

HPC COMPANY DOCUMENT

HINKLEY POINT C MATERIAL CHANGE APPLICATION - NON-TECHNICAL SUMMARY

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Owner & Approver	Andrew Goodchild
Technical Reviewer	John Pingstone
Author	Isabelle Barnard

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APPROVAL:

Prepared by:	Name: Isabelle Barnard Title: Environmental Consultant	Date: 22.12.23
Verified by:	Name: John Pingstone Title: Lead Planner HPC	Date: 22.12.23
Approved by:	Name: Andrew Goodchild Title: Planning Manager HPC	Date: 22.12.23

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1. INTRODUCTION

1.1 Overview

- 1.1.1 NNB Generation Company (HPC) Limited ('NNB') is intending to submit an application for a material change to the approved Development Consent Order for the new nuclear power station known as Hinkley Point C, which is currently under construction.
- 1.1.2 Hinkley Point C will be an electricity generating station where power will be generated by two nuclear reactor units (Unit 1 and Unit 2).
- 1.1.3 Hinkley Point C and the associated development required to facilitate its construction and operation is hereafter referred to as 'the Hinkley Point C Project'.
- 1.1.4 An Environmental Impact Assessment is the process of identifying the environmental effects (which can be positive or negative, short-term or long-term, direct or indirect) that might arise as a result of a development - or in this case, the Hinkley Point C Project as changed by the changes that are now proposed by NNB. The results of this process will be set out in an Environmental Statement.

1.1.5 Planning Act 2008: Guidance on changes to Development Consent Orders was published by the Department for Communities and Local Government in 2015. The guidance document explains that a change to a previously consented development should be treated as material if it would require an updated Environmental Statement (from that at the time the original Development Consent Order was made) in order to take account of new or materially different likely significant effects on the environment.

1.1.6 The original Development Consent Order application was submitted by NNB in 2011 and consent was granted in 2013. Since 2013, NNB has submitted four non-material change applications to make changes to the Hinkley Point C Project. These changes included minor changes to buildings, accommodation campuses and changes within the site layout. These were not considered material change applications as (amongst other things) no new or materially different likely significant effects on the environment were identified.

1.2 Purpose of this Report

1.2.1 NNB wishes to obtain the opinions of the public and relevant stakeholders on the proposed changes. The

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responses received will be taken into consideration when refining the final design of the proposed changes and potential mitigation measures required.

1.2.2 This report provides a non-technical summary of the information presented within the Preliminary Environmental Information Report prepared as part of the consultation process.

1.2.3 This report describes the changes being proposed by NNB in **Chapter 2** and **Chapter 3** including commentary on the alternatives considered. A summary of the Environmental Impact Assessment process is then outlined in **Chapter 4**, followed by the preliminary environmental information on the environmental effects of the proposed changes in **Chapters 5** to **7** including commentary of measures required to reduce or offset any effects identified. A summary of this report and the proposed scope of the Environmental Impact Assessment is provided in **Chapter 8** followed by an outline of the next steps in the process in **Chapter 9**.

1.2.4 There will be a period from Tuesday 9 January 2024 to 23:59 on Thursday 29 February 2024 within which members of the public and relevant stakeholders can provide their responses to the consultation.

1.2.5 For further information about the consultation, please visit NNB's website via the following link: www.edfenergy.com/hpccommunity.

1.3 Proposed Changes On-Site

1.3.1 NNB is proposing six changes to Hinkley Point C Project on-site that will form the basis of the proposed material change application, as summarised below:

1. Removal of the requirement to install an Acoustic Fish Deterrent system (using sound to repel hearing-sensitive fish from the cooling water system intake heads);
2. A change from wet to dry storage of spent fuel at the Interim Spent Fuel Store and a change in building dimensions as a result;
3. Replacement of the Access Control Building associated with the Interim Spent Fuel Store with a new larger Equipment Storage Building;
4. Relocation and re-design of the meteorological mast resulting in the meteorological station building no longer being required;
5. Retaining the existing temporary Hinkley Point Substation as a permanent building to supply

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electricity to neighbouring Hinkley Point A and Hinkley Point B; and

6. Four new structures (two per Unit of Hinkley Point C) to house sluice gates and lifting beams to be used during outages (i.e. maintenance periods) only.

1.3.2 Refer to **Figure 1** for the location of the proposed changes within the Hinkley Point C site, which are hereafter referred to as 'the proposed changes on-site'.

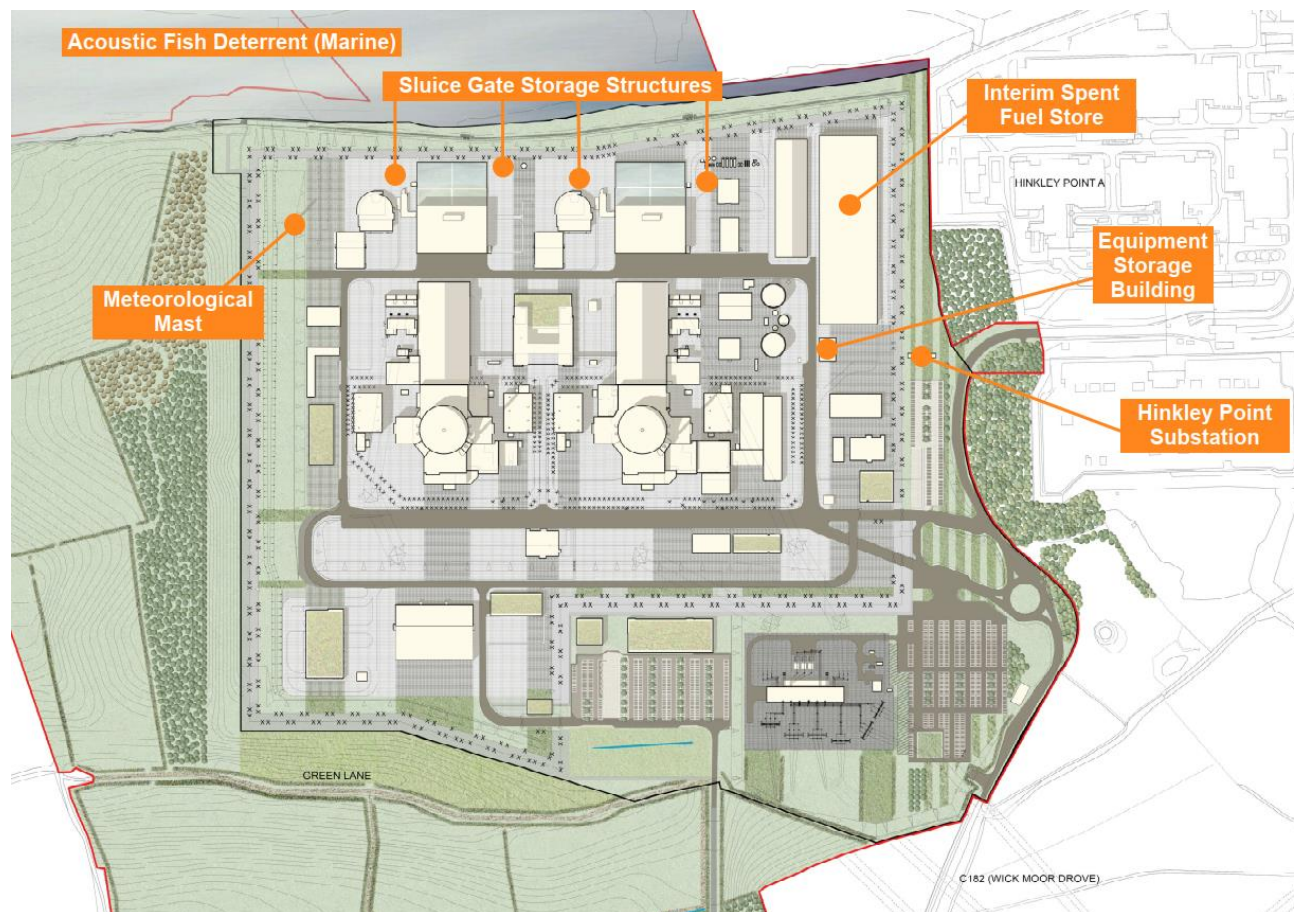


Figure 1: Location of the proposed changes on-site

1.4 Proposed Changes Off-Site

1.4.1 Following engagement with relevant stakeholders, NNB has identified a package of compensatory measures that will ensure that the overall coherence of the national network of protected sites is protected. These measures are hereafter referred to as 'the proposed changes off-site' and are summarised below:

- Compensation for fish that migrate into and out of rivers, achieved through the removal of or introduction of structures to help fish to pass existing river barriers (known as 'weirs'). NNB is committed to undertaking works at three sites but has identified five potential locations where appropriate works to weirs would provide the appropriate compensation for the migratory fish. NNB is proposing to carry out works to three of the five weirs identified:
 - Maisemore Weir on the River Severn (one of the preferred proposals);
 - Trostrey Weir on the River Usk (one of the preferred proposals); and
 - one further weir on the River Lugg (one of Mousenatch Weir, Eyton Weir or Coxall Weir), the

River Towy (Manorafon Weir) or the River Severn (Upper Lode Weir).

- Compensation for marine species that form part of the group of fish in the Severn Estuary, through improvements to, or creation of, habitats that will support the fish populations:
 - Creation or enhancement of approximately 340 hectares of saltmarsh and associated habitats at two locations referred to as Pawlett Hams and The Island located on the River Parrett;
 - Creation / enhancement of 5 hectares of seagrass bed;
 - Creation / enhancement of 15 hectares of kelp forest; and
 - Creation / enhancement of 1-2 hectares of oyster bed, size dependent on location.
- An Adaptive Monitoring and Management Plan - to provide reliable information on the effectiveness and success of the implemented measures and provide the means to adapt the measures where necessary.

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- 1.4.2 Refer to **Figure 2** for the location of the proposed changes off-site comprising the weir and saltmarsh measures.

- 1.4.3 The location for the seagrass bed, kelp forest and oyster beds are yet to be identified and are therefore not shown on **Figure 2**. However, these would likely be located within the Severn Estuary/wider Bristol Channel.

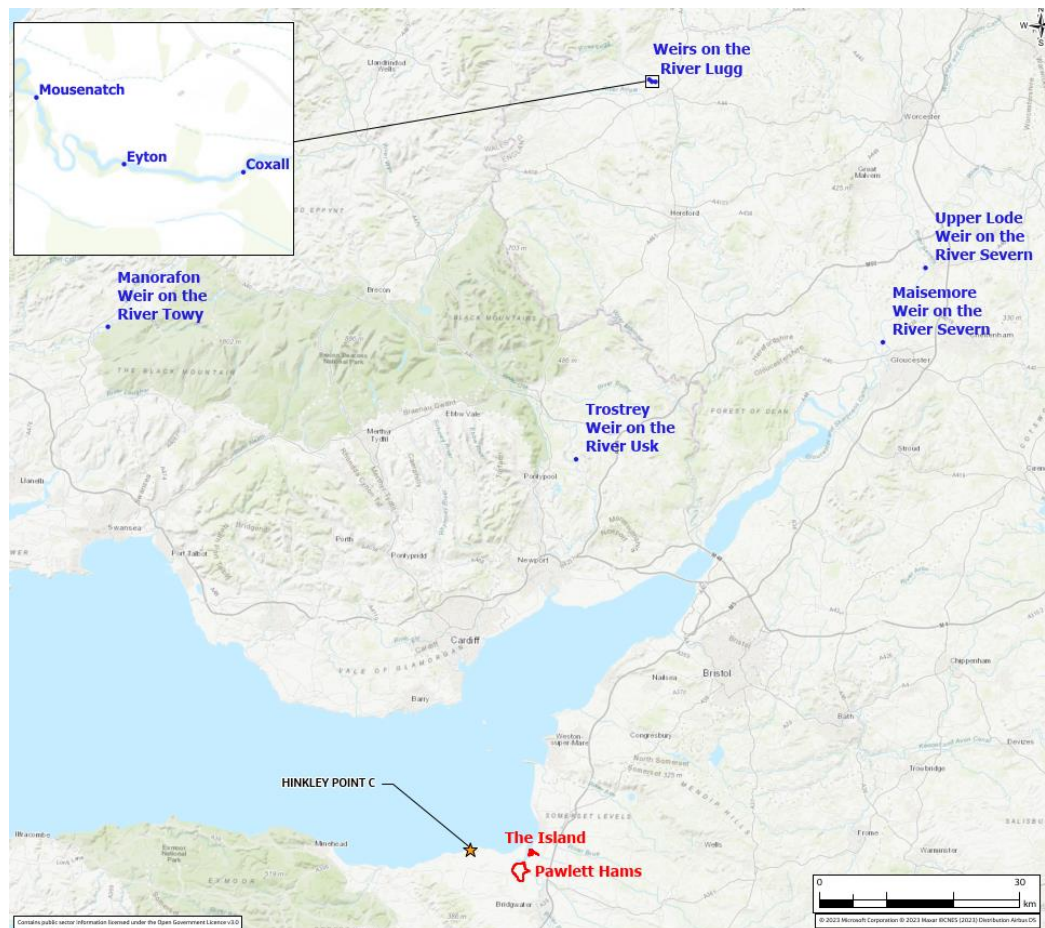


Figure 2: Location of the proposed changes on-site (weirs and saltmarsh)

2. DESCRIPTION OF THE PROPOSED CHANGES ON-SITE

2.1 Acoustic Fish Deterrent

- 2.1.1 An Acoustic Fish Deterrent was originally included within the proposed design of the cooling water system intake head at Hinkley Point C (refer to **Figure 3**). The intention of the Acoustic Fish Deterrent was to deter hearing-sensitive fish. The requirement to design and install the Acoustic Fish Deterrent was secured within the approved Development Consent Order.
- 2.1.2 Since the Development Consent Order was made in 2013, after lengthy and careful analysis, NNB has concluded that there are significant technical feasibility problems associated with the design, installation, maintenance and repair of an Acoustic Fish Deterrent system in the Severn Estuary.
- 2.1.3 There is a lack of engineering examples of installing an Acoustic Fish Deterrent system in an environment similar to that at Hinkley Point C.
- 2.1.4 Remotely Operated Vehicles would be required for works such as installation, maintenance and repair of

the Acoustic Fish Deterrent. Independent expert advice is that existing Remotely Operated Vehicles would not be able to undertake these tasks and it is highly unlikely that they would ever, on their own, be effective.

- 2.1.5 Without suitable Remotely Operated Vehicle technology, NNB would have to rely heavily on the use of human divers to undertake the works outlined in **paragraph 2.1.4**. This would expose divers for lengthy periods to intolerable health and safety risks on a regular basis which could lead to their deaths.
- 2.1.6 As a result of the above, NNB is proposing to remove the requirement to install an Acoustic Fish Deterrent system from the Development Consent Order.
- 2.1.7 If the proposed material change application to remove the requirement to install an Acoustic Fish Deterrent system is not approved, Hinkley Point C would not be able to commence operations in 2027, as planned. It would instead be necessary to delay the commencement of operations, potentially indefinitely, until an appropriate system had been designed, developed and tested.
- 2.1.8 Alternative fish deterrent approaches, site-specific constraints, availability of technology, and installation,

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maintenance, operation and safety have all been considered. The optioneering process determined that none of the identified alternatives can be considered feasible.

