2.2~~2.8 Fen meadow compensation areas

~~2.2.1~~2.8.1 The fen meadow compensation areas at Pakenham, Benhall and Halesworth created during the construction phase would be retained permanently to compensate for fen meadow permanently lost from Sizewell Marshes SSSI as a result of the development.

~~2.2.2~~2.8.2 The ~~two~~ three fen meadow compensation areas would provide fen meadow habitats to compensate for the permanent loss of approximately ~~0.7~~ 0.46 ha of fen meadow habitat from within Sizewell Marshes SSSI. In order to create the habitats, minor changes to existing watercourses and field drains may be required to raise water levels. Taking both sites forward maximises the likelihood that fen meadow habitats would be created.

~~2.2.3~~2.8.3 Further details on the fen meadow compensation areas are set out in **Volume 2, Chapter 14** of ~~this ES~~the **ES** and **Volume 2, Chapter 2** of the **ES Addendum**.

~~2.3~~2.9 Leiston off-site sports facilities

~~2.3.1~~2.9.1 The Leiston off-site sports facilities would be provided during the construction stage as detailed in **Chapter 3** of this volume, as a shared facility for Alde Valley School, the local community and construction workers. These would be retained as a permanent development and left as a legacy for the school and local community. As shown in **Figure 2.12** the facilities would include:

- one full-size 3G pitch, 400-millimetre (mm) pile, rubber crumb surface suitable for football, non-contact rugby and hockey; and
- two multi-use games areas suitable for basketball, netball, tennis and football.

~~2.4~~2.10 Proposed design strategies

a) Outline drainage strategy

~~2.1.1~~2.10.1 An outline drainage strategy has been developed based on the following strategic criteria:

- Drainage facilities to provide no surface flooding from a 1 in 30-year return period rainfall event, in accordance with accepted guidelines, combining a range of techniques e.g. Infiltration systems, permeable paving and surface drainage structures to remove water from paved or semi-paved surfaces (e.g. storage areas) with no ponding for a 1 in 30-year rainfall event.
- Store or safely convey the run-off from exceedance storm events greater than 1 in 30-year return period, without putting public or property at risk.
- Reduce if possible, or at least not increase, the pre-development risk of flooding.
- Determine the impact and store on site the volume of water generated from a 1 in 100-year rainfall event to prevent escape into adjacent areas.
- Remove/Treat any contaminants within surface water runoff before discharge.
- Provide amenity and ecological enhancement, if practicable.
- Protect the environment, minimise the use of finite natural resources and energy and provide value to those involved in its design, construction and operation.

~~2.4.1~~2.10.2 Further details are set out in **Appendix 2A** of this chapter.

b) Lighting management plan

~~2.4.2~~2.10.3 A lighting management plan has been developed based on the following objectives:

- Provide a safe working environment, meeting statutory requirements and standards.
- Allow 24-hour working (when required).
- Provide site security lighting.

- Mitigate the impact of artificial lighting on the surrounding environment as far as reasonably practicable.

2.4.32.10.4 **Further details are set out in Appendix 2B of ~~this chapter~~Volume 2 of the ES.**

c) Landscape

2.4.42.10.5 The landscape masterplan, as set out in detail in the **Sizewell C Main Development Site Design and Access Statement** (Doc Ref. 8.1) [APP-585 to APP-587] and the **Sizewell C Main Development Site Design and Access Statement Addendum** indicatively establishes the spatial arrangement of broad planting areas, comprising:

- mixed woodland;
- dry Sandlings grassland;
- semi-improved grassland;
- arable land;
- amenity landscape;
- marsh, fen and reedbed; and,
- vegetated dunes and shingle beach.

2.4.52.10.6 Specific objectives, which will guide long-term management of the landscape, are set out in the **Outline Landscape and Ecological Management Plan** (Doc Ref. 8.2) [APP-588]:

- To create a transition from a managed farmland landscape at the western edge of the site, which grades into open Sandlings grassland and then the coastal zone along the site's eastern boundary. This transition from a farmed to a more natural and biodiverse landscape would be subtle and not interrupted by sharp boundaries.
- To return areas of the temporary construction area in the west of the site (Land to the East of Eastlands Industrial Estate (LEEIE) and fields around Upper Abbey Farm) to arable and semi-improved pasture agriculture respectively.
- To reinforce and expand existing linear wooded corridors and create others to provide greater long-term connectivity for bats and other

species. Specifically, native woodland would be created along the margins of the Sandlings grassland linking existing woodland areas at Kenton Hills, Goose Hill and Ash Wood.

- To create an expansive area of Dry Sandlings Grassland habitat using soils inherited from the construction phase. The intention is to source seed from adjacent areas of acid grassland (such as the restored acid grassland at Retsom's and the Studio Field – both within the site). In the longer term, this area would be managed as a diverse mosaic of dry summer parched grassland with patches of neutral grassland, scrub and scattered trees – potentially with a similar structure and species assemblage as sites in the surrounding landscape such as Leiston Common and Westleton Common/Walks.

- Within the northern area of the Dry Sandlings Grassland habitat, opportunities will be sought to manage the habitat for the benefit of breeding stone-curlew (Burhinus oedicnemus).

- To re-establish wetland habitats temporarily lost by the realignment of sections of the Sizewell and Leiston drains within the Sizewell Marshes SSSI and minimise long-term severance effects on Sizewell Marshes SSSI. This includes the flood mitigation area and nearby wetland habitat, which post construction would become inter-linked to create a single integrated on water, wetland and wet woodland habitat feature.

- To maximise the capacity of wildlife and landscape to cope with climate change, using a planting palate of species resilient to drought and disease that are not reliant on irrigation measures.

- Once established, to integrate the management of the new habitats (coastal, grassland, woodland and wetland) with the management regimes for the existing and retained habitats within the EDF Energy Estate.

~~2.4.6~~2.10.7 Works to construct Sizewell C would result in a net surplus of excavated materials at the end of the construction programme. The end-use strategy for surplus spoil (including stripped topsoil and subsoil) is to re-distribute the majority of the material across the restored landscape rather than to transport it off-site.

~~2.4.7~~2.10.8 The majority of surplus materials would be distributed within the area between Dunwich Forest to the north and Kenton Hills to the south, and the coastal fringes around Goose Hill in the east to Bridleway 19 in the west. Additional mass haul of materials would also be required to complete the non-structural component of the sea defences and to restore small land parcels to existing levels where disturbed during construction.

Landforms would be tied into features including the: vertical and horizontal alignment of the site access road; edges of retained landscape, with sufficient offsets to protect rooting zones of boundary vegetation; crossing point at the SSSI Crossing; and, Bridleway 19 to the west.

d) Rights of way and access

~~2.4.8~~2.10.9 Sizewell C would have an impact on various public rights of way, including temporary and permanent closures and diversions. SZC Co. has therefore developed a strategy for the operational phase of development based on the following principles:

- To restore to at least their original standard any PRoW, permissive footpaths, access land, promoted cycle routes and all other pre-existing linear and area access, on the coast and inland affected by the development, where practicable.

- To comply with the legal requirements of the Equality Act 2010 and the Countryside and Rights of Way Act 2000, in terms of any new or existing access infrastructure and management, by ensuring that there are no barriers without lawful authority and that reasonable adjustments are made to facilitate access to all.
- To ensure that all new linear surfaces are easy to use.
- To apply and maintain best practice in terms of on-site signage and other information provision, and to enhance visitor enjoyment and safety.

~~2.4.9~~2.10.10 Further details on the proposals are set out in the **Rights of Way and Access Strategy** contained within **Volume 2 Chapter 15 Appendix 15I** of ~~this **ES**~~ the **ES**.

2.10.11 In addition to this, **Volume 2** of the **ES Addendum** assesses the environmental impacts of a crossing point and associated path which would be provided over Lover's Lane from the northern field of Aldhurst Farm into the arable field to the north. A new route would then pass through an existing field, parallel to the field boundary, towards Kenton Hills. It would then join the existing Bridleway 19 route, as shown in **Volume 2, Figure 2.2.32** of the **ES Addendum**. The link would be designated as a bridleway once construction of the Sizewell C Project is complete.

REFERENCES

2.1 EDF Energy (2017) Hinkley Point C Cooling Water Infrastructure Fish Protection Measures: Report To Discharge DCO requirement CW1 (Paragraph 1) and Marine Licence Condition 5.2.31 V2.0

2.2 Environment Agency (2005) Screening for Intake and Outfalls: a best practice guide

2.3 Environment Agency (2010) Cooling Water Options for the New Generation of Nuclear Power in the UK

APPENDIX 2.2.B UPDATED DESCRIPTION OF CONSTRUCTION

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3 DESCRIPTION OF CONSTRUCTION

3.1 Introduction

3.1.1 This chapter ~~of the **Environmental Statement (ES)**~~ describes the programme and methodology for the construction of the main development site, insofar as it is relevant for the assessment of environmental effects.

3.1.2 Construction works on the main development site would be controlled as follows:

- **Construction Method Statement**: secured via requirements in Schedule 2 of the **Draft Development Consent Order** (**Draft DCO**) (Doc Ref. 3.1(B)). The Construction Method Statement comprises the primary mitigation included in this chapter. This includes the maximum height of temporary buildings, structures, plant and earthworks across the main development site, as defined ~~at~~ in **Figure ~~3.1~~2.2.2 of Volume 2 of this ES Addendum**. This would also ensure that the sequence of construction phase mitigation comes forward in a manner that is consistent with the assessment.

- **Code of Construction Practice** (**CoCP**) (Doc Ref. ~~8.11~~8.11A): secured via a requirement in Schedule 2 of the **Draft DCO** (Doc Ref. 3.1(B)).

- **Construction Traffic Management Plan** (**CTMP**) (Doc Ref. 8.7), **Traffic Incident Management Plan** (**TIMP**) (Doc Ref. 8.6) and **Construction Worker Travel Plan** (**CWTP**) (Doc Ref. 8.8). These documents are all secured via a Section 106 Agreement and have been set out within the Section 106 Heads of Terms, Appendix J of the **Planning Statement** (Doc Ref. 8.4).

3.1.3 Details on the permanent proposals for the main development site are provided in **Chapter 2** of this volume. Details of the commissioning and operation of Sizewell C power station are found in **Chapter 4** of this volume.

3.1.4 The main development site comprises five components, which are described below, and illustrated in **Figure ~~3.2~~1.2 of Chapter 1** of this volume:

- Main platform: the area that would become the power station itself.

- Sizewell B relocated facilities and National Grid land: the area that certain Sizewell B facilities would be moved to in order to release existing Sizewell B land for the proposed development, and the area required for the National Grid transmission network.

- Offshore works area: the area where offshore cooling water infrastructure and other marine works would be located.

- Temporary construction area (TCA): the area located primarily to the north and west of the proposed Sizewell Marshes Site of Special Scientific Interest (SSSI) crossing, which would be used to support construction activity on the main platform, including the accommodation campus.

- Land to the East of Eastlands Industrial Estate (LEEIE): the area to the north of Sizewell Halt and King George's Avenue, which would be used to support construction on the main platform and TCA.

3.1.5 ~~This chapter~~ **Chapter 3** of **Volume 2** the **ES** also describes construction activities on the following off-site facilities, which for the purposes of the **ES** are considered to form part of the main development site. Development associated with these sites is secured by Schedule 1 of the **Draft DCO** and associated **Work Plans** (Doc Ref. 2.3(A)):

- Marsh harrier habitat improvement area (Westleton): land west of Westleton which could be used to mitigate potential disturbance effects on marsh harriers from the temporary loss of foraging habitat during construction, if required.

- Fen meadow compensation sites: the areas to the south of Benhall~~,~~ to the north of Pakenham and to the east of Halesworth, which would be used to compensate for the loss of fen meadow from Sizewell Marshes SSSI. This would also be retained as a permanent development as set out in **Chapter 2** of **Volume 2** of the **ES** and **Chapter 2** of this ~~volume~~**ES Addendum**.

- Leiston off-site sports facilities: the area to the south of Alde Valley Academy, and east of Leiston leisure centre, which would be used during the construction stage as a shared outdoor sports facility for Alde Valley Academy, the local community and construction workers. This would also be retained as a permanent development as set out in **Chapter 2** of **Volume 2** of the **ES** and **Chapter 2** of this ~~volume~~**ES Addendum** .

3.1.6 The remainder of this chapter is structured as follows:

- Construction and environmental management: which explains where measures and controls that SZC Co. will require its contractors to adopt during construction will be secured.

- Project-wide assumptions: which set out the assumed construction programme; traffic movements; working hours and workforce profile for the Sizewell C Project as a whole. Other volumes of the **ES** and chapters of this **ES** **Addendum** identify site-specific assumptions relating to these topics, as relevant for associated development sites.

- Construction method by sub-area: sets out the working methods for construction activities on the main development site, focusing on activities that are relevant for the assessment of environmental effects.

- Site-wide construction method: sets out the approach to managing construction waste, installation and connectivity of utilities, drainage, lighting, landscaping and rights of way.

3.2 Construction and environmental management

3.2.1 The updated **CoCP** (Doc Ref. 8.11(A)) sets out the measures and controls that SZC Co. will require its contractors to adopt during construction and removal and reinstatement phases of the proposed development, where appropriate. In summary, the **CoCP** sets out the following:

- General construction environmental management arrangements, including details of the environmental management system.

- How construction environmental management arrangements will be implemented, reviewed and monitored.

- Community and stakeholder engagement arrangements that will be implemented during the construction period.

- General measures relating to topics such as training and competence, construction consents, workforce code of conduct, working hours and construction site layout.

- Measures relating to waste management and resource use, land quality, ecology, landscape, cultural heritage, noise and vibration, air quality, water environment, traffic and transport, amenity and recreation, carbon emissions and emergency arrangements.

- Any site-specific controls to be applied at any of the Sizewell C Project sites.

3.2.2 The management measures and controls included in the updated **CoCP** have been identified through the EIA process and will minimise impacts on the environment and human receptors, as far as reasonably practicable.

3.2.3 The **CTMP** (Doc Ref. 8.7), **CWTP** (Doc Ref. 8.6), and **TIMP** (Doc Ref. 8.8), include a series of measures to reduce the impact of construction vehicle traffic upon the highway network and for the sustainable travel of construction workforce to the Sizewell C Project sites.

3.2.4 The appointed contractors will be required to undertake the construction works in accordance with the arrangements set out within the updated **CoCP**, **CTMP**, **CWTP** and **TIMP**. Any work undertaken by a contractor would be reviewed and approved by relevant SZC Co. personnel prior to the work commencing.

3.2.5 In addition, there may be a need to apply for additional permits, consents or licences prior to and during the construction works (such as land drainage consents, environmental permits or protected species licences, if required). As the programme of works and design are progressed, these permissions will be identified and scheduled in a timely manner to enable determination by the appropriate regulatory body. Any requirements of a granted permission will be provided to contractors undertaking the work.

3.3 Project-wide assumptions

a) Construction programme

~~3.1.1~~3.3.1 This section provides an overview of the assumed Sizewell C construction programme and summarises the main activities throughout the different phases of construction. Details on the working methods associated with each phase are provided later in this chapter.

3.3.2 Construction would commence following the grant of the Sizewell C Development Consent Order (assumed 2022, Year 1), and is likely to be completed approximately nine to twelve years later (Years 9 to 12). The assumed construction programme is set out in **Plate 3.1**.

3.3.3 For the purposes of analysing traffic impact during the construction phase, the overall peak of construction activity is assumed to occur in 2028 (the 'peak year') and the peak of construction during the "early years" (prior to completion of the associated development) is assumed to occur in 2023.

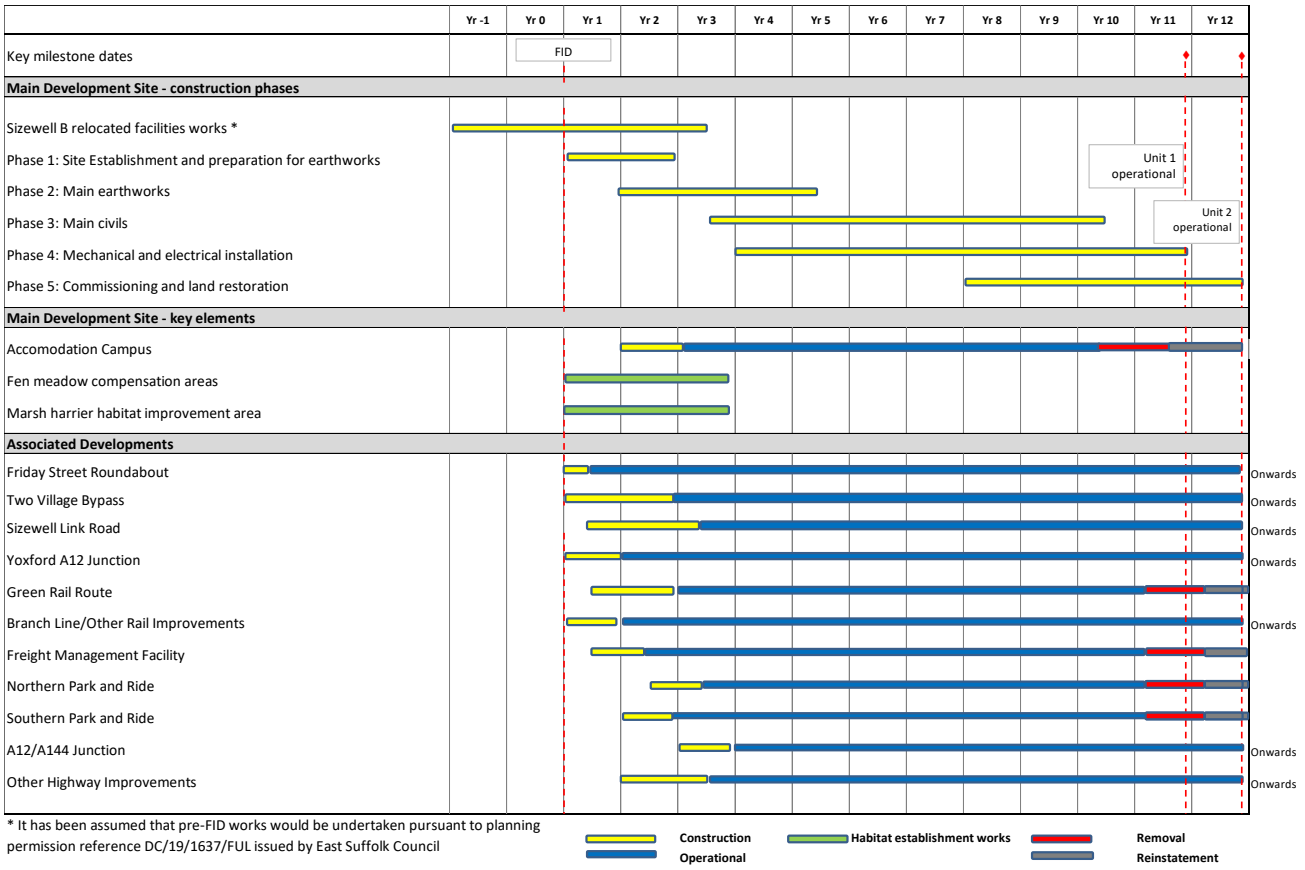
3.3.4 Construction would be undertaken in five main phases:

- Phase 1: Site establishment and preparation for earthworks, as provided in **Figure ~~3.2~~2.2.34** of **Volume 2** of this **ES Addendum**.
- Phase 2: Main earthworks, as provided in **Figure ~~3.3~~2.2.35** of **Volume 2** of this **ES Addendum**.
- Phase 3: Main civils, as provided in **Figure ~~3.4~~2.2.36** of **Volume 2** of this **ES Addendum**.
- Phase 4: Mechanical and electrical installation, as provided in **Figure ~~3.5~~2.2.37** of **Volume 2** of this **ES Addendum**.
- Phase 5: Commissioning and land restoration, as provided in **Figure ~~3.6~~2.2.38** of **Volume 2** of this **ES Addendum**.

