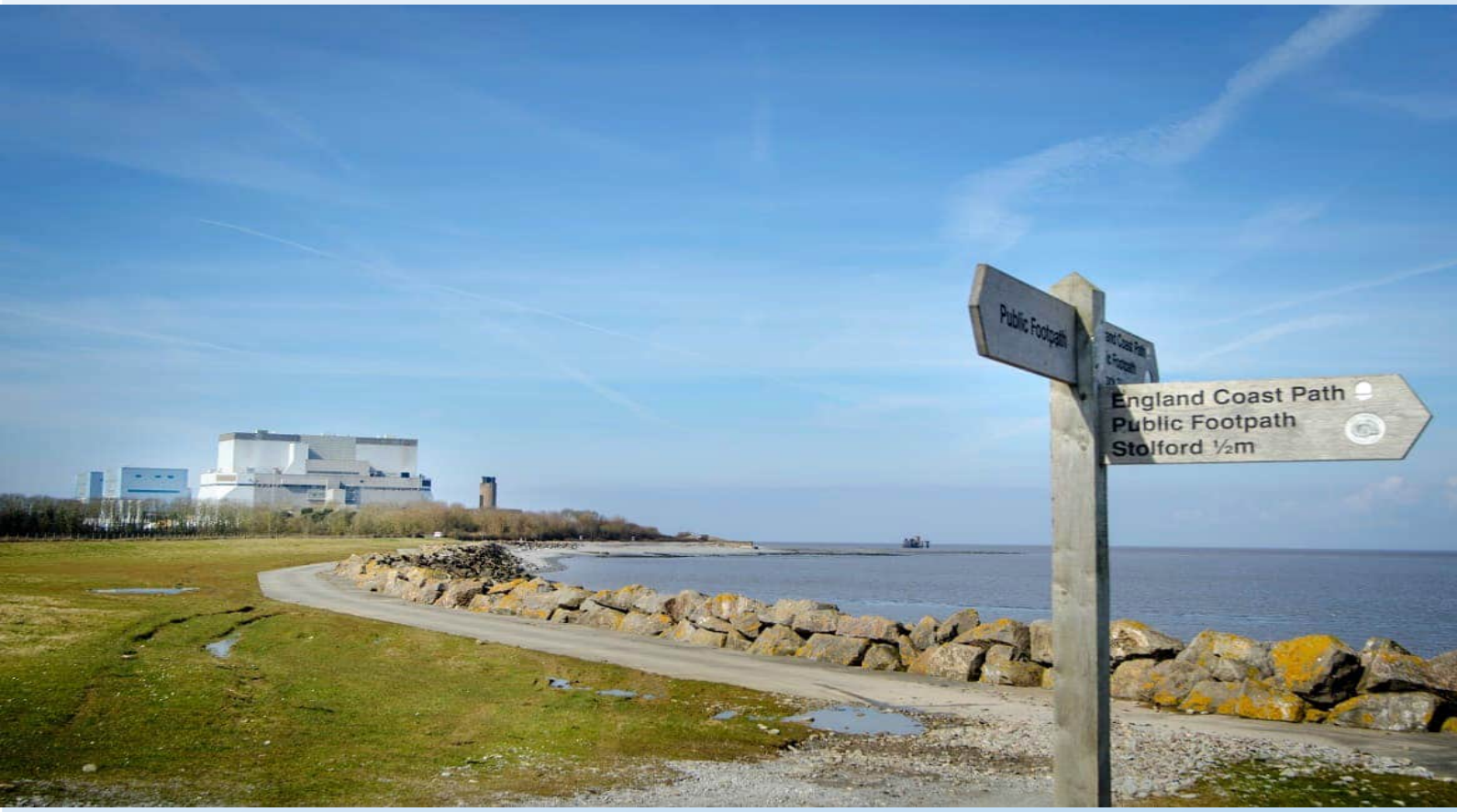
EDF Energy Nuclear Generation Ltd

Decommissioning of Hinkley Point B Nuclear Power Station

Environmental Statement

Volume III: Appendices - Part 1



February 2025

Public

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Introduction

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1A

Competent experts

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1A Competent experts

1A.1 Introduction

1A.1.1. As required under Regulation 5 (2) of the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) (hereafter referred to as 'EIADR'), an Environmental Statement ("ES") must be prepared by competent experts with the relevant expertise and qualifications.

1A.1.2. WSP is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1A.1.3. The Applicant confirms that the competent experts engaged in the delivery of this ES are appropriate and Suitable Qualified Experienced Professionals (SQEP).

1A.1.4. Competent experts involved in the preparation of this Environmental Statement are listed in **Table 1A-1**. The second column of this table includes two categories of staff, with different levels of responsibility:

- Primary author
- Secondary author

Table 1A-1 - List of competent experts

Topic	Responsibility	Name of company	Qualifications / competencies of author
Project Director	Lead Verifier	WSP	BSc (Hons) in Environmental Sciences, MSc (with Distinction) in Environmental Assessment. Over 35 years in environmental consulting and Nuclear Sector EIA Lead from 2009. Full Member of Institute of Environmental Sciences (IES).
Introduction	Primary Author	WSP	PhD in Environmental Geochemistry and Geomicrobiology, MEarth Sciences (Hons) in Earth Sciences, CEnv, Member of Institution of Environmental Sciences (IES), Practitioner Member of IEMA, 8 years' experience in EIA
Introduction	Secondary Author	WSP	BSc (Hons) in Marine Biology, MSc in Sustainability and

Topic	Responsibility	Name of company	Qualifications / competencies of author
			Consultancy, PIEMA and REnvP, 3 years' experience in EIA.
Policy and Legislation	Primary Author	WSP	BSc (Hons) in Town and Country Planning, Chartered Town Planner, over 20 years' experience in Waste Management Consultancy.
The Decommissioning Process	Primary Author	WSP	BSc (Hons) in Marine Biology, MSc in Sustainability and Consultancy, PIEMA and REnvP, 3 years' experience in EIA.
Alternatives	Primary Author	WSP	BSc (Hons) in Marine Biology, MSc in Sustainability and Consultancy, PIEMA and REnvP, 3 years' experience in EIA.
The Environmental Impact Assessment Process	Primary Author	WSP	BSc (Hons) in Marine Biology, MSc in Sustainability and Consultancy, PIEMA and REnvP, 3 years' experience in EIA.
Air Quality	Primary Author	WSP	BSc (Hons) in Biology, MSc in Environmental Diagnostics, Full member of IAQM, Full member of IES, 17 years' experience in Air Quality Consultancy.
Air Quality	Secondary Author	WSP	BSc (Hons) in Chemistry, MSc in Climate Change and Environmental Policy, Member of IES and IAQM, 5 years' experience in Air Quality Consultancy.
Climate Change	Primary Author	WSP	BSc (Hons) in Biology, MSc in Environmental Diagnostics, Full member of IAQM, Full member of IES, 17 years' experience in Air Quality Consultancy.

Topic	Responsibility	Name of company	Qualifications / competencies of author
Climate Change	Secondary Author	WSP	BSc (Hons) in Economics, MSc in Sustainable Development, 3 years' experience in Environmental Consultancy.
Terrestrial Biodiversity and Ornithology	Primary Author	WSP	BSc (Hons) in Ecology, MRes in Ecology, Chartered Environmentalist with the Society for the Environment, Member of CIEEM, over 20 years' experience of Ecology Consultancy.
Terrestrial Biodiversity and Ornithology	Secondary Author	WSP	BSc (Hons) in Zoology, MSc in Marine Environmental Protection, over 10 years' experience of Ecology Consultancy.
Marine Biodiversity	Primary Author	WSP	BSc. Marine and Freshwater Biology. MSc Aquatic Resource Management. PhD Biological Science (Marine Ecology). Over 30 years' experience in Marine & Coastal EIA and ESHIA.
Marine Biodiversity	Secondary Author	WSP	BSc (Hons) in Marine and Freshwater Biology, MSc in Estuarine and Coastal Science and Management, Full Member of CIEEM, 17 years' experience in Marine Consultancy.
Coastal Management and Water Quality	Primary Author	WSP	BSc (Hons) in Chemistry, MSc in Ecology, Fellow of the CIWEM, Fellow of the Royal Society of Biology, 50 years' experience in Water Quality Consultancy.
Coastal Management and Water Quality	Secondary Author	WSP	BSc (Hons) in Marine and Freshwater Biology, MSc in Estuarine and Coastal Science and Management, Full Member of CIEEM, 17 years' experience in Marine Consultancy.

Topic	Responsibility	Name of company	Qualifications / competencies of author
Surface Water and Flood Risk	Primary Author	WSP	BSc (Hons) in Geography, MSc in Water Resource System Engineering, PhD in Analysis of Spatial variability in Snow Processes, Chartered Scientist with the Science Council, Member of CIWEM, 17 years' experience in Water Consultancy.
Surface Water and Flood Risk	Secondary Author	WSP	BSc (Hons) in Geography, MSc in Hydrology and Climate Change, Member of CIWEM, 12 years' experience in Water Consultancy.
Soils, Geology and Hydrogeology	Primary Author	WSP	BSc (Hons) in Plant Sciences, MSc in Environmental Rehabilitation, Professional Certificate in Management, PIEMA, Environmental auditor for IEMA, over 20 years' experience in Environmental Consultancy.
Soils, Geology and Hydrogeology	Secondary Author	WSP	MEnvS in Environmental Studies, PIEMA, 16 years' experience in Environmental Consultancy.
Historic Environment	Primary Author	WSP	BA (Hons) in Archaeology and Prehistory, Member of CIfA, 34 years experience in Historic Environment sector.
Historic Environment	Secondary Author	WSP	BA in Ancient History and Archaeology, MA in Landscape Archaeology, Practitioner member of CIfA, 10 years' experience in Historic Environmental Consultancy.
LVIA	Primary Author	WSP	BA (Hons) in Landscape Architecture, Postgraduate Diploma in Landscape Architecture, Chartered Member

Topic	Responsibility	Name of company	Qualifications / competencies of author
			of Landscape Institute, 19 years' experience in LVIA Consultancy.
LVIA	Secondary Author	WSP	Master of Landscape Architecture (MLA), MSc Environmental Resource Management, Chartered Member of Landscape Institute, 18 years' experience in LVIA Consultancy
Noise and Vibration	Primary Author	WSP	BSc (Hons) in Acoustics, HND in Sound Engineering & Multimedia Integration, Corporate member of IOA, over 10 years' experience in Acoustics Consultancy.
Noise and Vibration	Secondary Author	WSP	BSc in Chemistry, MSc in Environmental Acoustics, Diploma in Acoustics and Noise Control, Professional member of IOA, 5 years' experience in Local Authority Pollution Control, 17 years in Acoustics Consultancy
Traffic and Transport	Primary Author	WSP	BA (Hons) Town Planning, DipTP Town Planning, Eng Civil Engineering, MSc in Transport Engineering and Operations, Chartered Member of Royal Town Planning Institute, 30 years' experience in Transport Planning.
Traffic and Transport	Secondary Author	WSP	Master of Technology (M.Tech.) in Transportation Engineering, Bachelor of Technology (B.Tech.) in Civil Engineering, 8+ years' experience in Transport Planning and Economics.
People and Communities	Primary Author	WSP	BA in Engineering, MA in Engineering, over 25 years'

Topic	Responsibility	Name of company	Qualifications / competencies of author
			experience in Socio-economic Consultancy.
Major Accidents and Disasters	Primary Author	WSP	MChem BSc (Hons) in Chemistry, Member of RSC, Registered Scientist with The Science Council, Chartered Environmentalist (CEnv), Chartered Chemist (CChem), over 10 years' experience working with Major Hazards.
Conventional Waste	Primary Author	WSP	BSc (Hons) in Town and Country Planning, Chartered Town Planner, over 20 years' experience in Waste Management Consultancy.
Conventional Waste	Secondary Author	WSP	BSc (Hons) in Environmental Studies, PgDip Environmental Rehabilitation Member of Chartered Institution of Wastes Management, over 28 years' experience in the waste management industry and consultancy.
Radioactive Waste and Discharges	Primary Author	WSP	BSc (Hons) in Environmental Sciences, MSc (with Distinction) in Environmental Assessment. Over 35 years in environmental consulting and Nuclear Sector EIA Lead from 2009. Full Member of Institute of Environmental Sciences (IES).
Cumulative Effects Assessment	Primary Author	WSP	PhD in Environmental Geochemistry and Geomicrobiology, MEarth Sciences (Hons) in Earth Sciences, CEnv, Member of Institution of Environmental Sciences (IES), Practitioner Member of IEMA, 8 years' experience in EIA.

1B

Glossary of terms and abbreviations

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1B Glossary of terms and abbreviations

1B.1 Abbreviations

Term/abbreviation	Definition
AA	Annual Average
AADT	Annual Average Daily Traffic
AAWT	Annual Average Weekday Traffic
ACD	Admiralty Chart Datum
AEDL	Active Effluent Discharge Line
AEP	Annual Exceedance Probability
AETP	Active Effluent Treatment Plant
AGL	Above ground level
AGR	Advanced Gas Cooled Reactor
ALARP	As low as reasonably practicable
AOD	Above Ordnance datum
AON	Apparently Occupied Nest
APC	Area of Potential Concern
APIS	Air Pollution Information System
AQAL	Air Quality Assessment Level
AQMA	Air Quality Management Area
AQO	Air Quality Objective
AQS	Air Quality Standard
ATC	Automatic Traffic Count
AWI	Ancient Woodland Inventory
BAP	UK Biodiversity Action Plan
BAT	Best available techniques
BDP16	Baseline Decommissioning Plan 2016

Term/abbreviation	Definition
BEIS	Department for Business, Energy and Industrial Strategy
BGS	British Geological Society
BNFL	British Nuclear Fuels Limited
BNG	Biodiversity Net Gain
BNL	Basic Noise Level
BoCC	Birds of Conservation Concern
BPM	Best Practicable Means
BTO	British Trust for Ornithology
CBC	Common Bird Census
CCA	Coastal Character Area
CCC	Climate Change Committee
CCR	Climate Change Resilience
CDG19	The Carriage of Dangerous Goods (Amendment) Regulations 2019
CDM	Construction Design and Management
CDOIF	Chemical and Downstream Oil Industries Forum
CEA	Cumulative Effects Assessment
CEH	Centre of Ecology and Hydrology
CH_4	Methane
CIBSE	Chartered Institution of Building Services Engineers
CIEEM	Chartered Institute of Ecology and Environmental Management
CL	Critical Level
CLVIA	Cumulative Landscape and Visual Impact Assessment
CO	Carbon Monoxide
COMAH	Control of Major Accident Hazards
CoP	Code of practice

Term/abbreviation	Definition
COPA	Control of Pollution Act
COSHH	The Control of Substances Hazardous to Health Regulations 2002
CR	Critically endangered
CRTN	Calculation of Road Traffic Noise
CSZ	Core Sustenance Zones
CW	Cooling Water
C_6H_6	Benzene
DEPZ	Detailed Emergency Planning Zone
DETR	Department for the Environment, Transport and Regions
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DoWCoP	Definition of Waste Code of Practice
DSEAR	The Dangerous Substances and Explosive Atmospheres Regulations 2002
DWPF	Decommissioning Waste Processing Facility
DWMC	Decommissioning Waste Management Centre
DTM	Digital Terrain Model
EA	Environment Agency
EC	European Commission
EcIA	Ecological Impact Assessment
EEA	European Economic Area
EFT	Emission Factor Toolkit
ENGL	EDF Nuclear Generation Limited
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment

Term/abbreviation	Definition
EIADR	Environmental Impact Assessment for Decommissioning Regulations
ELC	European Landscape Convention
eMARS	European Commission Major Accident Reporting System
EMP	Environment Management Plan
EPA	Environmental Protection Act
EPR	Environmental Permitting Regulations 2018
EPS	European Protected Species
EQS	Environmental Quality Standard
ES	Environmental Statement
ESS	Early Safestore Strategy
ESCCS	Environmental Sustainability & Climate Change Strategy
ETS	Emissions Trading Scheme
EU	European Union
FEH	Flood Estimation Handbook
FoV	Field of View
FRA	Flood Risk Assessment
FSC	Final Site Clearance
FTE	Full Time Equivalent
GBq/te	Gigabecquerels per tonne
GDF	Geological Disposal Facility
GEART	Guidelines for the Environmental Assessment of Road Traffic
GES	Good Environmental Status
GHG	Greenhouse Gases
GLVIA3	Third edition of the Guidelines for Landscape and Visual Impact Assessment

Term/abbreviation	Definition
GPP	Guidance for Pollution Prevention
GPS	Global Positioning System
HADV	Higher Activity Debris Vault
HASWA	Health & Safety at Work etc Act 1974
HAW	Higher Activity Waste
HDV	Heavy Duty Vehicle
HE	Historic Environment
HEP	Historic Environment Policy
HER	Historic Environmental Records
HFC	Hydrofluorocarbon
HGV	Heavy Goods Vehicle
HLW	High Level Waste
HPA	Hinkley Point A Nuclear Power Station
HPB	Hinkley Point B Nuclear Power Station
HPC	Hinkley Point C Nuclear Power Station
HRA	Habitats Regulations Assessment
HSAW	Health and Safety at Work
HSC	Hazardous Substances Consent
HSDA	Hunterston Strategic Development Area
HSE	Health and Safety Executive
HVDC	High Voltage Direct Current
IAQM	Institute of Air Quality Management
ICE	Inventory of Carbon and Energy
ICCI	In-combination Climate Change Impact
ICILWS	Interim Conditioned Intermediate Level Waste Store
IEA	Institute of Environmental Assessment

Term/abbreviation	Definition
IEEM	Institute of Ecology and Environmental Management
IEMA	Institute of Environmental Management and Assessment
ILMP	Integrated Land Management Plan
ILW	Intermediate Level Waste
INNS	Invasive and Non-Native Species
IPCC	Intergovernmental Panel on Climate Change
IRR	Ionising Radiations Regulations
IWS	Integrated waste strategy
KPI	Key Performance Indicator
LAQM	Local Air Quality Management
LBAP	Local Biodiversity Action Plan
LCRM	Land Contamination Risk Management
LCT	Landscape Character Type
LDP	Local Development Plan
LDV	Light Duty Vehicle
LLW	Low Level Waste
LMAR	Land Management Annual Review
LNCS	Local Nature Conservation Sites
LOAEL	Lowest Observed Adverse Effect Level
LoC	Letter of Compliance
LOLER	Lifting Operations and Lifting Equipment Regulations 1998
LPD	Local Plan District
LQM	Land Quality Management
LSE	Likely Significant Effects
LT	Long-term
LVIA	Landscape and Visual Impact Assessment

Term/abbreviation	Definition
LWS	Listed Wildlife Site
MAC	Maximum allowable concentration
MACR	Major Accident Control Regulation
MAHP	Major Accident Hazard Pipeline
MAPP	Major Accident Prevention Policy
MHWS	Mean High Water Springs
MHSAW	The Management of Health and Safety at Work Regulations 1999
MNCR	Marine Nature Conservation Review
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
MD-LOT	Marine Directorate Licensing Operations Team
mSv	Millisieverts
MtCO2e	Mega tonnes carbon dioxide equivalent
NCR	National Cycle Route
NDA	Nuclear Decommissioning Authority
NDC	Nationally Determined Contribution
NERC	Natural Environment Research Council
NGR	National Grid Reference
NHS	National Health Service
NIA	Nuclear Installations Act
NLF	Nuclear Liabilities Fund
NNR	National Nature Reserve
NO_x	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
NPF	National Planning Framework
NRMM	Non-Road Mobile Machinery

Term/abbreviation	Definition
NSA	National Scenic Area
NSL	Nuclear Site Licence
NSR	Noise Sensitive Receptor
NSR	Non-Statutory Register
NT	Near Threatened
NTEM	National Trip End Model
N_2O	Nitrous Oxide
OEPZ	Outer Emergency Planning Zone
ONR	Office for Nuclear Regulation
ONS	Office of National Statistics
OS	Ordnance Survey
OWPF	Operational Waste Processing Facility
PAD	Protocol for Archaeological Discovery
PAH	Polycyclic aromatic hydrocarbons
PAN	Planning Advice Note
Pb	Lead
PC	Process Contribution
PFC	Perfluorocarbon
PfQ	Preparations for Quiescence
PIA	Personal injury accident
PIRP	Pollution Incident Response Plan
PMF	Priority Marine Feature
$PM_{2.5}$	Particulate Matter smaller than 2.5µm
PM_{10}	Particulate Matter smaller than 10µm
PPC	Pollution Prevention and Control
PPE	Personal Protective Equipment

Term/abbreviation	Definition
PPG	Pollution Prevention and Control Guidelines
PPP	Pollution Prevention Plan
PRA	Preliminary bat Roost Assessment
pSAC	Possible Special Area of Conservation
pSPA	Potential Special Protection Area
PUWER	Provision and Use of Work Equipment Regulations
PWS	Private Water Supply
PWTP	Potable water treatment plant
PWR	Pressurised Water Reactor
RBMP	River Basin Management Plan
RCA	Radiation Controlled Area
REPPIR	Radiation (Emergency Preparedness and Public Information) Regulations
RIBA	Royal Institute of British Architects
RICS	Royal Institute of Chartered Surveyors
RIFE	Radioactivity in food and the environment
RSPB	Royal Society for the Protection of Birds
RWMC	Radioactive waste management cases
R2P2	Reducing Risks, Protecting People
SAP	Safety Assessment Principle
SC	Somerset Council
SCI	Sites of Community Importance
SEMS	Safety and Environmental Management System
SFRA	Strategic Flood Risk Assessment
SF_6	Sulphurhexafluoride
SLA	Special Landscape Area
SLR	Single-Lens Reflex

Term/abbreviation	Definition
SMP	Shoreline Management Plan
SO_2	Sulphur Dioxide
SPA	Special Protection Area
SPZ	Source Protection Zone
SQEP	Suitably Qualified Experienced Person
SRAM	Safety Report Assessment Manual
SSAFO	Silage, Slurry and Agricultural Fuel Oil
SSSI	Site of Special Scientific Interest
ST	Short-term
TAN	Technical Advice Note
TCO	Transport Co-ordination Officer
TPH	Total petroleum hydrocarbons
TTRO	Temporary Traffic Regulation Order
UKAEA	United Kingdom Atomic Energy Authority
UKCP	UK Climate Projections
UK RWI	UK Radioactive Waste Inventory
UNFCC	United Nations Framework Convention on Climate Change
UST	Underground Storage Tank
VLLW	Very Low Level Waste
VP	View Point
WeBS	Wetland Bird Survey
WFD	Water Framework Directive
WHVDC	Western High Voltage Direct Current
WLA	Wild Land Area
WMC	Waste Management Centre
WPA	Waste Planning Authority

Term/abbreviation	Definition
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility

1B.2 Glossary

Term	Definition
Abnormal indivisible loads (AILs)	Large loads which by their nature cannot be broken into smaller multiple deliveries.
Above Ordnance Datum (AOD)	An Ordnance Datum or OD is a vertical datum used by an ordnance survey as the basis for deriving altitudes on maps. A spot height may be expressed as AOD for "*Above Ordnance Datum*". Usually mean sea level is used for the datum.
Additional Measures	Further measures required in order to achieve the anticipated outcome. These are referred to as 'secondary measures' in accordance with IEMA guidelines.
Agricultural Land Classification (ALC)	A classification of agricultural land in England and Wales according to its quality and agricultural versatility. The classifications range from Grade 1 (the best and most versatile) through Grades 2, 3a, 3b, 4, down to 5 (the least versatile).
Annex I Habitats	Habitats listed in Annex I of the Habitats Directive 92/43/EEC.
Appropriate Assessment (AA)	A process required by the Habitats Directive 92/43/EEC to avoid adverse effects of plans, programmed and projects on Natura 2000 sites and thereby maintain the integrity of the Natura 2000 network and its features.
As Low As Reasonably Practicable (ALARP)	To satisfy this principle, measures necessary to reduce risk must be taken until the cost of these measures whether in money, time or trouble, is disproportionate to the reduction of risk. (Edwards v National Coal Board [1949]).
Baseline	The situation prevailing before the Proposed Works are commenced (the current baseline), and also to the situation that would prevail in the future without the Proposed Works (the future baseline).
Bathymetry	Describes the 'topography' or profile of the seabed.

Beneficial or Adverse Types of Landscape Effect	The landscape effects may be beneficial, neutral, or adverse. In landscape terms – a beneficial effect would require development to add to the landscape quality and character of an area. Neutral landscape effects would include low or negligible changes that may be considered as part of the 'normal' landscape processes such as maintenance or harvesting activities. An adverse effect may include the loss of landscape elements such as mature trees and hedgerows as part of construction leading to a reduction in the landscape quality and character of an area.
Beneficial or Adverse Types of Visual Effect	The visual effects may be beneficial, neutral, or adverse. In visual terms – beneficial or adverse effects are less easy to define or quantify and require a subjective consideration of a number of factors affecting the view, which may be beneficial, neutral, or adverse. Opinions as to the visual effects of large scale developments vary widely, however it is not the assumption of this assessment that all change, including substantial levels of change is an adverse experience. Rather this assessment has considered factors such as the visual composition of the landscape in the view together with the design and composition, which may or may not be reasonably, accommodated within the scale and character of the landscape as perceived from the receptor location.
Best Available Technique (BAT)	BAT is defined as the most effective and advanced stage in the development of activities and their methods of operation, which indicates the practical suitability of particular techniques for providing, in principle, the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and impact on the environment as a whole.
Brownfield Land	Land that has been previously developed is known as Brownfield land.
Conservation Areas	Designated areas of special architectural or historic interest, the character or appearance of which is desirable to preserve or enhance which have protection under legislation.
Carbon Budget	A restriction on the total amount of greenhouse gases the UK can emit over a 5-year period.
CO_2 Equivalent (CO_{2eq})	A metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

Decarbonisation	The process of reducing the amount of greenhouse gas emissions made.
Degree of change	A combination of the scale, extent and duration of an effect also defined as 'magnitude'.
Designated Landscape*	Areas of landscape identified as being of importance at international, national or local levels, either defined by statue or identified in development plans or other documents.
Disaster	A natural occurrence that is reasonably foreseeable and leads to serious damage on receptors, either immediate or delayed.
Elements*	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
Enhancement*	Proposals that seek to improve the landscape resource of the site and its wider setting beyond its baseline condition.
End of Generation	The date at which HNB ceased generating electricity (Unit 1 ceased generating on 26 November 2021 and Unit 2 on 7 January 2022).
Environmental Impact Assessment (EIA)	An EIA is a tool for systematically examining and assessing the impacts and effects of a development on the environment. The objective of the EIA is to identify any likely significant effects which may arise from the Proposed Works and identify measures to prevent, reduce or offset any adverse effects.
Environmental Statement	The outcome of the EIA process is reported within a document called an Environmental Statement.
Feature*	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
Field of View	The horizontal angle of the view illustrated in a visualisation.
Final Site Clearance	Final Site Clearance involving the deconstruction of the Safestore and final decommissioning is estimated to last approximately 12 years in duration and will commence up to 85 years after End of Generation.
Future Baseline	This is the theoretical situation that would exist in the absence of the Proposed Works. This is based upon extrapolating the current baseline using technical knowledge of likely changes over the identified period (for example anticipated habitat change over time, climate change projections, traffic and waste volume growth over time, etc.).

Good Practice Measures	Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements or actions that are considered to be standard practice used to manage commonly occurring environmental effects. These are referred to as 'tertiary measures' in accordance with the IEMA guidelines and would also be embedded within the design of the Proposed Works.
Groundwater	Water occurring below ground in natural formations (typically rocks, gravels and sands).
Hazard	Hazard is the potential for harm arising from an intrinsic property or ability of something to cause detriment.
Hazardous Waste	Hazardous waste is essentially waste that contains hazardous properties that may render it harmful to human health or the environment. The European Commission has issued a Directive on the controlled management of such waste (91/689/EEC) and hazardous waste is defined on the basis of a list drawn up under that Directive. Examples include asbestos, lead-acid batteries, oils and solvents.
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
Higher Activity Waste (HAW)	Higher activity radioactive waste comprises a number of categories of radioactive waste – High Level Waste (HLW), Intermediate Level Waste (ILW), and Low Level Waste (LLW) that is not suitable for near-surface disposal in current facilities.
Historic Landscape Characterisation (HLC) and Historic Land-use Assessment (HLA)	Historic characterisation is the identification and interpretation of the historic dimension of the present-day landscape or townscape within a given area. HLC is the term used in England and Wales, HLA is the term used in Scotland.
In-combination Effects	In-combination effects are effects that occur as a result of two or more project impacts acting together (i.e.) combined, to result in a new or changed effect on a specific receptor.
Indirect effects*	Direct effects relate to the host landscape and concern both physical and perceptual effects on the receptor. Indirect effects relate to those landscapes and receptors which separated by distance or remote from the development and therefore are only affected in terms of visual or perceptual effects. The Landscape Institute also defines indirect effects as those which are not a direct result of the development but are often produced away from it or as a result of a complex pathway.
Intertidal	The area of shore between the highest and lowest tides.

Intermediate Level Waste (ILW)	Waste with radioactivity levels exceeding the upper boundaries for Low Level Waste (LLW), but which does not need heating to be taken into account in the design of storage or disposal facilities. ILW arises mainly from the reprocessing of spent fuel, and from general operations and maintenance of radioactive plant. The major components of ILW are metals and organic materials, with smaller quantities of cement, graphite, glass and ceramics.
Intolerable Risk	Above a certain level, a risk is regarded as intolerable and cannot be justified in any ordinary circumstance.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.
Landscape Character Area (LCA)*	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.
Landscape Character Types (LCTs)*	Distinct types of landscape which are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement patterns, and perceptual and aesthetic attributes.
Landscape character*	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape effects*	Effects on the landscape as a resource in its own right. rd An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. (GLVIA3 2013, Para 5.1).

Landscape patterns	Spatial distributions of landscape elements combining to form patterns, which may be distinctive, recognisable and describable e.g. hedgerows and stream patterns.
Landscape quality (condition)*	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape qualities	A term used to describe the aesthetic or perceptual and intangible characteristics of the landscape such as scenic quality, tranquillity, sense of wildness or remoteness. Cultural and artistic references may also be described here.
Landscape receptors *	Defined aspects of the landscape resource that have the potential to be affected by a proposal
Landscape resource	The combination of elements that contribute to landscape context, character, and value.
Landscape sensitivity	The sensitivity of the landscape to a particular development considers the susceptibility of the landscape and its value.
Landscape value*	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons. The value of the Landscape Character Types or Areas that may be affected, based on review of any designations at both national and local levels, and, where there are no designations, judgements based on criteria that can be used to establish landscape value.
Listed Buildings	Buildings and structures which have been identified as being of special architectural or historic interest and whose protection and maintenance are the subject of special legislation.
Low Level Waste (LLW)	Low Level Waste which includes metals, soil, building rubble and organic materials, arising principally as lightly contaminated miscellaneous scrap. Wastes other than those suitable for disposal with ordinary refuse, but not exceeding 4 GBq/tonne (gigabecquerels) of alpha or 12 GBq/tonne of beta/gamma activity. Metals are mostly in the form of redundant equipment. Organic materials are mainly in the form of paper towels, clothing and laboratory equipment that have been used in areas where radioactive materials are used e.g. hospitals, research establishments and industry.
Major Accident	A reasonably foreseeable but unintended event caused by a man-made activity or asset that leads to serious damage on receptors, either immediate or delayed. The activity causing the event may be either within the project, or external to it.

Marine Environment	Anything below mean high water springs.
Managed Retreat Plan	Phased approach to deconstruction and demolition for the Proposed Works.
Nuclear Site Licence	A formal notification of the authorised body which can operate a nuclear operation under the Nuclear Installations Act (1965). A nuclear site licence granted by the ONR is a legal document, issued for the full life cycle of a nuclear facility. It contains site-specific information and defines the number and type of installations permitted. Such installations include nuclear power stations (like HPB), research reactors, nuclear fuel manufacturing and reprocessing, and the storage of radioactive matter in bulk.
Oslo-Paris Conventions (OSPAR)	Oslo-Paris Conventions which established requirements on the level of nuclear and non-nuclear discharges to the marine environment of the North East Atlantic, the North Sea and the Irish Sea.
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Perceptual Aspects	A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity. (GLVIA3, 2013 Box 5.1)
Photomontage*	A visualisation which superimposes an image of the Proposed Works upon a photograph or series of photographs.
Pre-application Opinion	Informs the requirements of EIA process and ultimately the Environmental Statement (ES) which will be submitted as part of the application. Through the scoping process the views of the statutory consultees and other relevant organisations on the proposed scope of the EIA are sought.
Preparations for Quiescence phase	Preparations for Quiescence phase is the first phase of decommissioning and is expected to take up to 16 years after the End of Generation at the Site. The purpose of this phase is to reduce the hazard presented by the radioactive and non-radioactive materials and wastes on the site, and to make preparations to place the site into a passively safe and secure state
Probability of Effect	The probability of a landscape and visual effect occurring as a result of this Development should be regarded as certain, subject to the stated project design and the continuance of the existing, baseline landscape resource, including known changes such as other permitted development.