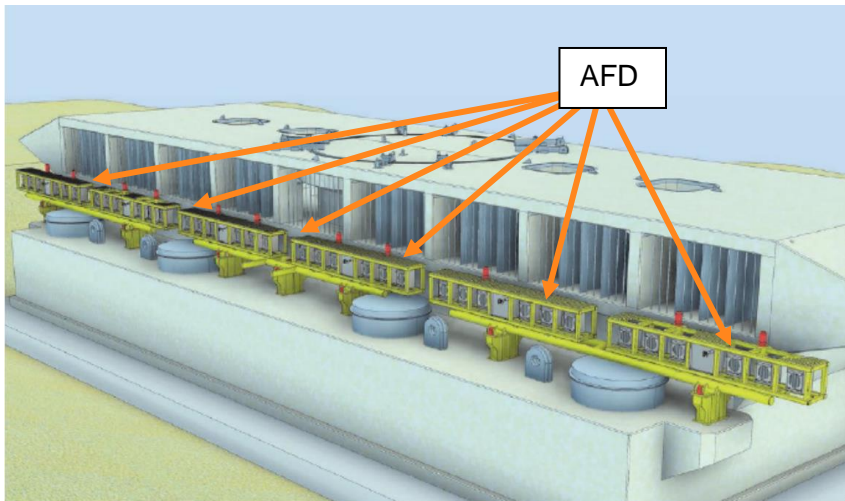


Figure 3: Siting of Acoustic Fish Deterrent structures as part of the intake head as originally proposed

2.2 Interim Spent Fuel Store and Equipment Storage Building

2.2.1 The approved Development Consent Order included an Interim Spent Fuel Store designed for the wet storage of spent fuel (i.e. fuel stored in pools of water) along with an Access Control Building.

2.2.2 Wet storage of the fuel would require an aircraft protection shell to be constructed over the large pool to protect the wet store from accident or attack. In contrast, a dry storage facility would involve storing fuel in concrete casks at ground level which would provide the same protection but in a more compact and efficient way. Wet storage would also require active management via circulating water cooling, to ensure that the pools were providing the correct environment for the storage of fuel, whereas for dry storage, the casks would be cooled by air convection, which would not require active management.

2.2.3 Through a series of assessments, it has been demonstrated that both the wet and dry storage of spent fuel are considered safe from the perspective of the Environment Agency, Office for Nuclear Regulation, and the Health Safety Executive. The

assessments also considered dry storage options in a cask storage system, within a vault and in a canister storage system. Scoring against health and safety, technical performance and environment determined that the dry storage of spent fuel within concrete casks was superior in practicability and in economic terms over other options, while being equal to the other options in relation to the environment and health and safety.

2.2.4 Therefore, given the engineering and management advantages of the dry storage of spent fuel in comparison to wet storage set out above, it is proposed that the Interim Spent Fuel Store is designed as a dry storage facility for the spent fuel. Dry storage is used at Sizewell B and will be used at Sizewell C.

2.2.5 Dry storage requires more space than wet storage, therefore the Interim Spent Fuel Store must increase in size (refer to **Figure 4**). However, as the concrete casks will be sealed, a 55 m stack that was previously required for wet storage is no longer required as no gaseous emissions will occur. **Table 2–1** outlines the proposed change in size of the Interim Spent Fuel Store.

Table 2–1: Proposed change in dimensions of the Interim Spent Fuel Store

Interim Spent Fuel Store Design	Dimensions (m) (length x width x height)
Original design	150 x 65 x 25 (with 55 m stack)
Proposed revised design	229 x 73 x 30 (with no 55 m stack)

2.2.6 It is also proposed that the Access Control Building associated with the Interim Spent Fuel Store is replaced with a new Equipment Storage Building located in close proximity to where the equipment will be used within the Interim Spent Fuel Store (refer to **Figure 4**). To store the relevant equipment, the building must increase in size as outlined in **Table 2–2**. Despite the increased size, the building remains considerably smaller than the adjacent Interim Spent Fuel Store.

Table 2–2: Proposed change in dimensions of the Access Control Building to the Equipment Storage Building

Building	Dimensions (m) (length x width x height)
Access Control Building (original design)	29 x 17 x 5

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Building	Dimensions (m) (length x width x height)
Equipment Storage Building (proposed revised design)	31 x 23 x 18

2.2.7 The Access Control Building had two security functions: control and access of pedestrian foot traffic in and out of the Interim Spent Fuel Store, and the control and monitoring of vehicles accessing through the vehicle inspection area. The Access Control Building's location and layout were based on operational requirements, particularly in relation to entrance and exit arrangements.

2.2.8 The currently approved design of the Access Control Building includes access functions that would have controlled entrance into the Interim Spent Fuel Store. These access functions will now be located within the Interim Spent Fuel Store itself which includes an Entrance Lobby. The Equipment Storage Building does not have an access function and will be for storage of equipment only.

2.2.9 The new Equipment Storage Building is located further south than the original Access Control Building as that location would be within the proposed new footprint of

the Interim Spent Fuel Store. Its exact location is based primarily on ease of operability with regards to the shared lifting equipment, such as overhead cranes, used between the two buildings.

2.2.10 Comments were raised in response to a previous application to change the fuel store from wet to dry storage in regard to the longer-term impacts of the proposed changes. Spent fuel will remain at Hinkley Point C until a Geological Disposal Facility becomes available and is able to receive the spent fuel. Decommissioning at Hinkley Point C will be subject to a separate Environmental Impact Assessment towards the end of generation.

2.2.11 Unit 1 of Hinkley Point C is planned to enter operation in 2027 and the spent fuel will be moved to the Interim Spent Fuel Store after 10 years. Therefore, the Interim Spent Fuel Store and Equipment Storage Building will need to be operational in 2037.

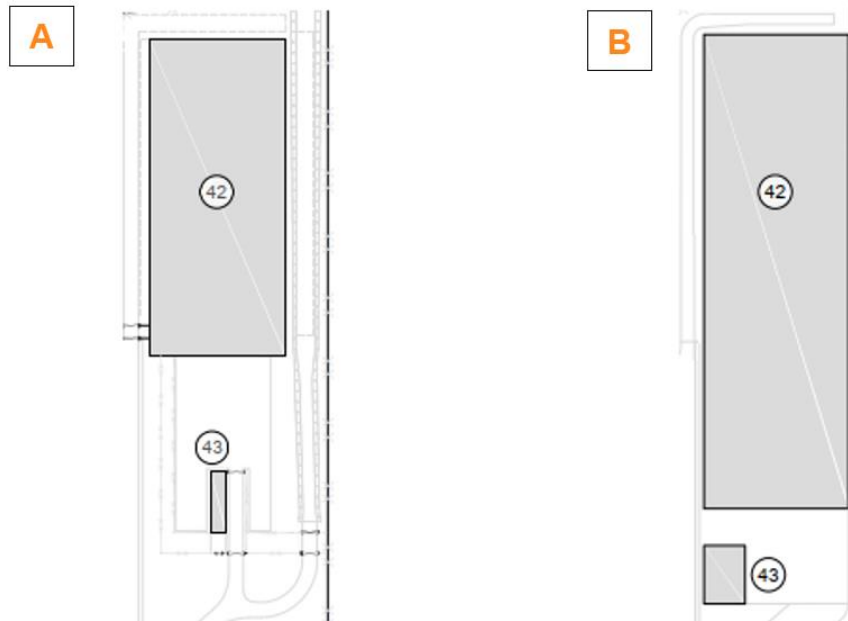


Figure 4: Interim Spent Fuel Store (42) design comparison. A: Original including Access Control Building (43); B: Proposed including new Equipment Storage Building (43)

2.3 Meteorological Mast

2.3.1 The proposed change involves lowering in height and relocating the meteorological mast to an area that reduces the potential for interference with obtaining meteorological measurements as a consequence of proximity to nearby buildings and infrastructure, thereby ensuring that the guidelines set out by the World Meteorological Organisation are met (refer to **Figure 5**).

2.3.2 Two options were considered when addressing the issues with the current location of the meteorological station: slight relocation to the north-east with reduction of the mast height; and relocation of the whole meteorological station to a platform with reduction of the mast height. Due to World Meteorological Organization guidelines, weather monitoring suitability, and no preference in relation to environmental effects, the relocation of the whole meteorological station to a platform was chosen.

2.3.3 The meteorological mast would be relocated to a platform 20 m above sea level rather than 14 m, approximately 60 m south-west of its current approved location. The change would involve reducing the height of the mast from 50 m to 10 m. Overall the height of the

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mast would be reduced by 34 m in comparison to the original design as a result.

2.3.4 The proposed change will also mean that a meteorological station building is no longer required. The equipment will instead be located outside, within a compound.

2.3.5 The mast will need to be in place around a year before first fuel delivery, in time for Unit 1 operation in 2027.

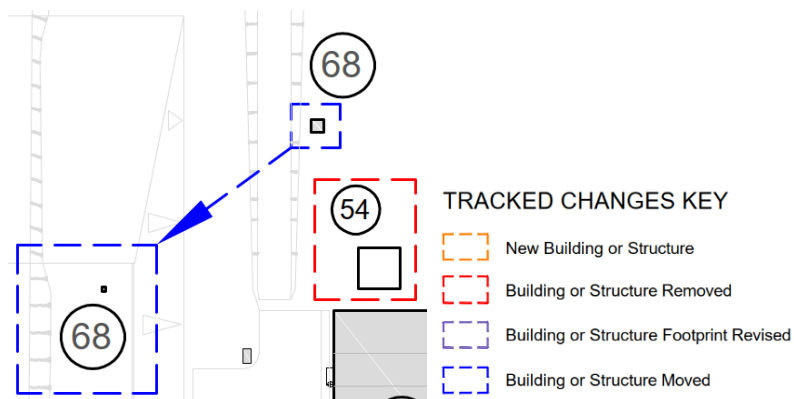


Figure 5: Relocation of the meteorological mast to a compound of increased area (68) and removal of the meteorological station building (54)

2.4 Hinkley Point Substation

2.4.1 NNB has an obligation to either provide power to Hinkley Point A and Hinkley Point B or provide them with an alternative like for like supply at least until 2040. To fulfil that obligation EDF Energy and National Grid originally planned to build a new substation and overhead line to Hinkley Point B.

2.4.2 After further consideration and discussions, it has been concluded that instead of building a new substation which would involve extensive construction works, the optimal solution is to retain the existing temporary Hinkley Point Substation during the operational phase of the Hinkley Point C Project as a permanent structure (refer to **Figure 6**). This would avoid the need to design and construct a new substation and overhead line in the future to supply electricity to Hinkley Point A and Hinkley Point B.

2.4.3 The proposed change involves switching the Hinkley Point Substation from importing electricity, to exporting a supply to Hinkley Point A and Hinkley Point B (to support decommissioning activities) at the end of the construction of Hinkley Point C.

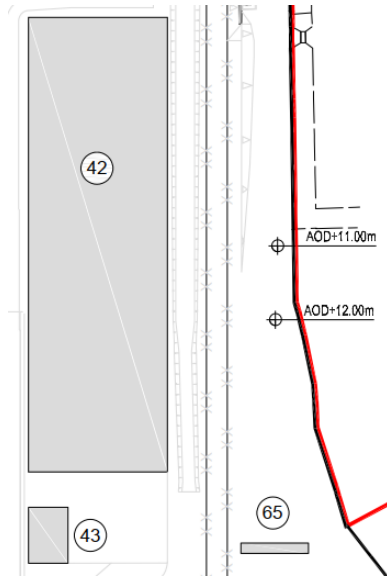


Figure 6: Location of the Hinkley Point Substation (65) in relation to the Interim Spent Fuel Store (42) and new Equipment Storage Building (43)

2.5 Sluice Gate Storage Structures

2.5.1 Currently there is no provision within the design of Hinkley Point C for the storage of sluice gates and lifting beams for the Forebay and Outfall Pond (surge chamber), and the lifting beams of the Pumphouse sluice gates. The Forebay, Outfall Pond (surge chamber) and Pumphouse (one per Unit of Hinkley Point) are located on the north/coastal side of the Hinkley Point C site.

2.5.2 The proposed change involves four new structures; two storage structures are required for each Unit of Hinkley Point C (Units 1 and 2) (refer to **Figure 7**). The structures will provide toaster-style storage racks which will be local to each Unit and fixed to a concrete base. Mobile cranes will then be used to lift the sluice gates from their storage position in the racks to where they are required.

2.5.3 The footprint of the two storage structures will be 10.6 m x 7.3 m (Type 1) and 6.3 m x 4.9 m (Type 2). The structures vary in size because one is designed to hold the sluice gates for the Forebay and the other for the Outfall Pond (surge chamber); each building requires a different number of sluice gates.

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- 2.5.4 The sluice gates will be used to allow water storage areas to be drained and maintenance to be performed. When the maintenance is complete, the water storage areas will be reflooded and the sluice gates returned to the storage structures.
- 2.5.5 The storage units need to be installed in locations within reach of the cranes used to lift the sluice gates into the adjacent buildings. Therefore, there are no feasible alternative locations for the storage units.
- 2.5.6 To ensure the storage units are accessible for the cranes to easily move the sluice gates from one location to another, the structures cannot be inside a building. Therefore, there are no feasible alternatives to the structures being “exposed”.
- 2.5.7 The storage racks are required prior to Hot Functional Testing (a process whereby the reactor is tested under high temperature and pressure prior to loading nuclear fuel into the reactor) which will be carried out around a year before the power station is commissioned. Construction duration is anticipated to last two weeks.

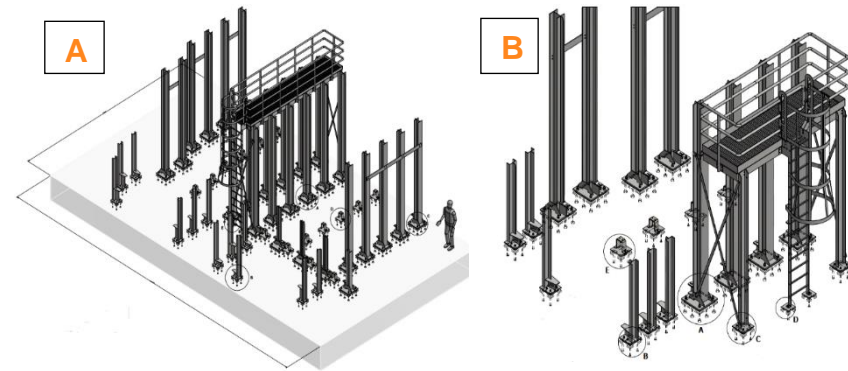


Figure 7: Toaster-style storage rack (A: Large rack; B: Small rack) for illustrative purposes

3. DESCRIPTION OF THE PROPOSED CHANGES OFF-SITE

3.1 Migratory Fish Compensation Measures

3.1.1 NNB has identified five potential locations where works to weirs would provide appropriate compensation for migratory fish, to ensure that the overall coherence of the national network of protected sites is protected, following the proposal to remove the requirement to install the Acoustic Fish Deterrent system at the Hinkley C power station. NNB is proposing to carry out works to three of the five weirs identified:

- Maisemore Weir on the River Severn (one of the preferred proposals);
- Trostrey Weir on the River Usk (one of the preferred proposals); and
- one further weir on the River Lugg (one of Mousenatch Weir, Eyton Weir or Coxall Weir), the River Towy (Manorafon Weir) or the River Severn (Upper Lode Weir).

3.1.2 NNB is exploring different options at each of the weirs to remove the weir or introduce structures to help fish pass over the weirs. For the purposes of the preliminary environment information summarised in this report, it has been assumed that each of the weirs would be removed. This is because works to install a separate channel for fish to travel around a weir would likely be of a similar scale to full removal and introducing a structure to allow fish to pass over the weirs would be of a smaller scale than full removal. Further work will be undertaken to confirm what works are undertaken at each weir and the environmental impact of the proposed works will be assessed in the Environmental Statement submitted in support for the proposed material change application.

Maisemore on the River Severn

3.1.3 Maisemore Weir is located on the River Severn in Gloucestershire, approximately two miles northwest of Gloucester City Centre.

3.1.4 The majority of shad migrate up the River Severn via the Maisemore Weir. However, fish can only pass over the weir in certain tides or when river flows are very high. This limits the extent of their migration upriver

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which can in turn impact on spawning success and increase predation pressure.

3.1.5 Works to Maisemore Weir would significantly ease passage for shad in the River Severn as well as improve chances of passage for eel, lamprey, and salmon.