3.3.5 It has been assumed that works relating to the relocation of certain Sizewell B facilities would begin approximately two years prior to the start of Phase 1, pursuant to planning permission reference DC/19/1637/FUL issued by East Suffolk Council. These works are referred to later in this chapter as Phase 0.

3.3.6 For the purposes of assessment, commissioning undertaken at Phase 5 is assumed to include both systems testing and other integrated commissioning works.

Plate 3.1: Assumed construction programme



~~b)~~a) Construction workforce

3.3.7 Workforce numbers have been estimated based on the workforce deployed to date at Flamanville 3 and Hinkley Point C, and the total estimated workforce hours to complete construction. Experience of construction of other multiple reactor unit plants in France has been factored in to convert the single-unit Flamanville workforce numbers required for the twin-unit power station at Sizewell C.

3.3.8 The Sizewell C Project's transport and socio-economic effects are influenced by two core assumptions about the construction workforce:

- The number of workers required over time, by skill/role, and the extent to which they can be sourced from existing labour markets (home-based) or would temporarily move to the area (non-home-based).
- The spatial distribution of workers (by accommodation type) across the area.

3.3.9 For the purposes of the Environmental Impact Assessment, during the peak year a total of 7,900 construction workers are assumed to be working on the nuclear power station at the main development site at any one time and 580 workers are assumed to be working at the accommodation campus and caravan park. A further 20 staff are assumed to be working at the freight management facility. This is a precautionary approach to ensure that appropriate mitigation can be applied.

3.3.10 The **Accommodation Strategy** (Doc Ref. 8.10) addresses the capability of existing local accommodation to house construction workers and defines the need for and size of the accommodation campus for workers, resulting in an on-site campus at Sizewell for up to 2,400 persons, as described later in this section.

3.3.11 The remaining workers would be distributed around the local area and the geographical distribution is predicted using a gravity model in the **Transport Assessment** (Doc Ref. ~~8.5~~8.5A) and the **Transport Assessment Addendum** (Doc Ref. 8.5(A)Ad). This assessment has identified the need for park and ride facilities as part of an integrated approach to worker transport as described in **Chapter 2** of both **Volume 3** (Doc Ref. 6.4) and **Volume 4** ~~of this~~ (Doc Ref. 6.5) of the **ES**.

~~c)~~b) Working patterns

3.3.12 The majority of workers are expected to be working on either an early shift or a late shift. Most of the remaining employees would work to office hours. Shift patterns are set out in **Table 3.1**.

Table 3-1: Construction shift patterns.

Shift	Start Time	End Time
Early shift.	06:00–08:30	14:00–18:30
Late shift.	13:30–15:00	22:00–00:00
Night shift.	20:30–22:00	06:00–08:00
Office shift.	07:30–09:00	17:30–19:00

3.3.13 The early and late shifts as well as the night shift, are likely to operate on a four to six-week cycle. Within these cycles, there would be longer weekends that result in the earlier departure of staff on Thursdays or Fridays, generally between 14:00 and 16:00.

3.3.14 At weekends, it is anticipated that different working patterns would apply. There are two likely work patterns that may be used:

- Some construction staff may work on Saturday mornings, with no shift on a Sunday.
- Others may work an alternating pattern, which may operate on a four-week cycle comprising 12 working days (Monday to Sunday plus Monday to Friday) followed by a two-day non-working weekend (Saturday and Sunday), followed by 11 working days (Monday to Sunday plus Monday to Thursday), followed by a three-day non-working weekend (Friday to Sunday).

3.3.15 There would be some occasions and activities which require continuity of working (e.g. fixing of concrete formwork, large concrete pours, erection of steelwork and marine tunnelling activities) where the working pattern may differ from that described above. It is anticipated that these would involve a reduced proportion of the workforce. Where possible, the accommodation campus would be prioritised for workers more likely to undertake these activities.

3.3.16 The night shift would generally be a maintenance and logistics support shift, involving activities such as:

- unloading and storing the morning's earliest heavy goods vehicle (HGV) arrivals;
- unloading and storing of freight from rail deliveries overnight;
- unloading and storing freight from ~~occasional marine deliveries overnight activities for~~ marine deliveries;
- pre-placement of materials for the subsequent shifts;
- repositioning of scaffolding;
- essential plant maintenance and repair;
- dewatering operations;
- refuelling; and
- radiography of welds.

3.3.17 In addition, where continuity of work is essential, the night shift would include:

- tunnelling activities, including removal of excavated material;

- fixing of concrete formwork and reinforcing bars;
- welding of the reactor containment liner; and
- continuation of large concrete pours (in excess of 18 hours).

~~d)~~c) Construction materials

3.3.18 The Sizewell C Project would require around ~~10.1~~ 12.1 million tonnes of material to be imported to the main development site during the construction period~~, of which at least 3.5 million tonnes is expected to be transported by rail facilitated by the delivery of up to three freight trains per day (six movements) directly into the main development site. The remaining 6.6 million tonnes would be transported by road, as shown in **Table 3.2**. These figures exclude equipment and abnormal loads delivered by sea using the beach landing facility (BLF).~~.

3.3.19 New rail infrastructure would be constructed that would facilitate the import of material by rail on trains which are assumed to be capable of each carrying up to 1,250 tonnes of construction material. Further details on the frequency of trains are set out below.

3.3.20 A temporary Beach Landing Facility (BLF) is proposed, which is expected to allow around 1,275,000 tonnes of construction material per year to be imported by sea. Further details on its design and construction are set out later in this chapter.

3.3.21 The expected proportion of material imported by mode is set out in **Table 3.2**. These figures exclude equipment and abnormal loads delivered by sea using the permanent BLF.

Table 3-2: Expected ~~total volume~~ proportion of material by mode.

Mode	~~Import (Million Tonnes)~~Imported material (%)
Road	~~6.6~~40%
Rail	~~3.5~~30% - 50%
Sea	10% - 30%
Total	~~10.1~~**100%**

~~3.3.19~~3.3.22 The expected breakdown of imported material by main material type is set out in **Table 3.3**.

Table 3-3: Breakdown of expected import material by type.

Material Type	Weight (Million Tonnes(%))*
Concrete: • Cement • Sand • Aggregate.	5.1 (50%), of which: • 1.3 (25 4.8 (40%) • 1.3(25%) • 2.5 (50%).
Backfill	2.0 (20 3.3 (27%)
Steel	1.0 (108%)
Bitumen	1.0 (108%)
Other	1.0 (10 2.0 (17%)
Total	10.1 12.1 (100%)

* Note: the quantities of material imports are current estimates and are likely to change, as detailed design and construction methodologies are confirmed.

3.3.23 Further details on materials management are set out in **Appendix 3B** of this volume and in the **Materials Management Strategy Update** (Doc ref. 6.14).

3.3.203.3.24 Sufficient supply is likely to exist within the UK to source construction materials, with some very specialist and specific materials needing to be sourced from elsewhere in Europe. Due to the strict requirements for nuclear standard concrete, the approach taken for sourcing concrete supply is likely to replicate that used for Hinkley Point C, which sourced most material from within the UK. **Chapter 8** of this volume presents an assessment of the likely significant effects as a result of resource use.

e)d) Construction freight movements

i. Early years

3.3.213.3.25 During the early years of construction, the workforce would be smaller than at peak construction but the associated developments and other mitigation measures would not yet be in place. On a typical day during the early years, a total of 600 two-way HGV movements are expected (i.e. 300 HGVs in each direction).

3.3.223.3.26 Proposed HGV and bus routes to and from the main development site are shown on **Figure 3.7** of **Volume 2 Chapter 3** of the **ES** and **Figure 3.12** of **Volume 2 Chapter 3** of the **ES**.

~~3.3.23~~3.3.27 Once the work on the Saxmundham to Leiston branch line and at LEEIE has been completed, up to two return freight trains per day would operate in each direction during the early years of construction. This would include overnight movements along the East Suffolk line to and from the hold points on the Saxmundham to Leiston branch line, and during the day movements along the Saxmundham to Leiston branch line from the hold points to and from the LEEIE.

~~3.3.24~~3.3.28 Once construction of the ~~Green Rail Route~~ rail extension route into the temporary construction area is complete, this would provide capacity for ~~three~~ up to five return freight trains to operate in each direction~~. These trains would predominantly operate overnight to make use of available rail capacity at these times.~~ .

3.3.29 However, for the purposes of assessment, a total of four train deliveries (eight train movements) per day is assumed for the majority of the construction phase. For a period of approximately two years during the construction phase when demand for bulk material imports is at its highest, a fifth train delivery (10 train movements in total) per day is assumed.

3.3.30 These trains would predominantly operate overnight, after 23:00, to make use of available rail capacity at these times..

3.3.31 For the purposes of assessment, the reasonable worst-case scenario as relevant to each environmental topic has been assumed. These comprise variously:

- Up to eight train movements take place overnight (for noise assessment purposes); or
- All train movements take place overnight, except for up to three daytime movements per day (for the purposes of the transport assessment).

3.3.32 For assessment purposes, it is also assumed that trains would run six days per week, including Sunday night / Monday morning.

~~3.3.25~~3.3.33 Once construction of the permanent BLF is complete, annual campaign periods (approximately April to October) are expected for the BLF during construction, for a total of approximately four years. During each annual campaign period, there is estimated to be approximately ~~30~~ 100 Abnormal Indivisible Load (AIL) deliveries, resulting in a total of approximately ~~120~~ 400 beach landings within the course of the construction period.

3.3.34 Once construction of the temporary BLF is complete, up to approximately 400 deliveries between April and October (inclusive) and up to approximately 200 additional deliveries are assumed for the remainder of the year, for each year of operation (approximately eight years in total).

3.3.35 The operational constraints of the weather and the tide normally limit the marine campaign to a 7-month period annually between April and October. Based on these 29 weeks of operation each year, with two vessels of 4,500 tonnes offloading over each high tide there is a theoretical capacity of 1,827,000 tonnes. Allowing for efficiency, adverse weather, tidal conditions and breakdowns, the current assessment is that 70% utilisation is the upper limit that could be achieved, which would allow around 1,275,000 tonnes per year to be imported.

3.3.36 The potential for use in the remainder of the year is proposed but principally for resilience in the freight management strategy. There are logistical difficulties in being able to reliably deliver infrequently when weather conditions allow and no extra capacity from potential movements out of the summer campaign period has been assumed or relied on, although the potential effects of operating the temporary BLF throughout the year have been assessed.

ii. Peak year

~~3.3.26~~3.3.37 During peak construction of the main development site, the permanent BLF, temporary BLF and the ~~Green Rail Route~~ rail extension route would be in place to remove many heavy and oversized loads from the road network. The residual number of HGV movements is expected to be:

- ~~650~~ 500 two-way HGV movements on a typical day (i.e. ~~325~~ 250 HGVs in each direction); and
- ~~1,000~~ 700 two-way HGV movements on the busiest day (i.e. ~~500~~ 350 HGVs in each direction).

~~3.3.27~~3.3.38 Further details on traffic movement during the construction period are set out in Chapter 4 of the **Transport Assessment** (Doc Ref ~~8.5~~8.5A) and the **Transport Assessment Addendum** (Doc Ref 8.5(A)Ad).

~~3.3.28~~3.3.39 Proposed HGV routes to and from the main development site during peak construction are shown on **Figure 3.7** of **Volume 2 Chapter 3** of the **ES**.

iii. Competent Harbour Authority

3.3.293.3.40 During the construction period, a Competent Harbour Authority will be in place to facilitate the safe delivery of construction materials to site and ensure the safe construction of the offshore elements.

3.3.303.3.41 A Harbour Master will manage navigation within a defined Harbour Area, bounded by the coordinates presented in **Table 3.4** and shown in **Figure 3.14** of **Volume 2 Chapter 3** of the **ES**.

Table 3-4: Coordinates of Harbour Area.

Latitude	Longitude
52°14'0''	1° 37' 37''
52°14'0''	1° 41' 0''
52° 12' 0''	1° 41' 0''
52° 12' 0''	1° 37' 20''

3.3.313.3.42 The Harbour Area has been defined by the need to include the full extent of the offshore works including the cooling water intake and outfalls and the use of discrete lines of latitude and longitude have been chosen as these are easier for mariners to use in the absence of any suitable landmarks.

3.3.323.3.43 The Harbour Authority would be in place throughout the construction period but surrendered at the end of the construction period. Although the permanent BLF would remain in place throughout the operation period for occasional delivery of AILs during maintenance periods, deliveries would be infrequent and not require the Harbour Authority to be in place.

3.3.333.3.44 Further information on the need for a Competent Harbour Authority is provided within **Regulation 6 Additional Information** (Doc Ref. 7.2) and an assessment of risks to navigation is provided in **Chapter 24** of **this Volume.**

3.4 Typical construction activities by sub-area

a) Main platform

3.4.1 The main platform refers to the area within which the main construction activity would occur and where the majority of permanent plant and buildings would be constructed, together with the foreshore works. It is bounded by Sizewell B power station to the south, Sizewell Marshes SSSI to the west and north, and a gravel beach to the east with the North Sea beyond, as shown on **Figure** ~~3.2~~1.2 of **Chapter 1** of **Volume 2** of the **ES** (Doc Ref. 6.3) .

3.4.2 **Table 3.5** sets out the maximum heights for construction activities on the main platform. The table should be read in conjunction with **Figure** ~~3.1~~2.2.2 of **Volume 2** of this **ES Addendum**. Existing ground levels are shown on **Figure 1.8** of ~~this volume~~**Chapter 1** of **Volume 2** of the **ES**.

3.4.3 The construction plant schedule in **Appendix A** of ~~this volume~~ **Volume 2** of the **ES** presents the significant noise sources assumed during each main phase of construction.

3.4.4 Further details are set out by phase below and illustrated in **Volume 2, Figure** ~~3.2 to~~ 2.2.34 of the **ES Addendum** to **Volume 2, Figure** ~~3.6~~2.2.38 of the **ES Addendum**.

Table 3-5: Construction zones and height parameter – main platform

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zone C1: Construction of the main platform.	Working envelope for main platform construction requirements. Structures to include: temporary buildings, tower cranes, mobile cranes and other specialised lifting equipment.	160 metres (m) above ordnance datum (AoD).
Zone C1: Construction of the main platform – exceptional circumstances.	Working envelope for exceptional structures that are required for the lifting and installation of reactor domes and other time limited activities that require specialised cranes of lifting equipment that go above the height parameters set out in Construction Zone 1. Typically these would include large mobile cranes for installation of the dome associated with the two reactor units.	250m AoD.

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zone C16: Construction of the permanent beach landing facility	Working envelope for permanent beach landing facility construction requirements.	25m AoD.
Zone C16: Construction of the permanent beach landing facility – exceptional circumstances	Working envelope for permanent beach landing facility construction requirements. Structures to include temporary cranes and other specialised equipment.	~~25m~~ 60m AoD.
Zone C20: Construction of the temporary beach landing facility	Working envelope for temporary beach landing facility construction requirements.	25m AoD.
Zone C20: Construction of the temporary beach landing facility	Working envelope for temporary beach landing facility construction requirements. Structures to include temporary cranes and other specialised equipment.	60m AoD.
Zone C21: Marine tunnelling and shafts	Working envelope for marine tunnelling and shafts. Structures to include temporary cranes and other specialised equipment.	40m AoD.
Zone C21: Marine tunnelling and shafts – exceptional circumstances	Working envelope for marine tunnelling and shafts. Structures to include taller cranes and other specialised equipment.	70m AoD.
Hard coastal defence feature	Working envelope for construction requirements.	15m AOD

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Hard coastal defence feature – exceptional circumstances	Working envelope for construction requirements. Structures to include temporary cranes and other specialised equipment.	35m AOD

i. Phase 1

Establishment of construction area

3.4.5 Enabling works would take place prior to formal site establishment, including archaeological and protected species mitigation works (translocation of species such as reptiles and water voles, and related local habitat removal).

3.4.6 Construction work would then begin by securing the site through installation of security fencing and site clearance, demolition of above and below ground structures and buildings and diversion of existing utilities as necessary. Areas of vegetation clearance and retention are shown on ~~**Figure 3.9** and **Figure 3.10**~~**Figures 2.2.39** and **2.2.40** of **Volume 2** of the **ES Addendum**.

3.4.7 Acoustic fences and earth bunds would be used, where necessary, to attenuate noise levels. Earth bunds would be grassed/seeded.

3.4.8 Contractor compounds would be erected including welfare and office accommodation. Storage and handling areas, facilities for and equipment for processing of excavated materials and other temporary facilities, plant, cranes and machinery would also be provided.

3.4.9 Temporary buildings would use modular (pre-fabricated) buildings on concrete foundations, as far as practicable.

Permanent land take within Sizewell Marshes SSSI and realignment of the Sizewell drain

3.4.10 Overall, the construction of Sizewell C would result in the temporary loss of approximately ~~2.9ha~~ 3.02ha of land within the Sizewell Marshes SSSI. Further details on individual habitat losses, alongside proposed mitigation and compensation, are set out in **Volume 2, Chapter 14** of ~~this **ES**~~the **ES** (Doc Ref. 6.3).

3.4.11 Sizewell drain currently runs diagonally across the north-west corner of land that will become the main platform. The drain would therefore need to be realigned to pass along the western edge of the proposed platform and connect to Leiston drain to the north, as shown on **Figure 3.13** of **Volume 2 Chapter 3** of the **ES**.

3.4.12 Initial access to the current drain would be made via the north or south for vegetation clearance and species relocation. Ground improvement works may be necessary in the form of piles or equivalent, dependent on ground conditions.

3.4.13 The realigned drain would be provided with a falling gradient and width to provide, at minimum, the same capacity as the current alignment. Banks would be varied to provide a more natural appearance.

3.4.14 The trench for the realigned drain would be excavated from the east, using standard wheeled equipment. Sheet piling would be installed on the eastern bank of the realigned drain to the depth of the first suitable crag level. Matting may be used during the works to prevent settlement of machinery into the soft ground.

3.4.15 Once the realignment is complete, the reclaimed area would be infilled with granular material to provide a suitable ground conditions for the creation of the cut-off wall platform.

3.4.16 Further details of the likely construction method for individual sections of the ~~realignmen t~~ realignment works are set out below.