	The probability of cumulative effects however is variable. Whereas those effects related to existing development and those under construction are considered as certain, effects related to development with planning consent are only considered as likely. Development sites for which there is a submitted planning application are considered as uncertain and other development for which no planning application has been made are considered as uncertain / unknown, as the level of uncertainty would be greater.
Rarity	The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type. (GLVIA3 2013, Box 5.1)
Receptor	A built asset, population or environmental aspect that may experience a change in its baseline condition as a result of an activity or impact pathway.
Recreation Value*	Evidence that the landscape is valued for recreational activity where experience of the landscape is important. (GLVIA3 2013, Box 5.1)
Representativeness*	Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.
Quiescence Phase	The Quiescence phase will commence approximately 16 years after End of Generation, with the site remaining in this passive condition for approximately 70 years under a regime of continuous monitoring and surveillance, with periodic care and maintenance.
Safestore	Safestore is a high integrity, weatherproof, durable, readily-maintained, secure structure enclosing the two reactor vessels, the high activity debris vaults, and remaining plant and internal structures in the Reactor Buildings, Charge Hall, and associated structural during the Quiescence phase.
Scale Indicators	Landscape elements and features of a known or recognisable scale such as houses, trees, and vehicles that may be compared to other objects, where the scale of height is less familiar, to indicate their true scale.
Scenic quality	Depends upon perception and reflects the particular combination and pattern of elements in the landscape, its aesthetic qualities, its more intangible sense of place or 'genius loci' and other more intangible qualities. (GLVIA3 2013, Box 5.1)
Scheduled Monument	A feature of national, historical or archaeological importance, either above or below the ground. Not all nationally important

	archaeological remains are scheduled and sites of lesser importance may still merit protection.
Seascape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Sense of Place (genius loci)	The essential character and spirit of an area: 'genius loci' literally means 'spirit of the place'.
Sensitivity*	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
Serious Damage on the Environment	Loss or significant detriment to populations of species or organisms, valued sites (including designated sites), valued cultural heritage sites, contamination of drinking water supplies, ground or groundwater, or harm to environmental receptors.
Serious Damage to Human Populations	This includes harm which would be considered substantial i.e., death(s), multiple serious injuries or a substantial number requiring medical attention.
Site of Special Scientific Interest (SSSI)	An area designated as being of special interest by reason of any of its flora, fauna or geological or physiographical features.
Site Licensee	The Site Licensee is the holder of the nuclear site licence. The current Site Licensee for HPB is EDF Energy (Nuclear Generation) Limited. Following the end of generation and defueling, the Nuclear Decommissioning Authority (NDA) and Nuclear Restoration Services (NRS) (a subsidiary of the NDA and formerly known as Magnox Ltd.) will become the Site Licensee and the responsible party for implementing decommissioning at the site.
Special Area of Conservation	A site designated via the European Directive on the Conservation of Natural Habitats of Wild Fauna and Flora (92/43/EEC) (i.e. the Habitats Directive) to protect rare and endangered habitats and species at a European level.
Special Protection Area	Designated under Article 4 of the European Directive on the Conservation of Wild Birds (2009/147/EC) (i.e. the Birds Directive) to protect the habitats of threatened and migratory birds.
Strategic Road Network	The strategic road network (or SRN) is made up of motorways and trunk roads (the most significant 'A' roads).
Subtidal	Areas below water at all states of tide.

Susceptibility*	The ability of a defined landscape or visual receptor to accommodate the specific Proposed Works without undue negative consequences.
Temporary or permanent effects	Effects may be considered as temporary or permanent.
Townscape	The character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.
True View Visuals	A mobile 3D augmented reality (AR) tool used to aid with the assessment. The True View Visuals tool indicates visibility of the Proposed Works to assist in confirming viewpoint positions as well as indicating limited or no visibility of developments in particular locations. Whilst the images are indicative only, the AR tool provides a comparable image to the accurate wirelines produced.
Type or Nature of effect	Whether an effect is direct or indirect, temporary or permanent, beneficial (positive), neutral or adverse (negative) solus or cumulative.
Viewpoints	Selected for illustration of the visual effects fall broadly into three groups: Representative Viewpoints: selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the significant effects are unlikely to differ – for example certain points may be chosen to represent the view of users of particular public footpaths and bridleways; Specific Viewpoints: chosen because they are key and sometimes promoted viewpoints within the landscape, including for example specific local visitor attractions, such as landscapes with statutory landscape designations or viewpoints with particular cultural landscape associations. Illustrative Viewpoints: chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations. (GLVIA3 2013, Para 6.19)
Visual amenity	The overall views and surroundings, which provide a visual setting or backdrop to the activities of people living, working, participating in recreational activities, visiting or travelling through an area.
Visual dominance	A visual effect often referred to in respect of residential properties that in relation to development would be subject to

	blocking of views, or reduction of light / shadowing, and high levels of visual intrusion.
Visual effect*	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors*	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visual sensitivity	The sensitivity of visual receptors such as residents, relative to their location and context, to visual change proposed by development.
Visualisation	Computer visualisation, photomontage, or other technique to illustrate the appearance of the development from a known location.
Waste Hierarchy	A hierarchical approach to minimise the amounts of waste requiring disposal. The hierarchy consists of non-creation where practicable; minimisation of arisings where the creation of waste is unavoidable; recycling and reuse; and, only then, disposal.
Wireline / Wireframe	A computer-generated line drawing of the DTM (digital terrain model) and the Proposed Works from a known location.
Zone of Influence (ZoI)	An identified geographical area around the Proposed Works where there is a potential for impacts to occur.
Zone of Theoretical Visibility (ZTV)	The likely (or theoretical) extent of visibility of a development, usually shown on a map.

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2

The Decommissioning process

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2A

COOLING WATER INTAKE DRAWINGS

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2A Appendix 2A

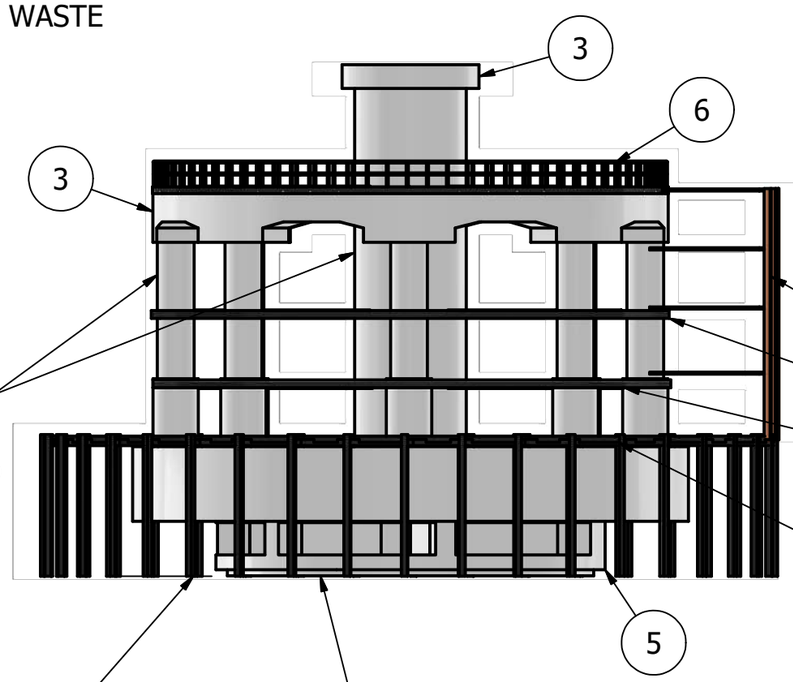
2A.1 Cooling Water Intake Drawings

2A.1.1. **Appendix 2A** presents schematic drawings of the Cooling Water Intake Structure and associated Material Quantities. For the purposes of assessment, a ~15% contingency is assumed to appropriately envelope the potential waste arisings for this activity and therefore 2,500 m^3 of material (concrete and steel) is considered in **Chapter 2: The Decommissioning Process** and the relevant technical aspect chapters (**Chapter 6 – 21**) of the EIA and the HRA Report**.**

FOR ESTIMATION OF DECOMM WASTE
(W099 EIADR)
SHEET-2 of 3

PARTS LIST		
ITEM	DESCRIPTION	MASS
2	EXTERNAL COLUMNS	24.95 CUBIC METRES
3	CENTRAL CONCRETE	541.235 CUBIC METRES
4	EXTERNAL SUPPORTS	21.12 CUBIC METRES
5	BASE TO SEABED	1395.625 CUBIC METRES
6	STEEL STRUCTURE	68.221 CUBIC METRES
7	CONCRETE PLINTH (EACH)	40.258 CUBIC METRES (EACH)
8	WALK-WAY	4.45 CUBIC METRES

APPROX 2136 CUBIC METRES

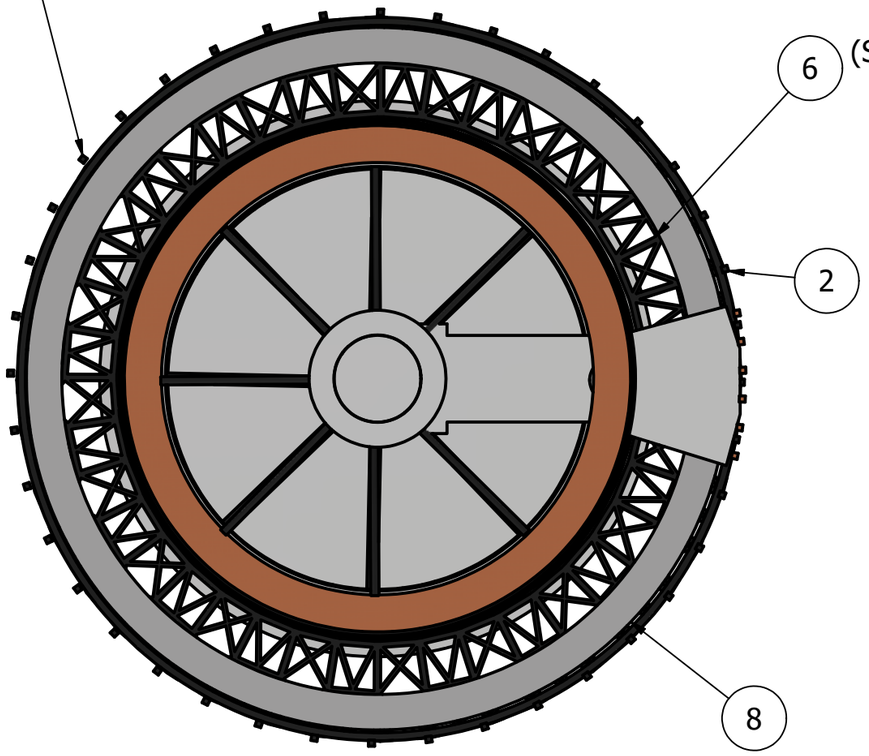


541.234 CUBIC METRES
(CONCRETE COLUMNS AND CENTRAL SHAFT)
(NOT INCLUDING STAIRS INTERNAL AND EXTERNAL)

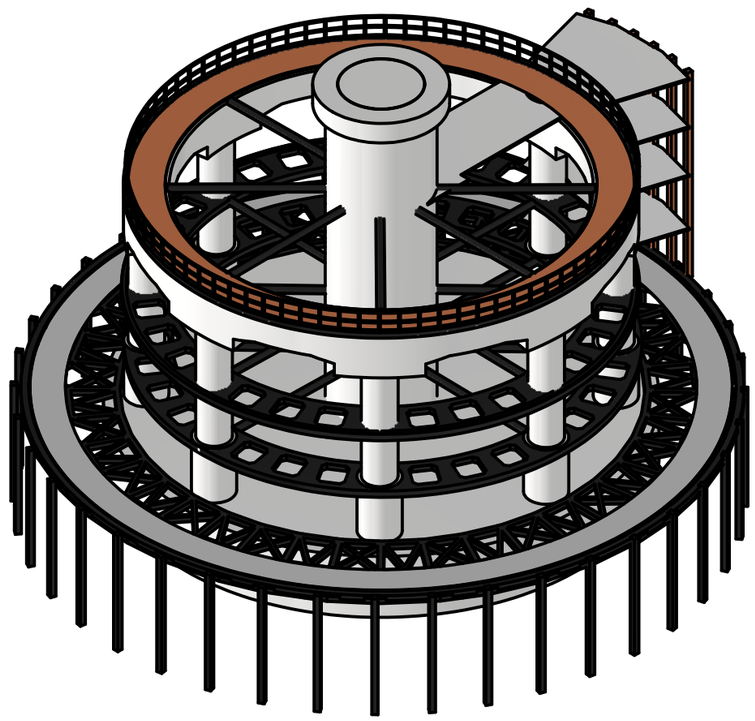
(CONCRETE)

24.95 CUBIC METRES (TO SEABED)

1395.625 CUBIC METRES
(CONCRETE PLINTH TO SEABED)



(STEEL WORK)



2B

Managed Retreat Plan Building Groups

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2B Appendix 2B

2B.1 Managed Retreat Plan Building Groups

2B.1.1. **Table 2A-1** presents the buildings with in the HPB Works Area that will be dismantled or demolished in the Preparations for Quiescence phase of the Proposed Works.

Table 2A-1 - Managed Retreat Plan building groups

Managed Retreat Group	Building
1	Contractors Compound and Workshop
	Administration Store (Head Wrightston Store)
	Contractors Area Switch House No. 1
	Contractors Area Switch House No. 2
	Contractors Area Switch House No. 3
	Spare Transformer Storage Compound
	Spare Generator Transformer Store
	Spare Transformer Storage Bund
	CRAWD Main Building
	CRAWD Access Control
	IS0 Store
	Fire Training Compound
2	Palletised Store
	Radioactive Pump House
	Alternative Indication Centre
	Back—Up Feedwater System
	Sub—Station No. 4
	Switch House for Palletised Store and Contractors Compound
	Outage Control Centre and Alternative ACP

Managed Retreat Group	Building
	Charge Machine Cooling Diesel House
	Methane Compound
	Compressor Workshop (Weirs)
	Diesel Generator Plant Houses (Doosan Workshop)
	Diesel Generator Plant Houses (Maintenance Workshop)
	CMEC Compressor Diesel Fuel Store
	Site Services Store
	X—Ray Building and Radiography Bay
	Sub—Station No. 3
	Outage Welfare Block
	Scrap Metal Compound
	Contractor Cabin
	Outage Welfare Block
	Outage Offices 1
	Outage Offices 2
	Outage Offices 3
3	Caisson Access Tunnel
	Training Rig Store
	Forebay Store/Workshop (Butlins Shed)
	Forebay Garage
	Maintenance Mess Facilities
	Forebay Training Room
	General Store
	Gas Bottle Store

Managed Retreat Group	Building
	Emergency Garage
	Projects & Station Engineering Support Equipment Store
	Resin Store
	Operations Store
	Highly Flammable Store
	Oil Drum Store
	Oil Drum House
	Flammable Store
	Ferrous Sulphate Dosing Plant
	Cooling Water Pump House
	Cooling Water Forebay Drum Screen Area
	Forebay Services Transformer Enclosure
	Forebay Services Switch House Enclosure
	EDF Store
	Oceanographic Monitoring Building
	EDF Bunded Store
	Pit Between 511 & 502
4	GT and Auxiliary Boiler Tank Farm
	Co2 Storage Tanks Compound
	Co2 Pumps 5 & 6 Plant Room
	Co2 Tanks 8, 9 & 10 Plant Room
	Co2 Tanks 11—16 Plant Room
	Sub—Station No. 5
	Gas Turbines and Auxiliary Boiler House

Managed Retreat Group	Building
	Nitrogen Plant
5 – Not considered as part of the Proposed Works	400kv SUB-STATION OFFICES + WORKSHOPS
6	Hydrogen Compound (West)
	Hydrogen Compound (East)
	Caustic Soda and Acid Storage
	Turbine Hall
	Containerised Water Treatment Plant
7	Reactor Building
	Oxygen Compound
	Vaporiser Auxiliary Boilers 5, 6 A 7
	General Storage Compound
8	Sub—Station No. 6
	PABX (Private Automatic Branch Exchange) Room
	3.3kv Switch House No. 2
	Reception Building
	Fire Hydrant Pump House
	Sub—Station No. 2
	11kv Site Supplies Switch House
	Sub—Station No. 7
	Security Lodge
	Security Lodge/Supply Chain Welfare BLDG & Storage Area
	Sewage Plant
	Combwich Laboratory

Managed Retreat Group	Building
	Asbestos Compound
	Contractors Welfare Block
	Motor Cycle Garage
	Vehicle Lock Cabin
	Security Reception
9	Projects & Station Engineering Support Equipment Store
	Oil Drum House
	Occupational Health Centre
	Bulk Chemical Store
	Flammable Store
	Document Centre and Workshops and Restaurant
	Gas Circulator Workshop and Associated Buildings
	Work Execution Centre
	Management Centre (Base Area Facility)
	Sub—Station No. 10
	Skills Training Facility
	Simulator Building
	Chemical Dosing Plant
	Chemical Monitoring Facility
	Welfare Building (Called Building 108. Derelict)
10	Gas Circulator Equipment Store
	Main Stores
	Sub—Station No. 5
11	Emergency Scheme Training Centre

Managed Retreat Group	Building
	Emergency Scheme Breathing Air Compressor
	HV Cable Tunnel (West)
	Diverse Hold Down Nitrogen Plant
	Skip Compound
	Facilities, Civil Workshop and Offices (Equans)
	Highly Flammable Store
	Building Material Storage Bays/Compound
	HV Cable Tunnel (East)
Marine Works -Cooling Water Intake	Cooling Water Intake Structure Dismantling
Marine Works – Cooling Water Outfall	Active Effluent Discharge Line (AEDL) and Sewage Treatment Plant Line (STPL) installation.

5

Approach to EIA

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5A

Office for Nuclear Regulation Pre-Application Opinion

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Assessment Report			
Unique Doc. ID:	ONR-OFD-AR-22-049	**Issue No.:**	1
Record Reference:	2022/68974		
Project:	EIADR – Pre-Application Opinion		
Site:	Hinkley Point B Nuclear Power Station		
Title:	Hinkley Point B Nuclear Power Station - Environmental Statement Pre-Application Opinion		
Nuclear Site Licence No.:	62C		
Licence Condition(s):	NA		
ONR Assessment Rating (Mandatory):	Green		

Table 1: Step-based document review

Step	Description	Role	Name	Date	Revision No.[1]
1	Initial Draft, including identification and mark-up of SNI/CCI	Author	[REDACTED]	29/11/22	2022/68974 Revision 4
2	Main editorial review	Author	[REDACTED]	30/11/22	2022/68974 Revision 6
3	Peer Review in accordance with NS-PER-GD-016	Peer Reviewer	[REDACTED]	05/12/22	2022/68974 Revision 6
4	Assessor update / sentencing of comments and return to Peer Reviewer	Author	[REDACTED]	06/12/22	2022/68974 Revision 6
5	Final editorial / clean draft review	Author	[REDACTED]	07/12/22	2022/68974 Revision 7
6	Acceptance review in accordance with NS-PER-GD-016	Professional Lead	[REDACTED]		

[1] CM9 revision to be identified upon completion of activity and incorporation of any changes to document.

7	Report Sign-off	Author/ Peer Reviewer/ Professional Lead	[REDACTED]	07/12/22	2022/68974 Revision 8

Table 2: Document acceptance

Role	Name	Position	Signature	Date	CM9 reference for review
Author	[REDACTED]	Inspector	[REDACTED]	07/12/22	N/A
Peer Review[2]	[REDACTED]	Inspector	[REDACTED]	07/12/22	Of completed form (see annex 1 NS-PER-GD-016)
Acceptance[3]	[REDACTED]	Nuclear Liabilities Regulation Professional Lead	[REDACTED]	07/12/22	Of completed form (see annex 2 NS-PER-GD-016)

Table 3: Revision history

Issue No.:	Date	Author(s)	Reviewed By	Accepted By	Description of Change
1	07/12/22	[REDACTED]	[REDACTED]	[REDACTED]	First formal issue

Table 4: Circulation list

Organisation	Name
Office for Nuclear Regulation	[REDACTED], DCI, SDFW [REDACTED], DCI, OFD [REDACTED], Head of Operating Reactors [REDACTED], SI, Head of DFW [REDACTED], NLR Professional Lead [REDACTED], NLR Nuclear Equivalent Inspector [REDACTED], NLR Principal Inspector [REDACTED], NLR Specialist Inspector [REDACTED]AGR EoG Project Inspector, Operating Reactors job title [REDACTED], Hinkley Point B Site Inspector, Operating Reactors. Files: Division Report File CM9 Folder 4.11.321.
Environment Agency	[REDACTED], EA Site Inspector for Hinkley Point B

[2] Where required in accordance with NS-PER-GD-016.
[3] Hard-copy of document signed-off, CM9 version updated with authors / approver / acceptor names and dates and record finalised

Licensee	[REDACTED]EIA Co-ordinator Nuclear Decommissioning, EDFE [REDACTED], Nuclear Decommissioning EDFE.

Hinkley Point B Power Station

Environmental Statement Pre-Application Opinion

Assessment Report Ref.: ONR-OFD-AR-22-049

Issue No.: 1

Date: 7 December 2022

Executive Summary

Permission Requested

EDF Energy (EDFE) has asked the Office for Nuclear Regulation (ONR) to provide an opinion on the proposed format and content of an application for consent to decommission the Hinkley Point B Nuclear Power Station under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) (EIADR).

Background

ONR is the enforcing authority for EIADR. EIADR is a legal instrument that requires the environmental impact of decommissioning nuclear power stations, and other nuclear reactors, to be considered in detail before consent for the decommissioning work to commence is given. When applying for EIADR consent, the licensee submits an Environmental Statement (ES) to ONR, which includes the Environmental Impact Assessment (EIA) for the decommissioning project.

EIADR provides for the applicant to seek the opinion of ONR on what should be included in the scope of the ES. EDFE has submitted a scoping report to ONR laying out the proposed format and content of their ES, and the scope of the EIA, and requested ONR provide a Pre-Application Opinion (PAO).

Assessment work carried out by ONR in the consideration of this request

ONR consulted with the statutory consultation bodies (as defined in regulation 2 of EIADR) and additional consultation bodies with whom ONR considered it appropriate to consult, for a period of one month. Consultation responses were considered and incorporated into the feedback if deemed appropriate by ONR. Where we have received comments on style or comments relevant to the Scoping Report rather than the ES, these will be shared as part of the debrief process held with the licensee. All consultation responses have been provided in full to the licensee.

A Technical Support Contractor (TSC) was used to review the scoping report and provide independent expert advice on the submission to help inform ONR's PAO.

Conclusions

Overall, ONR considers that the proposed scope of the ES for the Hinkley Point B decommissioning project is appropriate and addresses the relevant environmental topic areas and impacts required by the regulations. However, ONR has highlighted a number of specific points and issues that should be addressed in the ES to ensure that the requirements of the legislation can be fully met. Specific examples of where the scoping report could be strengthened for EDFE's consideration are included in Appendix 2.

List of Abbreviations

DMRB	Design Manual for Roads and Bridges
DWPF	Decommissioning Waste Processing Facility
EIA	Environmental Impact Assessment
EIADR	Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended)
ES	Environmental Statement
EDFE	EDF Energy
EMP	Environmental Management Plan
EoG	End of Generation
GRR	Guidance on Requirements for Release from Radioactive Substances Regulation;
HPA	Hinkley Point A Site
HPB	Hinkley Point B Site
HPC	Hinkley Point C Site
HRA	Habitat Regulations Assessment
IEMA	Institute of Environmental Management and Assessment
ILW	Intermediate Level radioactive Waste
NDA	Nuclear Decommissioning Authority
NRMM	Non-Road Mobile Machinery
ONR	Office for Nuclear Regulation
OWPF	Operational Waste Processing Facility
PAO	Pre-Application Opinion
SAC	Special Area of Conservation
SMP	Seabird Monitoring Programme
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
TSC	Technical Support Contractors
WFD	Water Framework Directive
WMC	Waste Management Centre
Zol	Zone of Influence

Table of Contents

1. Introduction

1.1. Issue

1. EDF Energy (EDFE) has asked the Office for Nuclear Regulation (ONR) to provide an opinion on the proposed format and content of an application for consent to decommission the Hinkley Point B Nuclear Power Station under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) (EIADR).

1.2. Background

2. ONR is the enforcing authority for EIADR. EIADR is a legal instrument that requires the environmental impact of decommissioning nuclear power stations, and other nuclear reactors, to be considered in detail before consent for the decommissioning work to commence is given.

3. An application for consent under EIADR will primarily include an Environmental Statement (ES), which presents an Environmental Impact Assessment (EIA), for the project. The information to be included in an ES is referred to and specified in Schedule 1 of EIADR. The application for consent is subject to stakeholder consultation before consent is granted.

4. EIADR provides for the applicant to seek the opinion of ONR on what should be included in the scope of the ES. EDFE has submitted a scoping report to ONR laying out the proposed format and content of their ES and requested ONR provide a Pre-Application Opinion (PAO). As part of the PAO process, ONR is required to seek the opinion of key stakeholders via a consultation.

2. Approach

2.1. Consultation

5. ONR has consulted with the statutory consultees (as defined in regulation 2 of EIADR) and other bodies with whom ONR considered it appropriate to consult, for a period of one month. The list of consultees is provided in Appendix 1.

6. ONR received a number of responses from the consultation. Consultation responses were considered and incorporated if deemed appropriate by ONR. Where we have received comments on style or general comments these have been shared as part of in debrief process held with the licensee. All consultation responses have been provided in full to the licensee.

2.2. Use of a Technical Support Contractor

7. A TSC with expertise in EIA was used to review the scoping report and provide an independent review of the submission to help inform ONR's PAO.

3. ONR's Pre-Application Opinion

8. The Hinkley Point B scoping report presents the proposed format and content of an application for consent to decommission the Hinkley Point B Nuclear Power Station under EIADR.

9. After due consideration of the scoping report and taking into account comments received from the consultation and the expert EIA advice received from the TSC, ONR found the proposed scope to be appropriate and to provide sufficient information, but a number of specific points and issues are highlighted that should be addressed in the ES to ensure that the requirements in the legislation can be fully met.

10. ONR's opinion is provided below. Feedback has been graded as a 'reservation', 'observation' or 'comment' to assist EDFE in prioritising them; these are defined as follows:

    - Reservation – a matter that if not addressed could mean that the ES may not explicitly meet all the requirements under EIADR and could be open to challenge from ONR and stakeholders during the ES assessment and associated consultation.
    - Observation – a matter that should be considered in the EIA and documented in the ES in order to strengthen it and ensure that it provides adequate information.
    - Comment – other matters for consideration that may improve the presentation of the ES.

11. The feedback provided has been organised into 'themes', for example 'EIA Methodology' or 'Future Baseline'. Further guidance is provided in the sections below. Where observations raised were relevant to a number of topic chapters further examples from specific chapters have been provided in Appendix 2.

3.1. Reservations

12. The reservations on the scoping report are detailed below for EDFE's consideration. ONR's opinion is that if the ES was based on the scope presented in the scoping report, then it may not meet all the requirements under EIADR.

3.1.1. Environmental Impact Assessment Process

13. In section 4.6 of the scoping report, a preliminary assessment for both intra-project and inter-project cumulative effects has not been provided to demonstrate if potential significant effects could occur and thus whether this is scoped in or out of the EIA. The ES should include an assessment of cumulative effects and provide clear rationale on how the study area was defined for the assessment. In addition, the choice of projects/developments included in the assessment of cumulative effects should be clearly justified. Specific examples relevant to this reservation have been included in Appendix 2 of the PAO.

14. In section 4.7 of the scoping report (Transboundary Effects), there is insufficient information and evidence to conclude whether a European Economic Area State could be significantly affected. The information provided is focused on radiation doses to members of the public but does not consider other potential significant effects on the environment, or other social aspects. The likely significant transboundary effects should be considered further in the EIA process and reported in the ES.

3.1.2. Omissions from the Scoping Report

15. In the environmental topic chapters, there are a number of receptors and aspects that do not appear to have been considered in the scoping exercise. These include:

- impacts to human health;
- impacts to maritime recreation and commercial services (relevant to socio-economic and traffic and transport impact assessments);
- impacts to agricultural land use (relevant to socio-economic and soils and geology impact assessments);
- resource and material use;
- impacts to marine archaeology; geoarchaeology and to the historic landscape.

16. This should be considered further in the EIA process and the ES should clearly report on whether these aspects are in scope of the EIA.

17. In the Climate Change Chapter of the scoping report (chapter 6), although it is recognised that the scope of the EIA should include consideration of the vulnerability of the project to climate change (also known as climate change resilience), climate change resilience is not considered further in this chapter. The scoping report states that “a semi-quantitative projection of future climate conditions at the site based on the UK Climate Change Projections 2018 will be presented as an appendix to the climate change chapter in the ES”, however, information on how this data will be used in the EIA to determine significant effects has not been provided in the scoping report. This should be clarified in the ES.

3.2. Observations

18. The following observations are relevant to a number of topic chapters in the scoping report and have been arranged under the following themes:

- EIA Methodology – focused on the proposed EIA methodology, including the legislation, policy and guidance referenced and the proposed assessment methods.

- Future Baseline – focused on the how the future baseline has been determined and any assumptions/limitations of this.
- Uncertainty – focused on the approach and method of managing uncertainty and limitations in the EIA.
- Decommissioning Project Scope – focused on what is considered as the being in scope of the EIADR decommissioning project.
- Environmental Baseline – focused on the baseline presented in the scoping report
- Evidence – focused on the evidence that has been provided to inform the conclusions of the scoping exercise.
- Proposed EIA Scope – focused on how the EIA scope has been defined and if it is deemed suitable, or if the assessment has considered all potential effects sufficiently.
- Assessment Interactions – focused on the coordination of the EIADR EIA with other assessments.

19. Where relevant, specific examples of these observations in the topic chapters are provided in Appendix 2.

3.2.1. EIA Methodology

20. EIADR requires a description of the factors likely to be significantly affected by the project as well as a description of the likely significant effects of the project on the environment (Schedule 4). Where there is potential to cause a significant effect in the project lifetime, these should be assessed. Some topic chapters in the scoping report have only reported likely significant effects in the 'worst' phase of the project (in every case this is the Preparations for Quiescence Phase), which is not considered as good practice. The ES should report all likely significant effects across the duration of the project.

21. The Scoping Report does not refer to some relevant good practice within the topic chapters, in particular guidance that is relevant for determining the significance of environmental effects. Specific examples are included in Appendix 2. This should be considered further in the EIA process.

22. The proposed assessment methodology follows relevant good practice, however, the year of each phase of the decommissioning project on which the scoping exercise was based has not been clearly defined. Due to the long duration of the project (~96 years), the three discrete phases of work, and potential changes to the baseline (both influenced by the project (i.e. changes on site) and not influenced by the project (i.e. changes off site), setting specific years (the worst-case year) for the EIA should be considered. This could be consistent for each topic assessment or vary; either way a justification should be provided.

23. Many of the topic chapters do not clearly define the study areas for the scoping exercise or the EIA and do not justify the choice of the study area. The ES should clearly define and justify the study areas and illustrate them where possible, for example on a figure.

24. Paragraph 4.3.9 of the scoping report states that the environmental effects of the project will be compared to the current baseline before the project commences. The Scoping Report recognises that the current baseline on and around the site will likely alter between now and the commencement of the decommissioning project, for example, discharges via the outfall may reduce and therefore there will be a change to the marine environment. How these changes to the baseline are to be considered in the assessment has not been addressed adequately and should be considered in the EIA and reported in the ES.

25. Within the topic chapters, there is inconsistency when determining the significance of effects. An overarching significance matrix is provided in Table 4.3 of the scoping report, however in some of the topic chapters there is no reference to this matrix or methodology for how significant effects will be determined. Whilst it is appropriate for the matrix to be adapted for each topic area, there should be consistency in the information provided.

26. In some instances within the topic chapters, the EIA methodology does not provide sufficient information to justify the approach adopted. For example, in the Marine Biodiversity chapter (Chapter 8), paragraph 8.5.10 refers to the 'importance' of ecological features and how this will be categorised, however, it is not clear how 'importance' is defined, and all marine receptors that are potentially affected by the project (regardless of their importance) should be included in the scope of the assessment. Further examples are provided in Appendix 2.

27. The information used in the proposed EIA scope to determine impacts and assess effects is limited with regards to modelling. For example, in the Coastal Management and Water Quality chapter (Chapter 9), information is provided on modelling of hydrology, sediment transport, erosion and deposition that has been done to inform the effects on coastal management. The chapter also recognises that marine infrastructure can affect hydrodynamics, sediment processes and water quality and states that there are potential effects relating to tidal transport of sediments (and potentially contaminants) mobilised by the decommissioning activities over a distance of approximately 15 km in the flood tide direction and 15 km in the ebb tide direction. Further modelling may therefore be required to investigate transport pathways and accretion, informed by the rate and nature of sediment released into the water column during the various marine infrastructure decommission activities.

3.2.2. Future Baseline

28. ONR recognises that due to the long durations of the decommissioning project, the amount of detail known for the later stages of the project will be limited. Whilst this uncertainty is acceptable, the scoping report does not indicate how the future phases (e.g. Final site Clearance) will be assessed and reported in the ES. Paragraph 4.3.10 of the scoping report defines what a future baseline is, however, it is not clear what method has been used to determine the future

baseline for the scoping exercise and for the EIA. The ES should provide further detail on how the future baseline has been determined, recognising any uncertainties and assumptions that have been made.