3.1.6 Llanthony Weir was considered as an alternative to works on Maisemore Weir. Llanthony Weir was discounted primarily due to difficulties in accessing the site and the limited benefit to migratory species compared to those that could be realised by selecting Maisemore Weir. Upper Lode has also been considered as an alternative and this is discussed below.

Upper Lode weir on the River Severn

3.1.7 Upper Lode Weir is located on the River Severn approximately half a mile east of Tewksbury in Gloucestershire.

3.1.8 Only 50 % of the shad that reach Upper Lode Weir are able to pass beyond it, limiting the extent of their migration upriver.

3.1.9 Works to Upper Lode Weir would significantly ease passage for shad to the upper reaches of the River Severn where key improvements to other barriers have already been made. Works to Upper Lode Weir would also potentially improve chances of passage for salmon, lamprey and eel.

3.1.10 Maisemore and Llanthony Weirs (discussed above) have been considered as alternatives to works on Upper Lode Weir.

Weirs on the River Lugg

3.1.11 A series of rock weirs are located on the River Lugg to the northwest of Leominster in Herefordshire. These weirs are called Mousenatch, Eyton, and Coxall.

3.1.12 As no suitable sites could be identified on the River Wye, following discussion with Natural Resources Wales and the Environment Agency it was decided that the best approach would be to explore options on the River Lugg (a tributary of the River Wye). The removal of one of the three weirs in the River Lugg would potentially improve successful migration of salmon to the upper reaches of the river, also lamprey and eel.

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3.1.13 The three weirs have been considered together for the purposes of the preliminary environmental information provided in this report as they are very similar and are located in close proximity to each other.

3.1.14 Crowards Weir was initially considered as a fourth option on the River Lugg. However, NNB understands that the Environment Agency is considering works to this weir and is therefore maintaining dialogue with the Environment Agency regarding proposed works to this weir to ensure alignment to works to the other three weirs in this location being considered as part of the proposed compensation works.

Trostrey Weir on the River Usk

3.1.15 Trostrey Weir was built in the late 1960s as part of a gauging station (where observations of water level or discharge are obtained) on the River Usk in Monmouthshire, Wales. It is located approximately two miles northwest of the town of Usk.

3.1.16 Trostrey Weir is one of the few remaining weirs on the River Usk. Works to Trostrey Weir would enable both shad and salmon to benefit from the other upstream improvements that have been already made on the River Usk.

3.1.17 Works to Trostrey Weir are dependent on whether the existing Natural Resources Wales gauging station can be relocated from Trostrey to another site on the River Usk at Chainbridge. Discussions with Natural Resources Wales are ongoing.

3.1.18 There is another barrier at Crickhowell Bridge that was considered as an alternative. However this barrier was discounted in favour of Trostrey primarily due to difficulties associated with carrying out structural works on and around Crickhowell Bridge.

Manorafon Weir on the River Towy

3.1.19 Manorafon Weir is located in the Towy Special Area of Conservation in Carmarthenshire Wales. It is part of what appears to be a series of rock weirs on the River Towy, approximately two miles northeast of Llandeilo town.

3.1.20 Emerging monitoring data have shown that shad are sometimes present in the Bristol Channel nearby to the Hinkley Point C cooling water intake heads and migrate up the River Towy. As such, works to a barrier on the River Towy are being considered.

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3.1.21 Works to Manorafon Weir would ease passage for shad as well as improving chances of passage for salmon.

3.1.22 No feasible alternatives to works at Manorafon Weir have been identified.

3.2 Fish Assemblage Compensation Measures

3.2.1 The sites identified for the creation or enhancement of saltmarsh and associated habitats are Pawlett Hams and The Island, both located on the River Parrett.

3.2.2 The location for the seagrass bed, kelp forest and oyster beds are yet to be identified. However, these would likely be located within the Severn Estuary and wider Bristol Channel.

Creation or enhancement of saltmarsh and associated habitats

3.2.3 Saltmarshes are areas of mud and sand that support salt-tolerant plants. Saltmarshes are inundated with tidal waters twice every day and are important habitats for plants and animals including birds, fish and

invertebrates. Saltmarsh can also provide value to local communities and visitors. They also naturally trap carbon through the burial of organic sediment that is brought into saltmarshes. The most common way of creating new saltmarsh is to let coastal waters back into low lying agricultural areas that were historically saltmarsh through a process called managed retreat.

Pawlett Hams

3.2.4 The creation of saltmarsh and associated habitats at an area of about 313 hectares of land at Pawlett Hams has been proposed. Pawlett Hams is located on the Pawlett Peninsula, on the River Parrett, three miles northwest of Bridgwater.

3.2.5 Pawlett Hams is in close proximity to the existing Steart marshes wetland site and the Somerset Wetlands National Nature Reserve. Developing this location will provide good ecological connectivity between Steart Wetlands and the Somerset Wetlands National Nature Reserve further contributing to the overall coherence of the national network of protected sites. It is also in close proximity to the proposed compensation measures at The Island.

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3.2.6 The creation of saltmarsh and associated habitats through breaching of the soft landscape flood defences and the excavation of new creeks will allow tidal waters to flood the low-lying areas of the Pawlett peninsula. The works will be very similar to those undertaken at Steart.

3.2.7 There are a number of sites that have been considered as alternatives to Pawlett Hams. These include:

- 65 hectares of land at Kingston Seymour, two miles southwest of Clevedon on the Severn Estuary. This site is located in an area likely to be inundated regularly in the near future.
- 150 hectares of land on the Awre Peninsula, three miles southeast of Newnham opposite Slimbridge on the River Severn.
- 215 hectares of land at Slimbridge, just north of the existing Wildfowl and Wetlands Trust site.
- 390 hectares of land Chilton Trinity, two miles northwest of Bridgwater.

3.2.8 All of these sites are considered possible alternatives. Pawlett Hams is the preferred option primarily due to its proximity to the Hinkley Point C site and the additional ecological connectivity that could be realised

by being located just across the River Parrett from the existing Steart Marshes wetland.

The Island

3.2.9 The enhancement of existing saltmarsh and associated habitats has been proposed on land of about 27 hectares close to the mouth of the River Parrett, three miles northwest of Bridgwater. This area is referred to as The Island.

3.2.10 The Island is also in close proximity to the existing Steart marshes wetland site, the Somerset Wetlands National Nature Reserve, and the proposed compensation site at Pawlett Hams. Developing this location will provide similar benefits to the proposals at Pawlett Hams and the works involved would also be similar to those described for Pawlett Hams.

3.2.11 There are a number of sites that have been considered as alternatives to The Island, which are the same as those outlined as alternatives to Pawlett Hams.

Seagrass bed

3.2.12 Establishing seagrass beds requires further studies and trials before the best locations can be identified.

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However, the seagrass beds will be somewhere within the Severn Estuary or the wider Bristol Channel area.

3.2.13 Seagrass beds provide a supportive habitat for fish by providing feeding and nursery grounds as well as shelter from predation. Seagrass also provides a habitat used by different species to those that favour the saltmarsh environment, notably Atlantic cod, whiting and pollack. It is also widely recognised that seagrass beds provide habitats for other marine life as well as helping to improve water quality and stabilise sediments. In addition to these benefits, seagrass will trap carbon from the environment in much the same way as saltmarsh.

3.2.14 The proposed measures will involve creation of 5 hectares of new seagrass habitat and/or enhancement of degraded seagrass area in the Severn Estuary or the wider Bristol Channel.

3.2.15 Including seagrass, kelp and native oyster bed in the compensation package is due to the combined benefit of all three types of habitat on fish. The type and the amount of each habitat proposed have been identified by Cefas as being appropriate to provide a proportionate level of compensation. Therefore,

alternatives to these measures are not considered further.

Kelp forest

3.2.16 Establishing kelp forests will require further studies and trials before the best locations can be identified. However, the kelp forest will be somewhere within the Severn Estuary or the wider Bristol Channel area.

3.2.17 Kelp forests provide a supportive habitat for fish by providing feeding and nursery grounds as well as shelter from predation. Kelp also provides a habitat used by different species to those that favour saltmarsh, notably European Plaice, Atlantic Cod, whiting and wrasse. It is also widely recognised that kelp forests provide habitats for other marine life as well as helping to improve water quality and stabilise sediments. In addition to these benefits kelp will trap carbon from the environment in much the same way as saltmarsh.

3.2.18 The proposed measures will involve the creation of 15 hectares of new kelp habitat and/or enhancement of degraded kelp areas in the Severn Estuary or the wider Bristol Channel.

Oyster bed

3.2.19 Establishing native oyster beds will require further studies and trials before the best locations can be identified. However, the native oyster beds will be somewhere within the Severn Estuary or the wider Bristol Channel area.

3.2.20 Native oyster beds provide a supportive habitat for fish by providing feeding and nursery grounds and can significantly improve water quality and clarity. It is also widely recognised that native oyster beds provide habitats for other marine life as well as helping to stabilise sediments. In addition to these benefits native oyster beds will trap carbon from the environment in much the same way as saltmarsh.

3.2.21 The proposed measures will involve the creation of 1-2 hectares of new oyster beds and/or enhancement of degraded native oyster beds areas in the Severn Estuary or the wider Bristol Channel.

3.3 Order Limits

3.3.1 If taken forward as part of the compensation package, some of the sites would be within the boundary of an

amended Development Consent Order known as the Order Limits. These are:

- Pawlett Hams;
- The Island;
- Maisemore Weir on the River Severn (one of the preferred weir proposals);
- Upper Lode Weir on the River Severn (an option being considered by NNB for the third weir proposal); and
- Weirs on the River Lugg (one of Mousenatch Weir, Eyton Weir or Coxall Weir) (an option being considered by NNB for the third weir proposal).

3.3.2 As a Development Consent Order cannot authorise associated development in Wales, the potential weir sites located in Wales would be consented separately and therefore would be outside of the amended Order Limits of the Development Consent Order. These sites are:

- Trostrey Weir on the River Usk (one of the preferred weir proposals); and
- Manorafon Weir on the River Towy (an option being considered by NNB for the third weir proposal).

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3.3.3 The location of the proposals for seagrass bed, kelp forest and oyster beds is not yet known. These proposals are not included in the amended Order Limits and will be consented separately.

3.4 Adaptive Monitoring and Management Plan

3.4.1 The continuous development of an Adaptive Monitoring and Management Plan is an important element of any compensation package to:

- quantify the impacts relative to predictions;
- provide evidence for the successful implementation of compensation measures; and
- set out a framework for additional monitoring and potential adaptive management should measures fail to achieve the objectives.

3.4.2 As such, an Adaptive Monitoring and Management Plan is in development.

3.4.3 A key principle that will drive the development of the Adaptive Monitoring and Management Plan is that fish population numbers are influenced by many factors, the provision of suitable habitat being only one of

these. The plan will need to be carefully designed to monitor and respond to the performance of the compensation measures.

3.4.4 As the compensation measures have not as yet been formally agreed or designs finalised, it is not possible to provide specific details of the Adaptive Monitoring and Management Plan at this stage. A plan for its development and how it will be governed is being discussed with the Statutory Nature Conservation Bodies (Environment Agency, Natural England and Natural Resources Wales) and relevant regulators.

4. ENVIRONMENTAL IMPACT ASSESSMENT

- 4.1.1 This report provides a summary of the Preliminary Environmental Information Report that has been prepared as part of the consultation process, to enable members of the public and relevant stakeholders to develop an informed view of the likely significant environmental effects of the Hinkley Point C Project as changed by the proposed changes on-site and off-site.
- 4.1.2 Environmental Impact Assessment is the process of identifying the environmental effects (which can be positive or negative, short-term or long-term, direct or indirect) that might arise as a result of a development in comparison to the existing environment (the baseline). The baseline is typically the existing environment in the area without the presence of the proposed development; or in this case, without the proposed changes on-site and off-site.
- 4.1.3 In relation to the proposed changes on-site the baseline that was assessed in the original Environmental Statement submitted as part of the Development Consent Order application in 2011 has been considered. This is referred to as the original

baseline. There is no original baseline for the proposed changes off-site because they were not assessed in the original Environmental Statement.

- 4.1.4 Given the number of years that have passed since the original application was submitted and how the design of the Hinkley Point C Project has evolved, the baseline of the site and surroundings as they are today has also been considered. This includes consideration of all the changes to the Development Consent Order that have occurred since 2013, including the changes approved through the four non-material changes, and the planning consents obtained under the Town and Country Planning Act 1990, as well as other relevant changes to the baseline including elements of the Hinkley Point C Project that have already been constructed. This is referred to as the current baseline.
- 4.1.5 The current baseline for the proposed changes off-site is considered to be the site and surroundings for each compensation measure as they are today.
- 4.1.6 A future baseline is also considered in the absence of the proposed changes on-site and off-site.
- 4.1.7 A process called scoping identifies what aspects of the environment should be assessed as part of the

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Environmental Impact Assessment. This process identifies likely significant effects on those aspects of the environment.

4.1.8 The more significant the effect, the greater the effect. For example, a significant beneficial effect would be greater than a beneficial effect that was not considered to be significant.

4.1.9 Significance is determined by the sensitivity (or value) of a receptor and the magnitude of the impact (degree of change from the baseline).

4.1.10 A receptor is the receiving environment, infrastructure or group, for example, an ecologically designated site within the scheme extents or a resident with views of the scheme.

4.1.11 Effects known as cumulative and in-combination effects can also arise as a result of a development. For the purposes of this non-technical summary, the definitions of cumulative and in-combination effects are as follows:

- **Cumulative Effects:** Effects that arise from the combined action of a number of different projects, in combination with the proposed development, on a receptor.

- **In-Combination Effects:** Effects that arise from the combined action of multiple effects from the same project (i.e. the proposed changes) on a single receptor.

4.1.12 If no likely significant effects are identified, it is likely that the aspect of the environment can be scoped out of further assessment within the Environmental Statement.

4.1.13 An assessment of the likely significant effects is compiled into a scoping report which is submitted to the Planning Inspectorate. The scoping report acts as a request to the Planning Inspectorate for an opinion on whether the proposed scope is acceptable. The response from the Planning Inspectorate (on behalf of the Secretary of State) is called the scoping opinion. The scoping opinion can change the scope of the Environmental Impact Assessment.

4.1.14 A Scoping Report for the proposed changes on-site was submitted to the Planning Inspectorate on 23 March 2022. The Scoping Report proposed that, due to the nature and scale of the proposed changes on-site, the following Aspects of the environment should be scoped into the Environmental Impact Assessment. These were:

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- Marine Ecology including an assessment of piscivorous (fish-eating) birds;
- Landscape and Visual; and
- Cumulative and in-combination effects for those Aspects scoped into the assessment.

4.1.15 The Scoping Opinion was adopted by the Planning Inspectorate on 3 May 2022 and mostly agreed with the proposed scope of the Environmental Impact Assessment. However, the Scoping Opinion did identify that further evidence to demonstrate no likely significant effects was required for Marine Water Quality, Groundwater and Transport.

4.1.16 Therefore, NNB has provided further evidence that no new or materially different likely significant Groundwater or Transport effects are anticipated in relation to the proposed changes on-site compared to the effects as assessed for the original Development Consent Order application. NNB has agreed with relevant stakeholders (Environment Agency, Somerset Drainage Board and Somerset Council) that Groundwater can be scoped out of further assessment in the Environmental Statement in relation to the proposed changes on-site. NNB has also consulted the Transport Review Group (representatives from

National Highways, Somerset Council and NNB) on Transport and is seeking agreement with that group that Transport can also be scoped out of further assessment in the Environmental Statement in relation to the proposed changes on-site.

4.1.17 The assessment of Marine Ecology also includes an assessment of Marine Water Quality.

4.1.18 At the time of writing the Scoping Report, there were no proposals for compensation measures off-site. To provide sufficient preliminary environment information on the likely significant effects of the proposed changes off-site, each Aspect of the environment has been assessed. These assessments will be used to inform the proposed scope of the updated Environmental Impact Assessment in relation to the proposed changes off-site.