Realignment works upstream of IDB DRN163G0201

3.4.17 For realignment works upstream of Internal Drainage Board (IDB) DRN163G0201, as shown on **Volume 2**, **Figure 19E.2** of the **ES** (Doc Ref. 6.3), construction would take place solely from the main platform. The only exceptions to this would be:

- where vegetation clearance is required to provide adequate clearance for plant;
- for the supervision of construction works; and
- where new/repositioned structures are required to maintain water levels within the fen meadow habitat.

3.4.18 The drain would be realigned immediately following construction of the sheet piling. This would better enable construction of a stable bank for the realigned drain closest to the piling to take place.

3.4.19 Water levels would be monitored during piling and an allowance made for pumping of land drainage where required to ensure that temporary construction effects are controlled to within acceptable limits.

Realignment works downstream of IDB DRN163G0201

3.4.20 For realignment works downstream of IDB DRN163G0201, as shown on **Volume 2**, **Figure 19E.2** of the **ES** (Doc Ref. 6.3), realignment of the drain would again immediately follow the installation of sheet piling. Access arrangements would be directly from the main platform. Due to the topography and water levels, a new water level control structure is likely to be required on the outer (west) bank to aid water level management in the adjacent wetland area, as described below, and therefore some construction is likely to be required on the outer (west) bank.

3.4.21 Apart from the above exception, construction access, and therefore any associated compaction of the underlying peat and any further temporary works, would be focused on the inner (east) bank to help protect the SSSI. A temporary crossing point may be required on IDB DRN163G0201 to provide access to Goodram's Fen whilst maintaining existing land drainage, until the realigned drain is in place.

Realignment works at Leiston drain

3.4.22 Construction works will aim to minimise disturbance to Leiston drain and would generally be limited to:

- works within approximately 10m of the new confluence of the Sizewell drain and Leiston drain;
- a further drain connection on the south bank of Leiston drain to a relic drain; and
- small-scale works (as necessary) to modify the form and function of Leiston drain.

3.4.23 Construction is likely to take place from the outer (north) bank of the channel where ground conditions are typically more stable. Where practicable, realignment works would take place concurrently with construction works to the SSSI crossing to minimise disturbance.

Water level control structures

3.4.24 There are currently many confluences between the Sizewell drain and other tributary drains in the Sizewell Marshes SSSI, as its drainage

network is generally artificially controlled. This includes the use of water level control structures, including sluices and simple piped connections. Monitoring shows them to be effective in contributing to the conservation of biodiversity interests in this SSSI.

3.4.25 As part of the realignment works, additional means of permanently manipulating water levels within the Sizewell Marshes SSSI are proposed. This would ensure water levels that would otherwise have changed as a result of the proposed development can be mitigated, where this is necessary to conserve biodiversity interests. Such control structures would include passage for fish, including eels.

3.4.26 IDB DRN163G0201 would incorporate temporary measures to provide pollution control, which would ultimately be removed to form an open connection with Sizewell drain. It is also proposed that an area of deeper water is created here by excavating the channel bed to a greater depth in a stepped profile. Pipe dams would also be installed as necessary within the site boundary at the confluences with other minor ditches that would adjoin the realigned drain.

3.4.27 A water control structure would be installed in the realigned Sizewell drain, approximately 5-10m south of the confluence with Leiston drain. Due to the capacity of Sizewell drain, a tilting weir is likely to be necessary to provide an adaptive water management regime across the eastern areas of Sizewell Marshes, unless evidence shows that a pipe dam is sufficient at the detailed design stage.

3.4.28 Whilst the realignment works are taking place, short-term temporary blind bunds are likely to be necessary to restrict water flow. Blind bunds are currently present within parts of the SSSI.

Installation of a cut-off wall and cut-off wall platform

3.4.29 The cut-off wall platform would be constructed around the perimeter of the location of the cut-off wall and would include a perimeter access corridor. The platform would be constructed to a level suitable to enable a uniform level to construct the cut off wall. There would be a retaining slope from the platform to the newly aligned Sizewell drain.

3.4.30 The activities necessary to construct the cut-off wall would be:

- Installation of piles to a depth of approximately 12m to support soft strata during installation of the cut-off wall.
- Installation of a hydraulic cut-off wall to depths of approximately 50m below ground level. Machines would excavate the material, replacing

it with bentonite in the short term. Bentonite would be used to stabilise the trench cutting during excavation.

- Bentonite would be produced on-site at a bentonite farm, which would mix the required solution as well as clean returned bentonite. Bentonite waste would either be removed to an approved landfill site or retained on-site and used in the fill of the borrow pits. Bentonite wastewater would be treated and either discharged via the combined drainage outfall (CDO) or tankered off-site.

- The cut-off wall would be anchored into the low permeability London Clay Formation at depth limiting the hydraulic connection with the wider groundwater regime in the overlying geological strata.

3.4.31 Arisings from the cut-off wall excavations would be stockpiled on the main platform prior to completion of the SSSI crossing, when they would then be transported via haul road to the temporary construction area stockpiles.

3.4.32 Groundwater abstracted during dewatering would be treated if necessary before it is either discharged to sea via the CDO in compliance with an environmental permit or stored onsite for reuse in supporting construction activities. To lower groundwater levels within the cut-off wall, a dewatering pumping system would be used in the crag sands ~~to~~ below the deepest earthworks excavation.

~~3.4.33 As part of the construction of the Sizewell C recirculated water outfall tunnels, tunnel boring machine launch chambers are required. These would be constructed within cofferdams within the cut-off wall and require locally deeper dewatering.~~

~~3.4.34~~3.4.33 A secondary cut-off wall would also be installed at the toe of the embankment slope leading to the main platform. This cut-off wall would utilise sheet pile methods to prevent the surrounding peat and crag formations from slumping.

Installation of launch chambers for marine tunnelling

3.4.34 As part of the construction of the Sizewell C recirculated water outfall tunnels, tunnel boring machine launch chambers are required. These would be constructed outside of the cut-of wall. Localised dewatering would be undertaken independently of dewatering within the cut-off wall.

Construction of a crossing over Sizewell Marshes SSSI, including temporary crossing

3.4.35 The Sizewell Marshes SSSI crossing would comprise ~~an embankment and culvert, with the culvert of sufficient dimensions to leave the bank and channel of the Leiston drain intact. The culvert would be sized to facilitate the passage of fish, bats, otters and water voles through the structure, and a~~ separate embankments at either end with an approximately 30m long single-span bridge connecting them. A ledge would be installed to ~~further~~ encourage passage by otters~~, if deemed necessary following detailed design~~. Appropriate lighting and noise protection measures would be deployed to ensure the ~~culvert~~ bridge is viable for use by bats. Further details are set out in the Lighting Management Plan contained in ~~**Volume 2, Appendix 2B** of this **ES**.~~**Appendix 2B** of **Volume 2** of the **ES** (Doc Ref. 6.3). Further details of the permanent design are set out in **Chapter 2** of this volume of the **ES Addendum**.

3.4.36 A sheet pile barrier wall would be driven into the ground either side of the Leiston Drain. The bank and channel of Leiston Drain would be unaffected.

~~3.1.1 To ensure works to construct the cut-off wall can progress as soon as possible, early access from the temporary construction area to the main platform area would be provided using a short-term crossing and would be designed to cater for lighter site traffic and material deliveries. Prior to this, all construction traffic including materials, plant, equipment and labour would access the main platform via the Sizewell B site access route.~~

~~3.1.1 Two access routes would be provided on the SSSI crossing during the construction phase to enable segregation of general site traffic from heavy earthmoving plant for site safety.~~

~~3.1.1 A typical cross-section illustrating how the SSSI crossing would interface with the SSSI and Sizewell drain during construction is shown on **Figure 3.11**. A typical cross-section for the permanent development is shown on **Figure 2.13**.~~

3.4.37 The width of the bridge over the Leiston Drain would be approximately 40m and the overall width of the crossing at its base would be up to approximately 70m. Splayed wing walls over the Leiston Drain would seek to maximise daylight. The structure would be up to approximately 8m in height and approximately 45m in width at the underside of the bridge Therefore, it is assumed the area underneath the centre of the crossing will be in deep shade.

3.4.38 The gradient of the slope on the eastern (seaward) side would be approximately a 1:3 gradient. The landward slope would be approximately

a 1:1 gradient accordingly. Soft landscaping would be provided on both sides of the embankment, with more substantial planting on the seaward side.

3.4.39 The existing ground below the embankments is assumed to be improved with a grid of rigid inclusions formed of controlled modulus columns (CMCs) or similar and overlaid with a reinforced granular stone load transfer platform above.

3.4.40 Contamination of the groundwater within the SSSI during construction would be prevented by provision of an impermeable sheet pile wall surrounding the construction area and permanent works, which would be embedded into the Crag layer below the softer materials near the surface.

3.4.41 During construction, the SSSI crossing would include segregated lanes for pedestrians, two-way light goods vehicles and two way working for off-highway dump trucks.

3.4.42 Two “Bailey” style temporary crossings would be installed in advance of the main crossing and within the SSSI crossing working area to provide an early route between the temporary construction area and the main construction area and to facilitate construction of the permanent bridge. They would be constructed on a temporary foundation to the south and to the north the foundation would be shared with the proposed permanent foundation

3.4.43 At the end of the construction phase, the construction haul road would be removed and planted with trees. The remaining access road would be positioned to the western edge of the embankment, away from the coastal edge. The carriageway would have an approximate width of 12m and require approximately 3m high safety barriers on either side.

~~3.1.43~~3.4.44

Laying out of construction roads

~~3.4.36~~3.4.45 ~~A haul road~~ Haul roads would provide a dedicated route for heavy earthmoving plant from the main platform to the TCA stockpiles. A conveyor system for the movement of construction material, which would typically be covered, is assumed to be provided along a similar route to the haul roads and connecting with the temporary BLF. A segregated route would be provided for general site traffic.

Initial coastal defence feature constructed

~~3.4.37~~3.4.46 The area currently benefits from protection by the Bent Hills, a man-made bund structure constructed as part of the landscaping scheme for Sizewell B. The Bent Hills extend from south to north along the top of the shore, merging to the north with an east-west feature known as the Northern Mound.

~~3.4.38~~3.4.47 The Northern Mound is likely to consist of mainly made ground material as a repository for Sizewell B surplus construction materials. Due to seismic requirements, the existing Northern Mound would need to be demolished and excavated down to a suitable formation layer before being built back up. Piling foundations may need to be constructed to stabilise the ground works prior to the installation of large rock armour. The rock armour would then be overlaid with site-won fill material and seeded to allow vegetation to take hold as early in the construction period as practicable.

~~3.4.39~~3.4.48 For the construction of Sizewell C, a new hard coastal defence feature (HCDF) would be required. The HCDF would be approximately ~~40m~~ 50m east of the existing Bent Hills and would replace the Bent Hills. To protect Sizewell C once the power station is operational, the Northern Mound would act as part of the HCDF.

~~3.4.40~~3.4.49 Sand and shingle substrates from the existing surface layers of the Bent Hills frontage would be stockpiled on the main development site to preserve the seedbank of the coastal vegetation and would be incorporated into the final landscaping of the new sea defence to enable reinstatement of the coastal vegetation.

~~3.4.41~~3.4.50 The sea defences would include retention and extension of the existing 5m high sacrificial sand dune approximately ~~35m~~ 25m in front of the HCDF, known as the soft coastal defence feature (SCDF). The role of the sacrificial dune would be to minimise coastal erosion and release sediment to the beach face, which would only be activated during a storm event. It is likely that the dune would occasionally be eroded and require repair in order to maintain its volume.

~~3.1.1 Following excavation and ground treatment, the construction phase HCDF would be built up using rock armour. This would form the eastern part of the permanent HCDF. The north-eastern corner of the HCDF would be curved to minimise potential disruption to sediment transport, if eroded the feature becomes exposed. Site-won fill material would be placed over the rock armour and planted to soften views from the coastal path.~~

3.4.51 Following excavation, the initial HCDF during the construction phase would comprise a sheet pile wall with a crest height of +7.3m AOD around the eastern perimeter of the main construction area. It would be constructed prior to removal of the existing defences. This height provides for a 1 in 10,000 year storm event at 2030, including a precautionary assumption for wave height. The sheet pile would be embedded into the underlying Crag layer, which is typically up to -9mOD.

3.4.52 The sheet pile wall would tie in with the existing ground at the Northern Mound. At its southern extent, it is assumed that there would be a transition provided to the Sizewell B sea defence using imported rock and shingle at up to +10.5mOD.

3.4.53 The temporary HCDF would be located on what would become the seaward slope of the permanent HCDF, as shown in **Figure 2.2.21** of **Volume 2** of the **ES Addendum**. The parameter location of the temporary HCDF is shown at **Volume 2**, **Figure 2.2.2** of the **ES Addendum**.

3.4.54 The temporary defence would be breached to allow access to the permanent BLF; however, this would only happen after the reinforced core of the permanent defence has been constructed up to a minimum level of 9.1m AOD.

~~3.1.6~~3.4.55

~~i.~~ii. Phase 2

Excavation of unsuitable material within the cut-off wall and backfilling

~~3.4.42~~3.4.56 Earthworks would commence alongside dewatering of the area within the cut-off wall area, as shown ~~on~~ in **Figure ~~3.3~~2.2.35** of **Volume 2** of the **ES Addendum**.

~~3.4.43~~3.4.57 Existing made ground and granular materials would be removed and transported to the stockpile areas within the TCA.

~~3.4.44~~3.4.58 Peat and clay materials that are unsuitable for re-use on the main platform would be removed and transported to the borrow pit area. An agent would be added, if necessary, to reduce the water content and make the materials easier to deposit and compact.

~~3.4.45~~3.4.59 The main platform would be backfilled to approximately 7.3m AoD.

~~3.4.46~~3.4.60 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

Marine shafts and tunnelling

3.4.473.4.61 Work would commence to construct the marine launch chambers and bore the intake and outfall tunnels from ~~within~~ adjacent to the main platform.

Construction of the permanent beach landing facility

3.4.483.4.62 The permanent BLF (Parameter Zone C16) is proposed to enable deliveries of very large loads such as~~, but not limited to,~~ Abnormal Indivisible Loads ~~(AIL~~(AILs) to support construction of the power station. An access road would link the permanent BLF to the main platform via the lower levels of the Northern Mound.

3.4.493.4.63 The permanent BLF would consist of a piled platform, fenders (located at the seaward end), a ramp~~.~~, a grounding platform on the sea bed and mooring dolphins. ~~Piling for the BLF would be necessary to a depth of approximately 23m below sea bed level and impact piling is assumed. There will be up to approximately 20 marine piles to ensure the BLF is transmissive to water and sediment flows. Piling for dolphins would be carried out from a jack leg rig or barge.~~ It would require approximately 28 permanent piles in total. No pile driving would take place between May and August (inclusive). The approximate dimensions of the piles are as follows:

- 24 of these piles are expected to have a diameter of approximately one metre and would be spaced a minimum of approximately 9m apart, excluding fender piles and mooring dolphins.

~~54.0.0 Localised dredging will be necessary prior to piling and is likely to take approximately 12 weeks.~~

~~55.0.0 Following completion of the piling works, remaining construction would be craned into position from the shore end by a mobile crane.~~

~~56.0.0 This part of the coastline would be closed for approximately six months during construction of the BLF and a diversion of the coastal path would be in place.~~

- Four fender piles and mooring dolphins are expected to have a diameter of approximately 2.5 metres.

3.4.64 The construction methodology (including piling method) would be the same as set out below for the temporary BLF.

3.4.65 The grounding platform would be made of a combination of concrete, timber and steel, or similar. It would protrude above bed level by less than

a metre and shallow foundations are assumed to be embedded into the sea bed. The sea bed would be graded to a roughly level surface before laying the platform, which is assumed to require localised dredging of less than a metre. Dredged material would not be removed from the sea and would be placed in close proximity to the BLF.

3.4.66 The sequence of installation would comprise:

- Prepare grounding area (approximately 100m x 30m) by trimming the seabed with an excavator.
- Place ground beams in trenches using a crane. Approximately 25 small bore piles would be required to control lateral shift of the grillage.
- Place platform or cross beams on top of ground beams using a crane and secure to ground beams.

3.4.67 On occasion, light injection dredging may be required if sand accumulates on the grillage when the BLF is in use. Excavated material would not be removed from the sea and would again be placed in close proximity to the platform.

3.4.68 The platform may require reinstallation following storm events or at the beginning of each summer period during construction use. The platform would be removed at the end of its use period within the construction phase. A grounding pocket would be used for deliveries after the platform is removed, as per the originally submitted assessment.

3.4.69 A dredging volume of approximately 9,250m^3 is assumed to facilitate access and barge grounding.

3.4.70 The Suffolk Coast Path would be redirected up and down the shoreline as necessary to facilitate construction of the permanent BLF, except in rare circumstances where it is considered unsafe to do so. In such instances, use of the temporary inland diversion would be necessary, as shown in **Volume 2**, **Figure 15l.4** of the **ES** (Doc Ref. 6.3). Access to the beach would follow the same approach.

~~3.4.50~~3.4.71 The BLF would extend up to approximately ~~37m seaward of the mean high water mark and approximately 70m~~ 100m seaward of the HCDF. Any coatings or treatments applied to the BLF would be suitable for use in the marine environment.

~~3.4.51~~3.4.72 Once operational, the BLF would typically receive deliveries by day ~~and occasionally by night when sea conditions are suitable~~. Barges would be loaded at a transhipment port and~~, on approach to the BLF, the barge~~

would be assisted ~~by~~ typically by two tugs and moor at the end of the permanent BLF at high water. Up to 100 deliveries per annual campaign are assumed using barges with a capacity of approximately 3,000 tonnes.

~~3.4.52~~3.4.73 Deliveries would typically be transported onto the main platform or to the TCA without delay via the BLF access road, which would cross the beach and would be incorporated into the embankment of the Northern Mound.

~~3.4.53~~3.4.74 During long periods of downtime, such as the winter season, the deck panels to the BLF would be temporarily removed and stored on the main development site.

~~3.4.54~~3.4.75 The BLF would be retained as a permanent development for occasional use during the operational phase of the power station, as set out in more detail in **Chapter 2** of ~~this volume.~~ **Volume 2** of the **ES** (Doc Ref. 6.3).

Construction of the temporary beach landing facility

3.4.76 The temporary BLF (Parameter Zone C20) is proposed predominantly for the delivery of bulk construction materials, such as aggregate. Other types of material may also be imported through the temporary BLF, such as marine tunnel segments for marine works.

3.4.77 The temporary BLF would be in operation for approximately 8 years and would be located within construction parameter zone C20 (see **Figure 2.2.2** of **Volume 2** of this **ES Addendum**), which is located approximately 165m to the south of the permanent BLF.

3.4.78 The temporary BLF would be up to approximately 505m in length and up to approximately 12m in width for the main jetty. An enlarged unloading area would form a jetty head with dimensions of up to approximately 62m in width. A single berth (for a single vessel) is assumed at its seaward end. The structure would be a visually recessive colour as far as reasonably practicable. An indicative visualisation of the temporary BLF is shown **Figure 2.2.4** in **Volume 2** of this **ES Addendum**.