29. Further to this, ONR notes the scoping report recognises that interim consideration of the evolving baseline will be required due to the extended duration of the decommissioning project and states that “interim reviews will be built into the decommissioning programme and refinements to assessments implemented as necessary”. It would be useful for the ES to provide an outline approach to how interim reviews will be undertaken in order to manage uncertainties and limitations as the project progresses.

30. There is a general lack of information on how the future baseline has been defined for the purpose of the scoping exercise and for the EIA across all topic areas. A consistent approach to defining and describing the future baseline should be applied to the ES.

31. Consultee comments noted that relevant local plans, such as the Somerset’s School Place Planning Infrastructure Growth Plan and Local Plans for housing developments, could be considered in order to inform future baseline as they will include information on planned development in the local area.

3.2.3. Uncertainty

32. As expected at the scoping stage, there is a level of uncertainty and limitations to the assessment. The scoping exercise is based on initial baseline data and limited project information. Uncertainties and limitations encountered during the scoping exercise have not been clearly documented, nor has an approach to be used to address or manage these in the EIA been set out. Clarity on the management of uncertainties and limitations should be provided in the ES.

3.2.4. Decommissioning Project Scope

33. In general, there is uncertainty across the scoping report on what activities are considered in the scope of the EIADR project and thus to be included in the EIA. While a description of the decommissioning process is provided in section 2 of the scoping report, there is uncertainty on when the current operational phase (defueling) ends, and the Preparations for Quiescence Phase commences (section 2.3). As decommissioning plans are developed and more information becomes available, further detail should be provided in the ES to provide clarity. Further examples of where the definition of the scope of the decommissioning project could be refined in the ES are included in Appendix 2.

34. It is noted that potential mitigation measures have not been considered as part of the Scoping Report. It is advised that potential mitigation measures are considered at an early stage as they may impact whether particular decommissioning activities remain feasible, i.e. if the mitigation measures required for a particular activity were disproportionate or unpracticable.

3.2.5. Environmental Baseline

35. The Scoping Report is based on a certain level of baseline information, and it is recognised that further baseline data is to be collected during the EIA process.

36. There are a number of areas in which the baseline data and analysis in the topic chapters in the scoping report could be strengthened; specific examples have been provided in Appendix 2. The following should be considered for the ES in terms of providing sufficient baseline information:

    - activities in the marine environment – navigation, shipping, commercial fishing, dredging;
    - human health;
    - vibration sources;
    - agricultural land use;
    - resource and material use;
    - marine archaeology and shipwrecks;
    - geoarchaeology;
    - historic landscape;
    - buried archaeological features and non-designated heritage assets;
    - ecological and heritage receptors along the highways that may be affected;
    - hydrodynamics (e.g. tidal range, tidal velocities, wave climate); and
    - night-time lighting.

3.2.6. Evidence

37. In some of the topic chapters in the scoping report there is insufficient information/evidence provided to understand what impact the decommissioning activity could cause. The lack of information results in uncertainty on how the receptors will be affected and therefore it is not clear if there is potential to cause significant effects. The rationale behind why receptors are scoped in or out is therefore not provided in sufficient detail to draw a confident conclusion. If a method to manage uncertainty was set out and assumptions made to accommodate these limitations, this may support the conclusions drawn (see section 3.2.3).

38. In addition, in a number of instances in the topic chapters, the activity presented in the potentially significant effects table does not indicate the Phase of works in which the activity occurs, therefore there is some repetition and uncertainty on the proposed scope.

39. Examples of lack of evidence to support the conclusions of the scoping exercise:

- No indication of transport movements to inform the traffic and transport assessment.
- No indication of employment numbers to inform the socio-economic assessment.
- The socio-economic assessment suggests that there is currently not a high pressure on GPs in Somerset compared to the national average. This statement is potentially misleading as patients per GP cannot be considered in isolation, it needs to also be reconciled with the population age profile of the area.
- Limited information on deconstruction methods to inform the noise assessment and type and volume of wastes produced to inform the waste assessment.
- Limited information is provided on the design of the Safestore and other facilities, infrastructure and buildings on site lasting the duration of the project and how they will be resilient to climate change.
- In relation to the Quiescence Phase, information on how the site will be managed during this phase, in particular with reference to vegetation growth and species inhabiting the area, is missing.
- Limited information on the potential environmental impacts of the decommissioning of marine infrastructure: the demolition of the intake structure to seabed level and the breaking up of the outfall structure at the head of the outfall channel (as detailed in Section 2 of the scoping report) may cause adverse effects on marine receptors. In addition to this, further information on the timing of this work is required in order to assess the potential cumulative effects with other marine activities and in-combination impacts in the Habitats Regulations Assessment.

40. A number of consultation comments noted the age of surveys and data used in the scoping report and the need for up-to-date information to be used in the EIA process. For example, the surveys for the presence of Great Crested Newts and Water Voles are three years out of date and therefore the conclusions of the scoping exercise may not be substantiated by up-to-date evidence. In addition to this, the latest climate change projections published on gov.uk should be used when considering future climate change impacts.

3.2.7. Proposed EIA Scope

41. In some of the topic chapters, the scoping report appears to have not considered certain receptors and potential environmental impacts of the decommissioning project. There is therefore a risk that the scope is either too wide or that some effects or receptors have been scoped out too soon.

42. Through the iterative EIA process, further scoping should be undertaken on those receptors/ effects that have not been considered sufficiently as more information becomes available and any changes to the scope should be substantiated in the ES. The following areas should be considered:

    - Impacts from increased traffic on the highway to biodiversity and heritage receptors.
    - Impacts to the marine environment that may have an indirect effect to birds.
    - Buried archaeological features and non-designated heritage assets.
    - Impacts to the AONB.
    - Impacts to noise sensitive receptors.

43. Further specific examples are provided in Appendix 2.

3.2.8. Assessment Interactions

44. Paragraph 3.2.3 of the scoping report sets out Directives that are relevant to the decommissioning project, however, it does not describe the interactions with the EIA carried out for the purposes of EIADR. In addition to this, the Habitats Regulations Assessment (HRA) is referred to in Table 8.7 but there is a lack of information on how the findings of this assessment will be considered in the EIA and reported in the ES. Regulation 4A of EIADR requires that the EIA is coordinated with assessments carried out under the Habitats Regulations.

45. The ES should include a description of interactions with other relevant assessments (for example the HRA and Water Framework Directive), and other regulatory requirements (e.g. safety case documentation and environmental permits), for example where assessment findings have been shared and used.

46. In addition, there is no mention of the Biodiversity Benchmark from the Wildlife Trusts that is held by Hinkley Point B. This is a useful source of biodiversity information, and the station management system is subject to external audits by the Wildlife Trust so it may be beneficial for this to be referenced in the ES.

3.3. Comments

47. The following comments are relevant to a number of topic chapters in the scoping report and have been arranged under the following themes:

    - Structure – focussed on the structure and proportionality of the scoping report and ES.
    - Clarity – focused on the clarity of the information reported.

- EIA Methodology – focused on the proposed EIA methodology, including the legislation, policy and guidance referenced and the proposed assessment methods.
- Consultation – focussed on the consultation undertaken to date, future proposed consultation and consultation approach.

3.3.1. Structure

48. Within the scoping report, some environmental aspects are covered in more than one topic chapter. It would be beneficial ES to identify where different receptors and environmental factors are considered in the report. For example, paragraph 9.1.2 of the Coastal Management and Water Quality chapter in the scoping report clearly sets out what is to be included in the assessment, whereas this is not as clearly articulated in other chapters.

49. The use of figures to optimise presentation of information to facilitate understanding of assessment outputs should be considered in the ES. For example, for many of the topics, study areas have not been illustrated on a figure and aspects of the baseline are absent. In Chapter 7 (Terrestrial and Freshwater Biodiversity) it would be useful to have a figure that provided a summary of the baseline, in particular habitats within the 3km Works Area.

50. Common information that provides a foundation for the EIA could be included in the upfront chapters to avoid the need for repetition in the topic chapters. For example, the context of the surrounding environment and potential sensitive receptors and resources that could be affected by the decommissioning project could be provided upfront such as a description of the RAMSAR site, Site of SSSI and SPA.

3.3.2. Clarity

51. Where multiple study areas have been defined for a topic area, it should be clear how they have been defined and whether they are the study areas for the purposes of the scoping exercise or the EIA. For example, in Chapter 5 (Air Quality), a study area for decommissioning traffic movements and road traffic emissions is provided but the study area for dust risk assessments is omitted. In addition, in Chapter 14 (Noise and Vibration), three study areas are defined but it is unclear how these study areas have been justified and which will be used for the scoping of the EIA.

52. Some surveys are referred to but not referenced in the scoping report, for example, in paragraph 8.3.3 a range of ecological surveys undertaken from 2020 to 2022 are mentioned.

3.3.3. EIA Methodology

53. The Scoping Report does not provide information on NDA policy, procedure and strategy that would be adopted once the site transfers to NDA ownership. For example, Chapter 7 (Terrestrial and Freshwater Biodiversity) does not refer to any specific NDA/Magnox Biodiversity Plans. Information on any NDA policies,

procedures and strategies relevant to environmental management could be included in the ES.

54. There are a number of potential omissions in the Legislation, Policy and Guidance section of the scoping report (Chapter 3), for example, Conservation of Offshore Marine Habitats and Species Regulations 2017 and relevant policies in the Local Plan. A full review and consideration of relevant legislation, policy and guidance applicable to the EIA should be documented in the ES, including an explanation of why they are relevant and how they have been considered in the EIA.

55. In addition to this, there are potential omissions in the 'relevant legislation, policy and technical guidance' sections of the topic chapters, for example, in Chapter 7 (Terrestrial and Freshwater Biodiversity), the local councils existing environmental policies are not referenced. In addition Chapter 6 (Climate Change) does not reference the Fluorinated Greenhouse Gases Regulations 2015 which may be relevant to the project.

3.3.4. Consultation

56. There is an inconsistent approach to how consultation is documented in the topic chapters in the scoping report. Some chapters focus on what has been undertaken to inform the scoping exercise and others focus on what consultation is to occur prior to the finalisation of the ES. In some instances, it is not clear what has been consulted on and why.

57. Natural England has not been included as a consultee in Chapter 7 (Terrestrial and Freshwater Biodiversity) and Chapter 13 (Landscape and Visual Impact Assessment). In addition, any future consultation undertaken to inform the EIA has been omitted.

58. Chapter 11 (Soils and Geology) states that consultation has not been undertaken to date and will be carried out to refine the scope and assessment methodology. This is not deemed good practice as consultation should have been carried out as part of the scoping exercise to determine the assessment methodology.

59. In Chapter 13 (Landscape and Visual Impact Assessment) it was noted in the consultation responses that the relevant District Council should also be consulted in addition to the County Council as they will be the Local Planning Authority.

60. The ES should set out what consultation has been done, who has been consulted, how it was undertaken, and what the outcome was.

4. Next stages of the EIADR Processes

61. When appropriate, the licensee will progress with the production of the ES and submit this to ONR as an application for EIADR consent. At this stage The ES is subject to a 90-day public consultation, following which ONR will make a decision on whether to grant consent for the decommissioning project described.

5. Contact Information

62. The ONR EIADR Team can be contacted via contact@onr.gov.uk

63. General information on EIADR can be found at: https://www.onr.org.uk/eiadr.htm

Appendix 1 – Consultees on the Scoping Report

Statuary Consultees
Somerset County Council
Somerset West and Taunton Council
Sedgemoor District Council
South Somerset District Council
Mendip District Council
North Somerset Council
Environment Agency
Natural England

Other Consultees
Ambulance Service
Avon and Somerset Police
Cannington Parish Council
Commoners Association
Crown Estates
Exmoor National Park Authority
Fiddington Parish Council
Food Standard Agency
Friends of the Earth
Greenpeace
Health and Safety Executive
Hinkley Point Site Stakeholder Group for A and B Sites
Historic England
Holford Parish Council
Magnox Ltd
Marine Management Organisation
Ministry of Defence (MOD)
National Air Traffic Services
National Grid
National Highways
Nether Stowey Parish Council
Nuclear Decommissioning Authority
Nuclear Free Local Authorities
Otterhampton Parish Council
Quantock Hills AONB
RSPB
Somerset Drainage Board Consortium
Somerset Waste Partnership
Somerset Wildlife Trust and Wildfowl and Wetlands Trust

South West NHS
Spaxton Parish Council
Stockland Bristol Parish Council
Stogursey Parish Council
Stop Hinkley
Stringston Parish Council
Wessex Water

Appendix 2 – Reservations and Observations: Specific Examples

The below table includes specific examples of the reservations and observations raised on the scoping report.

Theme	Reservation	Feedback Example(s)
EIA Process	It is not clear how the cumulative impacts of other projects and developments, for example HPA and HPC, have been considered in the scoping report, and how the assessment of the cumulative effects will be undertaken in the EIA. The cumulative impact assessment in the ES should provide clear rationale on how the study area was defined and the choice of projects/developments included in the assessment should be clearly justified.	• The Scoping Report clarifies that the ZoI will be defined by each environmental topic and be combined into a single area. This approach is deemed suitable, however the rationale for this ZoI has not been provided, for example the ZoI could be considered as being the greatest ZoI of a topic. • Within Appendix 4A (Cumulative Effects Assessment – Other Development), a number of developments including HPA and the Bridgewater Tidal Barrier Scheme have not been included. These could be omissions and should be reviewed for the EIA. If not included, a justification should be provided. The method for determining the initial list has not been included, nor has a description of how cumulative effects could occur. • It is noted that the list of developments provided in Appendix 4A is preliminary and should be updated to reflect strategic development set out in the Sedgemoor and Somerset West and Taunton Local Plans, given the timescales for decommissioning. In addition to this, the Gravity Local Development Order should also be considered. • What is covered in the future baseline and what is covered in the cumulative impact assessment should be considered and double counting should be avoided. The methodology also does not provide assessment years and how future phases will be assessed.

Theme	Observation	Feedback Example(s)
EIA Methodology	The Scoping Report does not refer to some relevant good practice within the topic chapters, in particular guidance that is relevant for determining the significance of environmental effects. This should be considered further in the EIA process.	• In Chapter 18 (Conventional Waste) paragraph 18.2.5 and Table 18.3 of technical guidance do not include the IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) or the Design Manual for Roads and bridges, LA110 Material assets and waste (2019). These guidance documents provide criteria for significance and magnitude of effect. The Scoping Report does not provide any justification of how/why the significance or magnitude has been decided and the criteria is not clear. Typically, a percentage of capacity occupied is used rather than a m^3 volume of waste generated. The IEMA and DMBR guidance should be considered as part of the EIA methodology. If they are not to be used, a justification should be provided in the ES. • No reference made to The Guidelines for the Environmental Assessment of Road Traffic published by the Institute of Environmental Assessment in 1993 (now IEMA) or Highways England DMRB LA112 – Population and Human Health, in particular for guidance on determination of significance of environmental effects, reporting and monitoring.
EIA Methodology	Many of the topic chapters do not clearly define the study areas for the scoping exercise or the EIA and do not justify the choice of the study area. The ES should clearly define and justify the study areas	• In Chapter 7 (Terrestrial and Freshwater Biodiversity), the desk study area is defined as extending 200km from the site to include marine statutory biodiversity sites with ornithological interest, however, Table 7.4 (terrestrial and freshwater biodiversity baseline) does not include the Carmarthen Bay SPA and Burry Inlet SPA and Ramsar site which are within the study area.

	and illustrate them where possible, for example on a figure.	• In Chapter 8 (Marine Biodiversity) relevant SACs, SPAs and Ramsar sites have not been identified in the study area and no justification for this is given. In addition to this, the River Usk, River Twyi, Carmarthen Bay & Estuaries, Cleddau Rivers and Pembrokeshire Marine SACs are omitted from the discussion of designated sites and it is not clear if they are within the study area. • In Chapter 11 (Soil, Geology and Hydrology) paragraphs 11.3.2 and 11.3.3 clearly define the study areas for soils and geological features (100m) and for land contamination receptors (1km), however, a study area for hydrogeology is not clearly set out. • In Chapter 12 (Historic Environment) the study area in 12.3.2 is stated as 5km for designated heritage assets, no study area has been given for non-designated heritage assets or a historic landscape assessment. • In Chapter 16 (Socio-economics) three levels of study area are defined – local, regional and national. There is no justification for electing for three different study areas. For example, it could be suggested that different types of effect could be felt at different spatial scales. It could also be clarified that information on the national scale is only likely to be used for context. • In Chapter 18 (Conventional Waste) one study area is defined for the EIA. The 'IEMA guide to: Materials and Waste in Environmental Impact Assessment (2020) / the Design Manual for Roads and bridges, LA110 Material assets and waste (2019)' defines two study areas – one is the area of which the waste will be generated (typically a red line boundary), the second is an area sufficient to make an assessment of capacity and availability of infrastructure to handle the

		waste; typically a county and/or region. Using one study area may not be sufficient to make an adequate assessment.
EIA Methodology	Within the topic chapters, there is inconsistency when determining the significance of effects. An overarching significance matrix is provided in Table 4.3 of the scoping report, however in some of the topic chapters there is no reference to this matrix or methodology for how significant effects will be determined. Whilst it is appropriate for the matrix to be adapted for each topic area, there should be consistency in the information provided.	• In some instances in the topic chapters, there is no reference to a matrix or how a significant effect is determined, or the matrix does not demonstrate the level of significance e.g. major, moderate or minor. • In Chapter 5 (Air Quality) paragraph 5.5.20 sets out the methodology to determine significance for dust emissions. Stage 1 of the process is clear, however stages 2 and 3 are not, including what is considered as a significant effect. In paragraph 5.5.25, impact from road traffic emissions is set out, however what is considered as a significant effect is not stated. In addition, there are omissions regarding how significance will be determined with respect to the impacts on human health receptors (long and short-term impacts) and nature conservation sites. • In Chapter 7 (Terrestrial and Freshwater Biodiversity), within section 7.5, the scale of the value or sensitivity of receptors has not been defined. A sensitivity value (high, medium, low) has not been clearly concluded and definitions of the scale should have been provided in Section 7.5. • In Chapter 9 (Coastal Management and Water Quality), the proposed methodology does not consider the importance or value of a receptor, only it's capacity to recover from a hypothetical impact (sensitivity). Paragraph 9.5.12 states that assessment of significance of impacts on coastal management will be based on expert judgement and refers to consultation with bodies responsible for implementing the SMP. It is also unclear whether expert judgement is also the basis for assessing significance with respect to water quality and coastal

		processes. In addition, paragraph 9.5.13 states that beneficial effects could occur, however does not define what would constitute as a significant beneficial effect. • In Chapter 15 (Traffic and Transport), it is unclear what is defined as a significant effect for severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents and safety. In addition to this, information on the maximum predicted weekly movements, rather than an average, will be important in assessing the potential impacts on receptors.
EIA Methodology	In some instances, within the topic chapters, the EIA methodology does not provide sufficient information to justify the approach adopted.	• In Chapter 8 (Marine Biodiversity) paragraph 8.5.10 refers to the importance of ecological features and how this will be categorised. The text suggests that only 'important' ecological features will be considered for potential significant effect. Receptors cannot be ruled out of the assessment based on their 'importance'. All marine receptors potentially affected by the project (regardless of their 'importance') must be included for assessment. In addition, it is not clear how the geographic context of the importance is being used for the assessment, or how the 'importance' is considered in terms of significance of effects or receptor sensitivity. • In Chapter 5 (Air Quality), paragraph 5.6.13 on the effects of pollutant emissions from NRMM refers to a *'long duration'* and a distance of *'20m to residential properties'*. A definition of what is meant by a long duration and why the distance is relevant as this spatial extent is not discussed in the assessment methodology section and should be provided in the ES. • In Chapter 12 (Historic Environment) the significance criteria used does not reflect the qualitive assessment required to establish the

		significance of a heritage asset. For example, Grade I listed buildings are demonstrably more significant than Grade II listed buildings. No reference is made to regional research frameworks for assessing the relative significance of archaeological assets and the potential significance of unknown remains.
Future Baseline	There is a general lack of information on the future baseline across all the topic areas, and therefore there is uncertainty as to what future baseline has been used in the scoping exercise and is to be used in the EIA. A consistent approach to defining and describing the future baseline should be applied to the ES.	• The majority (but not all) of the chapters conclude that long-term changes in the baseline cannot be predicted and therefore the current baseline will be used for the assessment. It is unclear if this was for the scoping exercise or if it is the approach for the EIA. There is insufficient justification to explain why this is an acceptable approach and limitations to defining the future baseline and methods of managing this have not been set out. • Most topics have included a 'without scheme' scenario (e.g. Air Quality), however some topics such as Climate Change have stated the 'without scheme' scenario is unrealistic as it is Government Policy to decommission the site. A consistent approach should be applied to the assessment, and if it differs, a justification should be provided in the ES. • Within the future baseline section of topic chapters, HPA and HPC have been included in some instances and have not in others; a consistent approach has not been followed. In Appendix 4A, HPC has been included as a project for consideration in the cumulative impact assessment. It will be important not to double-count the assessment in the EIA, with clear boundaries established between cumulative and future baseline. • There is limited information on who is responsible for the decommissioning of the 400kv substation and when this will be

		undertaken and if this is to be considered as future baseline or within the cumulative impact assessment.
Uncertainty	As expected at the scoping stage, there is a level of uncertainty and limitations to the assessment. The scoping exercise is based on initial baseline data and limited project information. Uncertainties and limitations encountered during the scoping exercise have not been clearly documented, nor has an approach to be used to address or manage these in the EIA been set out.	• Paragraphs 4.3.1 to 4.3.4 are well written and set out good practice and industry standard for the EIA scoping exercise. It would have been useful in this section to acknowledge that the information available at a scoping stage is limited and to manage this limitation and uncertainty, assumptions are made using for example a realistic worst case. Through the EIA process, as information becomes available the scope may be further refined. • There may be uncertainty over activities in the later stages of decommissioning, therefore it may not be possible to be definitive. The ES should therefore cover the strategic intention for eventual completion of decommissioning. Details should be given on the range of options being considered for future activities. Where there is uncertainty in the later stages, this should be indicated in the ES, with details on how the EIA approached the uncertainty. • The Scoping Report (Section 4.8 or within each topic chapter) does not detail how uncertainty or limitations have been managed in the scoping exercise or will be managed through the EIA. Having uncertainty is acceptable, it is how it is dealt with that is important to address. • There will be a number of uncertainties and limitations around the development and assessment of the future baseline as well as the assessment of future phases. The ES should document all limitations encountered and how they were managed. For example, it may be that further future baseline data is collected through the lifetime of the project, or reviewed against climate data as it is updated, and further

		assessment undertaken at specific points in the programme. The Scoping Report sets out the possibility of interim reviews, however an approach on how this will be undertaken and reported in the ES has not been included.
Decommissioning Project Scope	There is uncertainty across the Scoping Report on what is considered as the project scope and thus to be included in the EIA.	• In section 2.3, there is uncertainty on when the current operational phase (defueling) ends, and the Preparations for Quiescence Phase commences; it may be that the phases overlap but there are discrete activities of the two. • There is no mention of associated development that may be required to support the decommissioning of the site, for example if the access road is suitable for the duration of the project (e.g. considering climate change) and whether additional facilities are required for example to accommodate the work force (mentioned in Table 3.1 but nowhere else). • Paragraph 2.3.34 lists out additional enabling projects that have not been included in Table 3.1. There is uncertainty as to whether these are included in the EIA and considered in the scoping exercise. • The Scoping Report states that the OWPF and WMC will require planning permission through the TCPA, however this is less clear for the DWPF. It is unclear if these works are also included in the scope of EIADR. • The Scoping Report provides information on the OWPF and DWPF that may be required on site but refers to an option for utilising existing Hinkley Point A waste management facilities. During ONR's consultation with stakeholders it was noted that EDFE should provide further clarity on this point in the ES and consider whether existing

		facilities on the adjacent Hinkley Point A site could be used to support decommissioning activities. Any use of the A site's facilities would need to be in agreement with the licensee and the regulators. • It would be useful for the Scoping Report to include confirmation that HPA has sufficient capacity to accept ILW for storage as this will provide further clarity on the interactions between the two sites and the spatial scope of EIADR. • A Marine Licence including the removal of the intake and outfall structure are likely to be required. It is unclear how additional requirements under Marine Licensing will be managed where EIADR also applies. • In Table 8.7, the cessation of operation of the cooling water system has been considered, clarity should be provided on when this activity will take place i.e. is it part of defueling or part of the decommissioning project? • In Table 8.8 there is reference to the construction of new active effluent discharge outfall. This activity has not been mentioned previously nor in other chapters, such as Chapter 9: Coastal Management and Water Quality which should consider changes to water quality.
Baseline	The Scoping Report is based on a certain level of baseline information, and it is recognised that further baseline data is to be collected during the EIA process.	• In Chapter 5 (Air Quality), it is unclear which types of human health receptors have been considered. As human receptors have not been defined, there is uncertainty as to whether other sensitive human receptors have been considered other than residential properties. • In Chapter 12 (Historic Environment) paragraph 12.3.4 states that the online HER has been consulted. The online version of this resource

		will not provide sufficient information to allow for the assessment of historic environment constraints, and therefore provide a proportionate assessment. In addition, the online HER cannot be used for commercial purposes. There is a risk that additional assets may be identified (that have not been considered in the scoping exercise) and therefore will have to be considered in the EIA leading to a disproportionate assessment. • In Chapter 12 (Historic Environment), there is limited information provided on the outline of the archaeological and historic development of the area and there is no clear assessment of archaeological potential both terrestrial and marine. There is no discussion of the geology of the study area or geoarchaeological potential, which is fundamental given the location of the works on the edge of the Bristol Channel and within the marine environment. There is no discussion on HPC and HPA which form part of the baseline. There is no identification of non-designated heritage assets other than HPB. HPB is assessed as an entity rather than understanding which elements of the site contribute to the significance of the heritage asset. • In Chapter 8 (Marine Biodiversity) there is an absence of what activities occur in the marine environment that also form part of the baseline, e.g. commercial fishing, shipping, dredging. This should be considered in the EIA. In addition, the Scoping Report does not set out an existing baseline of potential noise sources in the marine environment, so the requirement of baseline noise surveys and type cannot be determined if acceptable. • In Chapter 9 (Coastal Management and Water Quality), the current baseline has been described although there is no mention of baseline

		hydrodynamics (e.g. tidal range, tidal velocities, wave climate), which will be required to assess impacts on coastal processes and subsequent coastal management. Sediment size information will also be required as well as information on any contaminants that may be present within the seabed. How the hydrodynamic baseline is to be defined with respect to the cooling water outfall operates altering should be included. • In Chapter 10 (Surface Water and Flood Risk) paragraph 10.3.28 states that there are no designated water dependent conservation sites within the Study Area. The RAMSAR, SSSI and SPA are within the study area, so understanding how these are not water dependent should be provided. The consideration of whether terrestrial and freshwater habitats depend on the surface water should also be considered. • Paragraph 10.3.14 states that the drainage system receives the cooling water discharge and paragraph 13.3.17 states this is discharged to the Severn Estuary. It should be confirmed if this source (and the others) and discharge will be considered as existing baseline in the EIA as site operations are altering. • In Section 3.1.4 there is no mention of night-time lighting. The 'Preparations for Quiescence Phase' description (paragraph 2.3.7) states that 'site *security lighting during this phase will remain largely as it has been in operation. The working hours make it likely that some site lighting may be required to undertake work safely in winter'*, the lighting would therefore reduce during the Quiescence Phase and likely reduce adverse effects and improve the landscape and visual amenity. This should be considered in the EIA.

		• There seems to be a lack of baseline for any existing vibration sources. It is acknowledged that ecological receptors that could be significantly affected by noise emissions are excluded from the noise and vibration chapter. The chapter however does not provide sufficient evidence of potential offshore noise emitting activities (baseline) that can be used in the biodiversity assessments (marine and bird assessments).
Proposed EIA Scope	In some of the topic chapters, the scoping report appears to have not considered certain receptors and potential environmental impacts of the decommissioning project. There is therefore a risk that the scope is either too wide or that some effects or receptors have been scoped out too soon.	• In Chapter 5 (Air Quality), Table 5.13 'Location and description of representative designated ecological receptors' does not provide a comprehensive list of sites and it is unclear if this will be expanded for the EIA. • In Chapter 15 (Traffic and Transport) the scoping exercise does not consider potential impacts as a result of increased traffic on the highway to biodiversity receptors, for example, acid and nitrogen deposition should have been considered in the scoping exercise. Transport routes (including the access route) are not in the red line boundary however will be considered in the traffic and transport assessment. • Chapter 7 (Terrestrial and Freshwater Biodiversity) covers impacts on birds, however, in table 7.8, activities that could affect the marine environment and thus have an indirect effect to birds have not been considered. For example, underwater noise effects, and changes to water quality such as contamination from the disturbance of sediments, which could lead to impacts to fish populations. Sufficient evidence to support the scoping exercise has not been provided at this stage.

		• In Chapter 8 (Marine Biodiversity) the proposed scope in Table 8.8 seems to be high level; the receptors that could be significantly affected are grouped as 'marine habitats and species'. A list of potential marine ecological receptors that could be affected are set out in Table 8.7 but it is unclear which receptors could be significantly affected and thus to be taken forward for further assessment. • Chapter 9 (Coastal Management and Water Quality) effects on the water quality of aquatic receptors associated with accidental spillages of fuels and oils from the Works Area have been scoped out given that good practice for pollution prevention will continue to be successfully implemented onsite. It would be useful for further information on the arrangements for mitigating accidental releases to the environment and minimising environmental impacts to be included in the ES. • In addition, Chapter 9 does not consider the potential impacts on the Porlock Bay Oysters oyster farm which has been impacted by an accidental spill of oil from the site in the past. • In Chapter 12 (Historic Environment) designated heritage assets (paragraph 12.6.7) appear to be scoped in based on proximity to the works area only. Further information should be required on how their setting contributes to their significance and how this significance may be impacted by the works. Similarly, there is no clear rational as to why other designated heritage assets have been scoped out as no discussion around their setting has happened in the chapter. • In Chapter 12 (Historic Environment) the scoping out of unknown buried archaeological features assumed to have been damaged by construction of HPB requires further definition. For example, does this

		scope out all archaeological assessment within the Works Area, or just the archaeology affected by the construction of HPB? The ES should include further information to ensure the assessment scope is robust and proportionate. • In Chapter 14 (Noise and Vibration) the receptors listed in Table 14.10 seem to be restricted to dwellings. There is insufficient evidence to demonstrate why these receptors have been scoped in and why others such as hospitals, schools and public amenity areas have not been considered. • In Chapter 13 (Landscape and Visual), a viewpoint from the AONB has not been considered and therefore there is insufficient evidence to determine if scoping this receptor out of the EIA is suitable. The EIA should reconsider effects on this receptor. In addition to this, the scoping report has not considered view points from close to the station. • Chapter 19 (Radioactive Waste and Discharges) states that the impact of ILW on interim storage facilities has been scoped out of the assessment (19.6.9). Given that there are uncertainties associated with the strategic assumption that HPB ILW can be stored in the HPA Interim Storage Facility, this impact may have been scoped out prematurely.

5B

Hinkley Point B Decommissioning

Pre-Application Opinion Response

Public

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Contents

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GRAPHIC

1

INTRODUCTION

1 Introduction

1.1 Overview

1.1.1 EDF Energy Nuclear Generation Limited (hereafter referred to as the 'Applicant') is applying for consent from the Office for Nuclear Regulation (ONR) to decommission the Hinkley Point B Nuclear Power Station (hereafter referred to as 'HPB'). Decommissioning works at HPB which are subject to ONR consent are referred to as the 'Proposed Works'. The Proposed Works will include the dismantling and deconstruction of buildings and structures in areas within and outside of the Nuclear Site License (NSL) boundary (defined and referred to hereafter as the 'Site') that are part of the power station, and include both the marine and terrestrial environments. To assist the identification of these areas for assessment, an Indicative Dismantling Works Area (hereafter referred to as the 'Works Area') has been identified.

1.1.2 Specifically, the Proposed Works occurring in the marine environment include the decommissioning and dismantling (to seabed level or an appropriate shallow depth below seabed level) of existing marine structures comprising of the Cooling Water Intake and Outfall Tunnels. Infrastructure below the seabed will remain in-situ.

1.2 Purpose of this Technical Note

1.2.1 A Scoping Report[1] was prepared to support a request by the Applicant pursuant to Regulation 6(1) of Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended[2]) (hereafter referred to as 'EIADR') for a written Pre-application Opinion to be provided by the ONR with respect to the scope of the Environmental Impact Assessment (EIA) for the Proposed Works. Consequently, the ONR consulted with relevant bodies and issued the Applicant with a Pre-application Opinion.

1.2.2 Within the Pre-application Opinion, the ONR cited a specific point (see **Table 1-1**) relating to additional topics that, in the opinion of the ONR were not addressed sufficiently within the Scoping Report and that were therefore to be considered in the EIA. The Applicant consulted with the ONR in December 2022 on this matter and agreement was sought for the Applicant to submit a Technical Note, to provide clarity on the scoping in or out of these topics. The Technical Note will be appended to the Environmental Statement (ES) as evidence.