4.1.19 A period of consultation is being undertaken to further inform the development of the proposals and the scope the Environmental Impact Assessment. This report is the non-technical summary of the Preliminary Environmental Information Report, prepared as part of the consultation process.

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4.1.20 The final output of the Environmental Impact Assessment process is a document known as an Environmental Statement. The purpose of the Environmental Statement is to report those effects which are considered to be significant. Where significant effects are identified, measures to avoid, prevent or reduce and, if possible, offset the significant effects are identified. These are called mitigation measures. Where possible, these mitigation measures are factored into the design of the development.

4.1.21 A summary of the Environmental Impact Assessment process in the context of the proposed material change application can be found in **Diagram 1**.

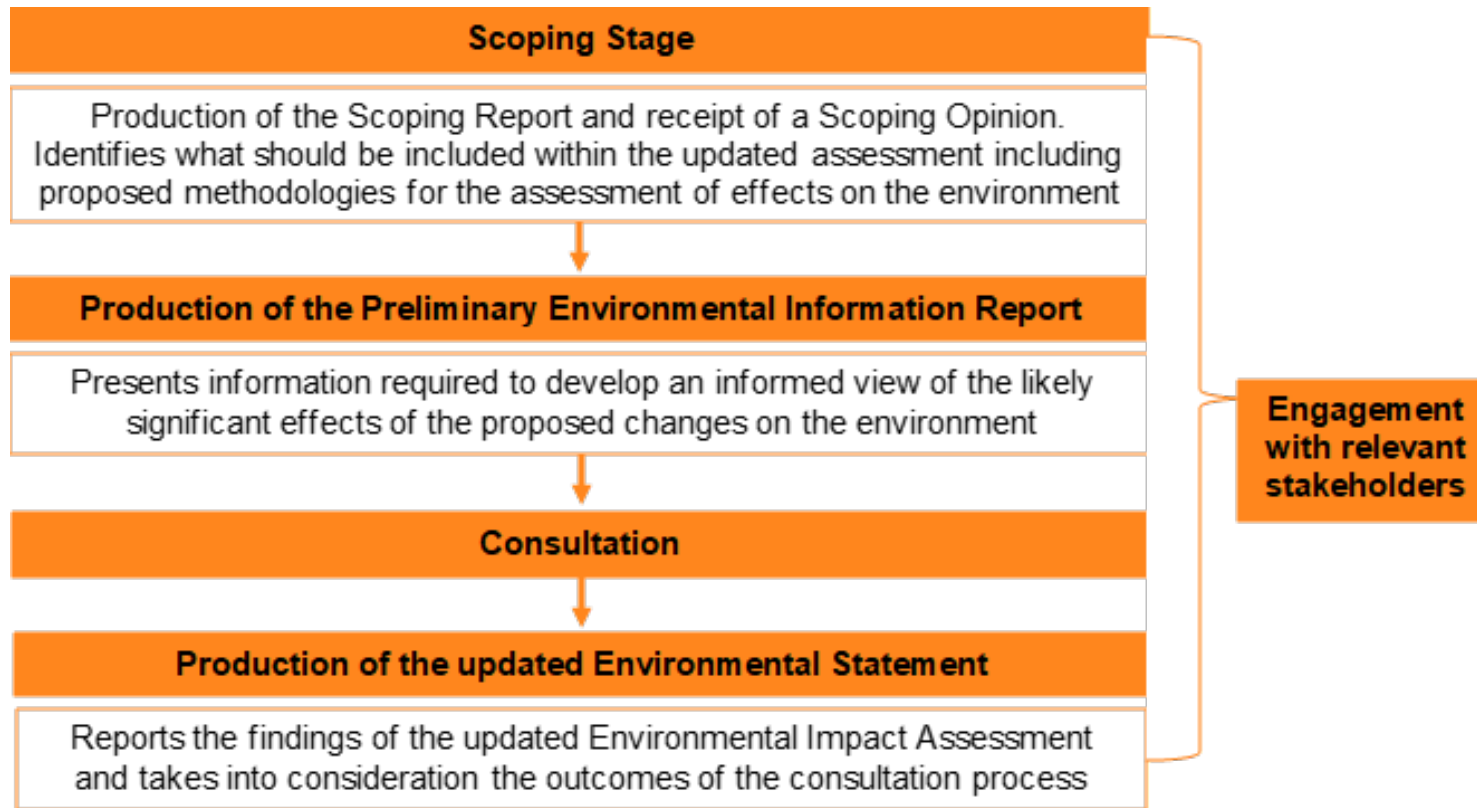


Diagram 1: The Environmental Impact Assessment process in the context of the proposed application for a material change to the Development Consent Order

5. EFFECTS OF THE PROPOSED CHANGES ON-SITE

5.1 Introduction

5.1.1 This section provides a summary of the preliminary environmental information related to the proposed changes on-site for the following environmental Aspects, in line with the Scoping Opinion:

- Groundwater;
- Transport;
- Marine Ecology and Marine Water Quality including an assessment of piscivorous (fish-eating) birds;
- Landscape and Visual; and
- Cumulative and in-combination effects for those Aspects scoped into the assessment.

5.1.2 In line with the Scoping Opinion, the above environmental Aspects have only been assessed in the Preliminary Environmental Information Report for specific proposed changes on-site as outlined in **Table 5–2**.

Table 5–1: Proposed changes on-site assessed for each environmental aspect in the Preliminary Environmental Information Report

Aspect	Proposed change on-site assessed					
	1*	2*	3*	4*	5*	6*
Groundwater	X	✓	✓	X	X	✓
Transport	✓	✓	✓	✓	✓	✓
Marine Ecology and Marine Water and Sediment Quality	✓	X	X	X	X	X
Landscape and Visual	X	✓	✓	✓	X	X

* The numbers in this table relate to the six proposed changes on-site as follows:

1. Removal of the requirement to install an Acoustic Fish Deterrent system (using sound to repel hearing-sensitive fish from the cooling water system intake heads);
2. A change from wet to dry storage of spent fuel at the Interim Spent Fuel Store and a change in building dimensions as a result;
3. Replacement of the Access Control Building associated with the Interim Spent Fuel Store with a new larger Equipment Storage Building;
4. Relocation and re-design of the meteorological mast resulting in the meteorological station building no longer being required;
5. Retaining the existing temporary Hinkley Point Substation as a permanent building to supply electricity to neighbouring Hinkley Point A and Hinkley Point B; and
6. Four new structures (two per Unit of Hinkley Point C) to house sluice gates and lifting beams to be used.

5.1.3 The baseline conditions at Hinkley Point C are outlined in **Section 5.2**. An assessment of the likely significant environmental effects has been undertaken in line with industry standard guidance. The outcome of this assessment is summarised in **Section 5.3** which has informed the proposed scope for further Environmental Impact Assessment.

5.2 Baseline

Groundwater

5.2.1 With respect to groundwater levels, the levels summarised in the original baseline have likely been reduced during construction dewatering at Hinkley Point C. Furthermore, groundwater will be managed to a fixed level during the operation of Hinkley Point C, which itself is lower than that outlined in the original baseline but is the same as the elevation of the Drainage Gallery. The Drainage Gallery is groundwater drainage that regulates groundwater levels around Hinkley Point C, and operates under gravity.

5.2.2 Consequently there is less opportunity for groundwater associated with the current and future baseline to be impacted compared to the original baseline because it

is unlikely to be directly encountered by the proposed changes on-site.

Transport

5.2.3 The baseline considered for the assessment of Transport related effects are based on:

- The Development Consent Order Transport Assessment's predicted peak construction traffic, including the predicted traffic scenario for 2021 along with Heavy Goods Vehicles travelling to Hinkley Point C, the Junction 23 development (2021) and the Bridgwater A Campus (2021).
- The current operation of Hinkley Point C in light of the latest construction traffic data reported by the Transport Review Group. This includes construction activities that incorporate the proposed changes on-site.

Marine Ecology and Marine Water Quality

5.2.4 The Hinkley Point C Project is on the shore of the Severn Estuary, Britain's second largest estuary, covering approximately 740 km² of designated conservation sites, where two thirds are represented by subtidal habitats and one third by intertidal habitats.

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The Severn Estuary has strong currents causing large quantities of sediment to be suspended.

- 5.2.5 The Severn Estuary has been exposed to the release of a range of contaminants over the years, including from sewage and industry. However, marine water quality monitoring results have shown a general improvement in water quality, including reduced levels of heavy metals.
- 5.2.6 Survey data between 1981-2019 at Hinkley Point B detected 90 species of fish, and further survey data between 2021-2022 recorded 62 species of fish, with sprat and whiting being the most commonly recorded species.
- 5.2.7 The Severn Estuary and the rivers associated with it make up the largest European eel fishery in the UK. The estuary also acts as a nursery area for several marine species. The impingement datasets show that for many fish species impingement is seasonal at Hinkley Point, where the greatest proportion occurs for several weeks to a few months each year, based on the time they are present in the vicinity.
- 5.2.8 The intertidal mudflats and sandflats are important feeding grounds for large numbers of seabirds

(including some fish eating species) that move along the west coast of Europe during the spring and autumn migration periods, as well as for wintering populations of swans, geese, ducks, and waders.

- 5.2.9 For an estuary of its size, the Severn Estuary has a relatively low number of fish eating birds in comparison with other UK estuaries, reflecting the largely impoverished invertebrate communities, which act as prey resources for the bird assemblage.
- 5.2.10 Species of predominantly fish eating birds with the potential to be present within the vicinity of Hinkley Point C itself include the lesser black-backed gull, Manx shearwater, gannet, Atlantic puffin, guillemot, razorbill, black-legged kittiwake, northern fulmar and common scoter.
- 5.2.11 Eighteen species of cetaceans (whales, dolphins, and porpoises) have been recorded within the Severn Estuary and wider Bristol Channel since 1990. Five species have either been noted as being present at any time of the year or recorded annually as seasonal visitors within the Bristol Channel: harbour porpoise, Risso's dolphin, common dolphin, bottlenose dolphin and minke whale.

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5.2.12 Occasional sightings and strandings of other cetaceans such as the long-finned pilot whale, fin whale and killer whale have also been recorded.

5.2.13 Of Britain's two resident seal species, grey seal sightings have been widespread in previous years in the Bristol Channel, but with no evidence of clustering at any particular location. Between 2014 and 2016, no harbour seals were recorded at haul-out sites in south-west England and only five were recorded in Wales.

5.2.14 Extensive fish impingement monitoring has been completed at Hinkley Point B, and bird surveys around Hinkley Point are ongoing. Detailed analysis of the data from this work will be presented within the Environmental Statement.

5.2.15 The intertidal area at Hinkley Point C is located within the Severn Estuary Special Area of Conservation, Special Protection Area and Ramsar site. Other designated sites within the vicinity of Hinkley Point C include the River Usk Special Area of Conservation, River Wye Special Area of Conservation and River Towy Special Area of Conservation.

5.2.16 Designated water bodies under the Water Framework Directive within the vicinity of Hinkley Point C include the River Parrett and Huntspill River.

5.2.17 Bideford to Foreland Point and Morte Platform Marine Conservation Zones are also within the vicinity of Hinkley Point C, both located off the north Devon coast.

Landscape and Visual

5.2.18 There have been a number of changes to the original baseline on site although the current baseline surrounding the site is generally unaltered.

5.2.19 The changes made on-site to Hinkley Point C that have been made since 2013 involved works to small buildings subject to limited repositioning, expansion, reduction in scale or removal or the addition of new small buildings.

5.2.20 Hinkley Point C is currently under construction, and therefore the construction activities and equipment such as cranes and other tall structures have been considered when assessing the current baseline.

5.2.21 Within the vicinity of Hinkley Point C are a number of small villages and hamlets, including Stogursey,

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Shurton and Wick, widely dispersed around a network of minor roads.

5.2.22 The Hinkley Point C site also falls within the Quantock Vale Landscape Character Area which is divided into Local Landscape Character Areas. Within this context, the Hinkley Point Power Station Complex, which includes Hinkley Point A and Hinkley Point B, is a dominant landscape feature.

5.2.23 The original baseline identified three Local Seascape Character Areas that extend along the Bridgwater Bay coastline approximately 6 km east and west of Hinkley Point C. These include areas of open water beyond the mainland, views from the land to sea, from sea to land and along the coastline.

5.2.24 The Quantock Hills Area of Outstanding Natural Beauty is located to the south-west of Hinkley Point C. Hinkley Point C is also located adjacent to the Severn Estuary which has several ecological designations: Ramsar site, Special Area of Conservation, Special Protection Area and National Nature Reserve.

5.2.25 The preliminary visual assessment includes the residents within Stogursey, Shurton, Wick and Stockland Bristol; and people using Public Rights of Way including the Coastal Path.

5.3 Likely significant effects and proposed scope of further assessment

5.3.1 An assessment of the likely significant environmental effects of the proposed changes on-site compared to the baseline outlined in **Section 5.2** for Groundwater, Transport, Marine Ecology and Marine Water Quality and Landscape and Visual have been undertaken. The outcomes of the assessments have determined the proposed scope of the Environmental Impact Assessment. The outcomes of these assessments and what is proposed to be assessed further is summarised in **Table 5–2**.

Table 5–2: Summary of the likely significant effects and Aspects to be scoped into and out of further assessment for the Proposed Changes On-site

Aspect	Likely significant effect(s) and justification of scope	Assessment of proposed change scoped in (✓) or out (X) of further assessment					
		1*	2*	3*	4*	5*	6*
Groundwater	<p>It is not anticipated that there would be any new or materially different likely significant effects of the Hinkley Point C Project as a result of the proposed changes to the Interim Spent Fuel Store, Equipment Storage Building and Sluice Gates on the groundwater environment from those identified in the original Environmental Statement. Therefore, there are no proposed amendments to the mitigation and enhancements measures for groundwater that are outlined in the original Environmental Statement.</p> <p>The assessment has been consulted on with relevant stakeholders (Environment Agency, Somerset Drainage Board, and Somerset Council) with the objective to agree that a detailed assessment of groundwater impacts can be scoped out of the updated Environmental Impact Assessment. Responses were received on the 30 August 2023, 21 August 2023, and 21 September 2023, respectively. All stakeholders agreed that groundwater can be scoped out of the updated Environmental Impact Assessment.</p> <p>Therefore, Groundwater will not be assessed in the Environmental Impact Assessment in relation to the proposed changes on-site.</p>	X	X	X	X	X	X

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Aspect	Likely significant effect(s) and justification of scope	Assessment of proposed change scoped in (✓) or out (X) of further assessment					
		1*	2*	3*	4*	5*	6*
Transport	<p>The proposed changes on-site will result in negligible changes in the overall construction traffic generated by the construction of the Hinkley Point C Project. All construction traffic is currently managed through the Construction Traffic Management Plan which caps the number of construction Heavy Goods Vehicles and the movement of construction personnel is managed through the Construction Workforce Travel Plan as agreed through the original Development Consent Order and subsequent amendments agreed with Transport Review Group. The proposed changes on-site are accounted for in the latest workforce and Heavy Goods Vehicles freight profiles. These profiles demonstrate that all construction activity is expected to remain within the permitted caps, with sufficient room for any unforeseen delays or updates to the construction programme. Furthermore, in the latest quarterly Transport Review Group Monitoring Report (2023 Quarter 2) demonstrates that modal share targets for the movement of personnel as agreed through the Development Consent Order have been met. All construction traffic will continue to be managed through the Construction Traffic Management Plan, which will not need to be amended because of these proposed changes on-site.</p> <p>Therefore, Transport will not be assessed in the Environmental Impact Assessment in relation to the proposed changes on-site.</p>	X	X	X	X	X	X