3.4.79 A temporary conveyor would be installed along the length of the temporary BLF deck and would be the primary method of unloading material. The conveyor would follow the deck to the Hard Coastal Defence Feature (HCDF) where it would continue into the secure construction area. Except where necessary for loading, unloading or maintenance, the conveyor would be covered. The conveyor would pass over the Suffolk Coast Path on the deck of the temporary BLF. It is assumed that the conveyor system would travel continue into the construction site and

follow a similar route to the haul roads. The underside of the temporary BLF deck would be at least 3.7m above the ground level of the Suffolk Coast Path.

3.4.80 The Suffolk Coast Path would be redirected up and down the shoreline as necessary to facilitate construction of the temporary BLF, except in rare circumstances where it is considered unsafe to do so. In such instances, use of the temporary inland diversion would be necessary, as shown at **Volume 2**, **Figure 15I.4** of the **ES** (Doc Ref. 6.3). Access to the beach would follow the same approach. An indicative visualisation of the temporary BLF on the beach is shown in **Figure 2.2.5** of **Volume 2** of the **ES Addendum**.

3.4.81 Other main infrastructure on the temporary BLF deck is assumed to include: an access road, for exceptional use by large vehicles; a private access footpath, lighting, hoppers; and railings or similar (to also provide some low-level screening of vehicle movements).

3.4.82 Standard navigation lights would be required on mooring dolphins and on nearby navigation markers and buoys. Task and ambient lighting would be required along the temporary BLF and would be installed, operated and maintained in general accordance with the controls and limits set out in **Appendix 2B** of the **ES** (Doc Ref. 6.3).

3.4.83 A self-propelled vessel typically delivering up to approximately 4,500 tonnes of cargo per delivery is assumed, making up to approximately 400 deliveries between April and October (inclusive) and up to approximately 200 additional deliveries for the remainder of the year, for each year of operation.

3.4.84 The temporary BLF would extend seaward of the outer longshore sand bar. As such, there would be no requirements for dredging and vessels could berth alongside with sufficient under keel clearance. The length of the vessel may be up to approximately 120m. The vessel is assumed to include an excavator at deck level to unload material.

3.4.85 The majority of vessel movements would typically travel to the site from the south, following a corridor between approximately two nautical miles and approximately six nautical miles offshore, except where it is necessary to deviate on safety grounds. It is assumed for the purposes of assessment that all vessels travelling to/from the south would navigate the full corridor between the site and the Thames Estuary. All vessels are assumed to approach the temporary BLF from the north of the Sizewell Bank, to avoid the area of relatively shallow water on the approach from the south.

3.4.86 Approximately 114 piles would be required to construct the temporary BLF, of which approximately 12 would be located above Mean High Water Springs. They would each be up to approximately 1.2m in diameter, with the exception of two berthing dolphins and two mooring dolphins (each approximately 2.5m in diameter). Six raking piles are assumed at the seaward end of the unloading platform. Cross braces would be required between some of the piles for stability.

3.4.87 Spacing between piles would be no less than 10m on the BLF pier and no less than 12m on the unloading platform, with the exception of where the dolphins, raking piles and pier adjoin the unloading platform.

3.4.88 It is assumed that the piles would be driven by hammering with the following mitigation measures in place:

- Marine mammal observation – a visual inspection for local marine mammals prior to commencement of piling.
- Use of a noise reduction system on the hammer (e.g. hydrohammer).
- Slow start procedure.
- No pile driving between May and August (inclusive).

3.4.89 Two piles would typically be driven every three days (for each BLF) to an embedment depth of approximately 20m, with hammering typically lasting approximately one hour per pile. Piling is assumed to occur simultaneously.

3.4.90 With the exception of the mooring dolphins, which would be installed using a jack-up barge, the temporary BLF would be predominantly constructed without placing construction vehicles into the sea. A crane, cantilever frame and piling equipment (including generators) are assumed to be located on the temporary BLF during construction. The temporary BLF would be constructed sequentially from the shore. A crane would not be used as part of normal operations.

3.4.91 The duration of the construction period for the temporary BLF is expected to be up to approximately nine months. The installation and commissioning of the conveyor system is assumed to take approximately a further eight months. It is assumed that the temporary BLF would be constructed at the same time as the permanent BLF.

~~iv.~~iii. The temporary BLF would predominantly be dismantled without placing construction vehicles into the sea, including use of a crane on the BLF. Piles would typically be removed by pulling using a

vibrohammer. Piles that cannot be removed using this method would require the use of a jack-up barge and would be cut off below sea bed level and removed. Phase 3

Construction of buildings, plant, facilities and other structures

3.4.553.4.92 The nuclear island buildings would be constructed with reinforced concrete. The concrete would be mixed using onsite batching plants in the temporary construction area.

3.4.563.4.93 The reactor building incorporates a steel liner which forms the inner shell of the building. Sections of the liner would be pre-fabricated within either the main platform or the temporary construction area and craned into position.

3.4.573.4.94 Concrete buildings within the conventional island would be constructed using similar methods to the nuclear island buildings.

3.4.583.4.95 Construction of pylons within the main platform would generally follow the same construction methodology as described below for National Grid pylons.

3.4.593.4.96 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

v.iv. Phase 4

Installation and testing of mechanical and electrical plant

3.4.60 Approximately 180 mechanical and electrical plant items, e.g. the reactor pressure vessels, would be AILs and may be shipped to the BLF during this phase.

3.4.613.4.97 The majority of mechanical and electrical activity would take place within the power station buildings.

3.4.623.4.98 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

Construction of permanent coastal defence features

3.4.633.4.99 During By Phase 4, the western part of the permanent sea defences would be constructed, involving the raising of the construction phase sea defence, to the final permanent level of +10.2m AoD. This would be followed by the implementation of a landscape scheme to soften the visual appearance through planting and varying the backfilled height between +10.2m AoD and +12.2m AoD. permanent level of +12.6m AOD .

This height provides for a 1 in 10,000 year storm event at 2140, including a precautionary assumption for wave height. Up to two metres of landscaping is assumed on the seaward slope and the crest, which would be constructed to varying depths to create naturalistic undulations to a typical gradient of approximately 1 in 3 on the embankment. The total height of the permanent HCDF with landscaping is therefore up to +14.6m AOD. The seaward toe of the sea defence would be buried to a depth of approximately +0mOD. A temporary cofferdam would be created to facilitate construction underwater.

3.4.100 The permanent design would include rock armour placed on the seaward side of the sea defence.

3.4.101 Fill material is assumed to be placed on the landward side and the core of the sea defence, with reinforcements, as necessary. Ground improvement works are assumed to be necessary using CMCs or similar where underlying peat is present.

3.4.102 Landscaping is assumed to comprise filling the interstices of the rock armour with shingle and sand followed by topsoil and planting, as appropriate. The coast path would form part of the seaward landscaping and would typically be placed at approximately +5mOD.

3.4.103 Unlike other construction materials, it is assumed that the rock armour or similar would be offloaded from grounded barges directly onto the beach.

3.4.104 Indicative details of the permanent HCDF are shown on **Volume 2, Figure 2.2.22** and **Figure 2.2.23** of the **ES Addendum**.

~~vi.~~v. Phase 5

Removal of temporary facilities to allow completion of groundworks, landscaping and the main platform

~~3.4.64~~3.4.105 Following completion of the works listed above, temporary facilities on the main platform would be removed and the final surfacing would be undertaken as part of on-site hard landscaping.

~~3.4.65~~3.4.106 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

b) Sizewell B relocated facilities and National Grid land

~~3.4.66~~3.4.107 The Sizewell B relocated facilities and National Grid land is the area that certain Sizewell B facilities would be moved to in order to release other land for the proposed development, and land required for the

National Grid transmission network, as illustrated on **Figure 1.2** of Chapter 1 of this volume.

3.4.673.4.108 A full description of works required for Sizewell B relocated facilities is provided within **Volume 1, Appendix 2A** of the **ES** (Doc Ref. 6.2). A summary of the works is also included below. For the purposes of this **ES**, it has been assumed that the first phase of the Sizewell B relocated facilities works would be carried out in Phase 0 pursuant to a planning permission granted by East Suffolk Council (ESC) on 13 November 2019 under the Town and Country Planning Act 1990, application ref. DC/19/1637/FUL. The second part of the Sizewell B relocated facilities works would be carried out pursuant to the DCO in Phases 1 and 2 in parallel with other DCO works due to take place at that time.

3.4.683.4.109 **Table 3.6** sets out the parameters for construction activities on Sizewell B relocated facilities and National Grid land. The table should be read in conjunction with the parameter plan shown on **Figure 3.12.2.2** of **Volume 2** of this **ES Addendum**. Existing ground levels are shown on **Figure 1.8** of **Chapter 1 Volume 2** of the **ES** (Doc Ref. 6.3).

3.4.693.4.110 Further details are set out by phase below and illustrated in **Figure 3.2** and **Figure 3.32.2.38** of **Volume 2** of this **ES Addendum**.

Table 3-6: Construction zones and height parameter – Sizewell B relocated facilities and National Grid land.

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zone C17 Construction activities on Sizewell B relocated facilities	Working envelope for Sizewell B relocated facilities. Structures to include: temporary buildings, tower cranes and mobile cranes.	50m AoD.
Zone C19 Working envelope for National Grid	Working envelope for National Grid land. Structures to include: temporary buildings, tower cranes and mobile cranes.	120m AoD.

i. Sizewell B relocated facilities works in Phase 0

Coronation wood area

3.4.703.4.111 Initial construction activity comprises the felling and grubbing of Coronation Wood.

~~3.4.71~~3.4.112 Once Coronation Wood has been cleared, construction of the western access road would commence to allow the separation of construction traffic from the main access road to Sizewell B at the earliest opportunity. A run-off drain would be constructed to the west of the road to avoid surface water run-off from the site discharging into the Sizewell Marshes SSSI.

~~3.4.72~~3.4.113 Following construction of the western access road to a standard suitable for the construction traffic, the remainder of the Coronation Wood development area would be levelled. Given the relatively constrained working area within Coronation Wood, an area within the northern part of the site (that was previously used for the construction of Sizewell B) has been identified for temporary stockpiling of excess material. The clean material would be spread across the existing field to a height no greater than 1m, leaving a 5m corridor around the perimeter for vehicular access and to act as a silt control area for any run-off. The side slopes would tend to be limited to 1:3 gradient for stability.

~~3.4.73~~3.4.114 Once the Coronation Wood development area has been levelled, the ~~training centre, replacement car park and laydown area~~ facilities would be constructed alongside the external infrastructure (roads and lighting), drainage and landscaping

Outage store

Option 1

Construction of the outage store would first include diversion/ protection of existing services, excavation and construction of reinforced concrete pads for foundation, construction of concrete base at ground level, erection of steel superstructure and the installation of cladding and building services.

Option 2

~~3.4.74~~ Construction of the outage store would first require the demolition of the existing general store. Following site clearance and the diversion/ protection of existing services, temporary sheet piles to a maximum depth of approximately 20m may need to be installed to allow for the excavation of the basement to commence, the depth of which would broach the groundwater table. Following piling and the excavation of the basement, the depth below the groundwater table would be dewatered.

~~3.4.75~~3.4.115 Temporary facilities, plant, cranes, machinery and other temporary works would be required for each option.

Outage car park and new access onto Sizewell Gap

Option 1

3.4.116 The existing west car park would be repurposed for use during outages as the outage car park. No significant civils works are anticipated.

Option 2

~~3.4.76~~3.4.117 Topsoil would be stripped from all relevant areas of Pillbox Field to prepare the area for construction activities. Where feasible, the topsoil would be re-used on non-paved areas, such as on the embankments of the outage car park and vehicular access road.

~~3.4.77~~3.4.118 Following the topsoil strip, earthworks would be undertaken to achieve the desired formation levels. Excavated material would be reused as fill, where appropriate.

~~3.4.78~~3.4.119 The existing technical training centre would be refurbished and would temporarily house the Sizewell B visitor centre during this phase of construction.

~~i.~~ii. Sizewell B relocated facilities works in Phases 1 and 2

Development of Sizewell B relocated facilities ongoing

~~3.4.79~~3.4.120 To allow for the construction of the new visitor centre, it is envisaged that the Sizewell B power station perimeter road immediately to the north of the Coronation Wood development area would be temporarily closed, with traffic diverted along the western access road. This would allow the contractor to set up cranes and laydown within this area.

~~3.4.80~~3.4.121 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

~~3.4.81~~3.4.122 To provide a suitable working area for construction, a number of modifications would be made to the existing Sizewell B site access arrangements for vehicles and workers. These temporary access arrangements would be constructed before the existing facilities are taken out of use.

~~3.4.82~~3.4.123 Construction of a number of facilities within the defined working envelope, including office accommodation for operations and outage staff, an associated mess facility; canteen; general storage; a civils store and workshop; a general store and changing facilities; and a ‘front of house’ for staff and visitors to the Sizewell B power station.

3.4.833.4.124 In addition, Sizewell B facilities to be relocated would be demolished on a phased basis.

ii.iii. National Grid works in Phase 2

National Grid substation

3.4.843.4.125 An extension to the existing National Grid 400kV substation would be required to accommodate the additional generation output of Sizewell C. The overhead lines that currently terminate at the existing National Grid 400kV substation would be diverted into a new substation building built alongside and interconnected with the existing substation building, so that the electricity generated by both the existing Sizewell B and new Sizewell C power stations can be exported to the National Electricity Transmission System.

3.4.853.4.126 This National Grid construction site would accommodate construction offices, welfare facilities, car parking, workshops, spoil storage and material/equipment laydown and storage areas. Water, sewerage, electricity, and communication services would be provided either via mains connection or mobile supplies (such as bowsers, septic tanks, and generators).

3.4.863.4.127 Works to the National Grid substation would require the use of temporary water-tight working areas within the substation footprint, formed by scaffolding wrapped in tarpaulin or similar material, to facilitate clean working and weather-proof conditions where this is required, such as the jointing and termination of cables. These temporary water-tight working areas would be large enough to accommodate cranes or other forms of lifting systems.

3.4.873.4.128 The National Grid substation would connect into each of the four circuits on the National Grid 400 kilovolts overhead lines. To facilitate these connections, modifications to the existing overhead line would be required which would include a new pylon, removal of an existing pylon and the permanent realignment of a short section of the overhead line to connect to the substation.

National Grid overhead line realignment works

3.4.883.4.129 The new pylon would require excavation around the pylon base for foundations and hardstanding areas, for erection of the pylon by crane.

3.4.893.4.130 Protective measures may be required at sensitive locations along the new overhead alignment such as roads or footpaths, when installing the new conductors and connecting into existing circuits. These measures

may include erection scaffolding, temporary controls around roads or footpaths along the diversion.

3.4.903.4.131 Temporary working areas and access tracks would be required to construct the new/replacement pylon within the Sizewell Marshes SSSI, string the conductors and dismantle the existing pylon.

3.4.913.4.132 Temporary vehicle access would be required to each of the two pylon working areas.

3.4.923.4.133 Once the replacement/new pylon is constructed overhead line circuits would be transferred. Removal of the existing piling and associated foundations up to a depth of approximately 1m would take place. Subsoil and topsoil would be reinstated.

3.4.933.4.134 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

c) Offshore works area

3.4.943.4.135 The offshore works area is the area where offshore cooling water infrastructure and other marine works would be located, as illustrated on **Figure 1.2** of **Chapter 1** of this volume. Further details on the location of offshore infrastructure are set out in **Chapter 2** of this volume and the **Work Plans** (Doc Ref. 2.3).

3.4.953.4.136 Construction work for offshore infrastructure would begin in Phase 1 and continue until Phase 5.

Cooling water infrastructure

3.4.963.4.137 Off-shore cooling water infrastructure consists of two subterranean intake tunnels and one outfall tunnel.

3.4.973.4.138 The cooling water tunnels would extend approximately 3 kilometres (km) offshore and would be bored using tunnel boring machines from land at depths of approximately 30m under the seabed. The tunnel boring machine heads would be left at the end of each tunnel run, approximately 30m under the seabed.

3.4.983.4.139 The excavated material would be transported back to the tunnel entrance where any bentonite used in the tunnel boring process would be recovered for re-use before the excavated material is transported to the appropriate stockpile. Treatment of spoil would be piped to a slurry treatment plant in the temporary construction area and dehydrated. Tunnelling would be a continuous activity requiring 24-hour working and

preliminary estimates suggest this would take around 15 months to complete. Excavated material would be transported to on-site stockpiles during both day and night, although distribution and grading of the material would be restricted to the daytime in order to reduce night-time noise levels. This may comprise approximately 50 articulated dump truck movements per night.

~~3.4.99~~3.4.140 Connections between the intake and outfall structures and the bored tunnels would be made via lined vertical shafts bored from the seabed down to the tunnels. The shafts would be bored using a drilling technique and are likely to be undertaken from a jack-up rig.

~~3.4.100~~3.4.141 The intake and outfall headworks would be prefabricated off-site and floated into position. Prior to the installation of the headworks small scale capital dredging to remove surficial sediments to the underlying bedrock. Dredging is anticipated to be by cutter suction dredger with local disposal. A description of dredging activities is provided in the section below.

~~3.4.101~~3.4.142 Following dredging, the bedrock would undergo ground preparation and a gravel bed would be installed below the proposed headwork, which would be lowered into position.

~~3.4.102~~3.4.143 Vertical connection shafts would be drilled with the headwork in-situ to connect the headworks to the subterranean cooling water tunnels. Drilling would occur through the centre of the headworks.

~~3.4.103~~3.4.144 After the headworks are installed and scour protection placed in-situ (where required), soft-sediment would be back-filled.

Fish Recovery and Return system

~~3.4.104~~3.4.145 Two Fish Recovery and Return (FRR) systems would be constructed, one for each reactor. The tunnels would be drilled beneath the seabed using a directional drilling technique, with arisings transported landward for disposal. The FRR systems would terminate in a seabed outfall structure approximately 300m offshore.

Combined Drainage Outfall

~~3.4.105~~3.4.146 The combined drainage outfall (CDO) would be constructed early in the construction phase and act as the site discharge outfall. Prior to CDO completion, station effluents would be reused where possible or tankered offsite for managed disposal.

~~3.4.106~~3.4.147 The CDO would be created using a directional drilling technique under the foreshore and seabed, with arisings transported landward for

disposal. Two individual tunnels would connect and terminate in a CDO structure approximately 300m offshore. The tunnels would be connected to a concrete outfall structure anticipated to be of similar dimensions to the FRR headworks.

~~3.4.107~~3.4.148 As required, the CDO would discharge material such as the following during the construction period:

- treated final effluent originating from the construction phase sewage treatment plant;
- treated surface water run-off from the deep excavation within the main platform;
- treated surface water run-off from the wider construction site, as required;
- groundwater, treated if required, from dewatering within the main platform cut-off wall;
- treated plant cold commissioning waters;
- treated concrete wash water; and
- treated water originating from tunnel construction.

~~3.4.108~~3.4.149 Discharges would be treated with bypass separators to minimise potential hydrocarbon contamination from mobile or fixed plant operations and a silt-buster or similar technology to reduce sediment loading. The CDO would discharge to the sea in compliance with the requirements of an environmental permit. Further details relating to discharges during the construction period are set out in **Appendix 21G** of this volume.