[1] EDF Energy Nuclear Generation Limited. 2022. *Hinkley Point B Nuclear Power Station – Scoping Report.*

[2] UK Government. 1999. *Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended)* [Online]. [Accessed: 30/03/2023]. Available at: https://www.legislation.gov.uk/uksi/1999/2892/contents/made

Table 1-1 - HPB Pre-application Opinion responses relevant to this Technical Note[3]

Pre-application Opinion Reference	ONR Comment
Section 3.1.1 Environmental Impact Assessment Process, Paragraph 14	*"In section 4.7 of the scoping report (Transboundary Effects), there is insufficient information and evidence to conclude whether a European Economic Area State could be significantly affected. The information provided is focused on radiation doses to members of the public but does not consider other potential significant effects on the environment, or other social aspects. The likely significant transboundary effects should be considered further in the EIA process and reported in the ES."*
Section 3.1.2 Omissions from the Scoping Report, Paragraph 15	*"In the environmental topic chapters, there are a number of receptors and aspects that do not appear to have been considered in the scoping exercise. These include:* ▪ *impacts to human health;* ▪ *impacts to maritime recreation and commercial services (relevant to socio-economic and traffic and transport impact assessments);* ▪ *impacts to agricultural land use (relevant to socio-economic and soils and geology impact assessments);* ▪ *resource and material use;* ▪ *impacts to marine archaeology; geoarchaeology and to the historic landscape."*
Section 3.1.2 Omissions from the Scoping Report, Paragraph 16	*"This should be considered further in the EIA process and the ES should clearly report on whether these aspects are in scope of the EIA."*

1.3 Structure of this Technical Note

This Technical Note is structured to provide analysis and response to the topic areas identified in **Table 1-1**, as follows:

- Marine archaeology;
- Material resource use;
- Impacts on fishing, maritime recreation and maritime commercial services;
- Agricultural land use;
- Human health;
- Transboundary effects; and
- Summary.

[3] Office for Nuclear Regulation. 2022. *Hinkley Point B Nuclear Power Station - Environmental Statement Pre-Application Opinion*.

2

MARINE ARCHAEOLOGY, GEOARCHAEOLOGY AND HISTORIC LANDSCAPE

2 Marine Archaeology, Geoarchaeology and Historic Landscape

2.1 Introduction

2.1.1 HPB is located approximately 12 km to the north-west of Bridgwater, in Bridgwater Bay on the southern flank of the Severn Estuary, south of the mouth of the River Severn. The centre of the Site is at approximate National Grid Reference (NGR) ST 212 459.

2.1.2 This section of the Technical Note has been informed by the sources listed below:

- National Heritage List for England (NHLE) compiled by Historic England– information on statutorily designated heritage assets;4
- United Kingdom Hydrographic Office (UKHO) wrecks and obstructions data5;
- British Geological Survey (BGS) – Subsurface deposition, including buried geology and topography, can provide an indication of potential for early human settlement, and potential depth of archaeological remains6;
- Somerset Historic Environment Record (HER) on Heritage Gateway;7
- Decommissioning Hinkley Point B – Historic Environment Survey Report;8
- Decommissioning of Hinkley Point B Nuclear Power Station - EIA Scoping Report;9
- People and the Sea: a maritime archaeological research agenda for England;10
- Early Ships and Boats Desk-Based Assessment;11
- Aircraft Crash Sites at Sea: A Scoping Study; and12
- Life below the waves: palaeolandscapes preserved within the sub-tidal Bristol Channel. Archaeology in the Severn Estuary.13

[4] Historic England National Heritage List for England, (2024), Map Search [online] Available at: Search the List: Map Search | Historic England [Accessed: January 2024]

[5] United Kingdom Hydrographic Office, 2024, Admiralty Marine Data Portal. https://seabed.admiralty.co.uk [Accessed: January 2024]

[6] British Geological Survey, (2024). Geology Viewer [online] Available at https://geologyviewer.bgs.ac.uk/ [Accessed: January 2024].

[7] Somerset HER on Heritage Gateway (2024) Available at: https://www.heritagegateway.org.uk/ [Accessed: January 2024]

[8] Wood Group UK Limited(2021) *Decommissioning Hinkley Point B - Historic Environment Survey Report.* Doc Ref. 807184-WOOD-XX-XX-RP-O-00004_S0_P02

[9] WSP in the UK(2022) *Decommissioning of Hinkley Point B Nuclear Power Station - EIA Scoping Report.* 808125-WOOD-XX-XX-RP-O-000025_S3_P01

[10] Ransley J, F Sturt, J Dix, J Adams, and L Blue (2013) People and the Sea: a maritime archaeological research agenda for England. Available on https://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-281-1/dissemination/pdf/RR171_People_and_the_Sea.pdf

[11] Wessex Archaeology Ltd (2013) Early Ships and Boats (Prehistory to 1840): Strategic Desk-based Assessment.

[12] Wessex Archaeology Ltd (2008) Aircraft Crash Sites at Sea: A Scoping Study.

[13] Sturt, F. *et al.* (2014) 'Life below the waves: palaeolandscapes preserved within the sub-tidal Bristol Channel.' Archaeology in the Severn Estuary. 22, 41-66.

2.1.3 The publicly accessible data the Historic Environment Record (HER) search has uploaded to Heritage Gateway was reviewed as part of this assessment; however, it should be recognised that the data uploaded to Heritage Gateway may not be complete.

2.1.4 The records held by the UKHO, Historic England (NHLE) and Heritage Gateway used in this assessment are not a record of all surviving cultural heritage assets, rather a record of the discovery of a wide range of archaeological and historical components of the historic environment, both marine and terrestrial. The information held within these datasets is not complete and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown. In particular, this relates to buried or submerged archaeological features.

2.1.5 Due to the nature of marine archaeological remains, their identification and assessment necessarily requires an element of assumption. The nature, extent, survival, and even the precise location, of marine heritage asset remains are often uncertain, as many sites have not been subject to archaeological investigation to modern standards.

2.2 Baseline

2.2.1 Aspects of the historic environment that are considered by this scoping assessment comprise designated and non-designated heritage assets within a 1.5km buffer extending from the Works Area; hereafter referred to as ‘Study Area’.

2.2.2 Marine Archaeological and Cultural Heritage receptors can be attributed to four main categories of sites or features:

- Submerged prehistoric landscapes resulting from changes to sea-level and eventual stabilisation of sea-level at or near present levels. Such landscapes may contain highly significant evidence of prehistoric human occupation and/or environmental change;
- Archaeological remains of watercraft deposited when such vessels sank while at sea or became abandoned in an intertidal context which subsequently became inundated;
- Remains of aircraft crash sites, either coherent assemblages or scattered material usually the result of Second World War (WWII) military conflict, but also numerous passenger casualties, particularly during the peak of seaplane activity during the interwar period. Also includes aircraft, airships and other dirigibles dating to the First World War (WWI) though these rarely survive in the archaeological record; and
- Structural remains other than watercraft, including such elements as fish traps, abandoned quays, hards, defensive structures or sites lost to coastal erosion may be found within the intertidal zone and marine zone. Marine Archaeological and Cultural Heritage receptors located seaward of Mean High Water Spring tide have been considered in this section.

2.2.3 Within the Works Area, there are no known archaeological sites or structures recorded within the NHLE or within the Somerset HER on Heritage Gateway, with the exception of HPB itself which is recorded as a non-designated asset within the Somerset HER (45100: Hinkley Point nuclear power station, Stogursey). An archaeological record of a bone ring (SHER 30188) has been recorded in the location of HPB, although there are no details of when this was recovered or what period it may relate to.

2.2.4 There is one designated heritage asset within the 1.5 km study area. Approximately 280 m south west of the Works Area lies a scheduled monument, Pixie's Mound (NHLE 1006226). Pixie’s Mound is a round cairn at the summit of a low hill, which was previously excavated in the 19th century

revealing a burial structure with human remains and funerary objects. The dating of this monument is uncertain, but sherds of Neolithic pottery were recovered during the excavation.

2.2.5 There are two recorded Obstructions recorded by the UKHO within the Study Area. Obstruction 67535 lies approximately 928m north of HPB and it is recorded as a diffuser. Obstruction 82916 lies approximately 1150m north of HPB, also recorded as a diffuser.

Submerged Prehistoric Landscapes

2.2.6 The Severn Estuary and Bristol Channel have long been noted for their significant archaeological record and potential for future discoveries. After the Last Glacial Maximum (LGM) it is believed that sea level was at least 120m lower than today in this region. The Bristol Channel would have gone through significant environmental changes over the glacial and inter-glacial periods. Studies show that the sea level rapidly increased during the Holocene period, which became more stable around 7,000 BC. Geophysical and geotechnical surveys north of HPB have revealed an extensive, yet fragmentary, Early Holocene submerged palaeolandscape. The current sub-tidal area of HPB and the offshore study area was entirely dry land in the Late Pleistocene and Early Holocene periods, and the landscape would have been suitable for human activities.

2.2.7 These ancient, submerged landscapes are now covered in thick layers of marine sediments which are known to preserve earlier land surfaces and archaeological finds. The buried sediments are likely to contain evidence relating to the palaeoenvironment and evidence of hominid occupation in the area prior to 7,000 BC; therefore, the geoarchaeological potential of the area is high.

Marine Archaeology

2.2.8 Marine archaeological sites can be considered to comprise two broad categories: the remains of vessels that have been lost as a result of stranding, foundering, collision, enemy action and other causes; and sites that consist of vessel-related material. Wreck-related debris includes (but is not limited to) equipment lost overboard or deliberately jettisoned such as fishing gear, ammunition and anchors or the only surviving remains of a vessel such as its cargo or a ballast mound. Shipwrecks on the seabed provide an insight into the types of vessels used in the past, the nature of shipping activity in the wider area and the changing usage of the marine environment through different periods. Such remains are considered more likely in sediments which promote the preservation of wreck sites (e.g. finer grained sediments that are not subject to high levels of energy), particularly where such sediments have seen limited, recent disturbance.

2.2.9 The intense historic use of the Severn Estuary indicates the presence of marine archaeological remains on the seabed cannot be ruled out. In the post-medieval period (1650-1850), the port of Bristol was an important port, second only to London, that built its fortune on participation in the ‘triangular trade’, which comprised shipments of sugar, cotton, and tobacco from the Americas and the Caribbean to Europe, manufactured goods, textiles, and rum from Europe to Africa, and slaves from Africa to the Americas and Caribbean. The maritime heritage of the Bristol Channel, particularly as it relates to the triangular trade, is considered to be under-researched as most archaeological studies focus on the plantations and colonies of the West Indies.

Aviation Archaeology

2.2.10 Marine aviation archaeology receptors comprise the remains or associated remains of military and civilian aircraft that have been lost at sea. Evidence is divided into three primary time periods based on major technological advances in aircraft design: Pre-1939; 1939-1945; and post-1945.

2.2.11 There are no UKHO Wrecks and Obstructions records noted as an aircraft wreck within the Study Area, however, it is worth noting that there are eight RAF stations in Somerset, all of which operated during the World War II. In addition, the Air Accident Investigation Branch recorded that an VC10 type aircraft was lost over the Bristol Channel in 1965.

2.3 Scope in or out of further assessment

2.3.1 Decommissioning is anticipated to involve the removal and dismantling (to seabed level or an appropriate shallow depth below seabed level) of existing marine structures (the Cooling Water Intake Structure). It is likely that the impact from these works will be limited to areas which were previously impacted by the initial construction and ongoing maintenance of the existing infrastructure. Although the offshore works area is within an area of high archaeological potential for palaeolandscapes and isolated remains from other periods, the nature of the Proposed Works, the previous construction within the Offshore Works Area, and the limited area of impact suggest that the impacts from the Proposed Development would not result in a significant effect on the assets and therefore the aspect can be scoped out.

2.3.2 It is suggested that a Protocol for Archaeological Discovery (PAD) setting out the approach to the reporting and subsequent treatment of unexpected archaeological discoveries should be in place during the Proposed Works within the marine environment in order to ensure that unforeseen marine archaeological remains can be appropriately identified and recorded if they are encountered during the proposed works. The PAD will be included in the Environmental Management Plan (EMP).

2.4 Summary

2.4.1 While no marine archaeological remains are anticipated within the Offshore Works Area, the history of the Bristol Channel and the known geoarchaeological potential in proximity to the Site means the presence of remains on the seabed cannot be ruled out completely. No further assessment is considered to be necessary and the implementation of a PAD would provide adequate mitigation.

3

MATERIAL RESOURCE USE

3 Material Resource Use

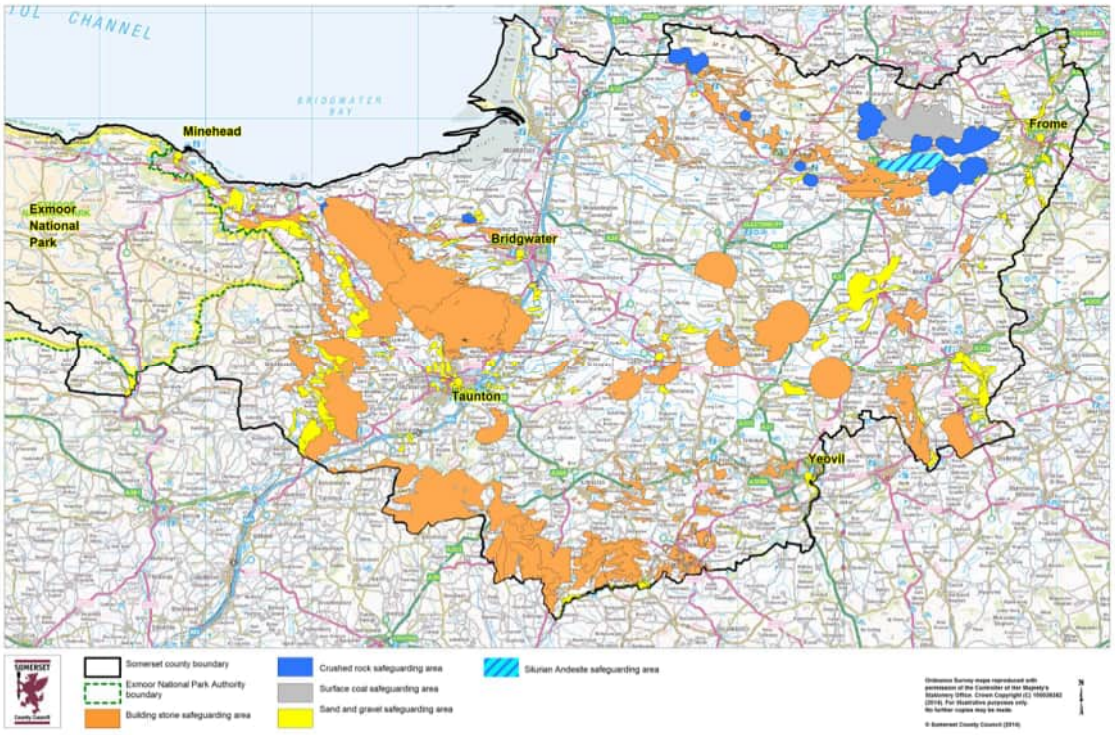
3.1 Baseline

3.1.1 HPB falls within the Minerals Planning Authority area of Somerset Council. Somerset Council is the statutory body responsible for the management and determination of mineral planning applications and is specifically responsible for ensuring that minerals development proceeds in line with national targets[14].

3.1.2 Somerset County Council has prepared a Minerals Local Plan, which was adopted by the County Council in February 2015. The Minerals Plan sets out broadly where and how much mineral will be worked in Somerset until the year 2030.

3.1.3 There are no safeguarded economically viable mineral resources within the vicinity of the Proposed Works. Therefore, the Proposed Works are very unlikely to sterilise any significant / economically viable existing mineral deposits within and surrounding the Site. **Graphic 3-1**[15] identifies the mineral safeguarding areas in Somerset, which substantiates this assumption.

Graphic 3-1 - Mineral Safeguarding Areas in Somerset



[14] Minerals Planning Authorities are required to ensure there is a sufficient landbank and supply of at least 7 years for sand and gravel and at least 10 years for crushed rock, whilst ensuring that the capacity of operations to supply a wide range of materials is not compromised (paragraph 219 of the National Planning Policy Framework, 2023).

[15] Source: Somerset Minerals Local Plan (February 2015).

3.1.4 The performance of this Minerals Plan is reviewed on an annual basis through the production of a Local Aggregates Assessment (LAA). The latest LAA - *Somerset Local Aggregate Assessment, Eighth Edition, data to 2022 (incorporating data from 2022)* - was published by Somerset County Council in December 2023. The data set out in this LAA represents the most up to date information on minerals consents, outputs, and reserves across Somerset.

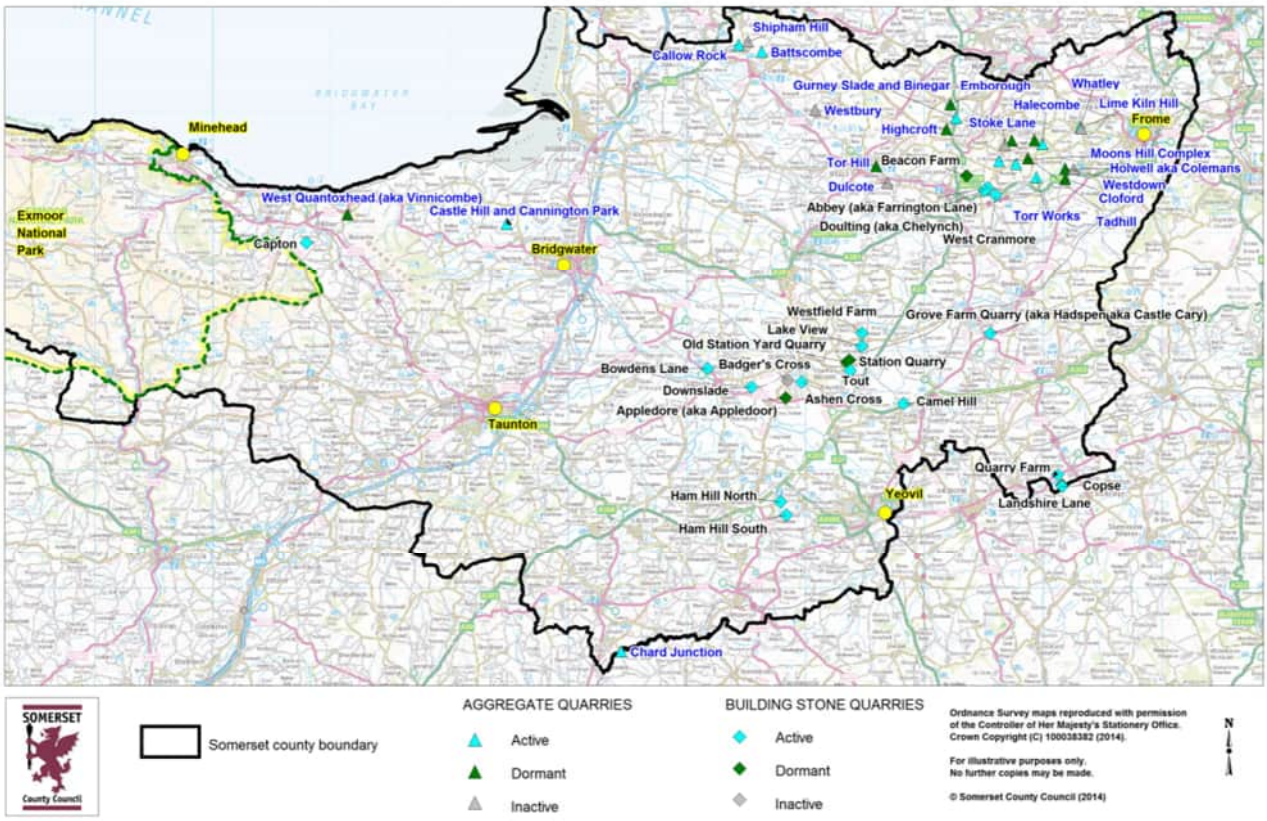
3.1.5 **Table 3-1** shows recent outputs and estimated reserves in permitted sites in Somerset at the end of 2022. This indicates that aggregates are sourced from four distinct types of supply – land won primary sources (namely sand and gravel and crushed rock extraction); marine extraction; secondary sources (most notably the use of by-products from other industrial processes as aggregate substitutes e.g. blast furnace slags); and recycled sources i.e. that from the recycling of construction and demolition wastes/rubble. **Table 3-1** also illustrates that for primary aggregate supplies, there are in excess of 24 years' worth of supply of crushed rock and almost 6 years' supply of sand and gravel.

Table 3-1 - Estimated consented reserves in active sites in Somerset (S = suppressed to preserve confidentiality)

	Sand & gravel	Crushed rock	Marine aggregates	Secondary aggregates	Recycled aggregates
2022 sales	0.521 million tonnes	14.35 million tonnes	72,490 tonnes	0 tonnes	25,367 tonnes
10-year average sales	0.516 million tonnes	13.78 million tonnes	-	13,882 tonnes	52,679 tonnes
Reserves at end of 2022	3.034 million tonnes	326.22 million tonnes	-	-	-
Landbank	5.9 years	24.3 years	-	-	-

3.1.6 The supply of aggregate minerals across Somerset is derived from numerous operators located across the county. **Graphic 3-2** illustrates the geographical spread of quarry operators across Somerset.

Graphic 3-2 - Location of Quarry Sites in Somerset



3.1.7 Baseline data indicates that aggregate minerals are readily available across Somerset, from a range of sources – both numerous land won primary aggregate suppliers, as well as alternative sources (i.e. marine won, secondary and recycled).

3.1.8 It should also be noted that the Applicant has indicated that approximately 10,000 m^3 of clean rubble derived from demolition is suitable for re-use on site as fill material. This re-use of onsite material will substitute a proportion of the currently anticipated imported fill material requirements, amounting to approximately 67,000 m^3 in total if on-site voids need to be filled prior to entry into the Quiescence phase.

3.2 Scope in or out of further assessment

3.2.1 The Proposed Works involve the construction of waste processing facilities and cladding of the Safestore with a requirement that materials (aggregates/minerals) are imported to the Site for these purposes. To robustly assess the likely significant effects on material resource locally and regionally, material resource use is carried forward to assessment in **Appendix 19A** of the ES.

3.3 Summary

3.3.1 The scope of the materials resource impact assessment assesses the potential impact of the type and quantity of raw materials required because of the Proposed Works and how this would impact on existing mineral reserve, operators and active quarries.

3.3.2 At the EIA Scoping stage, it was not possible to identify the type and volume of material required to support the construction of new buildings over the decommissioning period with a sufficient degree of certainty to allow scoping out of materials requirements for the Proposed Works from further assessment. Sufficient detail is now available to inform assessment in the ES. As it is likely that the Proposed Works will require imported fill and other construction materials to be provided to the HPB site to enable the delivery of the Proposed Works. Material resource use is scoped into the EIA and is an appendix to the Conventional Waste ES chapter (see **Appendix 19A**).

4

AGRICULTURAL LAND-USE

4 Agricultural Land-use

4.1 Baseline

4.1.1 **Chapter 2: The Decommissioning Process** of the Environmental Statement defines the spatial extent of the Proposed Works within the Indicative Dismantling Works Area ('Works Area') and defines the three parts of this as the Radiation Controlled Area (RCA), the conventional area and the marine works. The RCA and conventional area are located almost entirely on hardstanding.

4.1.2 The provisional Agricultural Land Classification applicable to the fields surrounding the Site to the east and south is shown mainly as Grade 4[16]. This grade is applied to land with severe limitations which significantly restrict the range of crops or level of yields and it is, therefore, not considered to be best and most versatile (BMV) land[17]. Land within the Works Area and the adjacent woodland Hankley Brake is shown as Grade 3. Land classed as provisional ALC Grade 3 land can potentially be best and most versatile (BMV) land (if it meets the criteria of Subgrade 3a), however, the naturally occurring soils within the Site and Works Area are likely to have been removed or damaged during construction of the HPB.

4.1.3 There is an Environmental Stewardship Agreement (Higher Level Stewardship) recorded on a narrow strip of agricultural land running west to east along the coast immediately east of the Site beyond Hankley Brake. The agreement is registered to the Sharpham & Sheep Commoners Association and dates from 2010[18]. Higher Level Stewardship Agreements are land management schemes designed to secure environmental benefits[19].

4.2 Scope in or out of further assessment

4.2.1 In response to a Pre-Application Opinion comment from the ONR "Impacts on agricultural land use are omitted from the Scoping Report. The ONR states that these should be considered further in the EIA process, with the ES being clear on whether these aspects are in the scope of the EIA." The baseline in **Chapter 12: Soils, Geology & Hydrogeology,** Section 12.5 includes information on the agricultural land surrounding the Site.

4.2.2 The scope of the assessment in **Chapter 12: Soils, Geology & Hydrogeology,** Section 12.9 explains that effects on property receptors (including agricultural crops or livestock, and ecological receptors) are included in the assessment as potential land contamination receptors. However, effects on the local or national agricultural land resource (including best and most versatile land),

[16] Defra (2024). Data Services Platform. Provisional Agricultural Land Classification (ALC). (Online). Available at: https://www.data.gov.uk/dataset/952421ec-da63-4569-817d-4d6399df40a1/provisional-agricultural-land-classification-alc. (Accessed: August 2024).

[17] Natural England (2021). Guidance: Guide to assessing development proposals on agricultural land. (Online). Available at: https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land. (Accessed: August 2024).

[18] MAGIC interactive map. (Online). Available at: https://magic.defra.gov.uk/MagicMap.aspx. (Accessed: August 2024).

[19] Rural Development Service (2005). Environmental Stewardship, Entry Level Stewardship Handbook, Terms and conditions and how to apply. (Online). Available at: https://www.gov.uk/guidance/environmental-stewardship. (Accessed August 2024).

and associated soil resources and soil functions, are scoped out. This position is reached on the basis that the onshore Works Area is limited to areas of existing hardstanding at HPB and the agricultural land surrounding the Site is not likely to be best and most versatile land; based on the published provisional ALC grade, the land is shown primarily as Grade 4. The agricultural land is separated from most of the Works Area by the woodland at Hankley Brake, and there will be no physical disturbance to the agricultural soils at Wick Moor or North Moor, as a result of the Proposed Works.

4.3 Summary

In response to the Pre-Application Opinion comment, agricultural land use has been scoped into assessment and is therefore considered in **Chapter 12: Soils, Geology and Hydrogeology**.

5

FISHING, MARITIME RECREATION AND MARITIME COMMERCIAL SERVICES

5 Fishing, Maritime Recreation and Maritime Commercial Services

5.1 Introduction

5.1.1 As per **Chapter 2: The Decommissioning Process** of the Environmental Statement, the Proposed Works associated with the marine environment are limited to the dismantling and removal of the HPB Cooling Water (CW) Intake Structure and the installation of a new Active Effluent Discharge Line (AEDL) and Sewage Treatment Plant Line (STPL) via the existing Outfall Structure. The works are planned to take place in normal working hours, subject to tidal and other environmental constraints, avoiding the period between July – September to avoid impacts to sensitive ecological receptors.

5.1.2 The HPB CW Intake Structure is situated approximately 540 m from the shore. The decommissioning of the CW Intake Structure will require a Marine License and is assumed to be completed utilising long reach excavators working from Jack Up Barges (JUB) which will remove the low level perimeter screen structure. The excavator and crane barges will utilise appropriate tooling to demolish the structures to seabed level and to load the debris from the seabed on to a barge for disposal. As discussed in **Chapter 2: The Decommissioning Process**, there is approximately 2,500 m^3 of material (concrete and steel) above seabed level to be removed. This is anticipated to require approximately 16 vessel movements.

5.1.3 The installation and operation of the AEDL and STPL will be completed from onshore where possible and as the CW Outfall Structure is exposed at low-tide, activities to secure the discharge lines will not impact fishing, maritime recreation or maritime commercial services. Their installation may also necessitate a variation of the existing HPB RSR permit, discharge consent and the need for a Marine License, where required.

5.1.4 This section considers the scope of the Proposed Works in the marine environment and thus the dismantling and removal of the CW Intake Structure and potential impacts to fishing, maritime recreation and maritime commercial services.

5.2 Baseline

Fishing

5.2.1 For the purposes of this Technical Note, this section has focused on commercial fishing activity only. Recreational fishing activity is described and considered under ‘Maritime recreation’ (see section 5.2.2).

5.2.2 The HPB Works Area is located within the International Council for the Exploration of the Seas (ICES) statistical Rectangle 31E6[20]; this represents the most targeted dataset available for the location, with additional site-specific information having been obtained from other publicly available

[20] International Council for the Exploration of the Sea (ICES) Statistical rectangles. Available at: https://www.ices.dk/data/maps/Pages/ICES-statistical-rectangles.aspx. [Accessed 19/01/2024]

data sources, including studies undertaken for the Hinkley Point C Nuclear Power Station (HPC) development.

5.2.3 In general, commercial fishing within the Severn Estuary is relatively small-scale, with the main ports within the ICES Rectangle (in order of landings weight in 2022) being[21]:

- Ilfracombe (48.69 tonnes);
- Swansea (25.05 tonnes);
- Porthcawl (6.63 tonnes);
- Burry Port (4.94 tonnes);
- Newlyn (1.67 tonnes);
- Milford Haven (0.68 tonnes); and
- Cardiff (0.28 tonnes).

5.2.4 The dominant species landed in the above ports (by weight) are:

- lesser-spotted dogfish (Scyliorhinus canicula);
- thornback ray (Raja clavata);
- blonde ray (R.brachyura);
- smooth hounds (Mustelus spp.), and
- Dover sole (Solea solea).

5.2.5 However, it is noted that in general, commercial fishing activity in the Severn Estuary is relatively low-level, compared to other parts of the UK, and there are no registered commercial fishing vessels based at the Port of Bridgwater[22]; the harbour limits within which the Hinkley Point coastal frontage is located (see **Graphic 5-1**).

[21] UK Government (2023) UK Sea Fisheries Annual Statistics Report 2022. Available at: https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2022. [Accessed 19/01/2024]
[22] Sedgemoor District Council (2021). Port of Bridgwater Port Operations Manual. Revision 9.

Graphic 5-1 - Port of Bridgwater Harbour Limits

Plan of the Port of Bridgwater

There has been a significant volume of work undertaken to understand the fish composition and diversity of the Severn Estuary, in particular drawing on the HPB fish impingement dataset (associated with the HPB cooling water system), which has been subject to detailed analysis to inform impact assessments for the HPC development. Offshore fish surveys were also conducted in association with the HPC impact assessment in Bridgwater Bay, in the vicinity of Hinkley Point. These 2 m beam trawls recorded a total of 15 species of fish, all of which were individuals less than 30cm in length. The species with the highest catch rates were greater sandeel (*Hyperoplus lanceolatus*), solenette (*Buglossidium luteum*) and whiting (*Merlangius merlangus*)[23]. None of these species are notable commercial fisheries targets for the local fleets listed above.

[23] EDF (2011). *Development Consent Order Application for Hinkley Point C. Environmental Statement Vol II.* Available at https://webarchive.nationalarchives.gov.uk/ukgwa/20190919184551mp_/https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010001/EN010001-005038-4.3%20-%20Volume%202%20-%20Hinkley%20Point%20C%20Development%20Site%201.pdf [Accessed August 2024]

Maritime recreation

5.2.6 HPB is located to the west of the estuary of the River Parrett, which opens out into the wider Severn Estuary, which is immediately north of the Site. Marine activities in the Severn Estuary are extensive while recreational activities are a fundamental component of use of the marine environment and are enjoyed by residents and visitors.

5.2.7 The Port of Bridgwater Operations Manual[22] identifies that leisure activities take place from the beach at Burnham-on-Sea and there are leisure craft moorings at Combwich Pill and in the River Brue, approximately 9 km north-east of the Site.

5.2.8 Two reports provide the current basis of plans by authorities with statutory powers to manage activities within the marine and coastal environment of the Severn Estuary and are published by the Association of Severn Estuary Relevant Authorities (ASERA). The two reports are the *Severn Estuary European Marine Site Management Scheme 2018-23*[24] and *Recreational Boating in the Severn Estuary*[25]. ASERA declared in the former that *"Recreational boating remains as an action in the ASERA Action Plan to ensure the information within the report stays up-to-date and accurate."* As such the information in is taken to be current.

5.2.9 The HPB marine infrastructure is located within the Severn Estuary and the scope of marine recreation activities that may be affected by the Proposed Works are included within the activities listed in **Graphic 5-2** which identifies the Activities undertaken by each Relevant Authority[25].

[24] ASERA (2023). Severn Estuary European Marine Site Management Scheme.