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Aspect	Likely significant effect(s) and justification of scope	Assessment of proposed change scoped in (✓) or out (X) of further assessment					
		1*	2*	3*	4*	5*	6*
Marine Ecology and Marine Water and Quality	<p>There is the potential that the proposed change of removing the requirement to install an Acoustic Fish Deterrent may affect specific fish species offshore of Hinkley Point; however, when considering the fish community overall, minor (not significant) effects are predicted. The detailed assessment of potential effects on a selected group of 25 fish species (and brown shrimp) will be provided within the Environmental Impact Assessment.</p> <p>Fish eating seabirds and marine mammals have the capacity to be indirectly affected by changes in their main prey resource (i.e. fish). However, based on the wide-ranging nature of key fish eating bird and mammal species identified as present within the Severn Estuary / Inner Bristol Channel, and their broad diets, indirect effects on birds and mammals are not expected to be significant.</p> <p>Detailed consideration of the potential effects on designated sites and their qualifying features is presented in the Shadow Habitats Regulations Assessment Evidence Report – Pre-Application Consultation Version. Based on the proposed change of removing the Acoustic Fish Deterrent, there is the potential for significant effects on certain qualifying features of the identified protected sites (namely: twaite shad as a qualifying species of the Severn Estuary SAC, River Wye SAC, and River Usk SAC; the migratory fish assemblage of the Severn Estuary Ramsar Site; Atlantic salmon as qualifying species of the River Wye SAC and River Usk SAC; and Allis shad as a qualifying species of the River Usk SAC).</p> <p>Potential effects on the fish, seabird and marine mammal populations of the Severn Estuary / Inner Bristol Channel, marine water quality, and designated sites will be further considered in the Environmental Statement. This will include consideration of the emerging evidence base, including detailed analysis of fish impingement data collected at Hinkley Point B, and ongoing bird surveys around Hinkley Point.</p>	✓	X	X	X	X	X

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Aspect	Likely significant effect(s) and justification of scope	Assessment of proposed change scoped in (✓) or out (X) of further assessment					
		1*	2*	3*	4*	5*	6*
Landscape and Visual	<p>Given the small scale of the proposed changes relative to the overall Hinkley Point C Project, the screening from surrounding vegetation, topography and the Hinkley Point C Project, and the distance from surrounding visual receptors, the proposed changes on-site are not likely to result in significant landscape or visual effects.</p> <p>The final assessment to be presented within the Environmental Statement, to be supported by visual representations of the proposed changes (known as ‘visualisations’), will take account of the value and sensitivity of the landscape and people’s views at given locations. For example, in terms of the existing quality of landscape or relative importance of visual amenity at a given location, as well as the degree of change predicted to occur as a result of the proposed changes on-site.</p>	X	✓	✓	✓	X	X

* The numbers in this table relate to the six proposed changes on-site as follows:

1. Removal of the requirement to install an Acoustic Fish Deterrent system (using sound to repel hearing-sensitive fish from the cooling water system intake heads);
2. A change from wet to dry storage of spent fuel at the Interim Spent Fuel Store and a change in building dimensions as a result;
3. Replacement of the Access Control Building associated with the Interim Spent Fuel Store with a new larger Equipment Storage Building;
4. Relocation and re-design of the meteorological mast resulting in the meteorological station building no longer being required;
5. Retaining the existing temporary Hinkley Point Substation as a permanent building to supply electricity to neighbouring Hinkley Point A and Hinkley Point B; and
6. Four new structures (two per Unit of Hinkley Point C) to house sluice gates and lifting beams to be used.

6. EFFECTS OF THE PROPOSED CHANGES OFF-SITE

6.1 Introduction

6.1.1 This section provides a summary of the assessment of the preliminary environmental information related to the proposed changes off-site that would be within the amended Order Limits of the Development Consent Order:

- Pawlett Hams;
- The Island;
- Maisemore Weir on the River Severn (one of the preferred weir proposals);
- Upper Lode Weir on the River Severn (an option being considered by NNB for the third weir proposal); and
- Weirs on the River Lugg (one of Mousenatch Weir, Eyton Weir or Coxall Weir) (an option being considered by NNB for the third weir proposal).

6.1.2 The baseline conditions at each of the sites listed above are outlined in **Section 6.2**. An assessment of

the likely significant environmental effects has been undertaken in line with industry standard guidance. The outcome of this assessment is summarised in **Section 6.3** which has informed the proposed scope for further Environmental Impact Assessment.

6.1.3 The compensation measures that would be outside of the amended Order Limits of the Development Consent Order have been considered in **Section 6.4**.

6.2 Baseline

Pawlett Hams

6.2.1 This section summarises the key elements of the baseline environment at Pawlett Hams.

6.2.2 Pawlett Hams is located directly adjacent to the River Parrett. It is currently grassland, some of which is farmland, and is intersected by a network of drainage ditches. The area is classified as Grade 3 agricultural land, and is used for grazing.

6.2.3 The site is ecologically sensitive and is located within and near to several sites designated internationally, nationally and locally for ecological reasons. It is within the boundary of three international statutory

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designated sites (Severn Estuary Special Protection Area, Severn Estuary Ramsar site and Severn Estuary Special Area of Conservation). There are a further four international statutory designated Special Areas of Conservation with bats as a qualifying feature within 30 km of Pawlett Hams.

6.2.4 Pawlett Hams is also within one national statutory designated site (Bridgwater Bay Site of Special Scientific Interest) and 250 m west of another national statutory designated site (Somerset Wetlands National Nature Reserve). The Site of Special Scientific Interest overlaps the same area as the Special Protection Area and Ramsar Site. The National Nature Reserve is located on the opposite bank of the River Parrett.

6.2.5 There are three Local Wildlife Sites within 1 km of Pawlett Hams. The Pawlett Hams Wetland Site ('White House Hams') is an area of habitat restoration within the south and central portion of the site.

6.2.6 Protected species likely present at Pawlett Hams include:

- Bats
- Otters
- Water Voles

- Birds
- Great Crested Newts
- Common Reptiles
- Invertebrates

6.2.7 A total of 81 species of notable plants have been recorded within 1 km of Pawlett Hams and the whole of the site is considered part of the Severn Estuary Shore Important Plant Area that identifies Pawlett Hams as valuable for plant diversity in the UK. Invasive and non-native species may also be present at Pawlett Hams.

6.2.8 Protected species likely present in the marine environment surrounding Pawlett Hams include:

- Phytoplankton (microscopic marine plants) in surface waters;
- Zooplankton (microscopic marine animals);
- Ichthyoplankton (eggs and larvae of fish); and
- Species occurring at the bottom of the River Parrett including clam and mudsnail.

6.2.9 Specific data relating to the fish in the River Parrett is not available. However, 90 species of estuarine and marine fish have been identified in the Severn Estuary,

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the most common of which are sprat and whiting. Many species of fish living within the Severn Estuary undertake regular migrations and tend to move seasonally in waves up and down the estuary.

- 6.2.10 Marine mammals in the Severn Estuary include bottlenose dolphin, common dolphin, harbour porpoise and grey seal. Although these have not been officially recorded in the Parrett Estuary, occasional observations of common seal and harbour porpoise have been made in the Parrett.
- 6.2.11 Deposits of clay, silt, sand and gravel underlie the site. The superficial deposits beneath the site and the bedrock mainly consists of limestones and mudstones.
- 6.2.12 Groundwater conditions around the River Parrett are considered to be relatively shallow and are likely to be influenced by the tides.
- 6.2.13 Pawlett Hams and the majority of the surrounding area is classified as having a medium to high groundwater vulnerability. This relates to the ease at which contaminants can migrate into an aquifer from ground level.
- 6.2.14 There are four Water Framework Directive water bodies within 1 km of Pawlett Hams, these are referred to as the:
- Parrett Water Framework Directive transitional water body
 - Stockland Bristol Stream river water body
 - Fiddington Brook river water body
 - Cannington Brook Lower river water body
- 6.2.15 Pawlett Hams is within Flood Zone 3, meaning that there is a high risk of flooding from rivers or tidal flooding. The site is mostly at very low risk of surface water flooding, however areas including Combwich that contain small areas at high risk to low risk of surface water flooding.
- 6.2.16 The western bank of Pawlett Hams forms part of the Steart Peninsula and there are large mudflats located in the area where the River Parrett joins the River Severn. The River Parrett is dominated by strong tidal flows that lead to erosion which in part results in high amounts of suspended solids and silt.
- 6.2.17 There has been a decline in industrial discharges over the past 30 years that has improved emissions controls

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in the Severn Estuary that influence marine water quality and is within the annual average ammonia concentration that would indicate 'good' quality status.

6.2.18 The marine sediment in the area contains concentrations of chemicals within the threshold considered acceptable for disposal at sea.

6.2.19 The site also has two existing flood defences in the form of a tidal embankment separating the River Parrett from the low-lying areas of Pawlett Hams, and a smaller, older embankment inland of this. Several strategies are being considered by the Environment Agency to address the long-term flood risk in the area; one of these strategies being the managed realignment¹ at Pawlett Hams.

6.2.20 The site falls within both a National and Local Landscape Character Area related to the Somerset levels and moors.

6.2.21 There are no designated heritage assets recorded at Pawlett Hams or within the intertidal zone adjacent to

Pawlett Hams. The site is also not located within a World Heritage Site or Conservation Area. There are four Grade II listed buildings within 1 km of Pawlett Hams in Comwich.

6.2.22 The Somerset Historic Environment Record database records a number of non-designated heritage assets within Pawlett Hams. The Comwich Causeway, an important fort that is likely to have existed in the Roman period, crosses the river to the Pawlett Hams. As such, Pawlett Hams is of high archaeological potential.

6.2.23 The Somerset Historic Environment Record database also records the remains of floodbanks and locations of former buildings that are now located in the main channel of the River Parrett.

6.2.24 Access to the River Parrett by boat has typically taken place around high tide times. Minimal dredging takes place at Dunball Wharf and the occasional clearance of silt at Comwich Wharf. Recreational navigation also

¹ Managed realignment is a process involving creating breaches in existing flood defences or by using structures to regulate the flow of water in and out to allow water back into low lying agricultural areas that were historically saltmarsh.

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takes place from the Comwich Wharf Motor Boat and Sailing Club.

6.2.25 The site is surrounded by agricultural land and one commercial property, Comwich Anchor Restaurant, which is located within 500 m of Pawlett Hams.

6.2.26 Nearby receptors include Pawlett Primary School Academy, Pawlett Methodist Church and nearby residential properties. These properties are located west of Pawlett village along Gaunts Road and Ham Lane and within the villages of Pawlett, Stretcholt and Comwich. Full planning permission was also granted for the construction of two agricultural buildings on the Pawlett Hams site to the north of White House Road in July 2023. An application to retain facilities associated with the Elizabeth Boat Room has recently been submitted to Somerset Council.

6.2.27 Transport routes nearby include:

- Old Main Road and Gaunts Road
- Old Main Road, Manor Road, Chapel Road, Sloway Lane, and Ham Lane
- Red Lane, Stretcholt Lane and Ham Lane
- The A38 Corridor and A39.

6.2.28 There are several Public Rights of Way within the vicinity of Pawlett Hams, mainly diverging off White House Road. The King Charles III England Coast Path National Trail sits adjacent to the River Parrett and borders the western edge of the site.

The Island

6.2.29 This section summarises the key elements of the baseline environment at The Island.

6.2.30 The Island is located directly adjacent to the River Parrett. It currently supports saltmarsh and associated habitat intersected by drains, known to be former agricultural drains. It is classified as Grade 3 agricultural land.

6.2.31 The site is ecologically sensitive and is located within and near to several sites designated internationally, nationally and locally for ecological reasons. It is located within three international statutory designated sites (Severn Estuary Special Protection Area, Severn Estuary Ramsar and Severn Estuary Special Area of Conservation). There are a further four international statutory designated sites with bats as a qualifying feature located within 30 km of The Island.

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6.2.32 The Island is located within one national statutory designated site (Bridgwater Bay Site of Special Scientific Interest) and is immediately adjacent to another national statutory designated site (Somerset Wetlands National Nature Reserves in England). These sites overlap in full or in part the same area as the international designated sites.

6.2.33 There is one Local Wildlife Site within 1 km of The Island (Bridgwater Bay National Nature Reserve) which is located immediately to the east of The Island.

6.2.34 It is anticipated that common and widespread bat species, similar to the species likely present at Pawlett Hams (approximately 3 km southwest), may use The Island.

6.2.35 Protected species likely present in the marine environment surrounding The Island include:

- Phytoplankton (microscopic marine plants) in surface waters;
- Zooplankton (microscopic marine animals);
- Ichthyoplankton (eggs and larvae of fish); and
- Species occurring at the bottom of the River Parrett including clam and mudsnail.

6.2.36 Specific data relating to the fish in the River Parrett are not available. However, 90 species of estuarine and marine fish have been identified in the Severn Estuary, the most common of which are sprat and whiting. Many species of fish living within the Severn Estuary undertake regular migrations and tend to move seasonally in waves up and down the estuary.

6.2.37 Marine mammals in the Severn Estuary include bottlenose dolphin, common dolphin, harbour porpoise and grey seal. Although these have not been officially recorded in the Parrett Estuary, occasional observations of common seal and harbour porpoise have been made in the Parrett.

6.2.38 Deposits of clay, silt, sand and gravel underlie the site. The superficial deposits beneath the site and the bedrock mainly consist of mudstones.

6.2.39 Groundwater conditions around the River Parrett are considered to be relatively shallow and are likely to be influenced by the tides.

6.2.40 The Island and the majority of the surrounding area is classified as having a medium to high groundwater vulnerability. This relates to the ease by which

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contaminants can migrate into an aquifer from the ground surface.

6.2.41 There are two Water Framework Directive water bodies within 1 km of The Island, the Parrett Water Framework Directive transitional water body and another referred to as the River Brue from the confluence with North Drain to Tidal Limit water body.

6.2.42 The site is within Flood Zone 3, meaning that there is a high risk of flooding from rivers or tidal flooding. The site is mostly at very low risk of surface water flooding.

6.2.43 The western bank of The Island forms part of the Steart Peninsula and there are large mudflats located in the area where the River Parrett joins the River Severn. The River Parrett is dominated by strong tidal flows that lead to erosion which in part results in high amounts of suspended solids and silt.

6.2.44 There has been a decline in industrial discharges over the past 30 years that has improved emissions controls in the Severn Estuary that influence marine water quality and is within the annual average ammonia concentration that would indicate 'good' quality status.

6.2.45 The marine sediment in the area contains concentrations of chemicals within the threshold considered acceptable for disposal at sea.

6.2.46 The site has one existing flood defence in the form of an embankment separating the intertidal area of The Island from the terrestrial areas to the east. There is also the remnants of a smaller, older flood embankment further west.

6.2.47 The site falls within both a National and Local Landscape Character Area related to the Somerset levels and moors.

6.2.48 There are no designated heritage assets recorded at The Island or within 1 km. There are also no designated heritage assets in the intertidal zone adjacent to The Island and the site is not located within a World Heritage Site or Conservation Area.

6.2.49 The Somerset Historic Environment Record database records a number of non-designated assets within The Island. As such, The Island is of high archaeological potential.

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6.2.50 The Somerset Historic Environment Record database also records the site of a possible post-medieval oyster bed in the intertidal zone near The Island.

6.2.51 Access to the River Parrett by boat has typically taken place around high tide times. Minimal dredging takes place at Dunball Wharf and the occasional clearance of silt at Combwich Wharf. Recreational navigation also takes place from the Combwich Wharf Motor Boat and Sailing Club.

6.2.52 Nearby receptors include Yearsley Farm, Laburnum House, Collings Farm and residents of nearby villages including Stetcholt, West Huntspill and properties to the northeast of Start.

6.2.53 Transport routes nearby include:

- Red Lane and Sloway Lane
- Church Road and Sloway Lane
- The A38 corridor and A39

6.2.54 A number of Public Rights of Way are in close proximity to The Island site providing public access towards or around the site. These include three bridleways that run along the edge of the site and the King Charles III

England Coast Path that runs along the banks of the River Parrett.

Maisemore Weir on the River Severn

6.2.55 This section summarises the key environmental elements of the baseline environment at Maisemore Weir.

6.2.56 Maisemore Weir is located on the River Severn and is surrounded by Grade 3 agricultural land and floodplain grazing marsh and traditional orchard priority habitat.