Temporary marine outfall

3.4.150 In the period before the CDO is constructed, surface water would be temporarily pumped from the construction site, over the temporary sea defences and into a chamber before discharging water through a gravity pipe towards the shoreline. The pipe size is assumed to be less than 50cm in diameter. A maximum total suspended solids content of 250mg/l is assumed.

3.4.151 The outfall would be designed to be pumped at a maximum permitted rate of 200 litres per second when required. It is assumed that the outfall would typically only be used infrequently when surface water is captured in the construction site which cannot be discharged through infiltration or

to the surrounding watercourses (e.g. due to flooding or storm events). Surface water under normal conditions would be collected in balancing ponds, treated via water treatment systems and then either infiltrated to ground or discharged to the surrounding watercourses at greenfield rates, in accordance with the **Outline Drainage Strategy** (Doc Ref. 6.3).

3.4.152 The temporary outfall would be laid under the Suffolk Coast Path to ensure no obstruction and would then terminate above the Mean High Water Spring tide level. The temporary outfall is assumed to be located south of both the permanent and temporary beach landing facilities in the approximate location shown at **Figure 2.2.2** of **Volume 2** of this **ES Addendum**.

3.4.153 The Suffolk Coast Path would remain open during construction and operation of the temporary outfall as far as it is reasonably practicable and safe to do so.

3.4.154 Once the CDO is constructed the temporary outfall would be removed.

Dredging and disposal

~~3.4.109~~3.4.155 To accommodate the safe passage of barges and accompanying tugs to the permanent BLF, a navigational channel~~, and grounding area~~ would be required in the nearshore zone occupied by the two longshore bars.

~~3.4.110~~3.4.156 Dredging would only be needed in periods when the permanent BLF is in use. Due to navigational limitations this coincides with calm sea conditions, meaning the permanent BLF usage, and therefore dredging, would take place approximately between the months of April and October~~. Plough dredging would be used to create a planar surface for the barges to come aground~~.

~~3.4.111~~3.4.157 To provide a navigational channel and grounding pocket, an area approximately 62m wide would need to be dredged and profiled to allow the barge and tug sufficient room to manoeuvre and dock approaching from the south within the shallow subtidal zone (less than 6m water depth). Plough dredging pushes the sediment aside from the required area, which is then redistributed by subsequent tides

~~3.4.112 Dredging would be conducted over an area of approximately 1 hectare (ha), to a depth greater than 0.5m below the sediment surface.~~

~~3.4.113~~3.4.158 The frequency of maintenance dredging would depend on the specific tolerance of the barges to the substrate profile and seasonal infilling rates. Maintenance dredging is anticipated at least annually due

to infilling during winter periods but may also be required following storm events.

3.4.1143.4.159 Dredging and disposal for other works would comprise:

- CDO headworks: Cutter suction dredger with local disposal at sea via a down tide pipe.
- Cooling water system intake and outfall tunnel headworks: Cutter suction dredger with local disposal at sea via a down tide pipe. Drilling with arisings released at drill site for the intake heads.
- FRR tunnel headworks: Cutter suction dredger with local disposal at sea via a down tide pipe.

3.4.1153.4.160 The anticipated total volume of dredging during construction is approximately 110,000m^3, covering a surface area of approximately 45,000m^2. All dredging and disposal will take place within the geographical limits of the **Draft DCO** (Doc. Ref. 3.1).

3.4.1163.4.161 The duration of dredging works required for ~~each of~~ the BLF, CDO, cooling water system and FRR tunnels is likely to be approximately 12 weeks each.

d) Temporary construction area

3.4.1173.4.162 The TCA refers to the main area of land that would be required largely on a temporary basis to facilitate the construction of the proposed development. This land would primarily be located to the north of the Sizewell Marshes SSSI between the B1122 and the coast, to the north-west of the main platform as shown on **Figure 1.2** of **Chapter 1 Volume 2** of the **ES**.

3.4.1183.4.163 **Table 3.7** sets out the maximum heights for construction activities in the TCA. The table should be read in conjunction with the zones shown on **Figure** ~~3.1~~ **2.2.2** of **Volume 2** of the **ES Addendum** and the following description. Existing ground levels are shown on **Figure 1.8** of ~~this volume~~**Chapter 1 Volume 2** of the **ES** (Doc Ref. 6.3).

Table 3-7: Maximum heights for construction activities in the temporary construction area.

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zones C2a and C2b: Construction of common user facilities.	Working envelopes for liner fabrication facilities, workshops, storage buildings, offices and mess facilities and concrete batching plants.	Zone C2a: 70m AoD Zone C2b: 70m AoD.
Zones C2a and C2b: Construction of common user facilities – exceptional circumstances.	Working envelopes for exceptional structures that are required for the lifting and installation of reactor domes and other time limited activities that require specialised cranes of lifting equipment that go above the height parameters set out in Construction Zone 2. Typically these would include mobile and tower cranes.	Zone C2a: 160m AoD. Zone C2b: 140m AoD.
Zone C3: Construction of contractor compounds and other yards.	Working envelope for workshops, storage buildings, offices and facilities to support the contractors compound area, reinforcement and formwork prefabrication yards	35m AoD.
Zone C3: Construction of contractor compounds and other yards – exceptional circumstances.	Working envelope for exceptional structures such as mobile cranes and tower cranes.	120m AoD.
Zone C4: Construction of southern earth bund.	Working envelope for landscaped bund bordering the south of the temporary construction area.	18m AoD.

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zone C5: Construction of main stockpile.	Working envelope for main stockpile area. Parts of the zone used as a borrow pit will not subsequently exceed a stockpile height of 5m above existing ground level.	50m AoD.
Zone C5a: Construction of stockpile, contractor compounds and other yards.	Working envelope for stockpile area, workshops, storage buildings, offices and facilities to support the contractors compound area, reinforcement and formwork prefabrication yards	35m AoD.
Zone C6: Construction of eastern borrow pit and stockpile.	Working envelope for eastern borrow pit and stockpile area. Parts of the zone used as a borrow pit will not subsequently exceed a stockpile height of 5m above existing ground level.	20m AoD.
Zone C7: Construction of western borrow pit and stockpile.	Working envelope for western borrow pit and stockpile area. Parts of the zone used as a borrow pit will not subsequently exceed a stockpile height of 5m above existing ground level.	20m AoD.
Zone C8: Construction of northern stockpile area.	Working envelope for northern stockpile area.	20m AoD.
Zone C9: Construction of site entrance hub.	Working envelope for parking facilities, temporary buildings, security facilities and freight management.	35m AoD.

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zone C9: Construction of site entrance hub – exceptional circumstance.	Working envelope for exceptional structures such as mobile cranes.	65m AoD.
Zone C10: Construction of ~~Green Rail Route~~ rail extension route stockpile area.	Working envelope for ~~Green Rail Route~~ rail extension route (part) and stockpile area.	30m AoD.
Zone C11: Construction of Lover's Lane stockpile area.	Working envelope for stockpile area.	30m AoD.
Zone CA1: Construction of accommodation campus residential buildings.	Working envelope for the accommodation campus residential buildings and associated works.	36m AoD.
Zone CA1: Construction of accommodation campus residential buildings – exceptional circumstances.	Working envelope for exceptional structures such as mobile cranes.	70m AoD.
Zone CA2: Construction of accommodation campus multi-storey car park.	Working envelope for the accommodation campus multi-storey car park and associated works.	25m AoD.

Construction Zone	Explanation of Parameter	Construction Zone Parameter (Max. Height)
Zone CA2: Construction of accommodation campus multi-storey car park – exceptional circumstances.	Working envelope for exceptional structures such as mobile cranes.	70m AoD.
Zone CA3: Construction of accommodation campus non-residential buildings.	Working envelope for the accommodation campus non-residential buildings and associated works.	35m AoD.
Zone CA3: Construction of accommodation campus non-residential buildings – exceptional circumstances.	Working envelope for exceptional structures such as mobile cranes.	65m AoD.

i. Phase 1

Establishment of construction area

~~3.4.119~~3.4.164 Work would begin by securing the site through installation of security fencing and site clearance. Fencing would be combined with ecological protection measures, where necessary. Areas of vegetation clearance and retention are shown on ~~**Figure 3.9** and **Figure 3.10**~~**Figures 2.2.39 ES Addendum** and **2.2.40** of this **ES Addendum**.

~~3.4.120~~3.4.165 Utilities would be diverted and archaeological mitigation works would take place as necessary.

~~3.4.121~~3.4.166 An acoustic fence would be used where it is necessary to attenuate noise levels, which would be up to approximately 5m in height, with localised variations in height as necessary. The approximate locations of acoustic fences are shown on **Figure 3.1** of **Chapter 3 Volume 2** of the **ES** (Doc Ref. 6.3).

~~3.4.122~~3.4.167 Site clearance would include topsoil strip and associated stockpiling, diversion of utilities and vegetation removal. Early planting would take place where practicable.

~~3.4.123~~3.4.168 Construction of the batching plant would begin and initial modular site offices and welfare facilities would be installed.

~~3.4.124~~3.4.169 Early access routes would be established, to facilitate movement of plant, materials and workforce.

~~3.4.125~~3.4.170 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

Creation of water resource storage area and associated infrastructure

~~3.4.126~~3.4.171 A temporary water resource storage area would be constructed~~, which~~ north of Parameter Zone C7 alongside a water management zone. The storage area is expected to provide a volume of less than 25,000m^3 of non-potable water for use in the construction process and would provide the ability to store water over the winter period typically for use during the summer months. Water would be stored above groundwater level to ensure it is hydrologically separate and does not cause adverse effects to groundwater levels on-or off-site. ~~Land cover would comprise dry Sandlings grassland and scrub mosaic.~~

~~3.4.127~~3.4.172 The water resource storage area is likely to be part below existing ground level and part above existing ground level, with raised embankments as necessary up to approximately 3m in height. ~~Tree/hedgerow planting is proposed to reinforce existing vegetation around the perimeter of the field, providing visual screening and connective habitat between Sandy Pytle Plantation and The Grove/proposed wet woodland habitat.~~

~~3.1.1 Design considerations would include: siting, to benefit from screening provided by established vegetation; the shape and profile of earthworks, to reference local conditions and avoid an over engineered appearance; and, the establishment of planting, for wildlife and aid integration into the landscape. Pumping equipment and associated infrastructure would be located and designed to minimise visual effects.~~

Wet woodland habitat and flood mitigation area

3.4.173 The area extending along the edge of The Grove, could be designed in part to create wet woodland habitat. The area would include a linear reedbed, which is likely to make the area more attractive to water birds. This, as well as the vegetated margins of the flood mitigation area

described below, should provide foraging opportunities for marsh harriers during the construction of Sizewell C.

3.4.174 Additional flood mitigation land would be provided to the north of the wet woodland habitat. Design considerations would include: siting, to benefit from screening provided by established vegetation; the shape and profile of earthworks, to reference local conditions and avoid an over engineered appearance; and, the establishment of planting, for wildlife and aid integration into the landscape.

~~3.4.128~~3.4.175 Screening planting would be provided along the eastern side of Sandy Pytle Plantation and at the northern edge of Dove House Hill. As well as vegetation screening, the banks of the water resource storage area would have a naturalistic design. Planting will include a mosaic of rough grassland, wild flower mixes, hedgerows and scrub areas.

~~3.1.1 Water from within the water resource storage area would be transported directly to parameter zone C3, which is shown on **Figure 3.1**, via a trenched water supply pipe.~~

~~3.1.1 Construction works would be timed to minimise disturbance effects on foraging marsh harriers during their breeding season.~~

~~Wet woodland habitat and flood compensation land~~

~~3.1.1 The area to the south of the water resource storage area, extending along the edge of The Grove, would be designed in part to create wet woodland habitat. The area would also include a linear reedbed, which is likely to make the area more attractive to water birds. This, as well as the vegetated margins of the water resource storage area, should provide foraging opportunities for marsh harriers during the construction of Sizewell C. It would also provide additional flood compensation land. These works would be retained permanently.~~

3.4.176 These proposals would provide approximately 100,000 cubic metres of additional flood mitigation volume and require excavation up to approximately -2mOD.

3.4.177 Construction activity would predominantly consist of earthmoving activities using excavators and earthmoving vehicles. Construction activity is assumed to also include a materials handling area west of the flood mitigation area during the construction period of this feature only (approximately 6 months).

3.4.178 Once the construction of Sizewell C is complete and compensatory marsh harrier foraging habitats are no longer required, the open water and wet reedbed habitats could be transitioned to wet woodland habitats, either

through natural successional processes or through planting. In the long term, if progressed, this would compensate for the loss of wet woodland from the Sizewell Marshes SSSI. The flood mitigation area would also be linked to the proposed permanent wetland habitat corridor immediately to the south to create a single integrated wetland feature, as illustrated in **Volume 2**, **Figure 2.2.14** of this **ES Addendum**.

Laying out of construction roads and parking

3.4.1293.4.179 The main haul routes would be developed to facilitate the movement of vehicles carrying excavation and construction materials to and from the main platform, as shown on **Figures** ~~**3.1** and **3.8**~~**2.2.2** and **2.2.33** of **Volume 2** of this **ES Addendum**. These haul routes would be approximately 30m wide with earth bunds either side for use by heavy duty earthmoving equipment. Segregated site roads would be provided for other traffic, including HGVs and, where practicable, would be aligned with the subsequent permanent access road. A conveyor system for the movement of construction material, which would typically be covered, is assumed to be provided along a similar route to the haul roads and connecting with the temporary BLF.

3.4.1303.4.180 Construction roads would be constructed in accordance with the current relevant standards and guidance as required for heavy vehicle usage and estimated traffic volumes. These roads would be surfaced with tarmac or compacted granular material as appropriate.

3.4.1313.4.181 An initial temporary drainage system would be installed for predominately managing surface water run-off. This would be replaced by a site construction drainage system which would manage site-wide surface water run-off associated with the various platforms, groundwater from dewatering, and treated sewage effluent and any other permitted construction waste streams. Further details are set out in the drainage section of this chapter.

3.4.1323.4.182 Initial parking would be provided for approximately 300 cars and approximately 75 HGV parking spaces during the early years within the temporary construction area, accessed off Lover's Lane.

Excavation of borrow pits begins

3.4.1333.4.183 Topsoil and subsoil would be stripped from the borrow pits and preserved for their future reinstatement.

3.4.1343.4.184 Excavation of material would take place, ensuring an unsaturated zone of at least 2m is maintained above the groundwater level. The maximum depth of excavation is likely to be to:

- approximately 5m AoD in parameter zones C6 and C7; and
- approximately 9m AoD in parameter zone C5.

~~3.4.135~~3.4.185 Engineered drainage will manage surface water run-off and contaminants, such as suspended solids, and protect groundwater.

~~3.4.136~~3.4.186 Works would continue on the borrow pits in Phase 2.

Realignment of Lover's Lane and relocation of B1122 junction

~~3.4.137~~3.4.187 To provide the necessary space between the proposed level crossing, as seen in **Chapter 2, Volume 9** of the **ES** (Doc Ref. 6.3), and the junction between the B1122 (Abbey Road) and Lover's Lane, this junction would be permanently relocated approximately 100m to the south of its existing position to facilitate development of the ~~Green Rail Route~~rail extension route, as shown on **Figure ~~3.1~~2.2.2** of **Volume 2** of this **ES Addendum**. This relocation requires Lover's Lane to be permanently realigned for a length of approximately 200m and would improve visibility at the B1122 junction for all road users. A crossing point would be provided over Lover's Lane from the northern field of Aldhurst Farm into the arable field to the north. A new route would then pass through an existing field, parallel to the field boundary, towards Kenton Hills. It would then join the existing Bridleway 19 route.The new permanent route and crossing point would be made available for pedestrians in the construction phase once the entrance to the main development site from the B1122 is in place and the number of HGVs using the early years' access is reduced, approximately two years post commencement of construction works.

~~3.4.138~~3.4.188 The realignment of Lover's Lane and relocation of the B1122 junction proposed development would be built off-line, with the exception of tie-ins. A new right turn lane would also be provided to the Leiston Household Waste Recycling Centre. The road would be designed and constructed in accordance with Design Manual for Roads and Bridges technical standards.

~~3.4.139~~3.4.189 The construction sequence would broadly follow the steps as below:

- Preparatory works: site set up and clearance including trees and hedgerows; erection of temporary fencing on land required for construction.

- Construction works: earthworks, road construction and surfacing, utility and drainage installation, construction of kerbs and footways, road signs and marking, road lighting and landscaping.

~~3.4.140~~3.4.190 Areas of vegetation clearance and retention are shown on ~~**Figure 3.9** and **Figure 3.10**~~**Figures 2.2.39** and **2.2.40** of **Volume 2** of this **ES Addendum**.

~~3.4.141~~3.4.191 An earth bund and vegetated retaining structure would be provided.

3.4.192 A new mammal culvert would be provided in close proximity to the existing culvert at Lover's Lane north of Leiston Recycling Centre. It would be designed with features to encourage use by mammals including otters and water voles to improve connectivity between the Sizewell Marshes SSSI and Aldhurst Farm. Otter fencing would also be installed to guide animals to the culvert.

~~i.~~ii. Phase 2

Site entrance hub developed and operational

~~3.4.142~~3.4.193 The main development site would be arranged as a secure construction site with controls on the people and materials entering and leaving the site.

~~3.4.143~~3.4.194 The site entrance hub would be located east of the new roundabout off the B1122, west of Upper Abbey Farm and south of the Accommodation Campus. This area would be the location of several temporary site facilities including:

- main site offices and induction facilities;
- site welfare and canteen;
- bus and car parking areas;
- freight areas; and
- people and vehicle security facilities.

~~3.4.144~~3.4.195 The on-site car park would have space for approximately 1,000 cars, rising from approximately 300 spaces in Phase 1, plus parking spaces for buses. Electric vehicle charging points would be provided where practicable given the temporary nature of the development.

Vehicular accesses onto the B1122 and Lover's Lane

3.4.1453.4.196 The TCA would be accessed principally via a new roundabout to be located on the existing B1122, approximately at the site of the existing junction with Eastbridge Road. All workers and most construction materials travelling by road would access the temporary construction area via this roundabout.

3.4.1463.4.197 The roundabout would have five arms, clockwise from the north as follows:

- B1122 north;
- Eastbridge Road;
- TCA access for buses, cars and cyclists, with an adjacent footway for pedestrians;
- TCA access for HGVs; and
- B1122 south.

3.4.1473.4.198 The roundabout would include an over-runnable strip in the centre to allow AILs to drive across the centre of the roundabout and into the HGV entrance. The roundabout would be largely constructed offline, avoiding the need for long-term temporary road closures or the diversion of the B1122 in this location.

3.4.1483.4.199 A secondary vehicular access road would be required to connect the main development site to LEEIE via Lover's Lane. This would be by means of a new priority junction on the northern side of Lover's Lane, a short distance west of Kenton Hills car park. This is required to facilitate the early delivery of materials into the main development site from LEEIE by HGV, generally before the roundabout is complete and after a SSSI crossing has been established. This access would also serve as an emergency access point in the event of an obstruction at the main development site entrance. Some permanent realignment to the existing highway would be required to ensure safe operation of the junction.