Graphic 5-2 - Activities undertaken by each Relevant Authority[25]

	Relevant Authorities																					
	Nature Cons			Ports						County Councils					District Councils			City Councils		Other	
	Natural Resources Wales	Environment Agency	Natural England	ABP	Cardiff Harbour Authority	Gloucester Harbour Trustees	Newport Harbour Commissioners	Port of Bridgwater	The Bristol Port Company	Gloucestershire County Council	Monmouthshire County Council	North Somerset Council	Somerset County Council	Vale of Glamorgan County Council	Forest of Dean District Council	Sedgemoor District Council	Stroud District Council	Cardiff Council	Newport City Council	Devon & Severn IFCA	Trinity House
Airborne sports												•				•						
Agricultural Run-off	•	•	•							•	•		•			•	•					
Anchoring (recreational)	•		•	•		•	•	•	•		•	•			•			•				•
Anchoring (commercial)		•		•		•		•	•			•										•
Angling (recreational)	•	•	•	•	•		•	•			•	•		•		•		•		•		
Archaeology (studies & protection)	•		•							•	•	•	•	•			•		•			
Bait digging	•											•		•		•					•	
Barrage and sluice operation	•	•	•	•	•				•			•				•						
Beach cleaning	•	•	•								•	•		•		•				•		
Boat repairs (commercial)		•			•			•										•				
Boat repairs (recreational)		•		•				•			•	•				•		•				
Cable laying & maintenance			•					•								•						
Coastal protection & flood defence	•	•		•						•	•	•		•	•	•		•	•			
Outfall & pipeline maintenance	•	•			•											•						
Commercial shipping/cargo operations				•		•	•	•	•													
Discharge/exchange of ballast water				•	•	•	•	•	•													
Collection of scientific data	•	•	•	•	•				•	•	•	•	•	•			•	•	•	•		
Educational fieldtrips	•		•	•	•					•	•	•	•	•		•		•	•			
Eel & elver fishing	•															•		•				
Emergency planning	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•		•			
Events/festivals			•	•	•	•	•	•		•	•	•		•	•	•		•	•			
Fishing (commercial)	•		•																	•		
Fishing (recreational)								•												•		
Grazing	•	•	•						•	•	•	•						•	•			
Habitat creation & restoration	•	•		•								•	•	•		•	•	•	•			
Highways discharge				•						•	•	•	•	•				•	•			
Land and beach-based recreation	•		•	•	•					•	•	•	•	•	•	•	•	•	•			
Lockgate & dockwater management		•		•		•			•													
Low flying aircraft		•	•									•		•		•		•				•
Maintenance dredging & disposal		•		•	•	•	•	•	•													
Managing unauthorised waste	•	•			•				•	•	•				•	•	•	•	•			
Moorings	•		•	•	•	•	•	•	•		•	•						•				•
Navigation				•	•	•	•	•	•			•										•
Port waste management (inc ship generated waste)				•	•		•	•	•													
Property & estate maintenance	•		•	•	•				•	•	•	•		•	•	•		•				•
Release of contamination through historic industry	•	•									•				•	•	•	•	•			
Water-based recreation	•		•	•	•	•	•	•	•		•	•		•	•	•		•				
Water channel maintenance	•	•	•		•							•	•	•								
Wildfowling	•	•	•														•					

[25] ASERA (2016). Recreational Boating in the Severn Estuary.

5.2.10 The categories of activities listed in **Graphic 5-2** by ASERA are used as the description of the baseline for the types of activities potentially affected, considered in **Section 5.2.2**.

Maritime commercial services

5.2.11 The Severn Estuary is an important shipping route, with commercial vessels navigating through the deep water approaches to several ports and harbours. Commercial ports in the Severn Estuary include the following:

- Royal Portbury and Avonmouth Docks (owned and operated by the Bristol Port Company);
- Cardiff, Newport, and Barry Docks (owned and operated by Associated British Ports);
- small ports and harbours including those located at Bridgwater, Watchet, Bibby, Minehead, Knightstone (Weston-Super-Mare), Sharpness, and Chepstow; and
- the Hinkley Point C Harbour Authority operate activities associated with the Hinkley Point C Project construction including deliveries to the jetty, marine construction activities, and abnormal indivisible loads ('AILs') delivered to Combwich Wharf.

5.2.12 The HPC Marine Works Offshore Area and HPC Harbour Limit are shown in **Graphic 5-3**[26]. The overlaid red cross identifies the location of the HPB CW Intake structure and therefore the location of its decommissioning, as part of the Proposed Works (see **Figure 1.1** of the ES). The CW Intake Structure is approximately 1.5 km east of the HPC temporary construction jetty.

[26] HPC (2022). LOCAL NOTICE TO MARINERS No. 16 OF 2022.

Graphic 5-3 - HPC Marine Works Offshore Area and HPC Harbour Limit

Extract from Admiralty Chart BA 1152

5.2.13 As for the consideration of maritime recreation above, the consideration of maritime commercial services is informed by reported Activities undertaken by each Relevant Authority in the *Severn Estuary European Marine Site Management Scheme 2018-23*.

5.2.14 Guidance on the activities which fall within the scope of under maritime commercial services is also provided by a recent assessment of decommissioning activities for Hunterston B Nuclear Power Station[27], which uses categories of maritime commercial services identified as “Productive” in Marine

[27] EDF (2023). Hunterston B EIADR – Volume III: Appendices. Available at: onr.org.uk/media/44dpr3uy/environmental-statement-volume-3-appendices.pdf. (Accessed August 2024)

Scotland NMPI mapping service (See **Table 5-1**). In place of a specific list for the Severn Estuary, these categories are also considered applicable to consider the maritime commercial services which feature in the Severn Estuary and therefore which may be affected by the Proposed Works (see **Section 5.2.3**).

Table 5-1 - Maritime Commercial Services in Marine Scotland NMPI mapping service

#	Categories of maritime commercial services (identified as 'Productive')[28]
1	Aquaculture
2	Seaweed Harvesting and Cultivation
3	Fishing (Commercial Sea Fishing)
4	Salmon and Trout Fishing
5	Tourism and Recreation
6	Renewable Energy
7	Subsea Cables
8	Carbon Capture, utilisation and Storage
9	Oil, Gas, Pipelines and Gas Storage
10	Water Abstraction
11	Dredging and Disposal
12	Ports and Shipping
13	Waste Water Treatment and Industrial Outfalls
14	Aggregates
15	Historic Environment and Cultural Heritage
16	Coastal protection and Flood Defence
17	Defence (Military)
18	Economic Analysis

[28] The Scottish Government *Marine Scotland Maps NMPi* Available at: https://marinescotland.atkinsgeospatial.com/nmpi/ [Accessed August 2024]

5.3 Scope in or out of further assessment

Fishing

5.3.1 To minimise the environmental impact to the marine environment, it is proposed that the CW intake is removed to seabed level (i.e. no longer extending above the seabed), with the subsea infrastructure left in-situ.

5.3.2 While the Proposed Works will not be introducing physical obstacles to commercial fishing activity, they will require temporary safety exclusion areas to be implemented for the duration of the works.

As described above, commercial fishing activity in the vicinity of HPB is likely to be of low intensity, with relatively low value stocks landed in local ports. Furthermore, any disruption through the implementation of a temporary safety exclusion zone to encompass the marine activities during their implementation as part of the Proposed Works will be of limited spatial and temporal extent, and these activities are therefore not considered likely to result in a significant impact. Accordingly, commercial fisheries are scoped out of further assessment.

Maritime recreation

5.3.3 Aspects of maritime recreation are inherently assessed in **Chapter 17: People and Communities** within the 'Walkers, cyclists and marine users near the Site' receptor group. The main source of potential impacts from the Proposed Works on maritime activities is the removal of the HPB offshore CW Intake Structure. All other activities related to the Proposed Works, such as transport of materials and people to and from the Site, will take place onshore.

5.3.4 The HPB site forms part of a wider Hinkley Point complex on an otherwise unremarkable promontory on the south coast of the Severn Estuary with respect to marine recreational interests. The complex includes temporary harbour facilities (i.e. a temporary construction jetty) which was developed for the construction of the HPC Project and licenced under the Hinkley Point Harbour Empowerment Order (HPHEO)[29]. Harbour facilities include a temporary jetty of approximately of 500 m in length.

5.3.5 The marine aspects of the Proposed Works are likely to be significantly smaller in scale than those for HPC. They are more significant than minor harbour works but similar in character. They involve underwater engineering with the use of JUB's and mechanical equipment (excavators) which are considered conventional and are routinely deployed for similar works.

5.3.6 The required activities reflect many of the same issues used in assessing and permitting the temporary construction jetty and the HPC Project. For comparison with the Proposed Works, the Development Consent Order Application for Hinkley Point C[30] notes that, for decommissioning of the

[29] The National Archives UK Statutory Instruments 2012 No. 1914. *The Hinkley Point Harbour Empowerment Order 2012*, Available at https://www.legislation.gov.uk/uksi/2012/1914/made [Accessed August 2024]

[30] EDF 2011. *Development Consent Order Application for Hinkley Point C. Environmental Statement Vol II.* Available at https://webarchive.nationalarchives.gov.uk/ukgwa/20190919184551mp_/https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010001/EN010001-005038-4.3%20-%20Volume%202%20-%20Hinkley%20Point%20C%20Development%20Site%201.pdf [Accessed August 2024]

HPC intake and outfall structures, works will be "*very limited in spatial scale and of limited duration*" (See **Graphic 5-4**).

Graphic 5-4 - Decommissioning impacts identified for HPC[30]

5.7.28	It is proposed to remove the intake and outfall structures but these works will be very limited in spatial scale and of limited duration. No significant impacts upon marine ecology receptors are anticipated as a result of these works.
5.7.29	Nevertheless, care will be taken through the design and execution of the works to avoid adverse effects on protected habitats such as Sites of Special Scientific Interest (SSI), National Nature Reserves (NNR), Special Protection Areas (SPA), Special Areas of Conservation (SAC) and County Wildlife Sites (CWS). The nearby protected habitats which are currently afforded protection are described in detail in **Volume 2**, **Chapters 19** and **20** of this ES.

5.3.7 During the Proposed Works, it may not be apparent from casual observation that the area of work is not within the area of the harbour covered by the HPHEO. As such, some impacts, such as visual impacts, may be more limited than had the HPB works been undertaken in an area of the coast without existing marine development.

5.3.8 The temporary construction jetty at Hinkley Point receives and dispatches loads to nearby ports for the construction of HPC. Combwich Wharf is and has been the nearest location for marine traffic related to the Hinkley Point complex. Combwich Wharf lies on the lower reaches of the River Parrett which has the local town Bridgwater further upstream. The Port of Bridgwater is the Statutory Harbour Authority for the River Parrett and Bridgwater Bay.

5.3.9 As discussed in **Chapter 3 Alternatives**, Combwich Wharf is excluded from consideration.

5.3.10 The specific port location(s), such as Avonmouth, required to support the marine works will be defined in detailed design, in support of the required marine licence. This will consider the required level of activity, in terms of quantity of materials removed, their dimensions, the need for wharfage and mooring, sizes of vessels, and levels of activity in embarking and disembarking working crews working, which are considered to be of a magnitude which would not disrupt existing use of the chosen location(s). Similarly, the additional marine traffic generated from removal activities (approximately 16 movements) is considered of a magnitude which would not disrupt existing use of sea areas between location of the CW Intake Structure and the specific port location.

5.3.11 The marine activities identified by ASERA and identified for the local authority areas relevant to the Proposed Works are listed in **Table 5-2**together with consideration of the potential impacts of the Proposed Works. The table replicates the relevant columns of **Graphic 5.2** and adds columns to the right showing assessment of effects for each activity and further rationale for clarification. The activity "Outfall and pipeline maintenance" is recognised as intrinsically relevant to the EIADR which involves work on and removal of the CW Intake Structure for HPB.

5.3.12 A number of embedded measures apply to more than one activity listed in the table. These are described below and assumed to be in place and accounted for in the assessment. These embedded measures are:

- **Notices to mariners** - these are expected to be consulted by mariners and other parties potentially affected by changes in the marine environment, such as recreational fishers and people undertaking coastal and nearshore activities.
- **Use of best practice for dismantling and deconstruction of structures and related activities in the offshore environmen**t - the Proposed Works will be undertaken following relevant guidance.
- **Public information** - information distributed to local authorities, other public bodies and will indicate the duration and type of Proposed Works as well as highlighting other sources of information such as notices to mariners. At the local level, public information will include notices to the public at perimeter of the Site, on PRoWs nearby, and information provided to local organisations.
- **Working during daytime and weekdays** - Except where required to meet safety requirements or for unexpected reasons, Proposed Works are planned to be undertaken during normal working hours, Monday to Friday.
- **Seasonal working** - Proposed Works in the marine environment will not be undertaken between July – September (see **Chapter 2: The Decommissioning Process**) to ensure there are no effects upon important local ecological receptors, and thus impacts associated with recreational activities, such as nature watching.

5.3.13 The screening assessment is expressed using summary terms as follows:

- **Not in Scope** - is not related to maritime recreation.
- **Not relevant** - may be related to maritime recreation but is not known to occur and additionally assumed not to be affected by the Proposed Works with the embedded measures in place.
- **Low, unlikely, very unlike**ly - an indication of expected levels and frequency of occurrence before mitigation, noting further that all activities identified in this way in the table are assessed as not affected by the Proposed Works with the embedded measures in place.
- **Mitigated** - mitigated through the implementation of defined environmental embedded measures relevant to the specific activity, such as information distributed to sailing clubs.

5.3.14 With the embedded environmental measures in place, all activities are not expected to be affected by the Proposed Works.

Table 5-2 - Screening assessment of effects of Marine Aspects of Proposed Works on Maritime Recreation

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
Airborne Sports	o	o			Mitigated	Not known in the marine and coastal areas used for Proposed Works and any impacts covered by Mitigation actions.
Agricultural run-off		o			Not in scope	
Anchoring (recreational)	o		o	o	Mitigated	Sea areas for Proposed Works are not commonly used for anchoring.
Anchoring (commercial)	o		o	o	Mitigated	Sea areas for Proposed Works are not commonly used for anchoring, or that indirect effects occur such as vessels wishing to anchor are displaced to another area that would affect maritime recreation.
Angling (recreational)	o	o	o		{see Fishing (recreational) below}	

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
Archaeology (studies and protection)	o				Not in scope	
Bait digging	o	o			Mitigated	
Barrage and Sluice Operation	o	o			Not in scope	
Beach Cleaning	o	o			Not relevant	No beaches near Proposed Works
Boat repairs (commercial)			o		Low; Unlikely	Proposed Works will not affect existing activities.
Boat repairs (recreational)	o	o	o		Unlikely	No centres of boat repairs that would be affected by the Proposed Works.
Cable laying and maintenance		o	o		Not relevant	No cables likely to be affected which would affect maritime recreation.
Costal protection and flood defence	o	o			Not relevant	No interaction or indirect effects on coastal protection or flood defences.
Outfall and pipeline maintenance		o			*Subject of EIADR*	Proposed Works relate to the CW Intake Structure and are

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
						described under this activity. No effects on similar infrastructure are expected to occur and so will not lead to effects on maritime recreation.
Commercial shipping/cargo operations			o		Mitigated	Proposed Works will not affect existing activities. Potential use of Avonmouth or an alternative port location for the Proposed Works is not extensive and will not interfere with existing uses.
Discharge/exchange of ballast water			o		Mitigated	Vessels used by HPB will follow good practice. No expected indirect effects on maritime recreation, such as on ballast water operations by vessels displaced to another area due to the Proposed Works.
Collection of scientific data	o				Mitigated	No known programmes. Effects on potential

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
						programmes, such as in designated areas near the Site, expected to be covered by embedded measures .
Educational fieldtrips	o	o			Not relevant	Not known in the marine and coastal areas used for Proposed Works.
Ell and elver fishing		o			Not relevant	Not known in the marine and coastal areas used for Proposed Works.
Emergency planning	o	o	o		Not relevant	The Site Licensee will operate appropriate emergency planning systems and the Proposed Works will be undertaken in line with them.
Events/festivals	o	o	o		Not relevant	Not known in the marine and coastal areas used for Proposed Works.
Fishing (commercial)					*See the "Fishing" section of this note.*	

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
Fishing (recreational)			o		Mitigated	Recreational fishing throughout the Severn Estuary is popular, with Hinkley Point being popular for targeting codling, flounder and whiting during winter, with summer species including plaice, dogfish and bass[31]. Recreational fishing near the HPB Site may be temporarily affected.
Grazing	o				Not relevant	
Habitat creation and restoration	o	o			Not relevant	No known programmes or plans for habitat creation and restoration.
Highways discharge	o				Very Unlikely	Proposed Works are predominantly marine. Some additional road traffic at the preferred

[31] British Sea Fishing: South West England. Available at: https://britishseafishing.co.uk/south-coast-and-south-west-england/. [Accessed 19/01/2024]

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
						port location is possible but will be managed to best practice and is not expected to increase highways discharges.
Land and beach-based recreation	o	o			Not relevant	No beaches near Proposed Works.
Lockgate and dockwater management					Not relevant	No use of or effect on use (e.g. at Bridgwater).
Low flying aircraft	o	o		o	Not relevant	Not known in the marine and coastal areas used for the Proposed Works.
Maintenance dredging and disposal			o		Unlikely	Proposed Works will not affect existing activities.
Moorings	o		o	o	Unlikely	The Proposed Works may require temporary changes in use of the preferred port location but effects on maritime recreation are expected to be mitigated.
Navigation	o		o	o	Unlikely	Proposed Works will not affect existing activities.

Activity	NSCC	Sedgemoor DC	Port of Bridgwater	Trinity Ho.	Assessment	Further rationale
Port waste management (inc ship generated waste)	o	o		o	Mitigated	Vessels used by HPB will follow good practice. No expected indirect effects on maritime recreation, such as on waste management due to the Proposed Works.
Property and estate maintenance		o			Not relevant	
Release of contamination through historic industry		o			Unlikely	Assessment of the potential of releases from the Proposed Works are covered in the ES.
Water-based recreation	o	o	o		Mitigated	Sailing clubs at Bridgwater, Combwich wharf and Burnham-on sea are unlikely to use the sea areas of Proposed Works.
Water channel maintenance	o				Unlikely	The Proposed Works will not affect existing activities.

Maritime commercial services

5.3.15 A number of maritime commercial services are included explicitly and implicitly within the table of activities identified by ASERA and used above for assessing maritime recreation. Based on a re-interpretation of the assessment for maritime recreation), the Proposed Works are not expected to result in further effects on maritime commercial services.

5.3.16 An assessment using the more specific definition of maritime commercial services identified in the Baseline from categories identified as “Productive” in the Marine Scotland NMPI mapping service is also considered here, as a supplement and cross reference and is presented in **Table 5-3** . The same categories for the assessment are used as for maritime recreation.

Table 5-3 - Assessment of effects of Marine Aspects of Proposed Works on Maritime Commercial Services as defined in Marine Scotland NMPI mapping service

#	Categories of maritime commercial services (identified as 'Productive')[32]	Assessment	Further rationale
1	Aquaculture	Not relevant	Not known in the marine and coastal areas used for the Proposed Works.
2	Seaweed Harvesting and Cultivation	Not relevant	Not known in the marine and coastal areas used for the Proposed Works.
3	Fishing (Commercial Sea Fishing)	*See the "Fishing" section of this note.*	
4	Salmon and Trout Fishing	*See the "Fishing" section of this note.*	
5	Tourism and Recreation	*See Maritime Recreation section of this note.*	
6	Renewable Energy	Not relevant	Not known in the marine and coastal areas used for the Proposed Works.

[32] The Scottish Government *Marine Scotland Maps NMPi* Available at: https://marinescotland.atkinsgeospatial.com/nmpi/ [Accessed August 2024]

#	Categories of maritime commercial services (identified as 'Productive')[32]	Assessment	Further rationale
7	Subsea Cables	Mitigated	Location and operation likely to be already coordinated with activities at Hinkley Point.
8	Carbon Capture, utilisation and Storage	Not relevant	Not known in the marine and coastal areas used for the Proposed Works.
9	Oil, Gas, Pipelines and Gas Storage	Mitigated	Location and operation likely to be already coordinated with activities at Hinkley Point.
10	Water Abstraction	Mitigated	Marine aspects of the Proposed Works concern water abstraction (water intake). Other abstraction locations and operations likely to be already coordinated with activities at Hinkley Point.
11	Dredging and Disposal	Unlikely	Proposed Works will not affect existing activities.
12	Ports and Shipping	Mitigated	Proposed Works will not affect existing activities. Potential use of Avonmouth or other preferred port location for the Proposed Works is not extensive and will not interfere with existing uses.
13	Waste Water Treatment and Industrial Outfalls	Mitigated	Location and operation likely to be already coordinated with activities at Hinkley Point.
14	Aggregates	Not relevant	Not known in the marine and coastal areas used for the Proposed Works.
15	Historic Environment and Cultural Heritage	Not in scope	
16	Coastal protection and Flood Defence	Not relevant	No interaction or indirect effects on coastal protection or flood defences.
17	Defence (Military)	Not in scope	

#	Categories of maritime commercial services (identified as 'Productive')[32]	Assessment	Further rationale
18	Economic Analysis		*Unclear need for this category in source, Included for completeness.*

5.4 Summary

Fishing

Commercial fishing activity in the vicinity of the Proposed Works is likely to be low intensity, as identified in **Section 5.1.1**. Further, any disruption to activity will be of limited spatial and temporal extent, and thus is not considered likely to result in a significant effect, and is scoped out.

Maritime recreation

The screening of the Proposed Works against the maritime recreation activities as identified in the ASERA Study, concludes that there is limited interaction between maritime recreational activities and the Proposed Works. Maritime recreation is considered within **Chapter 17: People and Communities**, with respect to the limited spatial and temporal extent for potential effects to occur, and the application of the proposed embedded environmental measures, effects on maritime recreation and is therefore scoped in.

Maritime commercial services

The screening of the Proposed Works against the Maritime Commercial Services identified in the ASERA Study (**Table 5-2)**, cross referenced against the relevant definitions of Productive Marine Commercial Services in **Table 5-3,** concludes that due to the limited spatial and temporal extent of the Proposed Works in the marine environment, there is limited opportunity to impact Maritime Commercial Services. Interactions will be suitably managed via the implementation of the proposed embedded environmental measures and therefore Maritime Commercial Services are scoped out.

6

HUMAN HEALTH

6 Human Health

6.1 Introduction

6.1.1 The ONR Guidance on the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations[33] states that "Potential impacts of a decommissioning project on health could include noise and vibration nuisance, changes in air quality, and changes to how people feel about their local community affecting their sense of wellbeing." Potential impacts on health are therefore considered within the context of the relevant environmental aspect assessments - Noise and Vibration, Air Quality, People and Communities and Soils, Geology and Hydrogeology.

6.1.2 **Appendix 17A** summarises the consideration of relevant areas of environmental, physical and mental human health effects, as identified in the Institute of Environmental Management and Assessment (IEMA) Guide to Effective Scoping of Human Health in Environmental Impact Assessment[34]. This approach has been taken to reflect the potential human health effects as they arise across different aspects of the EIA and the development of relevant baseline information and assessment methodologies is included within these environmental aspect chapters. This information is summarised in **Section 6.2**.

6.2 Noise and vibration

6.2.1 Human health effects may result from noise and vibration during the Proposed Works on-site and from off-site traffic. **Chapter 15: Noise and Vibration** of the ES identifies effects that may occur during the Proposed Works, where noise and vibration impacts may arise from the "*demolition of buildings, dismantling of plant and construction of the Safestore".* The Preparations for Quiescence phase is assumed to be the worst-case with respect to potential noise and vibration effects.

6.2.2 The residential receptors closest to the Proposed Works that may experience disturbance from noise and vibration (and thus human health) effects associated with the Proposed Works, are identified 1 km to the south of the Site. Users of the King Charles III Coast Path are also considered (See **Table 15-13** in **Chapter 15: Noise and Vibration**). The assessment concludes that effects on all receptors are **Minor** (**Not Significant**) and therefore are not likely to result in negative physical or mental health effects.

6.2.3 The chapter identifies the populations that may experience effects of road traffic noise as Noise Sensitive Receptors (NSRs), within specific distances of the road transport routes used and are therefore taken forward for assessment. The assessment concludes that likely impacts due to increases in road noise are negligible and therefore results in a **Minor** (**Not Significant**) effect.

6.2.4 A number of embedded environmental measures are proposed to reduce noise, vibration and associated health effects in **Chapter 15: Noise and Vibration**, such as:

[33] ONR (2023). Guidance on the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations.
[34] Institute of Environmental Management and Assessment (IEMA) (2022). Guide to Effective Scoping of Human Health in Environmental Impact Assessment

"Undertaking the Proposed Works in accordance with good practice. All noisy activities to be undertaken within hours for noisy activities for construction provided by Somerset Council, except where works need to be undertaken continuously (e.g. for any concrete pours that may be required) or in case of emergencies.

Where the potential for significant effects arises, applying methods, considered to be best practice, in accordance with the recommendations in BS 5228:1-2009+A1:201413, the approved code of practice for construction noise".

6.3 Air quality

6.3.1 Human health effects may arise from air quality impacts associated with the Proposed Works. **Chapter 6: Air Quality** of the Environmental Statement identifies "*construction, demolition, earthworks and trackout activities"* on-site, as a potential source of air quality impacts with related effects on human health arising from fugitive dust emissions. In addition, combustion product emissions associated with "*On-road HGVs and LDV movements for construction and demolition activities"* may have potential effects on human health from increases in concentrations of pollutants.

6.3.2 Human health effects arising from air quality impacts may occur during the initial and final phases of development (Preparations for Quiescence phase and Final Site Clearance phase) (see **Chapter 2: The Decommissioning Process**). No activities which give rise to air quality impacts are planned within the intervening Quiescence phase, such as from construction, demolition, earthworks or trackout activities or from vehicle movements.

6.3.3 The assessment methodology **in Chapter 6: Air Quality** follows the Institute of Air Quality Management (IAQM) guidance[35] [36]. Users of the King Charles III Coast Path are identified as the only sensitive human receptors within 250 m of the Works Area and therefore the only human receptors that may potentially experience human health effects from fugitive dust emissions (**Chapter 6: Air Quality**)[37]. Effects to this receptor are considered at low and negligible risk and therefore the effect is **Not Significant**. Air quality assessment of road traffic emissions on human receptors is screened out of further assessment due to the number of movements associated with the Proposed Works being less than the thresholds for detailed assessment, as defined in guidance by IAQM and Environmental Protection UK[38].

6.3.4 In the assessment, mitigation of effects on human health arising from air quality impacts generated by the Proposed Works are identified and applied. For example, mitigations contained within a Dust Management Plan and secured via the EMP.

[35] IAQM (2014). IAQM Guidance on the assessment of dust from demolition and construction (Online). Available at: http://iaqm.co.uk/wp-content/uploads/guidance/iaqm_guidance_report_draft1.4.pdf

[36] IAQM. (2018). Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, Version 1.1. (Online). Available at: http://iaqm.co.uk/text/guidance/guidance_monitoring_dust_2018.pdf

[37] As per IAQM Guidance, workers occupationally exposed to PM10 are not included, as protection is covered by Health and Safety at Work legislation

[38] IAQM and EPUK, (2017). Land-Use Planning & Development Control: Planning For Air Quality. (Online). Available at: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

6.4 People and communities

6.4.1 Human health is affected by the changes resulting from the Proposed Works and the wider socio-economic determinants characteristic of the community. The primary socio-economic effects identified in **Chapter 17: People and Communities** of the ES are the potential effects to the 'employment market' and also 'workers at HPB'. Employment is a socio-economic determinant with established links to levels of health with the UK government stating that "*there is clear evidence that good work improves health and wellbeing across people's lives*"[39]. Effects on the 'employment market' are considered to be **Minor** (**Not Significant**) at the local level, whereas effects on 'workers at HPB' are considered to be **Moderate** (**Likely Significant**).

6.4.2 Other wider determinants of health are considered in the assessment, such as effects on the 'local economy and business' and access for 'walkers, cyclists and marine users near the Site' to areas of amenity, such as the King Charles III Coast Path. Effects on this receptor group are considered to be **Minor** (**Not Significant**).

6.4.3 The assessment of effects on human health in the People and Communities chapter is based on the changes arising from the levels of employment required for the Proposed Works and the associated impacts which may lead to health effects.

6.5 Surface water and Flood Risk

Chapter 11: Surface Water and Flood Risk of the ES assesses the likely significant effects of the Proposed Works on 'off-site people, property and infrastructure' as a receptor and thus multiple determinants of health as per the IEMA Guidance, such as housing, climate change and adaptation and wider societal infrastructure and resources. Although 'Off-site people' and 'property and infrastructure' are considered to be 'high' and 'medium' sensitivity receptors respectively, the assessment concludes that the changes to off-site surface water and tidal flood risk as a result of the Proposed Works are expected to be **Negligible** to **Minor** (**Not significant**).

6.6 Soils, Geology and Hydrogeology

Chapter 12: Soils, Geology and Hydrogeology of the ES identifies two groups of human health receptors those inside of the Works Area; current and future site users and those outside of the Works Area, including the decommissioning workforce and adjacent land users, which includes public paths, fields, adjacent nuclear site users (including workers) at HPA. The assessment concludes with the proposed environmental embedded measures in place, the likely significant effects associated with the Proposed Works are considered **Negligible** (**Not Significant**).

6.6.1

[39] UK Government (2023). Health matters: health and work. (Online). Available at: https://www.gov.uk/government/publications/health-matters-health-and-work/health-matters-health-and-work

6.7 Summary

6.7.1 Human health effects are scoped into the assessment within the relevant environmental aspect chapters and therefore the associated baseline, assessment of likely significant effects and development of embedded environmental measures are considered in the ES and summarised in **Appendix 17A**.

7

TRANSBOUNDARY EFFECTS

7 Transboundary Effects

7.1 Introduction

7.1.1 Transboundary effects arise when impacts from a development within other European Economic Area (EEA) Member States ('EEA States') affects the environment of another EEA State(s).

7.1.2 The UK is a signatory to the United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment[40] in a Transboundary Context. The Convention was adopted in 1991 in the Finnish city of Espoo and is therefore known as the 'Espoo Convention'. It was established to enhance the cooperation between EEA states in assessing environmental effects in a transboundary context.

7.1.3 Schedule 1, paragraph 5 of the EIADR states that the ES should include:

7.1.4 "The description of the likely significant effects on the factors specified in regulation 10B(3) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project."

7.1.5 Schedule 2, Regulation 18 (3c) requires *'the transboundary nature of the impact'* to be taken into account when determining the likely significant effects of the Proposed Works on the environment.

7.2 Scope in or out of further assessment

7.2.1 Whilst preliminary work undertaken across the environmental aspects for the preparation of the HPB Scoping Report and further consideration during the development of the ES concluded that no transboundary effects are anticipated to arise as a result of the Proposed Works, it is recognised that Chapter 9: Marine Biodiversity includes a Study Area of 200 km for migratory fish and cetaceans that would be in close proximity to other EEA State(s). Therefore, to ensure that transboundary effects are suitably considered in the ES, transboundary effects are scoped in to the assessment. **Appendix 5D** following Planning Inspectorate Advice Note 12[41], which presents this information in a Transboundary Screening Matrix.

7.3 Summary

7.3.1 **Appendix 5D** considers the planned activities within each phase of the Proposed Works within the Works Area, with respect to the Study Areas / zones of influence associated with each relevant environmental aspect and the relevant key receptors.

[40] United Nations (1991). Convention On Environmental Impact Assessment In A Transboundary Context. Available at: https://unece.org/fileadmin/DAM/env/eia/documents/legaltexts/Espoo_Convention_authentic_ENG.pdf

[41] National Infrastructure Planning. (2020). 'Advice Note Twelve: Transboundary Impacts and Processes'. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-twelve-transboundary-impacts-and-process

8

SUMMARY

8 Summary

8.1.1 The summary of the requirements for further assessment in relation to those topics identified in HPB Pre-application Opinion responses are presented in **Table 8-1.**

Table 8-1 - Summary of the requirements for further assessment in relation to those topics identified in HPB Pre-application Opinion responses

Topic	Scoped in / out for further assessment
Marine archaeology, geoarchaeology and historic landscape	Scoped out of assessment
Material resource use	Scoped in for assessment – See **Appendix 19A: Material Resource Use**
Agricultural land-use	Scoped in for assessment – See **Chapter 12: Soils, Geology and Hydrogeology**
Fishing (commercial fisheries)	Scoped out of assessment
Maritime recreation	Scoped in for assessment – See **Chapter 17: People and Communities**
Maritime commercial services	Scoped out of assessment
Human health	Scoped in for assessment – See **Appendix 17A: Human Health Summary**
Transboundary effects	Scoped in of assessment – See **Appendix 5D: Transboundary Screening Matrix**

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5C

EIADR compliance summary

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5C EIADR compliance summary

5C.1 Introduction

5C.1.1. Under a transfer agreement made in June 2021 between UK Government and EDF, the AGR stations will transfer from EDF ownership to the Nuclear Decommissioning Authority (NDA) after EDF has ceased generating electricity and defueled. Once Nuclear Restoration Services (NRS) (formerly known as Magnox Limited), a subsidiary of the NDA, has obtained the necessary regulatory approval to become the holder of the Nuclear Site Licence for Hinkley Point B (HPB), the ownership of HPB will transfer to NRS.

5C.1.2. Since the transfer agreement was signed, EDF, NDA and NRS have been working together to develop a delivery plan for the decommissioning of HPB, realising synergies and opportunities to share site infrastructure across Hinkley Point A and HPB, aligning practice and processes, and sharing best practice and experience. The assumptions that underpin the EIADR application for HPB have been reviewed by NDA and NRS and confirmed as an appropriate basis for undertaking an Environmental Impact Assessment of the effects of decommissioning at the time the EIADR application has been submitted. The environmental effects and embedded environmental measures reported in the EIADR application have also been reviewed by NDA and NRS and confirmed as appropriate.

5C.1.3. The EIADR consent for HPB will be transferred to NRS in parallel with the transfer of ownership of the HPB asset to be decommissioned. Post transfer, NRS will assume the responsibility for implementing the decommissioning plan, in accordance with the requirements of the EIADR. This will involve management of any residual uncertainties either about the decommissioning proposals, future baseline, and the associated environmental effects reported in the HPB EIADR application; and management of any change or extension to the decommissioning plan that could result in a significant environmental effect.