6.2.57 There are two international statutory designated sites with bats as qualifying feature within 30 km of Maisemore Weir: Wye Valley and forest of Dean Bat Sites Special Areas of Conservation and Wye Valley Woodlands Special Areas of Conservation.

6.2.58 There are two Local Wildlife Sites within 1 km of Maisemore Weir: Sandhurst Brickpits South Local Wildlife Site (not including the area that is also designated as a Regionally Important Geological Site) and Maisemore Cliff Local Wildlife Sites, which is also a Regionally Important Geological Site. The Alney Island Local Nature Reserve is located approximately 2 km to the south of the site.

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6.2.59 Protected species likely to be present at Maisemore Weir include:

- Various species of bat including Common pipistrelle, Soprano pipistrelle, Greater Horseshoe, and Lesser Horseshoe
- Badger
- Otter
- Great Crested Newt
- Common Reptiles
- Moths
- Birds
- Hare
- Hedgehog
- Toad

6.2.60 Freshwater species present in the River Severn at Maisemore Weir include:

- Aquatic plants including reeds, brooklime, water pepper, water horsetails, mosses and liverworts. Rare frogbit is also present and the Invasive Non-Native Species Nuttall's waterweed has been present historically.

- Aquatic invertebrates that favour freshwater or are tolerant of mild brackish water (water that is a mixture of saline and fresh water) including mussels, mayflies, dragonflies and beetles. Invasive Non-Native Species have also been present historically, including zebra mussels and Asian clams.
- Freshwater fish including common goby and minnow, bleak, roach, gudgeon, dace, perch, chub, 3-spined stickleback, flounder, European eel, ruffe and rudd.

6.2.61 Deposits of clay, silt, sand and gravel underlie the site. The bedrock geology is Rugby Limestone Member consisting of mudstone and limestone, interbedded.

6.2.62 The area is mainly underlain by superficial deposits of alluvium (comprised of clay, silt, sands and gravels), which follow the course of the River Severn and its floodplain.

6.2.63 The site and majority of the surrounding area are classified as having a medium to high groundwater vulnerability.

6.2.64 There are two Water Framework Directive water bodies that are within or overlap the study area, the Severn

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Upper water body and a water body referred to as the River Severn from the confluence with the River Avon to the confluence with the Upper Parting water body.

6.2.65 The site is also located within a Surface Water Drinking Water Safeguard Zone.

6.2.66 Maisemore Weir is within Flood Zone 3, so it is at high risk of flooding from rivers or tidal flooding. In fields north of the site and in the River Severn upstream of the weir, the risk of surface water flooding is low.

6.2.67 Key receptors are commercial properties including agricultural businesses, the local workforce population and the local economy.

6.2.68 Maisemore Weir falls within a National Landscape Character Area related to the Severn and Avon Vales and is within a Local Landscape Character Area related to floodplain farmland and The Rea, Maisemore Ham and Longford.

6.2.69 There are no designated heritage assets at Maisemore Weir and it is not located within a World Heritage Site or Conservation Area. The area is considered of low archaeological significance.

6.2.70 Six commercial receptors have been identified within 500 m of the Maisemore Weir; The White Hart Inn, Ghurka Pub, J Young Fuels, LJ Bridal Collection, Steadings Business Centre and Ewatt Technology.

6.2.71 Nearby receptors include the Maisemore Lock House and residential properties. These properties are located along Church Road, Maisemore Bridge, Severn Way, The Rudge and Three Choirs Way and within Maisemore Village.

6.2.72 Transport routes nearby include narrow single tracks along Old Road and The Rudge and the A417.

6.2.73 A number of Public Rights of Way are in close proximity to Maisemore Weir site:

- Footpath EMA12
- Footpath EMA23
- Footpath EMA15
- Footpath EMA14
- Footpath ESA1A
- Bridleway EMA18

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Upper Lode Weir on the River Severn

6.2.74 This section summarises the key elements of the baseline environment at Upper Lode Weir.

6.2.75 The Upper Lode Weir is located within the River Severn in an agricultural area, which is classified as Grade 3 agricultural land with several areas of priority habitat in the vicinity. The Severn Ham is registered as Common Land.

6.2.76 There is one international statutory designated site with bats as a qualifying feature within 30 km of Upper Lode Weir at the Wye Valley and Forest of Dean Bat Sites Special Area of Conservation.

6.2.77 There are two national statutory designated sites within 2 km of Upper Lode Weir (Severn Ham, Tewkesbury Site of Special Scientific Interest and Old River Severn, Upper Lode Site of Special Scientific Interest).

6.2.78 There are three Local Wildlife Sites within 1 km of Upper Lode Weir: Forthampton Oaks, Lower Lode Lane (Tewkesbury) Conservation road verge and Voulters Woods.

6.2.79 There are several Ancient and Veteran trees to the western side of the River Severn.

6.2.80 Protected species likely to be present at Upper Lode Weir include:

- Bats
- Badger
- Otter
- Great Crested Newt
- Dragonflies
- Moths
- Beetles
- Birds
- Hedgehog
- Common Toad

6.2.81 Freshwater species present in the River Severn at Upper Lode Weir include:

- Aquatic plants including mosses and grasses. Blue-green algae is likely also present and the Invasive Non-Native Species Himalayan balsam and fringed water lily.

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- Aquatic invertebrates that are tolerant of both brackish (water that is a mixture of saline and fresh water) and fresh water including mussels, mayflies, dragonflies and beetles. The threatened scarce chaser has also been present historically. Invasive Non-Native Species are likely to be present, including zebra mussels and Asian clams.
 - Freshwater fish including common goby and minnow, bleak, roach, gudgeon, dace, perch, chub, 3-spined stickleback, flounder, European eel, ruffe and rudd.
- 6.2.82 Deposits of clay, silt, sand and gravel underlie the site. The bedrock geology is interbedded limestone and mudstone underlain by mudstone.
- 6.2.83 The Upper Lode Weir site and majority of the study area is classified as having a medium to high groundwater vulnerability.
- 6.2.84 There is one Water Framework Directive water body that overlaps the site referred to as the River Severn from the confluence with the River Avon to the confluence with the Upper Parting.
- 6.2.85 The Upper Lode Weir is located within a Surface Water Drinking Water Safeguard Zone.
- 6.2.86 The site is within Flood Zone 3, so it is at high risk of flooding from rivers or tidal flooding.
- 6.2.87 The Upper Lode Weir falls within a National Landscape Character Area related to the Severn and Avon Vales and a Local Landscape Character Areas related riverside meadows and Severn Ham, Tewkesbury.
- 6.2.88 There are no designated heritage assets at Upper Lode Weir and the site is also not located within a World Heritage Site or Conservation Area. The area is considered of low archaeological significance.
- 6.2.89 Nearby receptors include residential properties to the north of the weir site including the Upper Lode Lock Cottages and the Upper Lode Angling Club.
- 6.2.90 Transport routes nearby include the A38 and the A438.
- 6.2.91 There are several Public Rights of Way within the vicinity of Upper Lode Weir:
- Footpath ZTE11 parallel to the south of Healings Flour Mill and Warehouses
 - Footpath ZTE10
 - Footpath ZTE13 to the west of Severn Ham
 - Footpath ZTE12

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- Footpath ZTE13 to the east of Severn Ham
- Footpath ZTE14 runs parallel to Mill Avon

Weirs on the River Lugg

- 6.2.92 This section summarises the key elements of the baseline environment at the River Lugg weirs.
- 6.2.93 The weirs on the River Lugg are surrounded by agricultural land, comprised largely of Grade 3 and Grade 4 soils, with some Grade 2 soils recorded on/near Coxall Weir.
- 6.2.94 There are no international statutory designated sites within 2 km or within 30 km of international statutory designated sites with bats as a qualifying feature.
- 6.2.95 The weirs on the River Lugg are located within the national statutory designated site - River Lugg Site of Special Scientific Interest. Mousenatch Weir is also located within the River Lugg Meanders Site of Special Scientific Interest.
- 6.2.96 Eyton Common Local Wildlife Site is located approximately 500 m north of the weirs.
- 6.2.97 Protected species likely to be present at the River Lugg weirs include:
- Bats
 - Badger
 - Otter
- 6.2.98 Freshwater species present in the River Lugg include:
- Aquatic plants including river crowfoot, branched bur reed, potamogeton and lesser water parsnip, arrowhead and purple loosestrife. The Invasive Non-Native Species Canadian pondweed is present near Leominster. Stream water crowfoot is nationally scarce and recorded near the weirs.
 - Aquatic invertebrates including white clawed crayfish, mayflies, common hawkers and the nationally scarce yellow-legged water-snipefly, larvae of caddisfly and beetles, mussels, mayflies, dragonflies and beetles.
 - Freshwater fish including bullhead, stone loach, minnow, sea/brown trout and Atlantic salmon, lamprey species, European eel and grayling.
- 6.2.99 The area near the River Lugg weirs is underlain by superficial deposits of clay, silt, sand and gravel. The

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bedrock geology in the weir locations is siltstone and mudstone.

6.2.100 The weirs are within a Nitrate Vulnerable Zone and there is one Ground Water protection zone within the vicinity of the sites.

6.2.101 The River Lugg weir sites and majority of the study area are classified as having a medium to high groundwater vulnerability.

6.2.102 The only Water Framework Directive water body within 500 m of the weirs is referred to as the River Lugg from the confluence at Norton Brook to the confluence at the River Arrow water body.

6.2.103 The River Lugg weir sites are within Flood Zone 3, meaning that there is a high risk of flooding from rivers only as the River Lugg is not tidal.

6.2.104 The weirs on the River Lugg fall within a National Landscape Character Area related to the Herefordshire Lowlands and a Local Landscape Character Area related to river floodplains.

6.2.105 There are no designated heritage assets recorded at the locations of the weirs on the River Lugg and the

sites are not located within a World Heritage Site or Conservation Area. The area is considered of low archaeological significance.

6.2.106 Nearby receptors include Coxall Farm, South Lodge, Coward's Mill, Oakfields Farm, Kemble House Farm, Coals View holiday cottage and Broad Farm.

6.2.107 Transport routes nearby include the B4360, B4361, the A44 and A49.

6.2.108 There are two Public Rights of Way within the vicinity of the weirs on the River Lugg:

- Footpath EY5 crosses the River Lugg between Gilbert's Weir and Mousenatch Weir
- Footpath KL6 runs along the River Lugg

6.3 Likely significant effects and proposed scope of further assessment

6.3.1 An assessment of the likely environmental effects of the proposed changes off-site has been undertaken. The outcomes of these assessments and what is proposed to be assessed further is summarised in

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Table 6–1 for Pawlett Hams and The Island and **Table 6–2** for the English weirs.

6.3.2 Where it was considered that there was no potential for environmental effects to arise for specific environmental Aspects, no assessment has been undertaken, as summarised below.

6.3.3 As the proposed changes off-site would not involve the management of spent fuel or radioactive materials, radiological emissions or increase the risk of major accidents or disasters, the following Aspects have not been assessed and have been scoped out of further assessment of all proposed changes off-site:

- Spent Fuel and Radioactive Management
- Radiological
- Major Accidents and Disasters

6.3.4 The following Aspects were also scoped out of the assessment of effects from the removal of the weirs, as the proposed sites are inland and do not interact with coastal processes:

- Coastal Hydrodynamics and Geomorphology
- Marine Water and Sediment Quality
- Marine Ecology
- Shipping and Navigation
- Offshore and intertidal archaeology

Table 6–1: Summary of the likely significant effects and Aspects to be scoped into and out of further assessment at the saltmarsh sites

Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Conventional Waste Management	An assessment of waste generated during construction should be conducted when more information is known – particularly whether the excavation material is suitable for use on-site or whether it requires recovery/disposal offsite. Conventional waste generation is predicted to be minimal and it is unlikely that the amount of waste required to be disposed of would alter the regional capacity in a significant way.	✓	✓
Socio-economics	<p>Disruption to commercial receptors during construction and operation at Pawlett Hams only is proposed to be scoped into further assessment. It is possible that disturbance effects to commercial receptors may arise due to the combined effect of landscape and visual, traffic and transport and noise and vibration impacts. A similar assessment is proposed to be scoped in for The Island as disruption to commercial receptors may occur due to the combined effect of landscape and visual and traffic and transport effects.</p> <p>Impacts on commercial and agricultural land use during construction and operation at Pawlett Hams only are also proposed to be scoped into further assessment. Land use impacts on commercial and agricultural properties are scoped into the assessment due to the potential temporary and permanent uptake of agricultural land.</p> <p>Given the large size of the local workforce within the Sedgemoor Council Area, the strength of the regional economy and the low level of direct labour requirements for the proposed measures, an assessment of impacts on employment and economic investment are proposed to be scoped out.</p>	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Transport	<p>Potential traffic impacts during construction need to be understood including impacts on sensitive receptors, pedestrians, cyclists and horseriders. A Construction Traffic Management Plan will outline necessary limits and restrictions on construction vehicle movements. Temporary and potentially permanent closures and diversions of bridleways will also need to be explored further when the route options for construction access are confirmed. Measures such as traffic management will be planned to avoid, prevent or reduce conflict points between construction traffic and other road users.</p> <p>The day-to-day operation of the proposed compensation measures at Pawlett Hams and The Island will generate negligible volumes of traffic and therefore an assessment of traffic impacts during operation is scoped out.</p>	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Noise and Vibration	<p>Potential noise effects due to emissions from construction site plant and machinery is proposed to be scoped into further assessment for Pawlett Hams due to the inherently noisy plant and equipment likely to be used and the receptors located nearby. However, this aspect is scoped out for The Island as there are no receptors sensitive to noise nearby.</p> <p>Potential noise and vibration effects due to emissions from construction-related off-site traffic at Pawlett Hams is also proposed to be scoped in due to the presence of receptors along the local roads near Pawlett Hams. This aspect is scoped out for The Island as traffic flows are likely to be below the threshold that would trigger the need for an assessment.</p> <p>Potential vibration effects due to emissions from construction site plant and machinery at Pawlett Hams and The Island are proposed to be scoped out of further assessment as there are no receptors sensitive to changes in vibration nearby.</p> <p>Potential noise and vibration effects during operation at Pawlett Hams and The Island are proposed to be scoped out as there are no activities expected to occur that could give rise to significant noise or vibration effects.</p>	✓	X

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Air Quality	<p>Potential effects arising from dust and particulate matter emissions generated during the construction and operation of Pawlett Hams and The Island are proposed to be scoped out of further assessment providing good practice mitigation measures are implemented during construction. There are no potential impacts from dust and particulate matter emissions generated during the operation of the proposed compensation measures at Pawlett Hams and The Island.</p> <p>Given that relatively low numbers of plant and items of machinery would likely be used for only a limited duration and spread across the site, an assessment of impacts on air quality due to emissions from site plant and machinery at both Pawlett Hams and The Island are proposed to be scoped out.</p> <p>Potential impacts on air quality due to emissions from construction-related and operation-related off-site traffic at both Pawlett Hams and The Island are proposed to be scoped out of further assessment as the traffic flows are likely to be below the threshold that would trigger the need for an assessment.</p>	X	X
Soils and Land Use	<p>Loss of soils and soil quality as a result of construction and operation at both Pawlett Hams and The Island are proposed to be scoped into further assessment as there will be disturbance, excavations and potential loss of soils and soil quality in these areas.</p> <p>Loss or disturbance to agricultural land at both Pawlett Hams and The Island are proposed to be scoped into further assessment as there may be the potential loss of Grade 3 soils.</p>	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Geology and Land Contamination	<p>Due to the limited information available at this stage related to existing geological features and contamination at Pawlett Hams and The Island, an assessment of these is proposed to be scoped into further assessment.</p> <p>The sterilisation of mineral resources as a result of the proposed compensation measures at Pawlett Hams and The Island are proposed to be scoped out of further assessment as they are not within a Mineral Safeguarding Area and are unlikely to be identified as an area for mineral extraction in the future.</p>	✓	✓
Groundwater	<p>Due to the limited information available about the groundwater conditions at Pawlett Hams and The Island, an assessment of impacts to groundwater levels, flows and quality and other groundwater receptors are proposed to be scoped into further assessment. Impacts can arise from the influx of salty water into groundwater environments, and from construction activities such as excavations, topsoil stripping, accidental leaks and spills etc.</p> <p>Increase in groundwater flood risk at Pawlett Hams is proposed to be scoped into further assessment. The presence of embankments can lead to upswelling of groundwater on the upgradient side of the embankment. Additionally, seepage loss under the embankments during periods of high tide impoundments could lead to groundwater flooding on the landward side of the embankments. The impact of groundwater flood risk at The Island is proposed to be scoped out of further assessment as there are no sub-surface structures or embankments proposed for this site, therefore the groundwater flood risk is not expected to change from baseline conditions.</p>	✓	✓