Realignment of Eastbridge Road

3.4.1493.4.200 As part of the realignment of Eastbridge Road, a new shared footway and cycleway would be created alongside it to provide an off-road connection to Eastbridge. There would also be a Pegasus crossing on the northern B1122 arm, and another one on the Eastbridge Road arm a short distance north of the roundabout, to enable pedestrians, cyclists and

equestrians to safely travel between the two sections of the diverted Bridleway 19. Further details are set out in **Volume 2, Chapter 15, Appendix 15I** of the **ES**.

Excavation and backfilling of borrow pits

~~3.4.150~~3.4.201 Once the borrow pit has been excavated, it would be prepared for backfilling with material from the main platform excavation.

~~3.4.151~~3.4.202 Materials such as alluvium, peat and clay, used for the borrow pit backfilling, are very soft materials. Whilst the alluvium would be pre-drained as much as possible during excavation from the main platform, the material would remain very wet and soft and constrains the methods of placement. Material would therefore be placed within the borrow pit and then treated if necessary, by lime or suitable other agent, during placement.

~~3.4.152~~3.4.203 Once the borrow pit has been backfilled and after settlement it has the capacity to act as a stockpile. In order to limit surcharge accelerating the rate at which leachate is released to the groundwater and ensure ground stability, the stockpile height would be limited to 5m above existing ground level.

Stockpiling of excavated materials continues

~~3.4.153~~3.4.204 The construction of Sizewell C requires deep excavations on the main platform as set out above. This generates significant quantities of excavated spoil, as well as a need to import backfill material, all of which would require stockpiling at various periods during construction. The locations of the stockpiles are shown on ~~**Figure 3.1** and **Figure 3.8**~~**Figures 2.2.2** and **2.2.33** of this **ES Addendum**. Further contextual information on the management of materials is set out in **Appendix 3B** ~~to this volume~~Volume 2 of the ES (Doc Ref 6.3) and to **Volume 2** of this **ES Addendum**.

Temporary railway track and associated infrastructure

~~3.4.154~~3.4.205 The ~~Green Rail Route~~ rail extension route would enter the main development site at the approximate location of the existing B1122 / Lover's Lane junction. The route would cross the B1122 by means of a level crossing and would continue east into the main development site approximately 2.7 kilometres to its terminus. The extension would be constructed in this phase and is shown on **Figures** ~~**3.1 and 3.8**~~**2.2.2** and **2.2.33** of **Volume 2** of this **ES Addendum**.

3.4.1553.4.206 Rail development within the main development site would comprise the terminus of the ~~Green Rail Route~~ rail extension route and three railway tracks, including a terminal facility for offloading goods, railway sidings and a passing loop for locomotives.

3.4.1563.4.207 The route would be constructed in three principal stages:

- Preparatory works: erection of temporary worksite fencing and controls.
- Earthworks: construction of the earthworks to support the track-form.
- Track and signal installation and upgrade: installation and upgrade of the track and signalling infrastructure which would link the main development site to the existing Saxmundham to Leiston branch line and western section of the ~~Green Rail Route~~rail extension route.

3.4.1573.4.208 A New Track Construction train would be deployed from the ~~Green Rail Route~~ rail extension route and would lay sleepers, move rails into final position and clip the rail to sleepers. Following use of the New Track Construction train, Auto-ballast trains would be deployed to lay top-ballast.

3.4.1583.4.209 Once the ballast has been dropped, a tamper train would be run over the section of newly ballasted rail to lift the rails and stabilise/compact the ballast. The process of dropping ballast would continue until the track is at its designated vertical alignment.

3.4.1593.4.210 Upon completion of the ballasting phase a Stabiliser train would be run over the newly laid track to provide a final compaction of the ballast before the ~~Green Rail Route~~ rail extension route becomes operational.~~Once operational, deliveries would arrive into the TCA by rail during both day and night. There would be up to six train movements per day, of which five would be at night.~~

3.4.1603.4.211 Where material delivered at night needs to be stockpiled, this would typically also occur at night and transferred to the main stockpile. This may comprise approximately 50 articulated truck movements per night.

Temporary facilities

3.4.1613.4.212 Land is required to accommodate the range of activities needed to build the power station and the contractors who would perform them. To maximise logistical efficiency, the contractors' compound areas would be located as close to the main platform as practicable, as shown on **Volume 2, Figure ~~3.1~~2.2.2** of the **ES Addendum**.

3.4.1623.4.213 The contractors' compound areas would be prepared as level platforms. Surface water drainage would be via the construction drainage systems installed (see drainage strategy section later in this chapter for details).

3.4.1633.4.214 Part of the temporary construction area would be designated for common user facilities, as shown on **Figure 3.82.2.33 of Volume 2 of the ES Addendum**:

- approximately six concrete batching plants;
- access and storage areas;
- logistical facilities, including waste handling areas;
- water treatment plants and water pumping stations;
- fabrication areas;
- pre-cast concrete production areas; and
- railway sidings and associated infrastructure, including storage area for aggregates and other materials.

~~3.4.164 Works would also commence to construct the marine launch chambers and bore the intake and outfall tunnels from within the temporary construction area.~~

3.4.1653.4.215 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

Accommodation campus and associated infrastructure constructed and operational

3.4.1663.4.216 SZC Co. would construct an Accommodation Campus on the TCA to reduce the commuting distance for a core part of the workforce.

3.4.1673.4.217 The proposed on-site Accommodation Campus would provide accommodation for up to 2,400 workers and facilities, as shown on **Figures 3.1 and 3.82.2.2 and 2.2.33 of Volume 2 of this ES Addendum**. The Accommodation Campus would comprise:

- 3-storey and 4-storey residential buildings placed in a broadly east–west orientation and providing up to 2,400 bed spaces;

- non-residential welfare, administration and amenity facilities, including: a 2-storey recreation building with a restaurant, kitchen, two bars, gym, multi-functional room, prayer / quiet room, plant and services; and a two storey reception building, incorporating administration /management space and a medical facility;
- 300 surface car parking spaces and a covered accommodation campus multi-storey car park, providing approximately 1,300 car parking spaces;
- provision of approximately 60 disabled car parking spaces, 120 motorbike spaces, 120 pedal cycle spaces, plus a drop-off and pick-up area;
- plant associated with the operation of the accommodation campus;
- access roads and footpaths;
- security office;
- access to the temporary construction area; and
- drainage and landscaping features, including recreational areas.

~~3.4.168~~3.4.218 Design principles for the Accommodation Campus are set out in the **Sizewell C Main Development Site Design and Access Statement** (Doc Ref. 8.1).

~~3.4.169~~3.4.219 Heat and power would be provided to the Accommodation Campus in one of two ways:

- Electricity via a direct connection to the construction electricity supply cable (as described below) and heating via air source heat pumps, located on the roof of all Accommodation Campus buildings. Air source heat pumps would be approximately 2m tall and 2m wide. A pump is likely to be needed for approximately every 20 rooms on the campus, with each pump providing 0.5kW of electricity.
- A combined heat and power (CHP) plant, which would also be used as a back-up power generation plant during the operational stage. The CHP plant building would have a thermal output of approximately 1,900kW and electrical output of approximately 1,700kW. The building would be approximately 10m in height and require a CHP stack, which would be approximately 4m above the building roof height.

Kenton Hills car park upgraded

~~3.4.170~~3.4.220 The existing car park serving Kenton Hills would be improved to provide up to 15 additional parking spaces and selective vegetation would be removed to make it less enclosed. The car park surfacing and the access road to it would be improved, and signage would be enhanced by replacing existing wayfinding and information boards adjacent to the car park and providing a sign on Lover's Lane promoting the parking and walking facilities.

~~ii.~~iii. Phases 3 and 4

~~3.4.171~~3.4.221 During phases 3 and 4, the TCA would be generally fully established and in use, with full operation including use of the batching plants, compounds, storage areas, prefabrication areas, rail infrastructure and access roads for moving materials.

~~iii.~~iv. Phase 5

Restoration of the temporary construction area

~~3.4.172~~3.4.222 Following completion of the construction phase, temporary construction facilities would be removed and existing arable land in the temporary construction area would be predominantly restored as Suffolk Sandlings habitat, comprising acid grassland and heathland. Removal of construction facilities would typically be the reverse operations of Phases 1 and 2. Remaining earth and topsoil would be removed from the stockpiles and profiled across the TCA. Once established, this landscape-scale habitat creation approach would replace existing intensively managed arable farmland with habitats of greater biodiversity value and would generally increase habitat connectivity. Further details are set out in the **Outline Landscape and Ecological Management Plan (oLEMP)** (Doc Ref. 8.2).

~~3.4.173~~3.4.223 Works would include restoring and making safe temporary work sites, including removal of temporary hardstanding areas, temporary structures and buildings (including the Accommodation Campus), temporary rail infrastructure, temporary water resource storage area and other temporary work.

~~3.4.174~~3.4.224 Temporary facilities, plant, cranes, machinery and other temporary works would be required.

~~3.4.175~~3.4.225 With the exception of early planting, planting within the TCA footprint would be undertaken in Phase 5. Early planting would take place where practicable.

Construction of permanent buildings and structures

3.4.1763.4.226 Permanent buildings and structures, as set out in **Chapter 2** of this volume of the **ES,** would typically be constructed as pre-fabricated steel-framed buildings, including basements and piling in some instances.

e) Land east of Eastlands Industrial Estate

3.4.1773.4.227 Land to the east of Eastlands Industrial Estate (LEEIE), which includes the area to the north of Sizewell Halt and King George's Avenue, would be used to support construction on the main platform and TCA. This land is generally bounded to the north by Valley Road, to the east by Lover's Lane, to the south by Grimsey's Lane, and to the west by Eastlands Industrial Estate, as illustrated on **Figure 1.2** of **Chapter 1 Volume 1** of the ES.

3.4.1783.4.228 **Table 3.7** sets out the parameters for construction activities on LEEIE. The table should be read in conjunction with the parameters shown on **Figure 3.1 2.2.2** of **Volume 2** of the **ES Addendum** and the following text. Existing ground levels are shown on **Figure 1.8**.

3.4.1793.4.229 An indicative layout of LEEIE is shown on **Figure 3.82.2.33** of **Volume 2** of the **ES Addendum**.

Table 3-8: Maximum heights for construction activities on Land east of Eastlands Industrial Estate.

Construction Zone.	Explanation of Parameter.	Construction Zone Parameter (Max. Height).
Zone C12: Construction of LEEIE stockpile area.	Working envelope for a stockpile area.	21m AoD.
Zone C13: Construction of caravan site.	Working envelope for worker caravan site and associated infrastructure.	35m AoD.
Zone C14: Contractor areas to the north of railhead.	Working envelope for temporary buildings, temporary facilities, laydown/stockpile areas, vehicular parking/maintenance, freight management facility and a stockpile area.	35m AoD.

Construction Zone.	Explanation of Parameter.	Construction Zone Parameter (Max. Height).
Zone C14: Contractor areas to the north of railhead – exceptional circumstances.	Working envelope for exceptional structures such as mobile cranes and tower cranes.	75m AoD.
Zone C15: Construction related areas and rail infrastructure.	Working envelope for a park and ride facility, vehicular parking/maintenance, logistics compound and rail infrastructure.	30m AoD.

i. Phase 1

Establishment of construction area

~~3.4.180~~3.4.230 Work would begin by securing the site through installation of security fencing and site clearance. Fencing would be combined with ecological protection measures, where necessary. Temporary drainage would be installed. Utilities would be diverted and archaeological mitigation works completed, as necessary.

~~3.4.181~~3.4.231 Acoustic fences or landscaped bunds would be used where it is necessary to attenuate noise levels, which would be up to approximately 5m in height, as shown on **Figure ~~3.1~~2.2.2 of Volume 2 of the ES Addendum**. Boundary treatments are illustratively shown in **Appendix 3C** to this volume.

~~3.4.182~~3.4.232 Site clearance would include topsoil strip and associated stockpiling, diversion of utilities and vegetation removal. Areas of vegetation clearance and retention are shown on ~~**Figure 3.9** and **Figure 3.10**~~**Figures 2.2.39** and **2.2.40** of **Volume 2** of this **ES Addendum**.

Vehicular accesses onto Valley Road, Lover's Lane and King George's Avenue

~~3.4.183~~3.4.233 New vehicular accesses would be provided onto Valley Road, Lover's Lane and King George's Avenue. This includes both temporary accesses into LEEIE and a permanent replacement farm access to land north of Valley Road. The junctions would be designed and constructed in

accordance with the Design Manual for Roads and Bridges technical standards.

~~3.4.184~~3.4.234 The vehicular accesses would be used by park and ride buses, cars using the park and ride and HGVs transferring construction materials between LEEIE and the temporary construction area. Workers accommodated in the caravans would also use the access onto Valley Road to drive to and from the caravan pitches.

~~3.4.185~~3.4.235 HGVs would travel along Lover's Lane to access the secondary entrance to the temporary construction area. Prior to completion of the SSSI crossing, HGVs would access the main platform along Sizewell Gap via the existing Sizewell A and B access road.

~~3.4.186~~3.4.236 Park and ride buses would travel along Lover's Lane and the B1122 to the site access roundabout.

Creation and use of caravan park begins

~~3.4.187~~3.4.237 Serviced pitches for up to 400 caravans would be created to provide accommodation to the construction workforce, starting prior to completion of the Accommodation Campus on the TCA. One car parking space per pitch would be available.

~~3.4.188~~3.4.238 This facility would continue to be offered throughout the construction phase, providing an option to workers not wishing to use the Accommodation Campus or private rental sector.

~~3.4.189~~3.4.239 An average of one and a half workers per caravan is assumed, meaning a total of approximately 600 construction workers staying at this facility.

~~3.4.190~~3.4.240 A private footpath for construction workers would be provided from the caravan park through the LEEIE during the construction phase, joining Valley Road opposite the existing footpath. This would allow construction workers from within the caravan park to walk to Leiston town centre safely.

Development of rail and associated infrastructure

~~3.4.191~~3.4.241 The rail extension into the LEEIE would comprise a single railway track with sidings and a passing loop for the locomotive. There would be no night-time deliveries through Leiston into the LEEIE by rail, as freight trains would be held on the Saxmundham to Leiston branch line overnight. The construction method would replicate that used for the rail extension in

the temporary construction area and for the ~~Green Rail Route~~rail extension route.

Freight management facility and park & ride constructed and operational

~~3.4.192~~3.4.242 Works for the creation of the park and ride and freight management facilities within the LEEIE would comprise:

- clearance of vegetation, removal of topsoil and levelling the site;
- laying of materials for parking areas and internal circulation routes;
- construction and fit out of temporary buildings, and installation of utilities; and
- construction of the final surface layer before road markings and signage are completed.

~~3.4.193~~3.4.243 The park and ride facility would contain approximately 600 car parking spaces, 20 bus parking spaces and an associated terminal area. Electric vehicle charging points would be provided where practicable given the temporary nature of the development. Workers would be shuttled by minibus to the main platform. The park and ride facility would only be in use during the early years whilst the associated development sites and on-site parking are under construction.

~~3.4.194~~3.4.244 The freight management facility would contain approximately 80 HGV parking spaces and would also only be used during Phase 1 as a HGV holding area, principally to regulate the flow of HGVs using the existing Sizewell A and B access road until the SSSI crossing is operational.

Storage and stockpiling of materials begins

~~3.4.195~~3.4.245 Bulk material delivered by rail, including aggregates for the concrete batching plant and imported material for use on the main platform, would be stockpiled in a central location within the LEEIE.

~~3.4.196~~3.4.246 Non-bulk and containerised materials delivered by HGV that are not required for use immediately, would also be stockpiled in a central location within the LEEIE.

~~3.4.197~~3.4.247 Topsoil from site clearance works would be stored in the north-east corner of LEEIE and sufficiently set-back from residential properties on Valley Road to prevent unacceptable impacts on the amenity of nearby residents.

Logistics compound developed and operational

3.4.1983.4.248 A logistics compound would be created to accommodate temporary buildings, facilities, plant, machinery and materials required to support construction.

iv. ii. Phase 5

Restoration of the LEEIE

3.4.1993.4.249 Following completion of the construction phase, temporary construction facilities would be removed and the LEEIE would be restored as indicated in the **Outline Landscape and Ecological Management Plan** (Doc. Ref. 8.2). Removal of the construction facilities would typically comprise Phase 1 activities in reverse. Works would include restoring and making safe temporary work sites, including removal of temporary hardstanding areas, temporary structures and buildings, temporary rail infrastructure and other temporary works.

f) Fen meadow compensation areas

3.4.2003.4.250 Fen meadow habitat would be provided on the fen meadow compensation areas to compensate for the permanent loss of approximately 0.7 0.46 hectares (ha) of fen meadow habitat from within Sizewell Marshes SSSI, associated with the construction of the proposed development and the diversion of Sizewell drain.

3.4.2013.4.251 The fen meadow compensation areas comprise two three areas of land, one to the south of Benhall-, one to the north of Pakenham and one to the east of Halesworth as shown on **Figure 1.4** and , **Figure 1.5** and **Volume 2, Figure 2.2.26** of the **ES Addendum**.

i. Phase 1

3.4.2023.4.252 Works associated with the fen meadow compensation areas would commence at (or prior to) the outset of construction on the main development site and could assumed to include:

- installation of water control structures, to maintain / manipulate water levels;
- removal of any existing field drains, to reverse historic patterns of drainage;

- limited and superficial excavation to reduce local ground levels, create low bunds and /or create minor surface watercourses to help distribute surface water;
- translocations of turfs from the fen meadow areas Sizewell Marshes SSSI, where subject to landtake; and
- limited planting of other locally sourced native species and use of appropriately sourced 'green hay' to accelerate colonisation by key fen meadow species.

~~3.4.203~~3.4.253 The proposed works would maintain the existing alignment of the public right of way (E-491/003/0) that crosses the fen meadow compensation site at Benhall and are not expected to affect the use of this route.

g) Marsh harrier habitat improvement area (Westleton)

~~3.4.204~~3.4.254 The conclusion of the main DCO **Shadow Habitats Regulation Assessment Report** (Doc Ref. 5.10) and the DCO **Shadow Habitats Regulation Assessment Volume 4 – Compensatory Measures Report** (Doc Ref. 5.10) is that the permanent habitat improvement area of 47.8ha that has been established, but is being further improved, at the northern edge of the EDF Energy Estate (UK grid reference: TM 46318 65222) would provide sufficient foraging to be regarded as appropriate compensation for the predicted 'loss of foraging' over the Sizewell Marshes SSSI, arising as a result of a barrier effect created by the temporary construction area. This effect is assessed within **Chapter 14** of this volume and also in the DCO **Shadow Habitats Regulation Assessment Report**.

~~3.4.205~~3.4.255 However, if it is determined by the Secretary of State that additional marsh harrier habitats are required, then the marsh harrier habitat improvement area (Westleton) would be temporarily used to provide this. If this area is determined to be required, the works to be undertaken to improve the area for foraging marsh harriers would comprise:

- Cessation of arable cultivation, under a land 'set-aside' approach, with 'abandoned arable' being part of the habitat mosaic.
- A one-off sowing of a coarse grassland mix over part of the area to produce rough grassland.
- Annual sowing of broad game strips to attract flocks of small birds and increase small mammal numbers.

- Potential planting of additional hedgerows and areas of scrub.