5C.1.4. The approach to managing EIADR compliance is set out in this note. The approach reflects the approach currently taken by NRS in managing EIADR compliance across all NRS sites in so far as EIADR applies (set out in NRS Standard Procedure S-159 Compliance with Nuclear Reactors (Environmental Impact Assessment for Decommissioning Regulations).

5C.2 Developing the Environmental Management Plan

5C.2.1. An outline Environmental Management Plan has been produced to accompany the HPB EIADR application. This includes:

- A summary of the environment effects during each stage of the decommissioning plan and for each environmental discipline;
- The agreed mitigation measures that are already identified in the Environmental Statement, as captured in the Mitigation Register;
- The work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future; and
- The options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future, and identify the mitigation measures for those options, giving reasons for their selection.

5C.2.2. An EMP will be developed and submitted to ONR for approval in accordance with the relevant EIADR consent condition.

5C.3 Maintaining an Environmental Impact Assessment Baseline

5C.3.1. The following records will be transferred from EDF to NRS and will form the basis of an Environmental Impact Assessment Baseline for HPB:

- The environmental baseline surveys and findings that underpin the environmental baseline for the HPB EIADR application (see appended list of baseline survey reports);
- The HPB Environmental Statement that includes the Project Description, EIA Methodology, the conclusions of environmental assessment on effects and significant impacts, and associated mitigation measures;
- The HPB Decommissioning EIADR Assumptions Register; and
- The HPB Decommissioning Environmental Mitigation Register.

5C.3.2. NRS will maintain and update the Environmental Impact Assessment baseline on a regular basis to reflect:

- Any significant updates to the environmental baseline that arise from the programme of monitoring and environmental surveys (as set out in the outline EMP) in so far as they have potential to result in changes to the assessment reported in the HPB Environmental Statement;
- Any significant updates to the environmental baseline that arise from changes in environmental designations, environmental features or receptors, in so far as they have potential to result in changes to the assessment reported in the HPB Environmental Statement;
- Any changes to the HPB Decommissioning Plan that would require an alteration to the Environmental Statement Project Description and/or the EIADR Assumptions Register in so far as they have potential to result in changes to the assessment reported in the HPB Environmental Statement; and
- Any changes to mitigation, to replace or improve the effectiveness of mitigation.

5C.4 Updates to the Environmental Management Plan

5C.4.1. Annual reviews of the EMP will be undertaken and an updated EMP submitted to ONR. Updates will include:

- A record of mitigation measures implemented to date;
- Description of any changes made to mitigation measures, giving reasons for such changes; and
- Description of the effectiveness of implemented mitigation, including how the measures were assessed, monitored and recorded.
- A review of any updates to Environmental Impact Assessment Baseline. The updated EMP will highlighting where there have been changes in the baseline environment, assess whether changes in baseline could result in a change to the assessment findings and a change in significant environmental impacts previously reported in the Environmental Statement, and identify any additional mitigation measures required.

5C.5 Assessing changes or extensions to the Decommissioning Plan

5C.5.1. Changes or extensions to the Decommissioning Plan will be proposed, assessed, agreed and managed through the EDF / NRS engineering change or modification process. Part of the assessment of the change will include an assessment of the implications for the EIADR consent and identification of the need for amendment of the EIADR consent, if required, under Regulation 13 of the EIADR. The assessment will be informed by engagement with ONR throughout the following steps:

- Step 1: Identification of whether a change or extension[1] to the decommissioning plan is a change to the consented decommissioning project as described in the Environmental Statement Project Description and/or the EIADR Assumptions Register.
- Step 2: Assessment, employing the skills and competencies of a SQEP, of whether the change or extension has the potential to have a Significant Adverse Environmental that has not previously been reported in the HPB Environmental Statement.
- Step 3: Where there could be potential for an additional Significant Adverse Environmental Impact that has not previously reported in the HPB Environmental Statement, consideration as to whether existing EIADR mitigations could be sufficient in managing the potential impact.
- Step 4: Where there is insufficient mitigation, undertake further EIA employing the skills and competencies of a SQEP and SME as required.
- Step 5: Provide information to the ONR under Regulation 13 of the EIADR to enable the ONR to determine whether EIA is required.
- Step 6: Where ONR determine that EIA is required, submit an application for consent, with an Environmental Statement, of the change or extension to ONR in accordance with the requirements Regulation 13 of the EIADR.

[1] A change or extension to the decommissioning plan could include changes to building requirements, changes to waste treatment/management/transport, changes to the decommissioning timescales, and changes in the use of resources (energy, water, materials).

5C.5.2. Once the relevant approvals have been obtained, any changes or extensions to the Decommissioning Plan, would be recorded in the Environmental Impact Assessment Baseline, with updates to the Project Description, Assumptions Register and Mitigation Register.

5D

Transboundary effects screening matrix

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5D TRANSBOUNDARY SCREENING MATRIX

5D.1 INTRODUCTION

5D.1.1. This appendix identifies the transboundary receptors of relevance to the decommissioning of Hinkley Point B Nuclear Power Station (the 'Proposed Works') and considers the potential pathway and effects on these receptors, as required by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) ('EIADR')[1].

5D.2 LEGISLATIVE CONTEXT

5D.2.1. Transboundary effects arise when impacts from a development within other European Economic Area (EEA) Member States ('EEA states') affects the environment of another EEA state(s).

5D.2.2. The UK is a signatory to the United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment[2] in a Transboundary Context. The Convention was adopted in 1991 in the Finnish city of Espoo and is therefore known as the 'Espoo Convention'. It was established to enhance the cooperation between EEA states in assessing environmental effects in a transboundary context.

5D.2.3. Schedule 1, paragraph 5 of the EIADR states that the ES should include:

"*The description of the likely significant effects on the factors specified in regulation 10B(3) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project."*

5D.2.4. Schedule 2, Regulation 18 (3c) requires 'the transboundary nature of the impact' to be taken into account when determining the likely significant effects of the Proposed Works on the environment.

5D.2.5. There is no specific guidance to how transboundary effects should be assessed with respect to the EIADR. However, Planning Inspectorate Advice Note Twelve: Transboundary Impacts[3] sets out the procedures for consultation in association with an application where such development may have significant transboundary impacts.

5D.2.6. It is acknowledged that Advice Note 12 applies to Development Consent Order applications in England and Wales. However, Advice Note 12 provides a structured approach to the assessment of transboundary effects. Therefore, the assessment of transboundary effects has been undertaken in line with this guidance.

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[1] UK Government (2018). The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) (Amendment) Regulations 2018. (Online). Available at: The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) (Amendment) Regulations 2018 (legislation.gov.uk) (Accessed August 2024).

[2] United Nations (1991). Convention On Environmental Impact Assessment In A Transboundary Context. Available at: https://unece.org/fileadmin/DAM/env/eia/documents/legaltexts/Espoo_Convention_authentic_ENG.pdf (Accessed August 2024).

[3] National Infrastructure Planning. (2020). 'Advice Note Twelve: Transboundary Impacts and Processes'. Available at: Nationally Significant Infrastructure Projects - Advice Note Twelve: transboundary impacts and process - GOV.UK (www.gov.uk) (Accessed August 2024).

5D.3 TRANSBOUNDARY SCREENING

Table 5D-1 - Transboundary Screening Matrix

Screening Criteria:	Summary of relevant information
Document(s) used for transboundary Screening:	Decommissioning of Hinkley Point B Nuclear Power Station (HPB) Environmental Statement
Screening Criteria:	
Location of Development (including existing use) and Geographical area	HPB is located on the north coast of Somerset on the shore of the Severn Estuary. The land within the Site lies at an elevation of approximately 10 m Above Ordnance Datum (AOD). It predominantly features built form development including the buildings housing the reactors and adjoining turbine hall towards the centre of the Site, and smaller ancillary buildings, warehouses and tanks around this central feature. The Cooling Water Intake and Outfall Structures are offshore, circa 400 m and 200 m respectively. The HPB Nuclear Site Licence boundary ('the Site') and the Indicative Dismantling Works Area ('Works Area') are defined in **Volume III, Figure 1.1**. The Site is within the jurisdiction of Somerset Council which is a Unitary Authority for Somerset. The Site is located entirely within the UK European Economic Area. **Figure 5A** included in this appendix shows the nearest European Economic Area States. The closest EEA state is France EEA which is approximately 185 km from the Site.
Characteristics of the Development	HPB is a 1,320 MW twin Advanced Gas-Cooled Reactor (AGR) site which ceased generation in August 2022 after 46 years of service. Defueling commenced in September 2022 to remove spent fuel from the reactors equating to approximately 99% of the radioactivity from the Site which will allow the ONR to confirm the Site has reached 'Fuel-Free Verification' (FFV). FFV is the trigger for the Proposed Works and therefore the activities for which consent is being sought under this EIADR application. The Proposed Works are planned to be delivered in three phases:

Screening Criteria:	Summary of relevant information
	- **Preparations for Quiescence (~13 years):** A period when the Site undergoes a relatively large amount of civil engineering work, including demolition of all existing buildings, except for the Reactor Building complex which will be repurposed and modified to create a 'Safestore' to allow further radioactive decay to occur during the Quiescence phase. - **Quiescence phase (~70 years):** Safestore is the only remaining infrastructure from the Preparations for Quiescence phase. The Quiescence phase allows for further decay of radioactive plant and materials housed in the Safestore, prior to Final Site Clearance to reduce the radioactive hazard when undertaking site clearance activities. - **Final Site Clearance (~10 years):** removal of the Safestore from the Site, including all radioactive or other hazardous materials and wastes, for the purpose of de-licensing the Works Area Further detail, including an indicative programme for the Proposed Works is provided in **Chapter 2: The Decommissioning Process** in this Environmental Statement.
Environmental Importance	As set out in the **HRA Report,** the following European environmental designations are of relevance to the assessment of Likely Significant Effects associated with the Proposed Works. ▪ Severn Estuary / Môr Hafren SAC (UK0013030); ▪ Severn Estuary / Môr Hafren Ramsar Site (UK11081); ▪ Severn Estuary SPA (UK9015022); ▪ Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396); ▪ West Wales Marine / Gorllewin Cymru Forol SAC; ▪ North Channel SAC; ▪ Rockabill to Dalkey Island SAC; ▪ Blasket Islands SAC; ▪ Roaringwater Bay and Islands SAC; ▪ Nord Bretagne DH SCI;

Screening Criteria:	Summary of relevant information
	▪ Ouessant-Molene SCI; ▪ Mers Celtiques Talus du golfe de Gascogne SCI; ▪ Côte de Granit rose-Sept-Iles SCI; ▪ Tregor Goelo SCI; ▪ Baie de Morlaix SCI; ▪ Abers – Côte des légendes SCI; ▪ Chaussée de Sein SCI; ▪ Lundy SAC (UK0013114); ▪ Pembrokeshire Marine / Sir Benfro Forol SAC; ▪ Cardigan Bay / Bae Ceredigion SAC; ▪ Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC; ▪ North Rona SAC; ▪ Monach Islands SAC; ▪ Horn Head and Rineclevan SAC; ▪ Slieve Tooey/Tormore Island/Loughros Beg Bay SAC; ▪ Inishkea Islands SAC; ▪ Duvillaun Islands SAC; ▪ Inishbofin and Inishsark SAC; ▪ Slyne Head Islands SAC; ▪ Roringwater Bay and Islands SAC; ▪ Isles of Scilly Complex SAC; ▪ The Maidens SAC; and ▪ Treshnish Isles SAC. **Chapter 8: Terrestrial Biodiversity and Ornithology** of this Environmental Statement considers relevant European designations listed above, with the addition of: ▪ Exmoor and Quantock Oakwoods SAC ▪ Somerset Levels and Moors SPA Given the nature, scale and duration of potential effects and the relative distance between the Proposed Works to any EEA State, the Applicant does not anticipate transboundary impacts on these designations because of the Proposed Works.
Potential impacts and Carrier, and Extent	Offshore Environmental Aspects[4] **Chapter 9: Marine Biodiversity** ▪ The largest Study Area associated with the marine biodiversity assessment is 200 km for migratory fish and cetaceans. However, as the effects of Proposed Works in the marine environment are described as localised and temporary, the assessment concludes that there are no significant effects and therefore no potential pathways to

[4] Cross-references to 'Chapter X' are to Volume I, Environmental Statement.

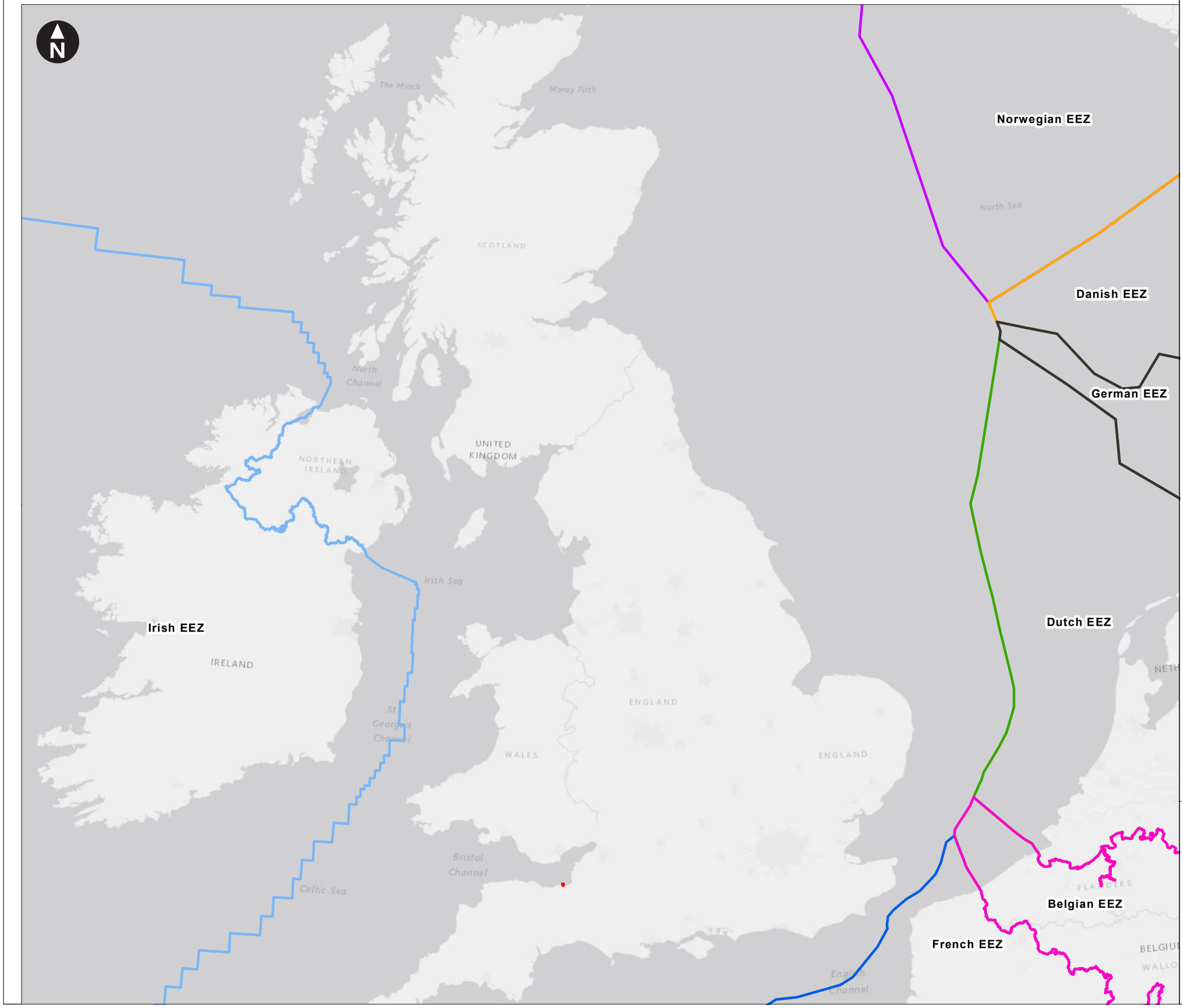
Screening Criteria:	Summary of relevant information
	transboundary impacts on other EEA states have been identified. **Chapter 10: Coastal Management and Water Quality** ▪ The Study Area includes the tidal ellipse which extends over a distance of up to 23 km in the flood tide direction and 23 km in the ebb tide direction, accounting for effects relating to tidal transport of sediments (and potentially contaminants) mobilised by the Proposed Works from the Site. No potential pathways to transboundary impacts on other EEA states have been identified. HRA Report ▪ Marine Mammal Management Units (MMMU) are the largest 'study area' considered in the HRA Report, as appropriate. MMMU's are used for contextualising population-level effects on cetaceans, given their highly mobile nature, and therefore considers European designated sites in other EEA States (Ireland and France). However, the **HRA Stage 2: RIAA** concludes no Adverse Effects on Integrity of any designated sites and therefore no potential pathways to transboundary impacts on other EEA states have been identified. <u>Onshore Environmental Aspects</u> **Chapter 6: Air Quality** ▪ The largest Study Area associated with the air quality assessment, extends to 250 m from the boundary of the Proposed Works and 50 m from the route(s) used by mobile machinery. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 7: Climate Change** ▪ The spatial scope for the GHG emissions assessment was informed by the spatial extent of the Proposed Works, including all activities within the Site during its decommissioning, as well as the GHG emissions associated with transport movements to and from the Proposed Works. These are considered in the context of UK Carbon Budgets. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 11: Surface Water and Flood Risk** ▪ The surface water Study Area covers the onshore surface water catchment area of the Site and comprises adjacent

Screening Criteria:	Summary of relevant information
	drainage ditches, the sea defences and other water infrastructure. The seaward boundary of the Study Area is defined as the Mean High Water Springs (MHWS) mark. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 12: Soils, Geology & Hydrogeology** ▪ The Study Area includes the Works Area with an additional 250 m buffer around the Works Area. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 13: Historic Environment** ▪ The primary Study Area for the historic environment assessment includes a buffer distance of 5 km from the Works Area for designated assets, with a smaller Study Area of 500 m for non-designated assets. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 14: Landscape and Visual Impact Assessment** ▪ The landscape and visual impact assessment Study Area includes receptors within 3 km of the Works Area. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 15: Noise and Vibration** ▪ The largest Study Area associated with the assessment presented in this chapter is approximately 2 km distance from the Works Area. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 16: Traffic and Transport** ▪ The Study Area is limited to specific roads on the Road Traffic Network within Somerset. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 17: People and Communities** ▪ The Study Area is limited to England, at its greatest extent. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 18: Major Accidents and Disasters** ▪ The largest Study Area for Major Accidents extends to 20 km from the Site. No potential pathways to transboundary impacts on other EEA states have been identified.

Screening Criteria:	Summary of relevant information
	Chapter 19: Conventional Waste ■ The Study Area includes the administrative area of Somerset Council which is the appropriate Waste Planning Authority. No potential pathways to transboundary impacts on other EEA states have been identified. **Chapter 20: Radioactive Waste and Discharges** ■ Scoped out on the basis radiological effects are subject to other regulatory processes and legislation, including The Transboundary Radioactive Contamination (England) Direction 2020[5]. No potential pathways to transboundary impacts on other EEA states have been identified. HRA Report ■ The **HRA Stage 1: Screening** concludes no Likely Significant Effects on Qualifying Features of Exmoor and Quantock Oakwoods SAC and Somerset Levels and Moors SPA. Therefore, no potential pathways to transboundary impacts on other EEA states have been identified.
Magnitude	No transboundary impacts scoped in at this stage.
Probability	No transboundary impacts scoped in at this stage.
Duration	
Frequency	
Reversibility	
Cumulative impacts	**Chapter 21: Cumulative Effect Assessment (CEA)** has not identified any cumulative effects which may combine to such an extent that it results in a transboundary effect.

[5] UK Government (2020). The Transboundary Radioactive Contamination (England) Direction 2020. (Online). Available at: https://www.legislation.gov.uk/uksi/2016/1154/pdfs/uksiod_20161154_en_001.pdf. (Accessed August 2024).

X:\UK\DCEMA100-ATT5\ATT5-FS7-Shared2\Projects\8081125 HNB & HPB EIADR\Deliver StageID Design_Technical\Drawings\ArcGIS\Hinkley Point B\MXD\853251-WSPE-XX-XX-FG-OP-00005_P01.mxd Originator: UKJXP782



Key

Indicative Dismantling Works Area ("Works Area")

Exclusive Economic Zone (EEZ):

- Belgian
- Danish
- Dutch
- French
- German
- Norwegian
- Irish
- Guernsey
- Jersey

0 50 100 150 200 km

Scale at A3 1:3,500,000

Decommissioning of Hinkley Point B Nuclear Power Station
Environmental Statement

Figure 5A
Transboundary Screening Matrix Nearest European Economic Area States

August 2024

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6

Air quality

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6A

Air quality objectives

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6A Air quality objectives

6A.1 Introduction

6A.1.1. **Table 6A-1** provides the Air Quality Standards (AQS) and AQOs relevant to Air Quality Assessments for NO_2, PM_{10} and $PM_{2.5}$. Currently these are the air pollutants that are of principal concern with respect to human health.

Table 6A-1 - Relevant air quality standards and objectives

Pollutant	Averaging period	Value (µg m^{-3})
NO_2	Annual mean	40
NO_2	1 hour mean, not to be exceeded more than 18 times a year (equivalent to 99.79th percentile)	200
PM_{10}	Annual mean	20
PM_{10}	24 hours mean, not to be exceeded more than 7 times a year	50
$PM_{2.5}$	Annual mean	20
	Annual mean	12 (Interim target for 2028)
	Annual mean	10 (target for 2040)

6A.1.2. Guidance from Defra in LAQM.TG22[1] establishes that exceedances of the human health-based AQOs should only be assessed at outdoor locations where members of the general public are regularly present over the averaging time of the objective.

6A.1.3. **Table 6A-2** provides examples of those locations that may be relevant for different averaging periods, as extracted from LAQM.TG22[1].

Table 6A-2 - Examples of locations where air quality objectives apply

Averaging period	Objectives should apply	Objectives should not apply
Annual mean	All locations where members of the public might be regularly exposed.	Building façades of offices or other places of work where members of

[1] Defra (2022). Local Air Quality Management Technical Guidance (TG22). (Online). Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf. (Accessed August 2024).

Averaging period	Objectives should apply	Objectives should not apply
	Building façades of residential properties, schools, hospitals, care homes etc.	the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
24-hour mean, and 8-hour mean	All locations where the annual mean objectives would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short-term.
1-hour mean	All locations where the annual mean and: 24 and 8-hour mean objectives would apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend one hour or more. Any outdoor locations at which the public may be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15-min mean	All locations where members of the public might reasonably be expected to spend a period of 15 minutes or longer.	-

6A.1.4. For NO_2, it is the annual mean objective that is the more stringent AQO. Monitoring results show that the 1-hour mean NO_2 AQO is unlikely to be exceeded if the annual mean objective is not exceeded. For PM_{10}, the 24-hour mean objective is more stringent than the annual mean.

6A.1.5. The likelihood of exceedance of the NO_2 and PM_{10} short-term AQOs can be assessed with reference to the predicted annual means and the relationships recommended by the Local Air Quality Management Technical Guidance (LAQM.TG(22))[1]. The 1-hour mean NO_2 objective is unlikely to be exceeded if the annual mean is less than 60 μgm^{-3}. An estimate of potential exceedances of the 24-hour mean PM_{10} objective is given by:

$$\boldsymbol{Number\ of\ 24\ hour\ mean\ exceedences} = \boldsymbol{-18.5 + 0.00145\ x\ annual\ mean^3 + \frac{206}{annual\ mean}}$$

6A.1.6. On the basis of the above relationship, the 24-hour mean objective for PM_{10} is likely to be met if the predicted annual-mean PM_{10} concentration is 31.8 μgm^{-3} or less.

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6B

IAQM construction Assessment Methodology

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6B IAQM Construction Assessment Methodology

6B.1 Step 2A - Define the potential dust emission magnitude

6B.1.1. **Table 6B-1** provides examples of how the potential dust emission magnitude for different activities can be defined. (Note that not all the criteria need to be met for a particular class). Other criteria may be used if justified in the assessment.

Table 6B-1 - Definitions of dust emission magnitude

Dust Emission Magnitude	Activity
Large	**Demolition** >75,000 m^3 building demolished, dusty material (e.g., concrete), on-site crushing/screening, demolition >12 m above ground level
	Earthworks >110,000 m^2 site area, dusty soil type (e.g., clay), >10 earth moving vehicles active simultaneously, >6 m high bunds formed
	Construction >75,000 m^3 building volume, on site concrete batching, sandblasting
	Trackout >50 HDVs out / day, dusty surface material (e.g., clay), >100 m unpaved roads
Medium	**Demolition** 12,000 - 75,000 m^3 building demolished, dusty material (e.g., concrete). 6 m - 12 m above ground level
	Earthworks 18,000 - 110,000 m^2 site area, moderately dusty soil (e.g., silt), 5-10 earth moving vehicles active simultaneously, 3 m – 6 m high bunds
	Construction 12,000 - 75,000 m^3 building volume, dusty material e.g., concrete, on site concrete batching
	Trackout 20-50 HDVs out / day, moderately dusty surface material (e.g., clay), 50 -100 m unpaved roads

Small	**Demolition** $<12,000\ m^3$ building demolished, non-dusty material (e.g., metal cladding), <6 m above ground level, work during wetter months
	Earthworks $<18,000\ m^2$ site area, soil with large grain size (e.g., sand), <5 earth moving vehicles active simultaneously, <4 m high bunds
	Construction $<12,000\ m^3$, non-dusty material (e.g., metal cladding or timber)
	Trackout <20 HDVs out / day, non-dusty soil, <50 m unpaved roads

6B.2 Step 2B - Define the Sensitivity of the Area

6B.2.1. The tables below present the IAQM assessment methodology to determine the sensitivity of the area to dust soiling, human health and ecological impacts respectively. The IAQM guidance provides guidance to allow the sensitivity of individual receptors to dust soiling and health effects to assist in the assessment of the overall sensitivity of the Study Area.

Table 6B-2 - Sensitivities of receptors to dust soiling effects

Sensitivity of receptor	Description
High	"*Surrounding land where:* *Users can reasonably expect enjoyment of a high level of amenity; or* *the appearance, aesthetics or value of their property would be diminished by soiling; and* *the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.* *indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms*
Medium	*users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or* *the appearance, aesthetics or value of their property could be diminished by soiling; or*

Sensitivity of receptor	Description
	the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. *indicative examples include parks and places of work.*
Low	*the enjoyment of amenity would not reasonably be expected; or* *property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or* *there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.* *indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads.*"

Table 6B-3 – Sensitivity of the area to dust soiling effects

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Low	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table 6B-4 – Sensitivities of receptors to human health effects

Sensitivity of receptor	Description
High	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.
Medium	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM10, as protection is covered by Health and Safety at Work legislation.
Low	Locations where human exposure is transient. Indicative examples include public footpaths, playing fields, parks and shopping streets.-sensitive horticultural), footpaths, short term car parks and roads.

Table 6B-5 – Sensitivity of the area to human health impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
Medium	>32	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table 6B-6 – Sensitivities of receptors to ecological impacts

Sensitivity of receptor	Description
High	▪ Locations with an international or national designation and the designated features may be affected by dust soiling; or ▪ locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. ▪ Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	▪ Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or ▪ locations with a national designation where the features may be affected by dust deposition. ▪ Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	▪ Locations with a local designation where the features may be affected by dust deposition. ▪ Indicative example is a local Nature Reserve with dust sensitive features.

Table 6B-7 – Sensitivity of the area to ecological impacts

Receptor Sensitivity	Distance from the Sources (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

6B.3 Step 2C – Define the risk of impacts

6B.3.1. The dust emissions magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts without mitigation applied. For those

cases where the risk category is 'negligible' no mitigation measures beyond those required by legislation will be required.

Table 6B-8 – Risk of dust impacts

	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks and Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

6B.4 Step 3 – Site specific mitigation

6B.4.1. Having determined the risk categories for each of the four activities it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the Site is considered to be a low, medium or high risk site. The IAQM guidance details the mitigation measures required for high, medium and low risk sites as determined in Step 2C.

6B.5 Step 4 – Determine significant effects

6B.5.1. Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

7

Climate Change

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7A

Data sources

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7A Data sources

7A.1.1. A summary of the organisations that have supplied data for the GHG emissions assessment, together with the nature of that data, is outlined in **Table 7A-1**.

Table 7A-1 - Data sources used to inform the GHG emissions assessment

Organisation	Data source	Data provided
Circular Ecology	Circular Ecology (2019). Embodied Carbon – The ICE Database (online). Available at: https://circularecology.com/embodied-carbon-footprint-database.html#.XKX_oJhKhPY	Embodied carbon figures from the ICE database are considered as the emission factor for calculating embodied carbon in the GHG assessment.
Department for Energy Security and Net Zero	Department for Energy Security and Net Zero (2023) Greenhouse gas reporting: conversion factors 2023 (online). Available at: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023	DESNZ emission factors for waste disposal of materials were used in the GHG assessment.
Department of Transport	Table RFS0108: Domestic road freight statistics: July 2021 to June 2022 (online). Available at: https://www.gov.uk/government/statistics/domestic-road-freight-statistics-july-2021-to-june-2022	The distances travelled by construction vehicles were estimated using Department for Transport datasets.
Department of Transport	DfT (2023). NTS0403e: National Travel Survey: 2022 (online). Available at: https://www.gov.uk/government/statistics/national-travel-survey-2022	Data on commuting distances was used to determine the GHG emissions from the decommissioning HPB workforce travelling to the Works Area.

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7B

Climate baseline

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7B Climate baseline

7B.1 Baseline conditions

7B.1.1. This section sets out the baseline for the Proposed Works in relation to current and future baselines to understand future climate change trends.

Data gathering methodology

7B.1.2. The following desk-based data sources were utilised to gather the information, as shown in **Table 7B-1.**

Table 7B-1 - Key sources of data

Source	Summary	Coverage of Study Area
Met Office South West England: Climate.	This document describes the main features of the climate for the region over a 30-year average period of 1981 – 2010.	Full coverage of the Study Area
Met Office Observational Climate Stations Data	The Met Office collect data from climate stations around the UK for a number of climate parameters. Largs is the most representative of the Project location.	10 km from boundary of the Study Area / within the Study Area.
UKCP18 User Interface	This data source was used to obtain quantitative land projection data to inform future climate.	Full coverage of the Study Area

Current baseline

7B.1.3. The current climatic conditions representative of the Works Area are presented below and provide context for the climate change impacts throughout the Proposed Works.

7B.1.4. The current climate for the area within which the Proposed Works are located is described in the report '*Met Office South West England: Climate*'[1]. This report provides a regional climate summary for land conditions in South West England with a focus on the 30-year averaging period of 1981 - 2010:

- The annual mean temperature tends to range between 12°C and 10.5°C.
- In the Somerset and the Bristol area, January is the coldest month with mean minimum temperatures between 1 and 2 °C. In contrast, July and August are the warmest months in the region with mean daily maxima ranging from around 19 °C in coastal Cornwall to 21.5 °C in inland areas of Somerset and around Exeter.

[1] Met Office, 2016, Met Office South West England: Climate' (online) Available at : https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/weather/regional-climates/south-west-england_-climate-met-office.pdf (Accessed August 2024).

- Annual rainfall totals vary from 850mm – 1100 mm.
- South-west England is one of the more exposed areas of the UK, with wind speeds on average only greater in western Scotland. The strongest mean speeds and gusts are experienced in the winter half of the year.

7B.1.5. **Table 7B-2** sets out the observed climate data from Cannington Climate Station for the period 1991 – 2020 and contextualises this against the regional data for southwest England and South Wales and for England and Wales.

Table 7B-2 - Baseline climate data 1991 – 2020

	Nearest Climate Station - Cannington	Regional: England SW and Wales S	England and Wales
Mean Summer Rainfall (June, July, August) (mm)	176	261	219
Mean Winter Rainfall (December, January, February) (mm)	216	395	270
Monthly average rainfall (mm)	65.59	106.44	79.23
Days of rainfall > 1 mm (days)	129.53	160.38	140.38
Minimum Annual Temperature (°C)	7.40	*6.49*	*6.10*
Maximum Annual Average Temperature (°C)	14.95	13.67	13.70
Mean Summer Temperature (June, July, August) (°C)	16.64	15.29	15.57
Mean Winter Temperature (December, January, February) (°C)	6.07	5.26	4.59
Mean wind speed at 10 m (knots)	-	9.27	8.52
Air frost (days)	-	37.13	45.11

7B.1.6. Average seasonal rainfall at Cannington weather station, England South West and Wales south and England and Wales for the period 1991–2020 is presented in **Table 7B-2** It shows that the weather station is drier than both the region and the England and Wales average year-round.

7B.1.7. The table also shows the long-term average seasonal mean temperature for Cannington weather station, England South West and Wales south and England and Wales between 1991-2020. It shows that throughout the year the Site is warmer than both the region and England and Wales average.

Future baseline

7B.1.8. UKCP18 provides probabilistic data on projected climate variables for the UK for administrative regions. The data provides RCP projections until the end of the 21st century for different emissions scenarios.

7B.1.9. RCP8.5 is considered a high emissions pathway and represents a potential future which is slow to transfer to low-carbon energy provision. With progress towards achieving National Determined Contributions, RCP8.5 is considered a possible, but conservative, emission scenario suitable for evaluating the climate change resilience of infrastructure projects.