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		Pawlett Hams	The Island
Surface Water	<p>Activities associated with construction have the potential to mobilise sediment or pollutants into the watercourse and could alter flow dynamics. The storage of water in the saltmarsh is also likely to change the biological and chemical quality of surface water. Therefore, an assessment of the potential effects on surface water quality and geomorphology is proposed to be scoped in.</p> <p>Potential impacts on flood risk due to breaching of flood defences at both Pawlett Hams and The Island are proposed to be scoped into further assessment as the breaching of flood defences is likely to increase flood risk at the sites.</p> <p>Potential impacts on surface water supply at both Pawlett Hams and The Island are proposed to be scoped out of further assessment given that water infrastructure is unlikely to exist in the proximity of the sites.</p>	✓	✓
Coastal Hydrodynamics and Geomorphology	<p>Potential impacts on coastal hydrodynamics and geomorphology at both the Pawlett Hams and The Island sites are proposed to be scoped into further assessment as the works involved result in changes to coastal processes (including sediment transport regimes and water movement), channel morphology and coastal / flood defences.</p> <p>There is also the potential for changes to affect several local coastal management policies and plans, primarily the North Devon and Somerset Shoreline Management Plan, and Parrett Catchment Flood Management Plan.</p>	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Marine Water and Sediment Quality	Potential impacts on marine water and sediment quality at both the Pawlett Hams and The Island sites are proposed to be scoped into further assessment as the works involved have the capacity to improve water quality by encouraging sedimentation of suspended matter, filtering run-off and by removing dissolved nutrients from the water. Whilst resuspension of sediment may occur, resulting in release of any contaminants held within the sediment (and subsequent changes to water quality), available data suggest contamination levels are not significant.	✓	✓
Marine Ecology	Potential impacts on marine ecology at both the Pawlett Hams and The Island sites are proposed to be scoped into further assessment as there is potential for changes to coastal hydrodynamics, marine water quality, and marine sediment quality, as a result of proposed compensation measures at Pawlett Hams and The Island. As a consequence, as well as any direct effects identified in relation to marine ecology, indirect effects may also arise.	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Ecology (Terrestrial and Freshwater) and Ornithology	<p>Potential effects related to disturbance and habitat loss for terrestrial species and wintering birds as a result of construction activities at Pawlett Hams and The Island is scoped into further assessment. An assessment of the loss of grazing marsh at Pawlett Hams and The Island is also scoped into further assessment as surveys are required to understand the condition and abundance of it.</p> <p>The potential effect of sediment removal and emissions generated during construction at Pawlett Hams is scoped into further assessment for freshwater ecology as a result of loss of freshwater habitat. Disturbance to fish communities and migration during construction are scoped into further assessment for Pawlett Hams as disturbance from noise and excavation activities is likely.</p> <p>Operation impacts on Pawlett Hams and The Island, designated sites and protected species as a result of increased saltmarsh and associated habitats and creation of new channels are scoped into further assessment for both terrestrial and freshwater ecology.</p> <p>Changes in sediment habitat and deposition are scoped in during the operation of the proposed compensation measures at Pawlett Hams as these may permanently alter the freshwater habitats present. Operational changes to water parameters like salinity, hydrodynamics, water quality and temperature regime at Pawlett Hams are scoped into further assessment as a result of breaching and saltmarsh creation.</p> <p>As The Island is already tidally influenced, any effects on freshwater ecology from the enhancement of saltmarsh and associated habitats can be scoped out. The only potential effects on freshwater ecology could occur within the surrounding land during site access. It is considered that these would be mitigated through best practice measures (e.g., pollution, runoff and siting of access tracks).</p>	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Landscape and Visual	<p>Due to the small scale of the proposed compensation measures at Pawlett Hams and The Island, only effects on the Local Landscape Character are proposed to be scoped into further assessment. A significant change in local landscape character is unlikely but will be reviewed when the designs are further developed.</p> <p>Impacts on visual receptors at both Pawlett Hams and The Island are proposed to be scoped into further assessment. It is anticipated that some, or all, of the visual receptors have the potential to experience temporary visual effects from construction due to temporary construction access, compounds and movement of construction vehicles. There is also the potential for visual receptors to experience permanent visual effects due to a change in vegetation / ground levels.</p>	✓	✓
Historic Environment	<p>The Somerset Historic Environment Record database recorded a variety of non-designated heritage assets dating to the medieval and post-medieval period which are of low/medium value within the vicinity of both Pawlett Hams and The Island. As such, these sites are of high archaeological importance.</p> <p>There are no designated heritage assets within Pawlett Hams or The Island. There are four Grade II listed buildings within 1 km of Pawlett Hams but these are on the opposite bank of the River Parrett.</p> <p>Therefore, the potential loss or damage of non-designated heritage assets and archaeological features only is scoped in for further assessment for both Pawlett Hams and The Island.</p>	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Offshore and Intertidal Archaeology	Studies undertaken to support the original Environmental Statement found there to be no protected wrecks or other designated heritage assets within the intertidal zone adjacent to Pawlett Hams or The Island. It is not anticipated that significant effects on archaeological remains within the intertidal area are likely; however, this will be scoped into further assessment to confirm this.	✓	✓
Amenity and Recreation	<p>Access to recreational receptors at both Pawlett Hams and The Island are proposed to be scoped into further assessment due to the loss, diversion or temporary closures required to Public Rights of Way.</p> <p>Access to community receptors at the Pawlett Hams site is proposed to be scoped into further assessment due to the loss of the Elizabeth Boat Room. There are no community receptors nearby for The Island so it is proposed that this is scoped out.</p> <p>Amenity effects at Pawlett Hams and The Island are proposed to be scoped into further assessment. Amenity effects could arise on recreational receptors as a result of the combined effects of Landscape and Visual, Noise and Vibration and Transport (Landscape and Visual and Transport only for The Island).</p>	✓	✓
Shipping and Navigation	Effects on shipping and navigation as a result of works at Pawlett Hams and The Island are proposed to be scoped into further assessment as there is potential for impacts on vessel moments, including commercial and recreational activities, and operational ports, marinas and wharfs by the proposed compensation measures. Possible changes to sediment loads in the River Parrett will also be investigated.	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of further assessment	
		Pawlett Hams	The Island
Population and Human Health	Population and human health effects at both Pawlett Hams and The Island during construction and operation are proposed to be scoped into further assessment as other constituent Aspects have been scoped into further assessment and could give rise to significant effects on physical and mental human health.	✓	✓
Climate Change	<p>An assessment of potential greenhouse gas emissions has been scoped out for Pawlett Hams and The Island as emissions during construction will be minimal and likely balanced out or surpassed by the carbon removal resulting from the increased sedimentation at the new sites. During operation, it is anticipated that greenhouse gas emissions would be minimal and because of the potential for the sites to trap carbon through the burial of organic sediment, the proposed compensation measures could lead to a net reduction in greenhouse gas emissions. This reduction would be beneficial, but minimal.</p> <p>As projected climate changes are lower over the short-term and would be mitigated for using best practice construction techniques, impacts related to vulnerability to climate change during construction are not expected to be significant and an assessment of this has been scoped out for Pawlett Hams and The Island.</p> <p>However, an assessment of the vulnerability of the operational sites to climate change has been scoped in to determine the significance of the effects. This would be based on further design work to determine the resilience of the saltmarsh and associated habitats to likely future climate and to inform the design and need for ongoing assessment of the sites.</p>	✓	✓

Table 6–2: Summary of the likely significant effects and Aspects scoped into and out of further assessment at the weir sites

Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Conventional Waste Management	An assessment of waste generated during removal should be conducted when more information is known about waste types and estimated tonnages have been confirmed as these may be subject to change as designs develop. Conventional waste generation is predicted to be minimal, and it is unlikely that the amount of waste required to be disposed of would alter the regional capacity in a significant way. Opportunities to recycle/recover construction, demolition and excavation waste also exists in the region.	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Socio-economics	<p>Disruption to commercial receptors at Maisemore Weir is proposed to be scoped into further assessment. It is possible that disturbance effects to commercial receptors may arise due to the combined effect of Landscape and Visual and Noise and Vibration. Disruption to commercial receptors at Upper Lode Weir and the weirs on the River Lugg is proposed to be scoped out of further assessment as there are no commercial receptors nearby.</p> <p>Impacts on commercial and agricultural land use at the weirs are proposed to be scoped out of further assessment given that no permanent commercial or agricultural land take is anticipated during removal of the weirs and operation and the site compound and accesses will only require temporary uptake of land.</p> <p>Given the large size of the local workforce, the strength of the regional economy and the low level of direct labour requirements to support the proposed measures, an assessment of impacts on employment and economic investment are proposed to be scoped out.</p>	✓	X	X

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Transport	<p>Potential traffic impacts need to be understood including the impacts on sensitive receptors (such as residential settlements), pedestrians, cyclists and horseriders. A Construction Traffic Management Plan will outline necessary limits and restrictions on construction vehicle movements. Temporary and potentially permanent closures and diversions of Public Rights of Way will also need to be explored further when the route options for access during removal are confirmed.</p> <p>The day-to-day operation of the proposed compensation measures at the weirs will generate negligible volumes of traffic and therefore an assessment of traffic impacts during operation is scoped out.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Noise and Vibration	<p>Potential noise effects due to emissions from site plant and machinery during the removal of the weirs are proposed to be scoped into further assessment due to the use of inherently noisy plant and equipment likely to be used and the receptors located nearby.</p> <p>Potential vibration effects due to emissions from site plant and machinery during the removal of the weirs are proposed to be scoped out of further assessment as there are no receptors sensitive to changes in vibration nearby.</p> <p>Potential noise and vibration effects due to emissions from construction traffic off-site for the weirs are proposed to be scoped out of further assessment as traffic flows are likely to be less than the threshold that would trigger the need for an assessment.</p> <p>Potential noise and vibration effects during operation are proposed to be scoped out of further assessment as there are no activities expected to occur that could give rise to significant noise or vibration effects.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Air Quality	<p>With the implementation of good practice mitigation measures during the removal of the weirs, significant impacts arising from dust and particulate matter emissions generated are not anticipated. There are also no potential impacts from dust and particulate matter emissions generated during the operation of the proposed compensation measures at the weirs. Therefore, the potential effects arising from dust and particulate matter emissions generated during the removal of the weirs and operation of the proposed compensation measures at the weirs are proposed to be scoped out of further assessment.</p> <p>Given that relatively low numbers of plant and items of machinery would likely be used for only a limited duration and spread across the site, an assessment of the impacts on air quality due to emissions from site plant and machinery at the weirs are proposed to be scoped out.</p> <p>Potential impacts on air quality due to emissions from construction traffic and operation-related traffic off-site for the weirs are proposed to be scoped out of further assessment as the traffic flows are likely to be less than the threshold that would trigger the need for an assessment.</p>	X	X	X

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Soils and Land Use	<p>Loss of soils and soil quality as a result of the removal of the weirs are proposed to be scoped into further assessment as there will be disturbance, excavations and potential loss of soils and soil quality in these areas.</p> <p>Loss or disturbance to agricultural land at each of the weirs are proposed to be scoped into further assessment as there may be the potential loss of Grade 2 and 3 soils.</p>	✓	✓	✓
Geology and Land Contamination	<p>Due to the limited information available at this stage related to existing geological features and contamination at the weirs, an assessment of these is proposed to be scoped into further assessment.</p> <p>The sterilisation of mineral resources as a result of the proposed compensation measures at all of the weir sites are proposed to be scoped into further assessment as the area required to undertake the works at each of the weirs is within a Mineral Safeguarding Area.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Groundwater	<p>Due to the limited information available about the groundwater conditions at the weirs, an assessment of impacts to groundwater levels, flows and quality and other groundwater receptors are proposed to be scoped into further assessment. Impacts can arise from the influx of saline water into groundwater environments, and from removal activities such as excavations, topsoil stripping, accidental leaks and spills etc.</p> <p>Changes to baseflow conditions from removal of the weirs is proposed to be scoped into further assessment. Considering the depth of the water table across the site is unknown significant changes to baseflow contributions cannot be ruled out.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Surface Water	<p>Activities associated with the removal of the weirs have the potential to mobilise sediment or pollutants into the watercourse and could alter flow dynamics. Therefore, an assessment of the potential effects on surface water quality and geomorphology is proposed to be scoped in.</p> <p>Potential impacts on surface water supply at the weirs are proposed to be scoped into further assessment. The diversion of utilities and improvement of field drains is likely to impact surface water supply.</p> <p>Potential impacts on flood risk at the weirs are proposed to be scoped into further assessment. Weir removal may increase flood risk downstream and re-establishing the natural river bed may increase connectivity with the underlying aquifer.</p>	✓	✓	✓

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		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Ecology (Terrestrial and Freshwater) and Ornithology	<p>Potential effects related to disturbance and habitat loss for terrestrial species and changes to riparian habitat are proposed to be scoped into further assessment at all of the weirs.</p> <p>The effect of sediment removal and emissions generated during the removal of the weirs is scoped into further assessment for freshwater ecology as a result of potential worsening of freshwater habitat.</p> <p>Disturbance to fish communities around the weirs will be unavoidable during removal and therefore an assessment of this is scoped into further assessment.</p> <p>Operational changes including the potential spread of Invasive Non-Native Species, changes to habitats, water quality and the distribution of freshwater species are all proposed to be scoped into further assessment as a result of removing the weirs.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Landscape and Visual	<p>Due to the small scale of the proposed compensation measures at the weirs, only effects on the Local Landscape Character are proposed to be scoped into further assessment. A significant change in local landscape character is unlikely but will be reviewed when the designs are further developed.</p> <p>Impacts on visual receptors at the weirs are proposed to be scoped into further assessment. It is anticipated that some, or all, of the visual receptors have the potential to experience temporary visual effects during the removal of the weirs due to temporary access during removal, compounds and movement of construction vehicles. There is also the potential for visual receptors to experience permanent visual effects due to a change in vegetation / water levels.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Historic Environment	<p>The historic environment at Maisemore Weir is proposed to be scoped out of further assessment. The lock was installed in the 20th century and construction would have removed any archaeological assets of significance in the process. There are no designated and non-designated heritage assets within close proximity to the site and therefore the area is of low archaeological significance.</p> <p>The Upper Lode Weir site is proposed to be scoped out of further assessment. The weir was completed in August 1858 by the Severn Commissioners. In May 1995, an archaeological watching brief was undertaken in connection with the proposed works to install a new fish pass at Upper Lode Weir. This watching brief noted no archaeology due to the removal of any archaeological potential during the construction of the weir. As such, it is of low/negligible significance.</p> <p>The River Lugg weir sites are proposed to be scoped out of further assessment. There are no designated heritage assets and non-designated heritage assets within close proximity and as such the area is of low archaeological significance.</p>	X	X	X

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Amenity and Recreation	<p>Amenity effects at the weirs are proposed to be scoped into further assessment as a result of the combined effects of Landscape and Visual and Noise and Vibration on recreational receptors.</p> <p>Access to recreational receptors at the weirs is proposed to be scoped out of further assessment as temporary diversions or closures to Public Rights of Way will be reinstated once removal is complete. This will not be a long-term change and access for the local community will still be maintained. The Upper Lode Angling Club may experience a minor impact from noise during removal affecting species targeted by anglers, however this is deemed non-significant. During operation, there could be benefits for those using the river for recreational activities due to increased biodiversity through habitat creation and benefits to aquatic communities.</p> <p>Access to community receptors at the weirs is proposed to be scoped out of further assessment as there are no community receptors nearby.</p>	✓	✓	✓
Population and Human Health	<p>Population and human health effects at the weirs during removal and operation are proposed to be scoped into further assessment as other constituent Aspects have been scoped into further assessment and could give rise to impacts on human health.</p>	✓	✓	✓

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Aspect	Likely significant effect(s) and justification of scope	Compensation measure scoped in (✓) or out (X) of assessment in the Environmental Statement		
		Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Climate Change	<p>An assessment of potential greenhouse gas emissions has been scoped out for all of the weirs as emissions associated with the removal of the weirs and operation of the river post-removal will be minimal and it is anticipated that there will be no impact on the UK's carbon budget.</p> <p>Similarly, there is no physical asset remaining once the weirs are removed that would be vulnerable to climate change. Therefore, an assessment of vulnerability to climate change has also been scoped out for all of the weirs.</p>	X	X	X

6.4 Additional Compensation Measures

Overview

6.4.1 This section highlights the additional compensation measures that are proposed by NNB as part of its package of measures to compensate for the removal of the requirement to install an Acoustic Fish Deterrent that would not be within the amended Order Limits of the Development Consent Order:

- Seagrass bed;
- Kelp forest;
- Oyster bed;
- Trostrey Weir on the River Usk; and
- Manorafon Weir on the River Towy.