3.4.2063.4.256 The plough depths for any coarse grassland or game strip sowing would be no deeper that a standard ploughed cultivation for existing arable use and any machinery used would be typical farm machinery. Any existing field drainage and irrigation infrastructure would be retained in situ. There would be no use of fertilisers unless required locally for sown 'game strips'. In addition, the group of trees protected under the Tree Preservation Order (TPO) in the south-western corner of the site would be retained and tree protection fencing provided, if required to undertake the works.

3.4.2073.4.257 At the end of the construction period for the power station, the land, if used, would be returned to arable use, as the marsh harriers would then have no impediment to foraging.

3.4.2083.4.258 The proposed works would maintain the existing alignment of the public right of way (E-550/029/0) that crosses this site and are not expected to affect the use of this route.

v.i. Phase 5

3.4.2093.4.259 At the end of the construction phase, the areas would be returned to agricultural use.

h) Leiston off-site sports facilities land

3.4.2103.4.260 The Leiston off-site sports facilities land is an area to the south of Alde Valley Academy and east of Leiston leisure centre, as shown on **Figure 1.3**. The facilities would be used during the construction stage as a shared outdoor sports facility for Alde Valley Academy, the local community and Sizewell C construction workers. Acoustic mitigation, such as specialist fencing, will be erected as required during the construction phase. The sports facilities would also be retained as a permanent development, as set out in **Chapter 2** of this volume. The development will be delivered in general accordance with **Figure 2.12** of the ES.

3.4.2113.4.261 Works associated with the Leiston off-site sports facilities include:

- Topsoil removal where necessary.
- Installation of a full size 3G pitch with a 10-foot perimeter rebound fence. The pitch would include regulation drainage run-off and would be flood lit.

- Installation of two multi-use games area courts, each with permeable surfacing, a 10-foot perimeter rebound fence and floodlighting.

~~3.4.212~~3.4.262 Once operational, the facilities would generally be in use by Alde Valley Academy during term-time weekdays and open to use by the construction workforce and local community from 16:00–22:00 on weekdays and during the weekend.

3.5 Typical site-wide construction activities

a) Construction activity

3.5.1 The construction parameter plan, shown at **Figure 2.2.2** of **Volume 2** of the **ES Addendum**, identifies typical maximum parameter heights by zone for fixed plant, structures and buildings. The plan also identifies exceptional maximum parameter heights by zone for time-limited activities, such as the installation of a large crane for specific tasks.

3.5.2 The environmental assessment assumes that short-term construction activities may take place across the main development site as a whole for the specific purposes of realising the construction methodology. Such activity would typically comprise minor works using mobile plant up to approximately five metres above ground level.

~~a)~~b) Construction waste

~~3.5.1~~3.5.3 Any contaminated material discovered during excavation would be removed and/or remediated in accordance with the updated **CoCP** (Doc Ref. ~~8.11~~8.11A).

~~3.5.2~~3.5.4 There would be a policy of waste reduction which would include reducing packaging material, consistent with the need for protection of sensitive items; re-use of items and recycling of remaining materials. This would be facilitated by the appointment of a site waste management contractor, who would consolidate the construction waste from the various construction and erection contractors at a dedicated on-site facility and take the accumulated waste to appropriate sorting and recycling facilities. Further details on the management of waste arising from the Sizewell C Project are provided in the **Waste Management Strategy** in **Appendix 8A** of ~~this volume~~**Volume 2** of the **ES** (Doc Ref. 6.3).

~~b)~~a) Lighting

~~3.5.3~~3.5.5 Due to the dynamic nature of a construction site it is not practicable to set out every likely lighting level. The objectives are to:

- provide a safe working environment, meeting statutory requirements and standards;
- allow 24hr working (when required);
- provide site security lighting; and
- mitigate the impact of artificial lighting on the surrounding environment as far as reasonably practicable.

3.5.43.5.6 Further detail is set out in the **Lighting Management Plan** in **Appendix 2B** ~~of this volume~~**Volume 2** of the **ES** (Doc Ref. 6.3).

~~c)~~b) Drainage

i. Surface water drainage

3.5.53.5.7 The site-wide surface water drainage philosophy would follow the conventional sustainable drainage techniques, typically moving from each stage to the next only when the current stage is deemed not practicable:

- Store rainwater for later use (e.g. rainwater harvesting).
- Use infiltration techniques (e.g. porous surfaces, swales, trenches).
- Attenuate rainwater in basins or open water features for gradual release.
- Attenuate rainwater by storing in tanks for gradual release through an outlet.
- Discharge rainwater direct into watercourse or sea.

3.5.63.5.8 There is a variability of ground water and strata across the main development site and as such the approach taken would vary.

3.5.73.5.9 Further details on the construction drainage system can be found in the **Outline Drainage Strategy** in **Appendix 2A** of ~~this volume~~**Volume 2** of the **ES** (Doc Ref. 6.3).

3.5.83.5.10 Details for the demand and supply of water during the construction stage are set out in **Appendix K** of the **Planning Statement** (Doc Ref. 8.4).

Land to the East of Eastlands Industrial Estate

~~3.5.9~~3.5.11 The overarching strategy for the surface water run-off associated with the Land East of Eastland Industrial Estate is storage with infiltration where possible.

~~3.5.10~~3.5.12 Storage would be used to balance runoff from the LEEIE with outfalls to watercourses at Greenfield Rates. Extreme storm runoff will be attenuated in an attenuation pond within the main development site to the east of the LEEIE before release to the environment through infiltration or discharged at greenfield runoff rate.

~~3.5.11~~3.5.13 Further details can be found in the **Outline Drainage Strategy** in **Appendix 2A** of ~~this volume~~**Volume 2** of the **ES** (Doc Ref. 6.3).

~~vi.~~i. Foul drainage

~~3.5.12~~3.5.14 The outline foul drainage strategy provides conventional drainage through the steps / hierarchy presented below, moving from each stage to the next only when the current stage is deemed not practicable:

- Transfer flows to treatment works.
- Introduce package plant.
- Specialist low flow package plant.
- Tankering to works (Cess Pits).

~~3.5.13~~3.5.15 Further details on the construction foul water drainage system can be found in the **Outline Drainage Strategy** in **Appendix 2A** of ~~this volume~~**Volume 2** of the **ES** (Doc Ref. 6.3).

~~d)~~c) Utilities

i. Construction electricity supply

~~3.5.14~~3.5.16 The construction electricity supply requires a cable route from National Grid's Leiston substation to the proposed location of the construction electricity supply primary substation, as seen in **Volume 2, Figure ~~3.3~~2.2.35** of this **ES Addendum**. This provides an incoming electrical supply that would power the main development site during construction.

~~3.5.15~~3.5.17 The route of the construction electricity supply is south from the proposed substation, along Lover's Lane and east onto Sandy Lane before passing direct to National Grid's Leiston substation.

~~3.5.16~~3.5.18 The width of the working area required for excavation of trenches and installation of cable ducts east of Lover's Lane is approximately 25m. This allows for a 4m wide excavation, 6m wide vehicle access road, 10m wide spoil mound plus 2m safety clearance on each side to accommodate temporary fencing. In highways and other constrained areas this working area can be considerably reduced by removing all excavated spoil off-site for disposal.

~~3.5.17~~3.5.19 Following installation of the ducts, the trench is backfilled and then the cables are pulled. Cables are typically delivered on drums in 500m lengths. An open excavation would therefore be required every 500m along the route to allow for cable joints to be installed. These works are likely to take up to nine months to complete.

~~e)~~d) Water supply

~~3.5.18~~3.5.20 The principal supply of water for the Sizewell C Project will come from mains water, provided by Essex and Suffolk Water. This will be drawn from within the Blyth Water Resource Zone, the zone that includes Sizewell C.

3.5.21 The ~~Site~~ **Water Supply Strategy**~~, which forms **Appendix K** of the **Planning Statement**~~ **Update** appended to **Volume 2** of this **ES Addendum** (Doc Ref. ~~8.4~~6.14) provides further details on how the water requirements of the Sizewell C Project could be met.

3.5.22 SZC Co. has also retained the following water supply options for further consideration:

New water resource options

- Sizewell B effluent reuse
- Licence trading with local abstractors
- Flood Water Storage
- On-site non-potable water management options Use of dewatering water
- Rainwater harvesting.

- Re-using concrete wash water.
- Recycling tunnel boring machine water.
- Greywater reuse.
- Effluent reuse (Sizewell C construction site and Sizewell B).
- Use of water efficient fixtures and fittings.
- Use of other water efficient practices on site

~~3.5.19~~ .

~~f)~~e) Rights of way

~~3.5.20~~3.5.23 Rights of way would be subject to disruption and change as a result of construction. The strategy is set out below:

- Minimise as far as possible any physical disruption or any other reductions in amenity on existing PRoW, permissive footpaths, access land, promoted cycle routes and all other pre-existing linear and area access, on the coast and inland.
- Minimise as far as possible any reductions in connectivity in and around the development, especially north-south.
- In particular, minimise any reductions in accessibility and amenity to the Suffolk Coast Path, Sandlings Walk and the future England Coast Path.
- Comply with the legal requirements of the Equality Act 2010 and the Countryside and Rights of Way Act 2000 in terms of temporary access infrastructure and management, by ensuring that there are no physical barriers to access without lawful authority and that reasonable adjustments are made to facilitate participation by all.
- Ensure that all new linear surfaces are easy to use.
- Minimise the need for temporary path closures and diversions, and where these are unavoidable, to provide and maintain alternative routes so as to reduce to a minimum any disruption or loss of amenity.

- Minimise road crossing points and, where unavoidable, to carry out relevant road safety audits and implement recommendations to ensure user safety.
- Apply and maintain best practice in terms of on-site signage and other information provision, and to enhance visitor enjoyment and safety.
- Justify, manage and agree temporary closures in advance and to publicise closures to members of the public, as required.

~~3.5.21~~3.5.24 Further details are set out in the **Rights of Way and Access Strategy** in **Appendix 15I** of ~~this volume.~~**Volume 2** of the **ES** (Doc Ref. 6.3).

~~3.1.11~~3.5.25 In addition to this, **Volume 2** of the **ES Addendum** assesses the environmental impacts of a crossing point and associated path which would be provided over Lover's Lane from the northern field of Aldhurst Farm into the arable field to the north. A new route would then pass through an existing field, parallel to the field boundary, towards Kenton Hills. It would then join the existing Bridleway 19 route, as shown in **Volume 2**, **Figure 2.2.32** of the **ES Addendum**. The link would be designated as a bridleway once construction of the SZC Project is complete.

APPENDIX 2.2.C MATERIALS MANAGEMENT STRATEGY

CONTENTS

TABLES

FIGURES

None

PLATES

None

1 MATERIALS MANAGEMENT STRATEGY UPDATE

1.1 Introduction

1.1.1 The original Materials Management Strategy was submitted as part of the Environmental Statement (ES) for the proposed new nuclear power station at Sizewell C and is located at **Volume 2, Appendix 3B** of the **ES** (Doc Ref. 6.3) [APP-185].

1.1.2 The document's purpose was to demonstrate how SZC Co. intends to manage excavated materials generated by the proposed development. The assumptions contained within it were derived from design details completed under early contractor input. The document noted that the materials volumes reported were estimates and that they would be subject to change as further design work was completed.

1.1.3 This Materials Management Strategy Update presents the outcome of more detailed analysis as SZC Co. has continued to develop its understanding of the detailed design and construction techniques. This document also contains further details on updated imported material assumptions. Other elements of the original Materials Management Strategy remain unchanged.

1.2 Excavated materials

1.2.1 The total volume of arisings assumed in the Application was approximately 5.4 million m^3. Further detailed site investigations and modelling have led to the need to increase this assumption by approximately 1.4 million m^3.

1.2.2 A comparison showing how the assumptions have been refined is contained below in **Table 1.1**.

Table 1.1: Indicative excavation material volumes arising

Source of material	Indicative excavation volume (m^3)	
	Original assumption	Updated assumption
Surface Strip (topsoil)	150,000	220,000
Main construction area Made Ground	1,400,000	1,000,000
Main construction area Peat and Alluvium	860,000	1,330,000

Source of material	Indicative excavation volume (m^3)	
	Original assumption	Updated assumption
Main construction area Crag	990,000	1,420,000
Borrow pit and surrounding area	950,000	1,070,000
Cut-off wall arisings	30,000	170,000
Bentonite	80,000	80,000
Marine and tunnelling	600,000	640,000
Other arisings	350,000	590,000
Associated developments	-	250,000
Sizewell B relocated facilities	-	70,000
Total	5,410,000	6,840,000

1.2.3 Further details on why these assumptions have changed are set out below.

i. Surface strip (topsoil)

1.2.4 Topographical surveys and further geotechnical investigation, along with a topsoil assessment, have demonstrated a greater depth of topsoil that should be stripped and stockpiled for reinstatement on completion of the project.

ii. Main construction area

1.2.5 The largest proportion of material arisings is generated from the bulk excavation of the main construction area to allow for the ground improvement, sub-structures and foundations of the main permanent works buildings.

1.2.6 The Application is based on an assumed average excavation depth of -6mOD, increasing to -15mOD in certain areas. Following further geotechnical investigation and site assessment, the excavation depths are now assumed to be in the range of between -10mOD and -15mOD over the majority of the main construction area, increasing to -30mOD in certain areas. Revised assessments have improved our understanding of the depth and thickness of the poor superficial layer, peat and alluvium, and identified a greater degree of weathering to the upper crag layers than previously assumed. This

has driven an increase in the excavation depth necessary to reach competent material.

1.2.7 This increase in depth has led to a growth in the total arisings in the main construction area by approximately 500,000m^3. The additional material would predominantly comprise of crag sands.

1.2.8 The revised interface boundary between the peat and alluvium layer and made ground above and below is more variable in level and at a shallower depth than was previously assumed. This has changed the proportions of the materials arising from the bulk excavation, by increasing the proportion of peat and alluvium arisings and reducing the made ground arisings.

1.2.9 The Application currently assumes that crag material is only suitable for re-use as landscaping and general fill areas. The greater excavation depth set out above increases the amount of crag material arisings that would be available for re-use. Further testing has allowed the project to assume that some of this additional crag material would now also be available for higher specification backfill material when treated with binders. This significantly reduces the amount of such backfill material that would otherwise have needed to be imported (by approximately 2.4 million tonnes). It also significantly reduces the amount of residual material that would otherwise have needed to be either exported off-site or incorporated into the permanent landscape.

iii. Borrow pits and surrounding area

1.2.10 The volumes of the borrow pits remain unchanged. The addition of a flood mitigation area and wet woodland habitat towards the north of the main development site have increased assumptions relating to arisings in that part of the main development site.

iv. Cut off Wall

1.2.11 In parallel to the development of the bulk excavation depths, the design of the cut off wall has been extended down to seal into the cohesive London clay strata below the crag at a level of approximately -50mOD. This has increased the volume of arisings from the cut off wall construction considerably, as the initial DCO volumes only allowed for the cut off wall through the made ground and peat and alluvium layers, which were initially assessed as being to a depth of approximately 5-7m below ground level.

v. Bentonite

1.2.12 Assumptions relating to bentonite remain unchanged.

vi. Marine and tunnelling arisings

1.2.13 Further detailed assessments of the marine activities have led to minor increases in the estimated marine and tunnelling arisings. These are generated due to refinement of the tunnel design and alignment, plus additional requirements for dredging at the intake and outfall locations.

vii. Other arisings

1.2.14 Multiple additional smaller volumes have also increased due to design developments and refinement of the construction process, in relation to facilities such as the Green Rail Route within the main development site.

viii. Associated development sites

1.2.15 The associated development sites have also been progressed with a greater level of design. The current vertical alignment has indicated that approximately 250,000m^3 of arisings will be generated, predominately from Sizewell Link Road and the Two Village Bypass. Some of this material may be retained as landscaping bund material on these sites, however provision has been made available for them at the main development site if needed.

ix. Sizewell B relocated facilities project

1.2.16 The Sizewell B relocated facilities project will involve early site clearance and enabling works to clear some of the existing Sizewell B facilities from the main construction area. Approximately 70,000m^3 of material is assumed to be generated from these activities and was omitted from the original assumptions in error.

1.3 Imported materials

1.3.1 The detailed understanding of the volume of material imports required has also continued to be developed since the Application was submitted.

1.3.2 A comparison between the original and updated assumptions is shown in **Table 1.2** below.

Table 1.2: Breakdown of expected import material by type

Type	Imported materials by weight (million tonnes (%))	
	Original assumption	Updated assumption
Concrete materials	5.1 (50%)	4.8 (40%)
Backfill	2.0 (20%)	3.3 (27%)
Steel	1.0 (10%)	1.0 (8%)
Bitumen	1.0 (10%)	1.0 (8%)
Other	1.0 (10%)	2.0 (17%)
Total	**10.1 (100%)**	**12.1 (100%)**

1.3.3 No changes are assumed to the amount of steel and bitumen that would need to be imported. Further details on updated assumptions for the other imported materials are set out below.

i. Concrete materials

1.3.4 Further design development has allowed a refinement of the forecast concrete requirements, which has resulted in a minor decrease in the amount of materials required. Volumes of course aggregate (crushed rock), fine aggregate (sand and filler powder), cement, granulated ground blast-furnace slag (GGBS) and other add mixtures are now better understood.

ii. Backfill

1.3.5 The volume of backfill imports is the main change compared with the original Materials Management Strategy. This has increased due to the greater excavation depths explained in the section above and the subsequent increase in engineered backfill required. More detailed design work on permanent below ground structures has also informed the overall backfill requirement.

iii. Other

1.3.6 As would be expected in a scheme of this scale, a wide range of other material imports are required to facilitate construction. The most significant of which are itemised below:

iv. Cement binder

1.3.7 The ability to re-use certain excavated material has been further assessed and continues to be assumed. To make this material suitable for backfill it needs to be blended with imported crushed rock and a small proportion of imported cement binder. The need to import additional material for this activity is considered to be outweighed by avoiding the 2.4 million tonnes of backfill import that would otherwise have been necessary.

v. Binder powders

1.3.8 Binder powders include cement and lime that is typically required to treat and stabilise certain arisings. The requirement for a larger amount of these materials has become evident as the detailed geotechnical investigation campaigns have been completed and the construction methodology and specialist marine and tunnelling techniques have been further established.

1.3.9 Binder powders would be used to treat and modify certain arisings. The hydration reaction of the powders absorbs the moisture, causing the material to dry slightly as well as bonding the material. This produces a modified material that can be handled and placed more easily.

vi. Bentonite

1.3.10 The import of approximately 100,000m^3 of bentonite is now assumed. This is because further contractor input has identified that the tunnelling method for the marine outfall and intake tunnels is likely to require a slurry shield variable density tunnel boring machine due to the geology. This involves using a bentonite slurry to maintain the earth pressures in the ground during tunnelling, creating a pumpable slurry that can be brought into the main development site. These arisings would be processed to remove a proportion of the bentonite for reuse.

1.4 Stockpiles

1.4.1 To help manage the increased volumes during construction, additional temporary stockpiles are proposed. It is important to note that there is not a need for a like-for-like increase in stockpile volume as not all the imported and excavated material would be in a stockpile at the same time. For example, backfill operations would progress prior to the completion of bulk excavation works.