7B.1.10. In accordance with National Policy Statement EN-1, the 10th, 50th and 90th percentile are considered. Probabilistic climate projections, such as UKCP18, assign climate change outcomes based on a probability distribution function (PDF), which shows the possible range of climate change with the 50th percentile the median value.

7B.1.11. The future baseline is used to set out general climatic conditions and trends that would be experienced over the project lifetime identified in the temporal scope.

7B.1.12. The future climate has been presented for the 2030s (2020-2049), the 2050s (2040-2069) and 2080s (2070-2099) to identify the anticipated climate conditions. These projections are provided against the baseline period of 1981-2010 (based on model data), and 1991-2020 (current climate) as an indication of change from the baseline period.

Graphic 7B-1 shows the Study Area for the Proposed Works with each grid square representing 25 km^2.

Graphic 7B-1 – Study Area for UKCP18 data extraction

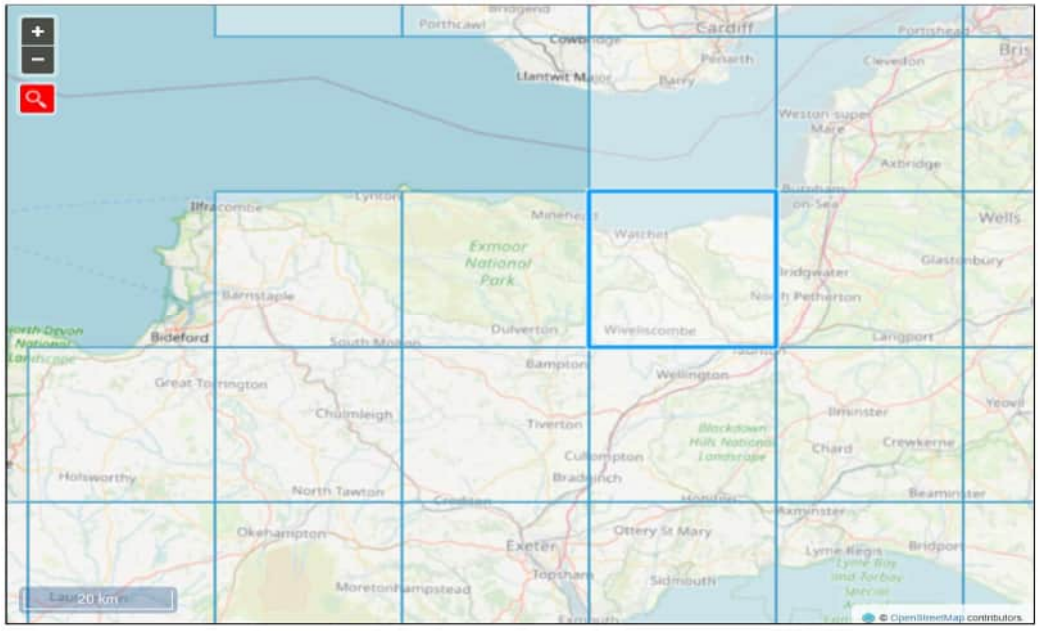

Table 7B-3 provides an overview of current and projected summer and winter temperature and rainfall for the location of the Proposed Works.

Table 7B-3 - Temperature and rainfall data for the Model Reference (1981-2010) future climate (2030s, 2050s and 2080s) for RCP8.5 (anomalies), the table shows the 50th percentile (10th percentile to 90th percentile) values

Climate Variable	RCP8.5		
	2030	2050	2080
Average summer Rainfall	-8.7% (-29.3% to +10.7%)	-20.3% (-45.8% to +5.5%)	-39.1% (-66.0% to -6.2%)
Average winter rainfall	+5.2% (-3.1% to +14.4%	+7.6% (-3.6% to +20.6%)	+17.1% (-0.3% to +38.0%)
Average summer temperature	+1.3 °C (0.3 °C to 2.2 °C)	+2.4 °C (1.0 °C to 4.0 °C)	+5.0 °C (2.3 °C to 7.8 °C)
Average winter temperature	+0.8 °C (0.1 °C to 1.6 °C)	+1.5 °C (0.4 °C to 2.7 °C)	+2.8 °C (1.0 °C to 4.8 °C)
Min winter temperature	+0.9 °C (0.0 °C to 1.7 °C)	+1.7 °C (0.4 °C to 3.0 °C)	+3.1 °C (1.1 °C to 5.3 °C)
Max summer temperature	+1.5 °C (0.2 °C to 2.7 °C)	+2.8 °C (0.9 °C to 4.7 °C)	+5.8 °C (2.4 °C to 9.2 °C)

Table 7B-3 shows that precipitation (rainfall) is anticipated to increase in the winter months, with a clear shift to drier summers across all time periods. However, despite an overall trend towards drier summers, summer rainfall events are still expected[2].

The table also illustrates that mean temperatures are increasing across all seasons but especially in the summer. The extremes are greater than the mean values, with extreme maximum temperatures increasing throughout the time periods. This could lead to frequent and prolonged hot spells. Hot spells are defined as maximum temperatures exceeding 30°C for two or more consecutive days. By the 2090s, the frequency of hot spells is expected to increase[3].

[2] Met Office, (2018). UKCP18 Factsheet: Precipitation. [online] Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-factsheet-precipitation.pdf

[3] Lowe, J. A., et al. (2018). UKCP18 Science Overview Report (Updated March 2019) ([online) Available at: https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf

Wind

7B.1.13. UKCP18 indicates an increase in surface wind speeds over the UK for the second half of the 21st century during the winter season, where more significant impacts of wind are experienced. The frequency of winter storms would increase, however the increase in wind speeds is modest4.

Snow

7B.1.14. The UKCP18 projects by the 2070s show a decrease in lying winter snow of around 80-100% for the Southwest of England in both local (2.2 km) and regional (12 km) projections. Snowfall will also substantially decrease[5].

Sea level rise

7B.1.15. The Project is located on the shore of the Bristol Channel. Therefore, it is at risk of future sea level rise. Sea level projections at the closest marine projections data point, to the north of the Proposed Works, range from 0.15m in the 2030s to 0.81m in the 2080s.

7B.1.16. **Graphic 7B-1** shows the Study Area for UKCP18 data extraction of sea level rise projections. Table 7B-4 below depicts the projected sea level rise for the 2030s, 2050s and 2080s using UKCP18 marine projections data.

[4] Met Office, (2018). UKCP18 Factsheet: Wind. (online) Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-wind_march21.pdf

[5] Met Office, (2018). UKCP18 Factsheet: Snow. (online) Available from: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18_factsheet_snow_jul-2021.pdf

Graphic 7B-2 - Study Area for UKCP18 data extraction of sea level rise projections.

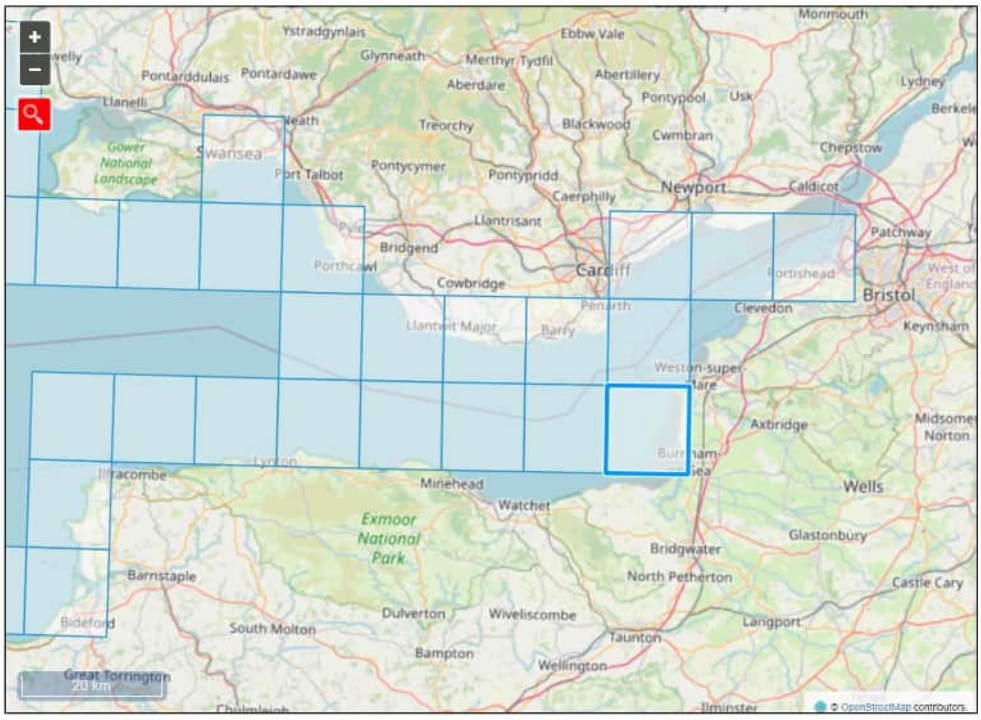

Table 7B-4 - Sea level rise projections (m) presented as 50th percentile (10th percentile to 90th percentile) for the Development area

2030s	2050s	2080s
0.19 (0.15 to 0.24)	0.34 (0.26 to 0.43)	0.62 (0.46 to 0.81)

7C

Climate change resilience of the proposed works

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7C Climate change resilience of the proposed works

7C.1 Approach to resilience to specific climate hazards

7C.1.1. This appendix presents the approach to embedding resilience within the Proposed Works to ensure that the Proposed Works are resilient to the effects of climate change. The appendix refers to HPB Post Defueling Safety Case – Plant and Structures Hazard Identification Report[1] which relates to the resilience of HPB (including associated infrastructure) after defueling has been completed. The Safety Case details the risks faced by the infrastructure on the Hinkley point B facility and associated infrastructure (including the reactor). It also contains assessments which demonstrate how these risks are reduced to as low as practicably possible. It assesses the climate risks that are faced by the facility.

7C.1.2. The climate risks considered include extreme winds, external flooding, extreme ambient air temperature, increased risk of lightning and drought. The potential impacts to 26 elements of the plant and structures have been considered. These elements and issues highlighted for each element are summarised in **Table 7C-1**

Table 7C-1 - Plant and structures hazard identification – post defuelling

Plant and structure element	Issues	Mitigations
Fuelling machine and make up shields	Extreme weather, including wind Loading, extreme ambient, temperatures, external flooding, lightning, drought,	Protected by station structure.
New fuel system		Protected by station structure.
IFD cell		Protected by station structure. No issues
IFD Cell Blowdown		Protected by station structure. No issues
Buffer Store, Supplementary Buffer Store and Storage Tubes		Protected by station structure. No issues
Flask Handling Facilities		Temperature limits for general crane operation
Active Maintenance Facility		Protected by station structure. No issues
Main Boilers & Decay Heat Boilers		Protected by Pre-stressed Concrete Pressure Vessel (PCPV).

[1] CRA (2023) HPB Post Defueling Safety Case – Plant and Structures Hazard Identification Report

Plant and structure element	Issues	Mitigations
Reheater Boilers		Protected by PCPV.
Gas Bypass Plant & Blowdown Plant		Protected by station structure. No issues
Gas Bypass Plant – Supporting Process Gases, Pipework and Equipment		Protected by station structure. No issues
PCPV		Protected by station structure
Core Components		
Gaseous Activity Monitor		No issues
Main Steam and Reheater Pipework		Protected by station structure. No issues
Turbine		No issues
Generator		No issues
No Break Supplies		No issues
Data Processing and Control Systems		No issues
Emergency Equipment		No issues
Health Physics Equipment		No issues
Buildings		No issues
Generic Internally Contaminated Pipework		No issues
Heating and Ventilation Systems	Damage to exhaust stack caused by wind loading. Top hat damage can lead to blowback in system. Generation of airborne activity with potential inhalation dose to operators.	Protected by station structure and flow alarms.
Fuel Cooling Pond	Failure of pond wall due to structural degradation of concrete caused by low ambient temperatures. Pond water could freeze. Generation of airborne activity with potential inhalation	Record of temperature. New heater system regulates temperature. Pond water level monitoring

Plant and structure element	Issues	Mitigations
	dose to operators. Contaminated water leakage to ground	and alarm equipment. G64 alarms. Emergency water fill available
Gas Circulators, Gas Circulator Auxiliaries and Gas Circulator Endurance	Possible high pressure due to high ambient temperature leading to lub oil release.	Increase in pressure not high enough, no issue

7C.1.3. The table illustrates that extreme weather, including wind loading, extreme ambient temperatures, external flooding, lightning and drought poses no issue for the majority of plant and structures. Where there are some risks posed by specific climatic events, these are mitigated. Examples include damage to the exhaust stack caused by wind loading, failure of the cooling pond wall caused degradation associated with low ambient temperatures and high pressure in gas circulators due to high ambient temperatures.

7C.1.4. The safety case, alongside other environmental management strategies including Environmental Management Plans, will be regularly updated throughout the lifecycle of decommissioning to re-evaluate and outline any necessary actions to maintain safety on-site which will include ensuring resilience of the site to climate change effects.

7C.1.5. This ES also supports the HPB Post Defueling Safety Case, in particular related to flooding. **Chapter 11: Surface Water and Flood Risk**, includes the Flood Risk Assessment (in **Appendix 11A**) which incorporates allowances for climate change.

7C.1.6. The design event for the purposes of the Flood Risk Assessment is the 0.5% Annual Exceedance Probability (plus climate change) for the duration of the Proposed Works.

7C.1.7. The future baseline section has considered Environment Agency climate change allowances based upon the latest UKCP18 climate change scenarios. This includes information derived from a range of coastal and pluvial modelling studies, which taken together with a range of existing and proposed embedded environmental measures will help minimise any potential effects towards flood risk receptors.

7C.1.8. The assessment within **Chapter 11** considers a number of predicted effects. These include an increase in surface water flood risk over time due to the influence of climate change, including the potential for more intense rainfall, and increases in pluvial and tidal flood risk towards the Site and surrounding areas

7C.1.9. The Flooding Risk Assessment concludes that the dominant source of risk to the Works Area throughout its lifetime is tidal flooding, however, some risk can also be attributed to pluvial sources. Fluvial flooding may affect the access route under future climate change. The Proposed Works will have a negligible impact on flooding to off-site areas.

7C.1.10. The assessment states that due to climate change, on-site flood risk from tidal and pluvial sources is likely to increase throughout the lifetime of the development. Any potential flood-risk impacts on buildings will be mitigated by design to keep flood-water from tidal or pluvial sources out of any proposed structures for their proposed design life. In particular, this will require raising the proposed OWPF and DWPF at least 0.3 m above surrounding ground levels and protecting the Safestore from

tidal floodwater depths of up to 0.3 m. Any potential impact on humans is limited to those that could potentially be working within the Works Area during extreme events (there is no on-site accommodation). This will be mitigated by the use of flood- and weather-warning systems.

7C.1.11. In addition to these conclusions, the HPB Safety Case will be periodically reviewed to take account of future updates to climate change allowances. Should changes in coastal protection be required then the HPB Safety Case process will ensure their timely identification.

Maintaining the Safety Case

7C.1.12. Throughout the Proposed Works, the Safety Case will be maintained to ensure that the Plant and Structures are resilient to the above climate hazards. The Safety Case will inform the design standards of different elements of the Proposed Works throughout its lifecycle. This will ensure that climate hazards will be considered at each stage of detailed design.

8

Terrestrial biodiversity and ornithology

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8A

HPB Decommissioning Baseline Report Desk Study (Terrestrial Ecology)

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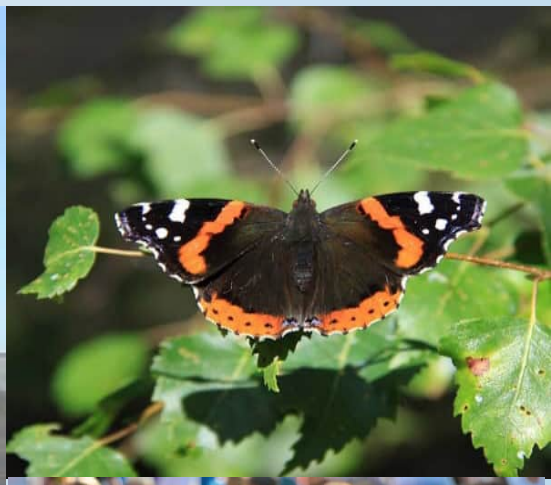
EDF Energy Nuclear Generation Limited

Decommissioning of Hinkley Point B Nuclear Power Station

Baseline Report: Desk Study (Terrestrial Ecology)



December 2024

UK-70112953

Report for

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Doc Ref. UK-70112953_DS24

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Document revisions

No.	Details	Date
1	Draft	December 2024
2	**Final**	February 2025

Contents

1. Introduction

1.1 Overview

1.1.1 EDF Energy Nuclear Generation Limited (the 'Applicant') is applying for consent from the Office for Nuclear Regulation (ONR) to decommission the Hinkley Point B Nuclear Power Station ('HPB'). The decommissioning works (the 'Works') will include the dismantling and deconstruction of buildings and structures in areas within and outside of the Nuclear Site License ('NSL') boundary that are part of the power station. An Indicative Dismantling Works Area ('Works Area') has been identified to delineate these areas. The land inside the NSL boundary is referred to as the 'Site'. The Site and Works Area boundaries are shown on **Figure 1.1**.

1.2 Site context

1.2.1 HPB is located on the coastline at Bridgwater Bay, approximately 12 km to the north-west of Bridgwater. The Site is approximately centred at Ordnance Survey (OS) National Grid Reference (NGR) ST 212 459. The majority of the Works Area comprises built structures and hard standing (mainly access routes and car parks). The Site includes the power station, associated facilities such as car parks, as well as some non-operational land to the south and west. This is shown on **Figure 1.1**.

1.2.2 Within the south, west and eastern extents of the Site there is a fringe of woodland and scrub, with some areas of open grassland. Most of this forms the Hinkley Local Wildlife Site (LWS), which is managed for biodiversity conservation by the Applicant, in conjunction with the Somerset Wildlife Trust (SWT). HPB has been a Wildlife Trust accredited Biodiversity Benchmark site since 2011.

1.2.3 Hinkley Point A (HPA) is located directly adjacent to the west of the Site and the Works Area, beyond which lies the Hinkley Point C (HPC) development which is under construction. The wider land use to the south and east is predominantly agricultural.

1.3 Desk Study

1.3.1 To inform the Ecological Impact Assessment (EcIA) of the Works, a desk-based study ('Desk Study') of the terrestrial biodiversity of the Site was completed in 2019 (Wood 2020[1]). The Desk Study collated and reviewed existing information on ecological features (habitats, species, ecosystems and their functions/processes) of potential biodiversity conservation importance that are known to occur, or have previously been recorded, within the Site and surrounding area.

1.3.2 A period of over four years has elapsed since the completion of the Desk Study and the area delineated as the Works Area has been refined to include the Sewage Treatment Plant, southern access road and marine infrastructure associated with HPB and to exclude the electrical substation. This report therefore sets out the revised and updated desk-based study of the biodiversity of the Site and Works Area (see **Figure 1.1**), drawing on sources outlined in **Section 2.3** and replacing the previous Desk Study report (Wood 2020).

[1] Wood (2020). Hinkley Point B Decommissioning EIA - Baseline Report: Desk Study (Terrestrial Ecology).

1.4 Baseline surveys

1.4.1 This Desk Study should be read in conjunction with details of the baseline terrestrial biodiversity surveys ('Baseline Surveys') that have been undertaken to inform the EcIA of the Works. This includes habitat surveys and surveys of a range of taxa, including otter (*Lutra lutra*), water vole (*Arvicola amphibius*), great crested newt (*Triturus cristatus*), reptiles, badger (*Meles meles*), birds, invertebrates and bats. These surveys are detailed in separate baseline reports:

- Wood (2019a). Hinkley Point B Decommissioning EIA - Baseline Report: Phase 1 Habitat Survey;
- Wood (2019b). Hinkley Point B Decommissioning EIA - Baseline Report: Otter and water vole;
- Wood (2019c). Hinkley Point B Decommissioning EIA - Baseline Report: Great crested newt;
- Wood (2019d). Hinkley Point B Decommissioning EIA - Baseline Report: Reptiles;
- Wood (2020a). Hinkley Point B Decommissioning EIA - Baseline Report: Badger;
- Wood (2020b). Hinkley Point B Decommissioning EIA - Baseline Report: Breeding and Non-breeding Birds;
- Wood 2020c). Hinkley Point B Decommissioning EIA - Baseline Report: Invertebrates; and
- Wood (2021). Hinkley Point B Decommissioning EIA - Baseline Report: Bats.
- WSP (2024). Decommissioning of Hinkley Point B Nuclear Power Station - Verification of Terrestrial Biodiversity Baseline

1.4.2 The desk-based study of ornithological data, included in the breeding and non-breeding birds baseline report (Wood 2020b), is updated in this report.

1.4.3 The latter, most recent report verifies that the baseline (terrestrial biodiversity) remains valid. Collectively these surveys and survey reports, combined with this Desk Study, set out the terrestrial biodiversity baseline against which the predicted effects of the Works on ecological features are to be assessed. The non-operational areas of the Site are managed for biodiversity conservation in accordance with the HPB Integrated Land Management Plan (ILMP). Biodiversity monitoring, focusing on habitats and plant communities, birds and butterflies is undertaken annually to assess progress against management plan objectives and to inform refinements to future management activities. This process is reported in the HPB Land Management Annual Reviews (LMARs) and ties in with HPBs Biodiversity Benchmark accreditation. A review of this information has informed the Desk Study as set out below (**Section 2.3** and **Section 3.4**).

2. Approach

2.1 Scope of data collection and review

2.1.1 The desk-based study of the Site, the Works area and surrounding areas was completed in Autumn/Winter 2024. Existing information on ecological features (habitats, species, ecosystems and their functions/processes) of potential biodiversity conservation importance that are known to occur, or have previously been recorded, within the Site and surrounding area were collated and reviewed.

2.1.2 In accordance with good practice in EcIA[2] this Desk Study focuses primarily on potentially '*Important*' ecological features (habitats, species and ecosystems), recognising that not all ecological features are of sufficient biodiversity conservation importance to warrant detailed investigation through the EcIA process.

2.1.3 '*Importance*' relates to the quality and extent of designated biodiversity conservation sites and habitats, habitat/species rarity and rates of decline. '*Important*' ecological features are typically those that are not widespread, unthreatened and resilient to project impacts. Ecological features that are not considered to be important are those that are widespread, unthreatened and resilient and will remain viable and sustainable irrespective of the Works.

2.1.4 The importance of ecological features is determined first with reference to UK biodiversity conservation legislation and policy and then with regard to the extent of habitat or size of population that may be affected by the Works. Accordingly, this Desk Study collates and reviews readily available information on the categories of ecological features that are summarised below.

- Statutory biodiversity conservation sites:
  - Special Areas of Conservation[3] (SACs) – part of the National Site Network within the UK, which comprises sites designated under the *European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora* (the Habitats Directive)[4] and any such sites designated post-Brexit under the *Conservation of Habitats and Species Regulations 2017 (as amended)*[5]. These sites are selected as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Habitats Directive.
  - Special Protection Area (SPA)[6] – part of the National Site Network within the UK territory, which comprises sites designated under the *European Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive)*[7] and any such sites designated post-Brexit under the *Conservation of Habitats and Species*

[2] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland (online). Available at: Combined-EclA-guidelines-2018-compressed.pdf (cieem.net) (Accessed December 2024).
[3] Special Areas of Conservation (SAC) and candidate SAC (cSAC), along with Special Protection Areas (SPA) and proposed SPAs (pSPAs) are also referred to as 'European Sites'.
[4] European Commission (1992). Council Directive 92/43/EEC (online). Available at: https://www.legislation.gov.uk/eudr/1992/43/contents (Accessed December 2024).
[5] UK Government (2017). The Conservation of Habitats and Species Regulations (2017) (online). Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made (Accessed December 2024).
[6] Special Protection Areas (SPA) and proposed SPAs (pSPAs), along with Special Areas of Conservation (SAC) and candidate SAC (cSAC), are also referred to as 'European Sites'.
[7] European Commission (undated). The Birds Directive (online) Available at: https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm (Accessed December 2024).

Regulations 2017 (as amended)[5]. SPAs protect rare and vulnerable birds (listed on Annex I of the Birds Directive) and regularly occurring migratory species.

- Ramsar Sites are wetlands that have been designated under the criteria of the *Ramsar Convention on Wetlands of International Importance 1971*, for containing representative, rare or unique wetland types or for their importance in conserving biological diversity.
- Sites of Special Scientific Interest (SSSIs) – these sites have been notified under the *Wildlife and Countryside Act 1981 (as amended)* [8] and provide statutory protection for the best examples of the UK's flora and fauna;
- National Nature Reserves (NNRs) – these are designated under the *National Parks and Access to the Countryside Act 1949*[9] and contain examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems; and
- Local Nature Reserves (LNRs) – these are declared under the *National Parks and Access to the Countryside Act 1949*[9] and are managed for nature conservation.

- Non-statutory biodiversity conservation sites:
  - Local Wildlife Sites (LWSs) are selected locally for their biodiversity conservation importance and designated and reviewed at a county level by the LWS selection panel (Somerset Environmental Records Centre, Somerset Wildlife Trust, Natural England, Somerset County Council and relevant Local Authorities).
- Areas included on the Ancient Woodland Inventory (AWI), which is land that has been continually wooded since at least 1750.
- Important habitats and species:
  - Habitats and Species of Principal Importance for the Conservation of Biological Diversity in England – these are identified by the Secretary of State pursuant to Section 41 of the *Natural Environment and Rural Communities Act (2006)*[10] and are described in BRIG 2011[11].
  - Birds listed as Red or Amber on the list of Birds of Conservation Concern (BOCC) (Stanbury et al 2021[12]). This includes bird species that are of the highest conservation concern in the UK;
  - Nationally Scarce species - species recorded from between 16 and 100 hectads (10 x 10 km squares) of the Ordnance Survey (OS) grid;
  - Local Biodiversity Action Plan (LBAP) priority habitats and species; and

[8] UK Government (1981). Wildlife and Countryside Act 1981 (online). Available at: https://www.legislation.gov.uk/ukpga/1981/69 (Accessed December 2024).
[9] UK Government (1949). National Parks and Access to the Countryside Act 1949 (online). Available at: https://www.legislation.gov.uk/ukpga/Geo6/12-13-14/97#:~:text=An%20Act%20to%20make%20provision,and%20improvement%20of%20public%20paths (Accessed December 2024).
[10] UK Government (2006). Natural Environment and Rural Communities Act 2006 (online). Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents (Accessed December 2024).
[11] BRIG (2011) UK Biodiversity Action Plan: Priority habitat Descriptions (online). Available at: UK Biodiversity Action Plan: Priority Habitat Descriptions (2008, revised 2011) | JNCC Resource Hub (Accessed December 2024).
[12] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

- Other species that are of notable importance for biodiversity conservation, for example (not necessarily limited to):
    - Species listed on the national (Great Britain and/or England) Red Lists of threatened species[13], based on International Union for the Conservation of Nature (IUCN) guidelines; and
    - Species identified by the local biodiversity records centre (Somerset Environmental Records Centre) as notable in a county (Somerset) context.

- Legally protected species:
    - European Protected Species - species included on Schedules 2 and 5 of *The Conservation of Habitats and Species Regulations 2017 (as amended)*[5];
    - Species included on Schedule 1, 5 and 8 of the *Wildlife and Countryside Act 1981 (as amended)*[8], excluding species that are only protected in relation to their sale; and
    - Badgers, which are protected under the *Protection of Badgers Act 1992*[14].

2.1.5 Legally controlled species are listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)[8]. These are not *important* ecological features as set out above, however they are taken into account because any activity that has the potential to cause the spread of these species could have associated adverse effects on native species and habitats.

2.1.6 The extent of the Study Area and the data sources informing this Desk Study are set out in **Section 2.6**.

2.2 Study Area

2.2.1 The Study Area encompasses the area over which biodiversity data was gathered to inform the EcIA. Study areas relating to each of the categories of ecological features listed above have been defined on a precautionary basis to envelope and extend beyond the potential 'Zone of Influence'[2] of the Works, collectively forming the 'Study Area'. The Study Area has been defined based on the professional judgement of experienced ecologists and informed by good practice guidance[2] and encompasses:

- Land within the Site and the Works Area (see **Figure 1.1**);
- Statutory biodiversity conservation sites and breeding bird colonies within 10 km, extended to 20 km for European Sites that are designated for birds[15];
- Non-statutory biodiversity conservation sites within 3 km[16];
- *Important* (as defined above) habitats within 3 km;
- Records of legally protected species (and legally controlled species) and other *important* species within 3 km, extended to 10 km with respect to bats and bat roosts,

[13] JNCC (no date) Conservation Designations for UK Taxa 2023 (online). Available at: https://hub.jncc.gov.uk/assets/478f7160-967b-4366-acdf-8941fd33850b (Accessed December 2024).
[14] UK Government (1992). Protection of Badgers Act 1992 (online). Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents (Accessed December 2024).
[15] This element of the Study Area is extended up to 200 km in the breeding and non-breeding bird survey report (Wood 2020b), specifically with respect to European Sites designated for highly mobile seabirds.
[16] This element of the Study Area is extended up to 10 km in the breeding and non-breeding bird survey report.

recognising that bats' Core Sustenance Zones can extend to 5 km or more from their roosts (Collins, 2016[17]);

- Locations subject to European Protected Species Mitigation Licences[18] (EPSML) within 5 km;
- Water bodies within 500 m, reflecting the distance that great crested newts (*Triturus cristatus*) are known to disperse from waterbodies where they breed[19]; and
- British Trust for Ornithology (BTO) Wetland Bird Survey (WeBS) monitoring sectors within the Severn Estuary.

2.3 Data sources

2.3.1 The data sources that informed the Desk Study are outlined in **Table 2.1**.

Table 2.1 Data sources

Data	Source
Statutory Biodiversity Conservation Sites	MAGIC[20], Joint Nature Conservation Committee (JNCC) website[21] and Natural England website[22]
Non-statutory Biodiversity Conservation Sites; and records of Important and Legally Protected Species	Somerset Environmental Records Centre (SERC), covering a ten-year period (2014 - 2024)[23]
Important habitats (Habitats of Principal Importance and priority habitats); and EPSMLs	MAGIC[20]
Water bodies	Aerial imagery[24] and 1:25,000 scale OS mapping
Breeding seabirds	Seabird Monitoring Programme (SMP) Database[25]
Wetland birds	Wetland Bird Survey (WeBS) data[26]

2.3.2 Additionally, a substantial biodiversity data set relating to the Hinkley Point Complex (collectively HPA, HPB and HPC) has been collected over a number of years, most notably to inform the environmental monitoring associated with the adjacent HPC development, which is currently under construction. Historic elements of this substantive dataset are not presented in this report since they are superseded by the programme of Baseline Surveys at HPB (see paragraph 1.4.1). However, recent relevant documents

[17] Collins, J. (2016). Bat Surveys: Good Practice Guidelines. 3rd ed. Bat Conservation Trust, London.
[18] Locations where licences have been granted for activities that affect European Protected Species
[19] English Nature. (2001). Great Crested Newt Mitigation Guidelines. English Nature; Peterborough.
[20] Defra (2022). Multi Agency Geographical Information for the Countryside (MAGIC). Magic Map: Interactive Map. (online) Available at: http://www.natureonthemap.naturalengland.org.uk/ (Accessed December 2024).
[21] JNCC (2022) UK Protected Areas (online) Available at: https://jncc.gov.uk/our-work/uk-protected-areas/(Accessed December 2024)
[22] Natural England (2022). Designated sites view (online) Available at: https://designatedsites.naturalengland.org.uk/SiteSearch.aspx (Accessed December 2024),
[23] This data review focuses on the most recent ten-year period, avoiding reliance on historic records that could risk misrepresentation of the baseline.
[24] Microsoft (2019). Bing Maps (online) Available at: http://www.bing.com/maps (Accessed December 2024).
[25] JNCC (2020). Seabird Monitoring Programme (online) Available at: https://app.bto.org/seabirds/public/index.jsp (Accessed December 2024).
[26] Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. (2020). Waterbirds in the UK 2018/19: The Wetland Bird Survey. BTO/RSPB/JNCC; Thetford, UK

relating specifically to biodiversity conservation and monitoring work undertaken by the Applicant at HPB, and recent monitoring work associated with the HPC development have been reviewed, focusing mainly on the most recent five years of reporting (2019-2023), limiting reliance on older datasets that are likely to be less representative of the current biodiversity baseline at HPB:

- HPB Integrated Land Management Plan[27] (ILMP), which sets out "*objectives and policies for managing the land, aimed at protecting and enhancing wildlife, conserving the local landscape, historical heritage and encouraging public access, education and community participation, without compromising the needs of the operational business*";
- HPB Land Management Annual Reviews[28] (LMARs), which describe *"the land management, biodiversity monitoring and community engagement activities that have been completed at Hinkley Point B Power Station. The actions and results of these activities are related to the Nuclear Generation Biodiversity Action Plan (BAP) targets for Hinkley Point B to determine if the annual BAP objectives are being achieved."*;
- HPB/HPC Bat Box Survey (2012-2023) - detailing the monitoring of bat boxes erected within Hinkley Local Wildlife Site (LWS)[29];
- Hinkley Point B Nuclear Power Station Breeding Gull Population Surveys (2024[30]);
- Hinkley Point C Annual Ecological Monitoring Report (2017 – 2023) [31];
- HPC Discharge of Condition J2 - Shelduck Monitoring and Mitigation Scheme[32]; and
- HPC Discharge of condition C2 – River Parrett Winter Waterfowl Monitoring Report[33].