Seagrass bed

6.4.2 This measure involves the creation of 5 hectares of new seagrass habitat and/or enhancement of degraded seagrass area in the Severn Estuary or the wider Bristol Channel.

6.4.3 Current evidence and historic records show that it is possible for seagrass to grow within the Severn Estuary and at various other locations in the south-west of the UK.

6.4.4 Potential locations within the Severn Estuary and wider area which have conditions which are suitable for creating and/or enhancing seagrass beds will be considered within further studies, to be informed by experience from other seagrass bed creation/enhancement projects. Relevant guidance and published resources will also be considered.

6.4.5 The Environmental Impact Assessment of the seagrass bed habitat will likely focus on the marine environment and has the potential to result in numerous benefits for key species in the Severn Estuary and other sites designated within the vicinity of Hinkley Point C.

Kelp forest

6.4.6 This measure involves the creation of 15 hectares of new kelp habitat and/or enhancement of degraded kelp areas in the Severn Estuary or the wider Bristol Channel.

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6.4.7 Potential locations which are suitable for creating and/or enhancing kelp forest will be considered within further studies, to be informed by experience from other kelp forest creation/enhancement projects. Relevant guidance and published resources will also be considered.

6.4.8 The Environmental Impact Assessment of the kelp forest habitat will likely focus on the marine environment and has the potential to result in numerous benefits for key species in the Severn Estuary and other sites designated within the vicinity of Hinkley Point C.

Oyster bed

6.4.9 This measure involves the creation of 1-2 hectares of new oyster beds and/or enhancement of degraded native oyster beds areas in the Severn Estuary or the wider Bristol Channel.

6.4.10 Historically, native oyster beds were found throughout the UK coastline, including in the Severn Estuary and Bristol Channel.

6.4.11 Potential locations which are suitable for creating and/or enhancing native oyster bed will be considered

within further studies, to be informed by experience from other oyster bed creation/enhancement projects. Relevant guidance and published resources will also be considered.

6.4.12 The Environmental Impact Assessment of the oyster bed habitat will likely focus on the marine environment and has the potential to result in numerous benefits for key species in the Severn Estuary and other sites designated within the vicinity of Hinkley Point C.

Welsh barrier sites

6.4.13 A Development Consent Order cannot authorise associated development (which the weir works would be) in Wales. Therefore, if selected as part of the compensation package, the weir(s) located in Wales (Trostrey Weir on the River Usk and Manorafon Weir on the River Towy) would be consented via a Town and County Planning Act 1990 application, submitted to the relevant local planning authority (Monmouthshire County Council and/or Carmarthenshire County Council) separately from the proposed material change application.

6.4.14 If taken forward for delivery, the Welsh weir(s) will be assessed in the Environmental Statement that will be

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submitted in support of the proposed material change application to ensure the decision maker has the necessary information before them. This will involve an assessment of the environmental impact of the proposals.

that proposed for the weirs in England (refer to **Section 6.3**).

- 6.4.15 The assessments will follow the same methodology used to assess the English weirs.
- 6.4.16 Potential works to the Welsh weir(s) include full removal, introducing a technical pass or introducing a bypass channel. It has been assumed that the weir(s) would be fully removed, in line with the assumption of the proposed works to the English weirs. This is because works to install a separate channel for fish to travel around a weir would likely be of a similar scale to full removal and introducing a structure to allow fish to pass over the weirs would be of a smaller scale than full removal. Further work will be undertaken to confirm what works are undertaken at each weir and the environmental impact of the proposed works will be assessed in the Environmental Statement submitted in support for the proposed material change application.
- 6.4.17 Assuming that the Welsh weir(s) would be removed, the scope of the environmental assessment and the likely significant effects are anticipated to be similar to

7. CUMULATIVE AND IN-COMBINATION EFFECTS

7.1 Introduction

7.1.1 A preliminary analysis of the potential for any likely cumulative or in-combination effects as a result of the proposed changes on-site and off-site has been carried out.

7.1.2 For the purposes of this non-technical summary, the definitions of cumulative and in-combination effects are as follows:

- **Cumulative Effects:** Effects that arise from the combined action of a number of different projects, in combination with the proposed development, on a receptor.
- **In-Combination Effects:** Effects that arise from the combined action of multiple effects from the same project (i.e. the proposed changes) on a single receptor.

7.2 Cumulative Effects

Introduction

7.2.1 The Scoping Opinion adopted on 3 May 2022 confirmed the need to undertake a Cumulative Effects Assessment as part of the updated Environmental Impact Assessment.

7.2.2 Lists of other projects within the cumulative effects study areas of the environmental Aspects that have been assessed for the proposed changes on-site and off-site respectively have been identified. These lists include approved major planning applications and allocations in local council development plans.

7.2.3 The lists of other projects will be reviewed and updated, if necessary, as part of the Environmental Impact Assessment process. If any additional other projects are identified, these will be included in the cumulative effects assessment presented in the Environmental Statement.

Proposed Changes On-Site

7.2.4 For the proposed changes on-site, of the other projects identified, none were within the study area for Marine

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Ecology, but all were within the study area for Landscape and Visual.

7.2.5 A preliminary assessment of potential cumulative landscape and visual effects was undertaken, taking into consideration project timings, the scale and nature of the projects and professional judgement.

7.2.6 In summary no cumulative landscape and visual effects are anticipated between the proposed changes on-site and other projects due to:

- Scale of the project and distance from Hinkley Point C;
- No intervisibility between the proposed changes to Hinkley Point C and the project; and
- Small scale of the allocation area, nature of the allocation and/or distance from Hinkley Point C.

Proposed Changes Off-Site

7.2.7 For the proposed changes off-site, of the other projects identified, only those within the study areas for Terrestrial Ecology and Ornithology and Landscape and Visual had the potential to result in a cumulative effect. This is in relation to the potential for birds to be disturbed during the construction of Pawlett Hams

and/or The Island that could then move into the area of another project and the cumulative impact of construction activities on nearby receptors. These cumulative effects are unlikely to be significant but will be assessed further when the timing of construction at Pawlett Hams and The Island is better established. If the construction periods of Pawlett Hams, The Island and the other projects do not coincide, there is no potential for a cumulative effect to arise.

7.2.8 NNB is aware of proposed works that the Environment Agency is considering at Crowards Weir on the River Lugg and is maintaining communication with the Environment Agency on this. Depending on the information available about the works to this weir, the cumulative effects of this with the proposed changes off-site will be considered in the Environmental Statement.

7.2.9 The Bridgwater Tidal Barrier is a project that is located outside of the study areas for the cumulative effects assessment. However, it has been identified as an important other project that should be assessed cumulatively with the proposed compensation measures at Pawlett Hams and The Island. This will be considered through design and construction

programming and will be assessed in the Environmental Statement.

- 7.2.10 An assessment of the cumulative effects with other projects for the Welsh weirs, seagrass bed, kelp forest and oyster beds will be undertaken as part of the environment impact assessment of these measures when further information on their location is confirmed.

7.3 In-Combination Effects

Proposed Changes On-Site

- 7.3.1 As Groundwater and Transport are proposed to be scoped out of the assessment of the proposed changes on-site, these two Aspects have not been considered in the in-combination assessment.
- 7.3.2 Considering this, and the lack of spatial overlap between the landscape and visual and marine ecology study areas, it is not anticipated that the proposed changes on-site would give rise to any in-combination effects.

Proposed Changes Off-Site

- 7.3.3 For each compensation site individually, there may be potential for in-combination effects to arise that result from two or more environmental effects on a receptor. For example, the combined effect on geology and other below ground designations resulting from changes to groundwater and geology at Pawlett Hams. This will be reviewed as the environmental assessments are developed and if any in-combination effects are considered likely, an assessment will be undertaken.
- 7.3.4 The proposed compensation measures at Pawlett Hams and The Island will result in beneficial in-combination effects on marine ecology that will be assessed and reported in the Environmental Statement once the designs are refined, and the Environmental Impact Assessments are completed.
- 7.3.5 Due to the close proximity of Pawlett Hams and The Island, there is potential for other in-combination effects to arise as a result of the proposed compensation measures if impacts affect receptors at the same time. This will also be reviewed in the Environmental Impact Assessment and if any additional in-combination effects are considered likely, an assessment will be undertaken.

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7.3.6 The implementation of the proposed compensation measures at the weirs has the potential to result in beneficial in-combination impacts on migratory fish populations which use the Severn Estuary. Whilst geographically distant, overall improvements to fish movement at the selected weirs will benefit the overall populations at a wider level, i.e. the Severn Estuary and south-west region.

7.3.7 It is unlikely that adverse in-combination effects between the weirs will arise due to the distance between them. However, should proposals at more than one site on the same river be taken forward (i.e. Maisemore Weir and the Upper Lode Weir on the River Severn), there is a potential pathway to in-combination effects. This will also be reviewed in the Environmental Impact Assessment and if any additional in-combination effects are considered likely, an assessment will be undertaken.

7.3.8 Due mainly to a lack of spatial overlap between the study areas for each of the weirs and the saltmarsh sites, it is not anticipated that the proposed changes off-site collectively would give rise to any other in-combination effects.

7.3.9 These pathways will be reviewed as part of the Environmental Impact Assessment and if any potential in-combination effects are identified, an assessment will be undertaken and reported in the Environmental Statement.

7.3.10 As it is not currently known which weirs will be taken forward, the potential for in-combination effects between the weirs will be assessed once this is confirmed.

Proposed Changes On-Site and Off-Site

7.3.11 The only identified potential for an in-combination effect to arise as a result of the proposed changes on-site and off-site combined is related to Transport. However, the Construction Traffic Management Plan for Hinkley Point C caps the total flow at the link where potential construction traffic flows could combine. Therefore, as the construction traffic from the proposed changes on-site are capped and the proposed changes off-site are unlikely to increase the combined traffic flow above this cap, it is not anticipated that a significant in-combination effect would arise. This will be reviewed and if an in-combination effect is considered likely, this will be assessed further.

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7.3.12 Due to distance between Hinkley Point C and the compensation sites, no other in-combination effects are anticipated.

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8. SUMMARY

- 8.1.1 The aim of this report has been to summarise in non-technical language the preliminary assessment of the likely significant environmental effects of the proposed changes on-site and proposed changes off-site at this stage in the process and as reported in the Preliminary Environmental Information Report.
- 8.1.2 A summary of the proposed scope of what is to be assessed further and presented in the Environmental Statement is provided in **Table 8–1** for the proposed changes on-site and **Table 8–2** for the proposed changes off-site that will be within the amended Order Limits of the Development Consent Order.
- 8.1.3 In addition to that outlined in the tables, the potential for cumulative and in-combination effects will be reviewed and if any are considered likely, these will be assessed further and presented in the Environmental Statement. This will include a review of the lists of other projects. Should any additional other projects be identified, the potential for cumulative effects between these other projects and the proposed changes on-site or off-site will be assessed.

Table 8–1: Summary of proposed scope of further assessment of the proposed changes on-site

Environmental Aspect	Proposed Change					
	Removal of requirement to install an Acoustic Fish Deterrent	Amendments to Interim Spent Fuel Store	Replacement of Access Control Building with Equipment Storage Building	Relocation and re-design of the meteorological mast	Hinkley Point Substation as a permanent feature	Four new structures to house sluice gates and lifting beams
Marine Ecology and Marine Water and Sediment Quality	✓	X	X	X	X	X
Landscape and Visual	X	✓	✓	✓	X	X
Groundwater	X	X	X	X	X	X
Transport	X	X	X	X	X	X

Table 8–2: Summary of proposed scope of further assessment of the proposed changes off-site that will be within the amended Order Limits

Environmental Aspect	Compensation Site				
	Pawlett Hams	The Island	Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Spent Fuel and Radioactive Management	X	X	X	X	X
Conventional Waste Management	✓	✓	✓	✓	✓
Socio-economics	✓	✓	✓	X	X
Transport	✓	✓	✓	✓	✓
Noise and Vibration	✓	X	✓	✓	✓
Air Quality	X	X	X	X	X
Soils and Land Use	✓	✓	✓	✓	✓
Geology and Land Contamination	✓	✓	✓	✓	✓
Groundwater	✓	✓	✓	✓	✓
Surface Water	✓	✓	✓	✓	✓
Coastal Hydrodynamics and Geomorphology	✓	✓	X	X	X
Marine Water and Sediment Quality	✓	✓	X	X	X

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Environmental Aspect	Compensation Site				
	Pawlett Hams	The Island	Maisemore Weir on the River Severn	Upper Lode Weir on the River Severn	Weirs on the River Lugg
Marine Ecology	✓	✓	X	X	X
Ecology (Terrestrial and Freshwater) and Ornithology	✓	✓	✓	✓	✓
Landscape and Visual	✓	✓	✓	✓	✓
Radiological	X	X	X	X	X
Historic Environment	✓	✓	X	X	X
Offshore and Intertidal Archaeology	✓	✓	X	X	X
Amenity and Recreation	✓	✓	✓	✓	✓
Shipping and Navigation	✓	✓	X	X	X
Population and Human Health	✓	✓	✓	✓	✓
Climate Change	✓	✓	X	X	X
Major Accidents and Disasters	X	X	X	X	X

9. NEXT STEPS

- 9.1.1 This report has been provided to support the consultation on the proposed changes on-site and off-site.
- 9.1.2 The statutory consultation period is from Tuesday 9 January 2024 to 23:59 Thursday 29 February 2024, during which consultees can provide their responses to the consultation.
- 9.1.3 For further information about the consultation, please visit NNB's website via the following link: www.edfenergy.com/hpccommunity.
- 9.1.4 Comments formally submitted as part of this statutory consultation will be taken into consideration when undertaking the Environmental Impact Assessment.
- 9.1.5 Further work to refine the design of the proposed compensation measures will be undertaken, including various surveys and investigations in the field. The outcome of this work will inform the Environmental Impact Assessment.
- 9.1.6 The Environmental Impact Assessment will include further assessments of the environmental effects of the

proposed changes on-site and off-site related to the environmental Aspects outlined in **Table 8–1** for the proposed changes on-site and **Table 8–2** for the proposed changes off-site that will be within the amended Order Limits of the Development Consent Order. The outcome of the assessments will be presented in an Environmental Statement that will be submitted to the Planning Inspectorate as part of the proposed material change application.