1.4.2 It is proposed to introduce these additional stockpiles to an area which is currently allocated for construction compounds. Once the peak demand for stockpiling has passed, use of this area would revert to the original assumption of construction compounds. The height of the additional stockpile area remains within the limits originally set by **Volume 2, Chapter 3** of the **ES** (Doc Ref. 6.3) [APP-184]. Details of the location of the additional stockpile area is set out in **Volume 2**, **Figure 2.2.2** of the **ES Addendum**.

APPENDIX 2.2.D WATER SUPPLY STRATEGY

CONTENTS

TABLES

PLATES

FIGURES

1 WATER SUPPLY STRATEGY UPDATE

1.1 Introduction

1.1.1 Construction of the Sizewell C Project would entail many activities that would require water supply, both potable and non-potable. SZC Co. has continued to develop its water supply strategy by engaging with stakeholders including the Environment Agency, Essex & Suffolk Water and Anglian Water to discuss and assess potential sources for this water supply. The principal supply for the Sizewell C Project is unchanged from the original Site Water Supply Strategy (**APP-601**) and would come from mains water, provided by Essex and Suffolk Water.

1.1.2 In order to provide security of supply, and to ensure that all the water requirements of the Sizewell C Project can be met, SZC Co. has continued to work with stakeholders to assess the water supply options. This document provides an update on those options by providing further detail on those that are retained as options and providing a justification for discounting others.

1.1.3 Retained water supply options are reviewed in **Chapter 2** of the **ES Addendum** to determine whether they have the potential to give rise to any additional significant adverse effects.

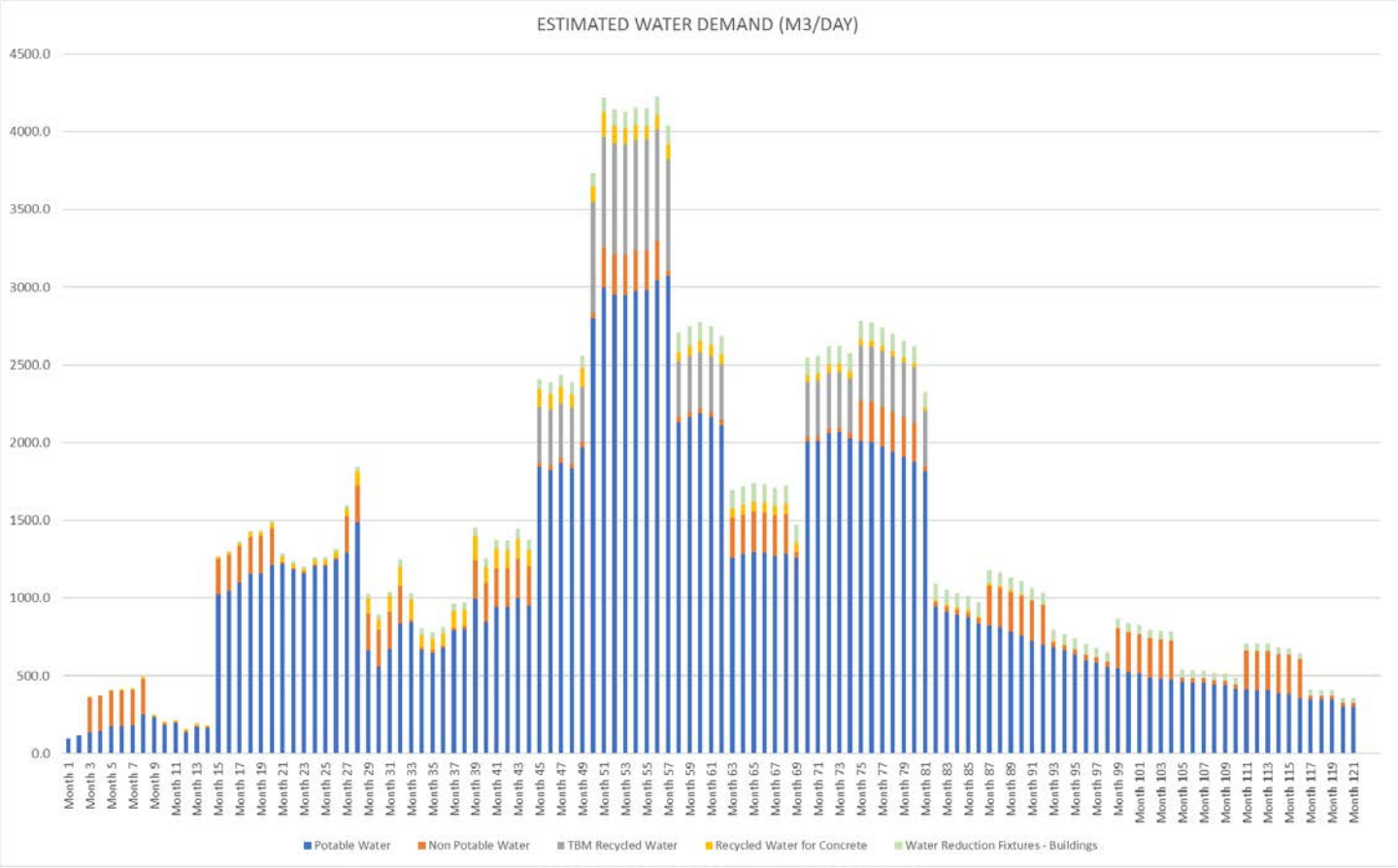
1.2 Estimated water demand

1.2.1 SZC Co. has updated its estimated water supply requirements during construction, based on a more detailed understanding of construction requirements and further findings from Hinkley Point C (HPC).

1.2.2 **Plate 1.1** provides an illustration of the indicative demand profile for both potable and non-potable water throughout the construction period. During the early years water demand continues to peak around 1.5Ml/d. This is related to the construction of the cut-off wall. During the main construction phase, potable water demand is predicted to peak at 3Ml/d during tunnelling works (4Ml/d including non-potable water), before returning to up to around 2Ml/d. This assumes no recycling of water by the tunnel boring machines, which would significantly reduce demand. After the completion of the tunnelling, forecast demand falls below 1Ml/d and then gradually decreases through the remainder of the construction period to around 0.5Ml/d. The demand during operation continues to be expected to be significantly lower than during construction.

1.2.3 SZC Co. considers that these estimates are reasonable and robust for the purposes of planning

Plate 1.1: Estimated potable and non-potable water demand throughout the construction period



1.3 Water supply options

1.3.1 SZC Co. has continued to consider options within three categories of water supply solutions in further developing its water supply strategy:

- Potable water transfer options – moving water into the Sizewell area from outside the Blyth Water Resource Zone.
- New water resource options – capturing, storing and supplying water to Sizewell C, either directly or indirectly.
- On-site non-potable water management options – opportunities to reduce consumption on-site as well as reducing the reliance on mains potable water.

1.3.2 **Tables 1.1 – 1.3** summarise all of the water supply options that SZC Co. has considered during the water strategy development process and concludes whether they are now being discounted or retained for further consideration, either as part of this project or separately. Each of the options considered falls into one of the three categories described above. Options are being taken forward in all categories.

Table 1.1: Potable water transfer options – updated position

Option	Conclusion
Essex & Suffolk Water transfer from nearby Water Resource Zone *Transfer of surplus potable water via a new pipeline from Barsham.*	**Retained.** • Essex and Suffolk Water has identified means to provide a viable supply of potable water to Sizewell C. • The proposal provides potable water in a two-stage approach providing a direct link from Barsham to Sizewell. Supply would initially be 1.5Ml/d increasing to 3.5Ml/d to cover the peak SZC water demand during tunnelling. The proposals would require an upgrade to some existing water treatment plants and a new high-capacity water main as shown in **Plate 1.1**. • SZC Co. continues to work closely with Essex and Suffolk Water and the Environment Agency on the details of the scheme, how it would be funded and the programme for its completion. • This scheme would be provided by Essex and Suffolk Water and does not form part of the Application. A cumulative assessment of the Sizewell C Project with the proposed scheme is provided within **Chapter 10** of this **ES Addendum**.
Essex & Suffolk Water transfer from Essex Water Resource Zone	**Discounted.**

Option	Conclusion
Transfer of surplus potable water via a new pipeline from further afield.	• This option would require more significant development at a greater cost than the alternative pipeline project identified above and is discounted on the basis.
Anglian Water Strategic Pipeline *Transfer of surplus potable water via a new pipeline from North Lincolnshire*	**Discounted.** • This option has been discounted due to the timescale required for design, build and commissioning, taking into account the specific constraints of the proposed route. Any additional supply of potable water would also be subject to available supply headroom and demand growth in Ipswich. This option is considered to be unable to deliver the water supply within the required project timescales.
National Framework *A long-term strategy to re-balance water resources across the country*	**Discounted.** • The National Framework is a long-term project and is unlikely to be delivered within the project timescales.
Regional Strategy *A long-term strategy to improve water*	**Discounted.** • The Regional Strategy is a long-term project and is unlikely to be delivered within the project timescales.

Option	Conclusion
management across the East of England.	

Plate 1.2: Pipeline transfer connection to Sizewell C

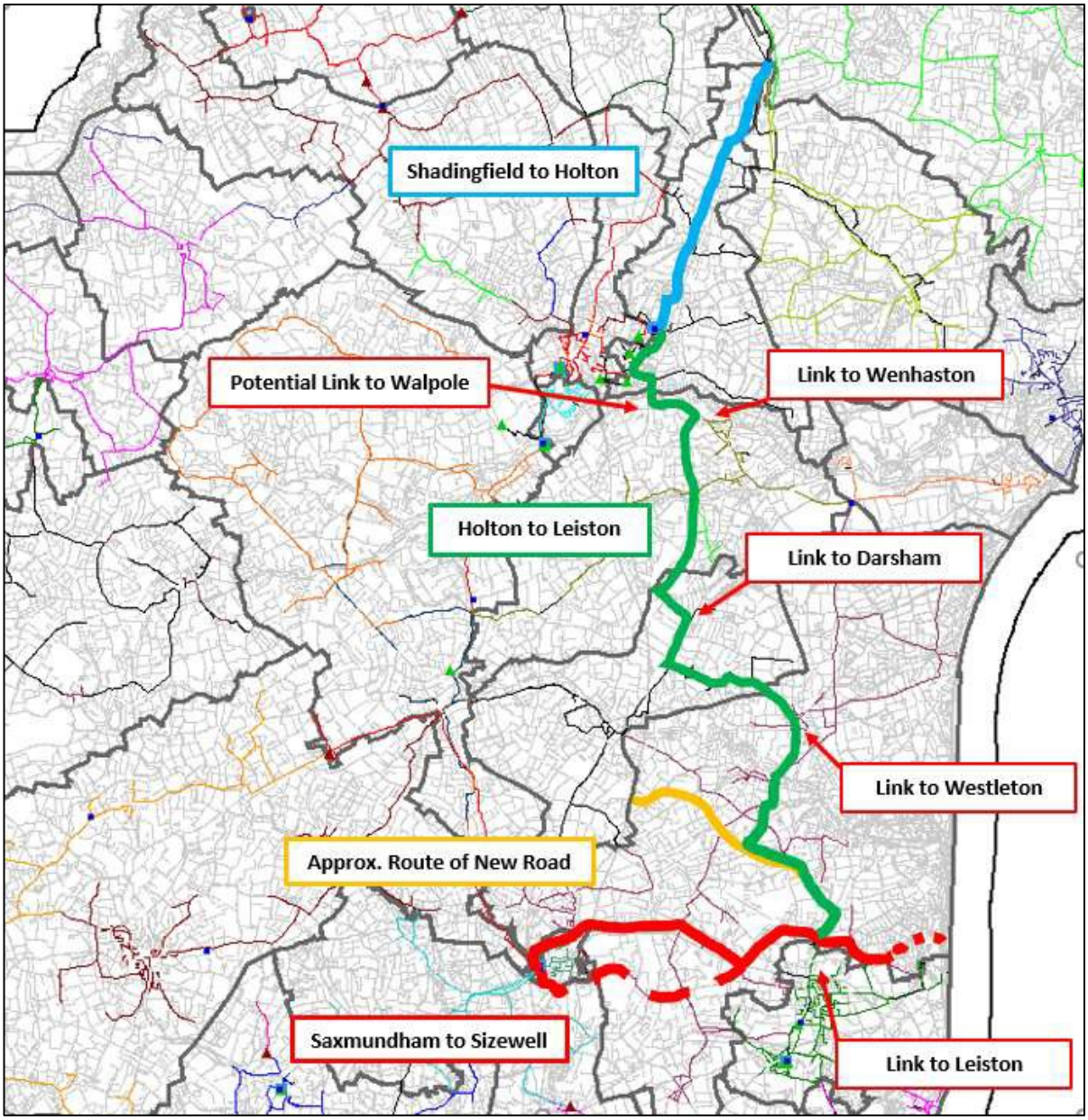


Table 1.2: New water resource options – updated position

Option	Conclusion
Water Resource Storage Area (WRSA) *A means of capturing and storing excess water on-site for construction use.*	**Retained.** • This option has been taken forward as **Change 5**. The Application identifies that a temporary non-potable water storage area would be constructed for use in the construction process to the north of the main development site. As described in more detail in **Chapter 2** of the **ES Addendum**, further design work has identified that the water storage area can now be temporarily located adjacent to Water Management Zone 5 providing a storage area of approximately 16,000m^3.
Licence trading with local abstractors *Brokering licence trade(s) between abstractors and Essex and Suffolk Water to increase available abstraction volumes, or taking on nearby licences directly.*	**Retained.** • As part of wider ongoing engagement with local landowners regarding the Sizewell C Project, opportunities for the potential to trade local licensed abstractions are continuing to be considered.

Option	Conclusion
Sizewell B effluent reuse *Taking the unused output from the existing Sizewell B sewage treatment works and diverting it for use as a water resource.*	**Retained.** • The Sizewell B foul water treatment plant is located to the south of the main construction area and is therefore a viable option to supply treated water to the construction site for reuse. • Discussions with Sizewell B are ongoing to determine what the output water quality and volumes of the existing plant are, and whether this can be diverted to the construction site rather than discharged to sea. The foul water treatment plant has a permitted discharge of up to 400m^3/day, however the actual flow rate would vary.
Non-potable water transfer from Benacre pumping station *Transferring surplus non-potable water via a new pipeline from Benacre.*	**Discounted.** • This option would require significant development and cost. It has been discounted on the basis that on-site non-potable options are available.
Non-potable water transfer from Minsmere Sluice	**Discounted.**

Option	Conclusion
Transferring surplus non-potable water via a new pumping station and pipeline from Minsmere Sluice.	• The potential volume and water quality provided by the Minsmere Sluice is unknown as it does not contain a gauging station. The source would also not provide a reliable supply and cannot be relied upon to offset potable water demand. • This option would require construction within Minsmere for a pipeline it has been discounted on the basis that more sustainable and suitable on-site non-potable options are available.
Non-potable water transfer from Aldeburgh sewage treatment works *Transferring surplus non-potable water via a new pipeline from Thorpeness, or discharging into and then abstracting from the Hundred River.*	**Discounted.** • This option would require significant development and cost. It has been discounted on the basis that on-site non-potable options are available.

Option	Conclusion
Desalination *Installing modular desalination plant on the main development site and abstracting seawater for treatment*	**Discounted.** • This option has been discounted in favour of alternative options, due to concerns with power consumption, sustainability, cost, and wastewater discharge. The desalination process is typically energy intensive, and the discharge of brine water as a result of desalination may not be suitable for discharge through the combined drainage outfall (CDO).
Ship tankering *Filling large vessels with non-potable water outside the region and pumping water onto the site from offshore.*	**Discounted.** • A large, non-potable water source is not necessary to meet the non-potable water requirements on site, which could be better met from smaller and more regular continual sources of non-potable water such as this identified in this report.
Compensation discharges *Seeking to facilitate various activities to help free up water from the environment that would*	**Discounted.** • This option has been discounted as compensation discharges are not within the control of SZC Co. and on-site non-potable options are available.

Option	Conclusion
allow increased local abstraction by Essex and Suffolk Water.	
Non-potable water transfer from Leiston sewage treatment works *Transferring surplus non-potable water via a new pipeline.*	**Discounted.** • It is noted that the Leiston sewage treatment works discharges into the Leiston Drain, which depends on this as a water source. This option has been discounted as it is not considered to be a sustainable solution and on-site non-potable options are available.

Table 1.3: On-site non-potable water management options – updated position

Option	Conclusion
Re-use of dewatering water *Re-using dewatering water on-site rather than discharging it to sea.*	**Retained.** • Dewatering water extracted from within the cut-off wall on the main platform would initially be brackish in nature, which is likely to be useable in the first three months of dewatering for non-potable water activities on site. The high volume of water at this stage (250 litres per second) would mean that it is not feasible to store all water on the site and some water would still be discharged via the combined drainage outfall. • After this point a more constant flow rate of approximately 30 litres per second is expected, however the high salinity levels would limit its usability. The option is retained as it has potential to provide a non-potable water supply for earthworks backfill and compaction within the cut-off wall when the main construction area is being infilled up to platform level.
Rainwater harvesting *Capturing, storing and re-using rainwater from construction buildings or other on-site sources.*	**Retained.** • This option is retained, typically for use on buildings that are likely to remain in situ for much of the construction period, such as the main site offices.

Re-using concrete wash water *Recycling and re-using wash water on the concrete batching plants multiple times to minimise wastage.*	**Retained.** • Water recycling at the concrete batching plant has been implemented at Hinkley Point C and this option is retained for Sizewell C.
Recycling tunnel boring machine water *Recycling and re-using multiple times the water required to cool and lubricate the tunnel boring machines to minimise wastage.*	**Retained.** • Recycling the tunnel boring machine water in a closed-circuit system would be pursued and is anticipated to reduce their demand for water by approximately 30%.
Greywater reuse *Collecting and re-using water from sources*	**Retained.** • This option is retained, typically for use on buildings that are likely to remain in situ for much of the construction period, such as the main site offices.

such as sinks and showers.	
Sizewell C construction site effluent reuse *Taking the unused output from the on-site sewage treatment works and diverting it for use as a water resource.*	**Retained.** • Similar to the retained Sizewell B retained option noted above, reuse of Sizewell C effluent is also likely to be a viable option to supply treated water to the construction site for reuse.
Use of water efficient fixtures and fittings *Reducing the amount of water that is used in welfare facilities.*	**Retained.** • Within offices on site, water reduction fixtures and fittings would be provided. For example, waterless urinals, water reducing taps, showers and cisterns to improve water efficiency.
Use of water efficient practices on-site	**Retained.**

Reducing the amount of water that is used in daily construction activity, such as wheel washing instead of road spraying and sweeping.	• Measures such as wheel washing would be required at the entrances and exits to the site to reduce the sediment carried by vehicles.
Programme works to avoid periods of high 'water stress' *Scheduling construction works to avoid high water demand activities during the summer months.*	**Discounted.** • Construction scheduling cannot feasibly be adjusted to average out peaks across the project, due to: high costs associated with project delays; interdependencies between individual construction activities; the length of time required to complete certain water-intensive activities (such as use of the tunnel boring machines); and uncertainty suitably far in advance over when water availability would be low.