2.3.3 A list of the species referred to in this Desk Study, including scientific names, is included in **Appendix B**.

[27] EDF Energy Nuclear Generation Ltd (2018) Hinkley Point B Integrated Land Management Plan.
[28] EDF Energy Nuclear Generation Ltd (2014 to 2023). Hinkley Point B Land Management Annual Review.
[29] J. Bates (2020) Letter confirming bat licence handover to T. Bradford for Hinkley Point C dated February 2020.
[30] WSP (2024). Technical Note: Hinkley Point B Nuclear Power Station Breeding Gull Population Survey 2024.
[31] NNB GenCo (HPC) Ltd. Hinkley Point C Annual Ecological Monitoring Reports (2017 – 2023): Main Site
[32] NNB GenCo (HPC) Ltd. 2023. Hinkley Point C Nuclear New Build Shelduck Phase 2 Monitoring - 2023
[33] NNB GenCo (HPC) Ltd. 2024. Hinkley Point C River Parrett Wader and Wildfowl Monitoring 2023/2024 – Draft Report

3. Results

3.1 Statutory biodiversity conservation sites

3.1.1 There are ten statutory biodiversity conservation designations within 10 km of the Site and Works Area, including four European Sites (including Ramsar sites), four SSSIs, one LNR, and one NNR. There is a further SPA and Ramsar site with 20 km. These sites are summarised in **Table 3.1** and **Table 3.2** and shown on **Figure 3.1** and **Figure 3.2**.

Table 3.1 Statutory biodiversity conservation sites (international designations)

Designation	Qualifying features and reasons for site selection/notification	Proximity to the Site (to the Works Area in brackets)*
Severn Estuary SAC	Annex I habitats that are a primary reason for site selection: • Estuaries. • Mudflats and sandflats not covered by seawater at low tide. • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). Annex I habitats present as a qualifying feature, but not a primary reason for site selection: • Sandbanks which are slightly covered by sea water all the time. • Reefs. Annex II species that are a primary reason for site selection: • Sea lamprey (*Petromyzon marinus*). • River lamprey (*Lampetra fluviatilis*). • Twaite shad (*Alosa fallax*).	0 m (Works Area extends into the SAC).
Severn Estuary SPA	ARTICLE 4.1 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: • Bewick's swan (*Cygnus columbianus bewickii*) (Western Siberia/North-eastern & North-western Europe) 3.9% of the GB population (5-year peak mean 1991/92-1995/96). ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: • Gadwall (*Anas Strepera*) (North-western Europe) 0.9% of the population (5-year peak mean 1991/92-1995/96). • White-fronted goose (*Anser albifrons albifrons*) (North-western Siberia/North-eastern & North-western Europe) 0.4% of the population (5-year peak mean 1991/92-1995/96).	0 m (Works Area extends into the SPA).

Designation	Qualifying features and reasons for site selection/notification	Proximity to the Site (to the Works Area in brackets)*
	• Dunlin (*Calidris alpina alpine*) (Northern Siberia/Europe/Western Africa) 3.3% of the population 5-year peak mean 1991/92-1995/96. • Shelduck (*Tadorna tadorna*) (North-western Europe) 1.1% of the population 5-year peak mean 1991/92-1995/96. • Redshank (*Tringa totanus*) (Eastern Atlantic – wintering) 1.3% of the population 5-year peak mean 1991/92-1995/96. ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 84,317 waterfowl (5-year peak mean 1991/92-1995/96), including: Bewick's swan, shelduck, gadwall, dunlin and redshank.	
Severn Estuary Ramsar	**Ramsar criterion 1** Contains the second largest tidal range which affects the physical environment and biological communities. Also contains the following Habitats Directive Annex I features: • H1110 – Sandbanks which are slightly covered by sea water all the time. • H1130 – Estuaries. • H1140 – Mudflats and sandflats not covered by seawater at low tide. • H1330 – Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). **Ramsar criterion 3** Due to unusual estuarine communities with reduced diversity and high productivity. **Ramsar criterion 4** This site is important for the run of migratory fish between the sea and river estuary. Species include salmon (*Salmo salar*), sea trout (*Salmo trutta*), twaite shad and eel (*Anguilla anguilla*). It is also of particular importance for migratory birds during spring and autumn. **Ramsar criterion 5** Assemblages of international importance, with large peak counts of waterfowl in winter. **Ramsar criterion 6** Species/populations occurring at levels of international importance. These include the tundra swan (Bewick's swan), greater white-fronted goose, common shelduck, gadwall,	0 m (Works Area extends into the Ramsar site).

Designation	Qualifying features and reasons for site selection/notification	Proximity to the Site (to the Works Area in brackets)*
	dunlin and common redshank. Some species have been identified subsequent to designation for possible future designation under criterion 6. **Ramsar criterion 8** Over 110 species of fish have been recorded within the estuarine and river system making this one of the most diverse in Britain. Some of these species include salmon, sea trout, sea lamprey, river lamprey and allis shad (*Alosa alosa*). The Severn Estuary is a key migration route to their spawning grounds and is also an important feeding and nursery ground for many fish species.	
Exmoor and Quantock Oakwoods SAC	Annex I habitats that are a primary reason for site selection: • H91A0. Old sessile oak (*Quercus petraea*) woods with *Ilex* and *Blechnum* in the British Isles. Annex I habitats present as a qualifying feature, but not a primary reason for site selection: • H91E0. Alluvial forests with alder (*Alnus glutinosa)* and ash (*Fraxinus excelsior) (Alno-Padion, Alnion incanae, Salicion albae)*. Annex II species that are a primary reason for site selection: • 1308 Barbastelle (*Barbastella barbastellus*) – a maternity colony of barbastelles utilises a range of tree roosts in this area of predominantly oak woodland. Annex II species that are qualifying features and not a primary reason for site selection: • S1355, Otter (*Lutra lutra*). • S1323, Bechstein's bat (*Myotis bechsteinii*).	6.6 km south-west (7.1 km south-west).
Somerset Levels and Moors SPA	ARTICLE 4.1 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: • Bewick's swan [Western Siberia/North-eastern & North-western Europe]. 2.7% of the GB population (5 year peak mean 1991/92-1995/96). • Golden plover (*Pluvialis apricaria*) (North-western Europe – breeding) 1.2% of the GB population (5 year peak mean 1991/92-1995/96). ARTICLE 4.2 QUALIFICATION (79/409/EEC)	15.8 km east (15.9 km east).

Designation	Qualifying features and reasons for site selection/notification	Proximity to the Site (to the Works Area in brackets)*
	Over winter the area regularly supports: • Teal (*Anas crecca*) (North-western Europe) 3.3% of the population (5 year peak mean 1991/92-1995/96). • Lapwing (*Vanellus vanellus*) (Europe - breeding) 0.5% of the population (5 year peak mean 991/92-1995/96. ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 73,014 waterfowl (5 year peak mean 1991/92-1995/96) Including: Bewicks swan, teal, golden plover and lapwing.	
Somerset Levels and Moors Ramsar	Ramsar criterion 5 - Assemblages of international importance Species with peak counts in winter: 97,155 waterfowl (5 year peak mean 1998/99-2002/2003). Ramsar criterion 6 - Species/populations occurring at levels of international importance Species with peak counts in winter: • Teal. • Lapwing. Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in winter: • Eurasian wigeon (*Anas Penelope*). • Mute swan (*Cygnus olor*). • Northern pintail (*Anas acuta*). • Northern shoveler (*Anas clypeata*).	15.8 km east (15.9 km east).

* Distances are approximate.

Table 3.2 Statutory biodiversity conservation sites (national and local designations)

Designation	Qualifying features and reasons for site selection/notification	Proximity to the Site (Works Area)*
Bridgwater Bay SSSI	A succession of habitats including extensive intertidal mudflats, saltmarsh, shingle beach and grazing marsh intersected by a complex network of freshwater and brackish ditches. It supports internationally and nationally important numbers of over-wintering and passage migrant waders and waterfowl. The site supports a diverse invertebrate fauna including Red Data Book (RDB) species and nationally rare and nationally scarce species. The site also supports uncommon and nationally restricted macrophytes. The site contains the most extensive area of saltmarsh in Somerset and one of the largest common cord-	0 km (Works Area extends into SSSI).

	grass (*Spartina anglica*) swards in the Severn Estuary. The habitats on the landward side include grazing marsh and semi-improved neutral grassland.	
Somerset Wetlands NNR	A newly merged Site consisting of the former Bridgwater Bay (Natural England and Environment Agency), Ham Wall (RSPB), Huntspill River Environment Agency), Shapwick Heath (Natural England), Somerset Levels (Natural England) and Westhay Moor (SWT) NNRs. Includes internationally important feeding and roosting sites for many waterfowl and wading birds. The main habitats include intertidal mudflats, saltmarsh, sandflats and shingle ridges. Reed beds support numerous small birds such as reed warbler (*Acrocephalus scirpaceus*) and sedge warbler (*Acrocephalus schoenobaenus*), whilst skylark (*Alauda arvensis*) nest on adjacent common land. At low tide oystercatcher (*Haematopus ostralegus*) and turnstone (*Arenaria interpres*) feed on exposed shingle whilst many birds of prey including short-eared owl (*Asio flammeus*), harriers (*Circinae sp.)* and peregrine (*Falco peregrinus*) hunt over the peninsula.	0 m (Works Area extends into the NNR).
Ge-Mare Farm Fields SSSI	An unimproved species-rich flood pasture community with interest enhanced by the presence of a wetter area supporting a lowland mire community. Herb species characteristic of unimproved wet grassland are frequent.	6.2 km south-west (6.5 km south-west.
The Quantocks SSSI	Contains a wide variety of habitats including dwarf-shrub heath, wet dwarf-shrub heath, acidic flushes, ancient semi-natural broadleaved woodland and dense scrub. This supports a rich plant, lichen and bird fauna.	6.3 km south-west (6.6 km south-west.
Berrow Dunes SSSI	This site covers a wide range of coastal habitats which includes salt marsh, fore, grey and yellow dunes, stable dune grassland, dune slacks, scrub and a freshwater lagoon. It supports one of the most diverse floras in Somerset with 272 species of flowering plant. It is also locally important for breeding and wintering birds.	8.8 km north-east
Berrow Dunes LNR	The site features rare sand dune systems, unique both nationally and locally, and hosts a wide array of coastal habitats that support diverse flora and fauna. Additionally, the site is home to various moth species, including three rare ones, such as the Pinion Spotted Pug Moth (*Eupithecia insigniata*).	9.9km north-east

* Distances are approximate.

3.2 Severn Estuary SPA - Functionally-Linked Land

3.2.1 Natural England commissioned the Severn Estuary SPA project (Link Ecology Ltd, 2021[34]), between Beachley and Hinkley Point, to collect information on the movement of birds between the Severn Estuary SPA and sites upstream of it. This was to identify and determine the importance of any land that is functionally linked with the SPA. The Wildfowl & Wetlands Trust's (WWT's) Steart Marshes (approximately 4 km east of the Works Area) has previously been identified as a functionally linked High Tide Roost. Recent studies identified two additional sites:

- Stockland Marshes is identified as functionally linked land of 'high' importance for a number of waterbird species, most notably shoveler (*Anas clypeata*), gadwall (*Anas*

[34] Link Ecology Ltd (2021). Identification of Land with proven or possible functional linkages with the Severn Estuary SSSI/SPA Phase 6 (Avon and Somerset). Report for Natural England.

strepera), black-tailed godwit (*Limosa lapponica*), snipe (*Gallinago gallinago*), green sandpiper (*Tringa ochropus*) and pintail (*Anas acuta*). Stockland Marshes is situated approximately 2.8 km to the south-east of the Works Area.

- Fields South of Combwich are identified as functionally linked for lapwing. However, these fields are defined as likely to be of 'low' importance or 'data deficient', given that the only data available was from a single winter's survey, over 10 years ago. Fields South of Combwich are situated approximately 5.8 km to the south-east of the Works Area.

3.3 Non-statutory biodiversity conservation sites

3.3.1 There are nine LWS within 3 km of the Site (see **Table 3.3** and **Figure 3.3**), four of which incorporate or overlap Ancient Woodland Inventory (AWI) sites.

Table 3.3 Non-statutory biodiversity conservation sites

LWS name	Description	Proximity to Site (Works Area reported in brackets)*
Hinkley	Species-rich scrub, coastal grassland and broadleaved woodland with ponds and areas of improved grassland. The Applicant and SWT manage the Hinkley LWS for biodiversity conservation. This LWS wraps around the area south of the power station security fence. Limited parts of the Works Area therefore lie within the Hinkley LWS. The mapped extent of Hinkley LWS does not take in to account the loss of part of this area to the west of the Site, which is within the footprint of the HPC development.	0 m (Works Area extends into the LWS).
Blue Anchor to Lilstock Cliff	Coastal cliffs, with unimproved calcareous grassland and scrub habitats from Blue Anchor to Lilstock.	1.4 km west (1.7 km west).
Mud House Copse	Ancient semi-natural broadleaved woodland.	1.7 km south-east (1.7 km south).
Wick Park Covert	Ancient semi-natural broadleaved woodland bisected by a road. Overlaps AWI site (two adjacent areas).	1.8 km south-east (1.9 km south-east).
Cole Pool Field	Field with unimproved neutral and marshy grassland and semi-improved grassland areas.	2.2 km south-west (2.5 km south-west).
Monk Wood	Ancient semi-natural broadleaved woodland. AWI site.	2.3 km south (2.5 km south).
Honibere Wood	A large tract of hedged, embanked and ditched ancient semi-natural woodland occupying very wet-lying ground on the coastal strip of country north of Stringston. AWI site.	2.6 km south-west (3 km south-west).
Martin's Wood	A generally square tract of ancient semi-natural woodland, hedged, ditched and embanked all round, with a small stream flowing eastwards along its southern edge.	2.9 km south-west (3.2 km south-west).

LWS name	Description	Proximity to Site (Works Area reported in brackets)*
	AWI site.	
Fairfield House Park	Parkland site as marked on the 1st edition OS map with an important assemblage of Veteran Trees.	3 km south-west (3.3 km south-west).

* Distances are approximate.

3.4 Legally protected and important species

Records held by SERC

3.4.1 With the exception of bats, which are summarised separately (paragraphs 3.4.2 - 3.4.3), records held by SERC of legally protected and important species within approximately 3 km of the Site and Works Area[35] are summarised below, focusing on records within the past 10 years (2014 – 2024) and with the full species list included in **Appendix B**:

- Numerous records of bird species (noting that the data do not distinguish between records of breeding and non-breeding birds) including: -
  - 21 species listed on Schedule 1 of the *Wildlife and Countryside Act 1981 (as amended)*[8], including two recorded within the Site – common scoter *(Melanitta nigra*) and scaup (*Aythya marila*);
  - 21 species of Principal Importance for biodiversity conservation, including two recorded within the Site – common scoter and scaup;
  - 27 BoCC Red List species including three recorded within the Site - common scoter, kittiwake (*Rissa tridactyla*) and scaup; and
  - 27 LBAP priority species, including three species recorded within the Site - arctic tern (*Sterna paradisaea*), common scoter and scaup.
- Seven records of otter since 2014, the closest being approximately 114 m south-east of the Site. There are a further 25 records of otter, for which limited data are available, dated from between 2010 and 2019.
- One record of water vole, approximately 1.27 km south-east of the Site.
- A total of 77 important plant species, 11 of which are on the national (GB and/or England) Red List of threatened species: common sea-lavender (*Limonium vulgare*), dwarf spurge (*Euphorbia exigua*), field pepperwort (*Lepidium camperstre*), sainfoin (Onobrychis sp.), sea barley (*Hordeum marinum*), sea wormwood (*Seriphidium maritimum*), slender hare's-ear (*Bupleurum tenuissimum*), smooth cat's ear (*Hypochaeris glabra*), stinking chamomile (*Anthemis cotula*), true fox-sedge (*Carex vulpina*), and yellow horned-poppy (*Glaucium flavum*).Three species are of Principal

[35] A 3 km perimeter around the combined Site and Works Area boundaries. Distances are approximate and measured from this combined boundary to each species record's grid square. Distances to 1 km, 2 km, 5 km, 10 km or 100 km grid references are therefore not exact due to the limited resolution of the grid reference.

Importance for biodiversity conservation (sea barley, slender hare's ear and true fox-sedge) and 21 are LBAP priority species.

- A total of four important/notable invertebrate species, both butterflies: small heath (*Coenonympha pamphilus)* and wall (*Lasiommata megera*).
- Two legally controlled plant species that are listed on Schedule 9 of the Wildlife and Countryside Act (as amended)[8]: Canadian waterweed (*Elodea canadensis*), and Himalayan balsam (*Impatiens glandulifera*).

Bat records

3.4.2 There are records of fourteen species of bat within approximately 10 km of the Site: Bechstein's (*Myotis bechsteinii*), barbastelle (*Barbastella barbastellus*), brown long-eared (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's (*Myotis daubentonii*), greater horseshoe (*Rhinolophus ferrumequinum*), grey long-eared (*Plecotus austriacus*), lesser horseshoe (*Rhinolophus hipposideros*), Nathusius' pipistrelle (*Pipistrellus nathusii*), Natterer's (*Myotis nattereri*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and whiskered (*Myotis mystacinus*).

3.4.3 SERC holds records of 38 bat roosts, including day, night, and hibernation roosts, within 10 km of the Site. These roosts belong to brown long-eared, common pipistrelle, horseshoe, grey long-eared, lesser horseshoe, Natterer's, serotine, soprano pipistrelle and whiskered bats. The closest record is of a day roost of one long-eared bat 3.69 km south-east of the Site. There are four EPSMLs (see **Table 3.4**) that relate to activities that affect bats at two locations within approximately 5 km of the Site. One of these locations (three licences) is adjacent to the western boundary of the Site, associated with HPC, and relates to the removal of barn and tree roosts. The fourth EPSML reported in **Table 3.4** (Ref. 2018-34609-EPS-MIT) relates to a location near Stockland Bristol, approximately 3.3 km south-east of the Site.

Table 3.4 EPSL (bats) within 5 km

Case reference	License start/end date	Species	Distance and direction
EPSM2010-2436	26/03/2012 - 28/02/2021	Brown long-eared (*Plecotus auritus*); common pipistrelle; Natterer's (*Myotis nattereri*); serotine (*Eptesicus serotinus*); soprano pipistrelle (*Pipistrellus pygmaeus*); whiskered.	Adjacent to Site boundary on west side
2015-14447-EPS-MIT	23/09/2015 – 28/02/2021		
2015-14447-EPS-MIT-2	20/05/2020 – 28/02/2021		
2018-34609-EPS-MIT	01/05/2018 – 31/07/2018	Common pipistrelle; soprano pipistrelle.	3.3km south-east of the Site boundary

Great crested newt records

3.4.4 There are three ponds within 500 m of the Site, identified from OS maps and aerial photography (see **Figure 1.1**). Ditches extend along the southern and eastern edges of the Site and are connected to the wider landscape along field margins to the south and

east of the Site. These ponds (P) and ditches (D) are summarised in **Table 3.5**. There are no records of great crested newt (*Triturus cristatus*) within 500 m of the Site within the last 10 years.

Table 3.5 Waterbodies within 500 m of the Site

Water body	NGR	Distance and direction	Separated from Site by significant barriers to GCN dispersal?
P1	ST 21630 45756	~85 m south-east of the Site boundary.	No
P2*	ST 20985 45539	South-west corner of the Site.	No
P3	ST 21775 45792	~160 m south-east of the Site boundary.	No
D1	ST 21680 45740	Along southern and eastern edge of the Site boundary.	No

Species reported in HPB ILMP and LMARs

3.4.5 Species records within the HPB estate detailed in the ILMP and LMARs are summarised in **Table 3.6**. These species are generally consistent with those included in the SERC dataset reported in **Section 3.2.** .

Table 3.6 Summary of species surveys/records from ILMPs and LMARs

Species/Group	Year	Key findings
Breeding birds	Annually to 2023 (no survey in 2020)	The breeding bird survey in 2023 recorded 1,154 individuals from 37 species, a decrease from the 1,380 individuals from 38 species recorded in 2022. The number of confirmed and probable breeding territories increased from 148 (2022) to 150 (2023). Three species listed on Schedule 1 of the *Wildlife and Countryside Act 1981 (as amended)*[8]: Cetti's warbler (*Cettia cetti*), little ringed plover (*Charadrius dubius*) and peregrine (*Falco peregrinus*); Notable species (Red List of birds of conservation concern and/or Species of Principal Importance) recorded during the monitoring programme include: cuckoo (*Cuculus canorus*), greenfinch (*Chloris chloris*), linnet (*Linaria cannabina*), song thrush (*Turdus philomelos*), reed bunting (*Emberiza schoeniclus*), bullfinch, dunnock (*Prunella modularis*), marsh tit, and nightingale (*Luscinia megarhynchos*).
Intertidal birds	Annually to 2023	The wintering bird survey (2022/23) recorded 56,820 individuals from 61 species, an increase on 54,862 individuals in 2021/22 survey, and continues the significant increase seen from 2020/21 where only 18,801 individuals were observed. Survey data includes Huntspill Island at the mouth of the River Parrett. Previous surveys have noted the importance of foraging resource around HPB for Severn Estuary populations of shelduck, wigeon, mallard, pintail, ringed plover, grey plover, dunlin, whimbrel, curlew and redshank. Recent surveys recorded notable numbers of teal associated

Species/Group	Year	Key findings
		with a pond (P2 (also referred to as 'East Pond'), **Figure 1.1**) to the south of the eastern boundary of the Site, with a combined total of 298 recorded across six survey visits in winter 2022/23, with previous combined totals (six surveys) of 178 (2021/22) and 52 (2020/21).
Badgers	Implementing/monitoring Hinkley Point C mitigation (2012 – 2023)	[redacted]. Information pertaining to badgers is provided in a Confidential Report (Wood (2020a) *Hinkley Point B Decommissioning EIA – Baseline Report: Badger*) and WSP (2024). *Decommissioning of Hinkley Point B Nuclear Power Station - Verification of Terrestrial Biodiversity Baseline*.
Bats	Bat box inspections (2012 – 2023)	Annual monitoring of 60 bat boxes, erected in 2011 to compensate for loss of potential tree roost habitat at the HPC development. Eight of the boxes are situated within c.50 m of the HPB double security fence, with four of these having been used by bats (soprano pipistrelle, common pipistrelle or unidentified bats) in the 2023 bat box inspections.
Reptiles	Reptile Surveys (2010)	Slow worm (good population) and grass snake (low population), including amongst scrub/grassland mosaic and along hedges and ponds. Unconfirmed records of common lizard (*Zootoca vivipara*).
Invertebrates	Annual (inc. 2023) Lepidoptera survey Ditch and terrestrial invertebrate survey (2008 – 2010) Coastal and foreshore invertebrate survey to the west (2010)	The 2023 butterfly survey recorded 4,225 individuals from 23 species, which is an increase on individual numbers from 2022 (3,150) and comprising the same species. An increase in the numbers of fourteen species and decrease in six species was recorded. The diverse assemblage of butterflies (upto 25 species in a single year) includes species of Principal Importance (e.g wall, small blue and small heath). Low invertebrate diversity recorded in ditches. Notable species: hairy dragonfly (*Brachytron pratense*), reed beetle (*Donacia sp*.), scarce fungus beetle (*Platyrhinus resinosus*) and a fly – *Anagnota bicolour.* Coastal survey recorded three nationally scarce species: grey bush cricket (*Platycleis albopunctata*), a scavenger beetle (*Hydrophilidae sp*.) and a rove beetle (*Staphylinidae sp*.). Bombardier beetle (*Carabidae sp*.) recorded in 2009. Other notable species: two Red Data Book species (*Homoneura limnea* and *Homoneura interstincta*); four nationally scarce species – a cranefly (*Atypophthalmus inusta*), a snail-killing fly (*Tetamocera punctifrons*), a picture-winged fly (Acanthiophilus elianthin) and *Dioxyna bidentis;* plus *Orthoceratium lacustre*, orange ladybird (*Halyzia sedecimguttata*) and latticed heath moth (*Chiasmia clathrate*). Mainly common invertebrate species that are typical of the habitat types and a small number of nationally scarce/notable species.
Other notable records (inc. incidental observations)		Intermittent evidence of otter activity on Wick Moor; evidence of water vole activity recorded in 2006 (not recorded during 2010 surveys and not detected since by adhoc checks to inform annual land management activities); willow tit; grasshopper warbler (*Locustella naevia*); and glow-worm (*Lampyris noctiluca*).
Invasive non-native species	-	Japanese knotweed (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*); and Canadian waterweed (*Elodea canadensis*) recorded outside the Works Area.

Severn Estuary Wetland Bird Survey data (WeBS)

3.4.6 Wetland bird numbers (2018/19 – 2022/23) reported in the most recently published Severn Estuary Wetland Bird Survey (WeBS) dataset[36] are summarised in **Table 3.7**, focusing on species recorded on more than 60% of survey visits during the baseline non-breeding bird surveys in winter 2019/20 (Wood 2020b) that are also qualifying features of the relevant designated sites (see **Table 3.1**).

3.4.7 Peak baseline counts in 2019/2020 are also compared against the corresponding peak average (2015/16 – 2019/20). This information updates contextual WeBS data included in the baseline breeding and non-breeding bird report.

Table 3.7 Severn Estuary WeBS Data

Species	Bridgwater Bay SSSI	Severn Estuary SPA	Severn Estuary peak average (2018/19 – 2022/23)	Severn Estuary peak average (2015/16 – 2019/20)	2019/20 peak count (% of WeBS 5-year peak average)
Curlew	Internationally important numbers over winter	-	2,942	3,192	1.94%
Mallard	Significant numbers over winter	-	No additional dataset	2,381	1.97%
Shelduck	Internationally important numbers over winter	3,330 Wintering	7,376	5,768	7.58%
Turnstone	Significant numbers over winter	-	488	481	5.19%
Wigeon	Significant numbers over Winter	-	6,858	8,608	0.87%
Brent goose	-	-	53	111	102.70%
Oystercatcher	-	-	No additional dataset	1,118	6.08%
Pintail	-	-	647	787	34.30%

Nesting gull records

3.4.8 Breeding gull surveys have been undertaken at HPB between 2019 and 2024[30] and are summarised below:

[36] WeBS (2023) WeBS Report Online (online). Available at: https://app.bto.org/webs-reporting/numbers.jsp (Accessed December 2024).

- 2019 – territory mapping surveys, employing the BTO's Common Bird Census (CBC[37]), estimated the lesser black-backed gull population at 20 pairs and herring gull population at 100 – 200 pairs.
- 2021 – baseline breeding gull surveys were undertaken following the Vantage Point (VP) methodology, as detailed in Gilbert *et al*. (1998[38]), accounting for the review of methods in Ross *et al*. (2016[39]) and recommended survey timings in Walsh *et al*. (1995[40]), primarily from rooftop VPs. The estimated lesser black-backed gull breeding population for the HPB survey area in 2021 was a minimum of seven pairs; and the herring gull population was estimated at a minimum of 187-194 pairs.
- 2022 – total estimated lesser black-backed gull breeding population for the HPB survey area in 2022 is six pairs; and the herring gull population was estimated at 189 pairs. The overall numbers at the Hinkley Point Complex are likely to have declined since 2016 due to the removal of roofing at HPA.
- 2023 – total estimated lesser black-backed gull breeding population for the HPB survey area in 2023 is six pairs; and the herring gull population was estimated at 185 pairs.
- 2024 – the total number of lesser black-backed gull nests declined from six to five pairs between 2023-24, with three of the pairs nesting on different buildings in 2024. The breeding population of herring gull at HPB decreased to 179 pairs in 2024, representing a 3% decline from 2023.

HPC annual biodiversity monitoring

3.4.9 Ecological surveys/monitoring have been carried out in relation to construction works at the adjacent HPC development, most recently in 2023. The results of the annual ecology monitoring are summarised below.

- **Bats:** in 2023 bat activity surveys (transects) recorded common pipistrelles as the most frequently encountered bat species. At least nine species were recorded during automated surveys, using static bat detectors, including barbastelle, Nathusius' pipistrelle, common pipistrelle, soprano pipistrelle, noctule, *Myotis sp., Plecotus sp*., greater horseshoe and lesser horseshoe bats. It is likely that more species were recorded however it is not possible to confirm this from recordings/sonograms.
- **Breeding birds**: A total of 53 species recorded in 2023, with territories identified for 26 species. The recorded species assemblage varied slightly between 2023 and 2022. Nine species recorded in 2023 were not recorded in 2022 and 17 species recorded in 2022 were not in 2023. Of the 26 species holding territories in 2023, five are SPI (dunnock, linnet, reed bunting, skylark, and yellowhammer (*Emberiza citrinella*)), and three are on the BoCC Red list (linnet, skylark, and yellowhammer). No territories of two of the three Schedule 1 species recorded in 2022 (black redstart (*Phoenicurus ochruros)* and Cetti's warbler) were recorded. Species recorded during the surveys that were not confirmed to be breeding and could potentially breed within habitats on

[37] British Trust for Ornithology (2000). Common Birds Census (online). Available at: https://www.bto.org/our-science/publications/birdtrends/2020/methods/common-birds-census#:~:text=The%20Common%20Birds%20Census%20(CBC,for%20this%20purpose%20by%20BBS. (Accessed December 2024).
[38] Gilbert, G., Gibbons, D.W. & Evans, J. (1998). Bird monitoring methods: A manual of techniques for key UK species. RSPB.
[39] Ross, K.E., Burton, N.H.K., Balmer, D.E., Humphreys, E.M., Austin, G.E., Goddard, B., Schindler-Dite, H., Rehfisch, M.M. (2016). Urban breeding gull surveys: a review of methods and options for survey design. BTO Research Report No. 680.
[40] Walsh, P.M., Halley, D. J., Harris, M. P., del Nevo, A., Sim, I. M. W., & Tasker, M. (1995). Seabird monitoring handbook for Britain and Ireland. Peterborough, UK.

the Site include carrion crow (*Corvus corone*), green woodpecker (*Picus viridis*), meadow pipit (*Anthus pratensis*), coot (*Fulica atra*), Cetti's warbler, nightingale, little egret (*Egretta garzetta*), greenfinch, goldcrest (*Regulus regulus*), garden warbler (*Sylvia borin*), little owl (*Athene noctua*), oystercatcher, rock pipit (*Anthus petrosus*), song thrush, willow warbler, stock dove and buzzard (*Buteo buteo*).

- **Intertidal birds**: Annual monitoring of intertidal non-breeding birds is carried out from a single VP, across five count areas, covering all intertidal and near shore habitats within 500 m of the HPC development. Four of these areas are within 500 m of the Works Area. In winter 2022/23, a total of 18 waterbird species (not including gulls) were recorded in intertidal areas within 500 m of the HPC development. The most frequently recorded species were curlew and oystercatcher, which were recorded during all six surveys. Shelduck and pale-bellied brent goose were recorded during all but one survey. The most numerous species recorded was shelduck with a peak count of 448 during the October survey. The only species to exceed 1% GB species threshold were pale-bellied brent goose and common tern (the 1% population thresholds are used to identify important sites).
- **Invertebrates**: Numbers of butterfly species and the total butterfly count recorded by the 2023 surveys were comparable to previous surveys. The total count of individual butterlies and day flying moths was 1,043, this is within 7% of the highest annual total recorded in 2022 and is the fourth highest count since 2015. None of the four transects recorded their peak or lowest counts of individuals in 2023.

HPC shelduck monitoring

3.4.10 Monitoring of shelduck at the mouth of the River Parrett and Bridgwater Bay has been undertaken annually, as required by Condition J2 of the Hinkley Point C – Development Consent Order[41] (DCO). Surveys have been undertaken to measure population, distribution and background disturbance.

3.4.11 The population surveys recorded a peak count of 5,582 individuals in late September. This is the fourth highest peak count since the commencement of surveys in 2012 and a decrease of 15% on the 2022 peak count (the highest peak count since the surveys commenced).

3.4.12 The spread of shelduck around high tide remained broadly consistent throughout the 2023 survey period and largely similar to that recorded in previous years, with birds concentrated around Fenning Island, Stert Island, and Stert Point (the 'core roost area'), at the mouth of the River Parret. However shelduck were more widely dispersed across the recording area during 2022 and 2023, with an increase in the number of birds utilising the foreshore between the Wall Common fence line and Stert Point; and it was apparent that there was a lower number of birds using the main channel of the River Parrett, potentially attributable to disturbance by vessels.

3.5 Important habitats

3.5.1 A total of 13 different important habitat types are known to occur, or have previously been recorded, within 3 km of the Site (see **Figure 3.4** and refer to **Table 3.8**). These are Habitats of Principal Importance for Biodiversity Conservation, except for good quality semi-improved grassland and deciduous woodland. The latter, however, potentially includes areas of Lowland Mixed Deciduous Woodland, which is a habitat of Principal Importance. Habitats that are within or bordering the Site boundary and/or Works Area

[41] UK Government (2013). The Hinkley Point C (Nuclear Generating Station) Order 2013. (online) Available at: https://www.legislation.gov.uk/uksi/2013/648/contents/made (Accessed December 2024).

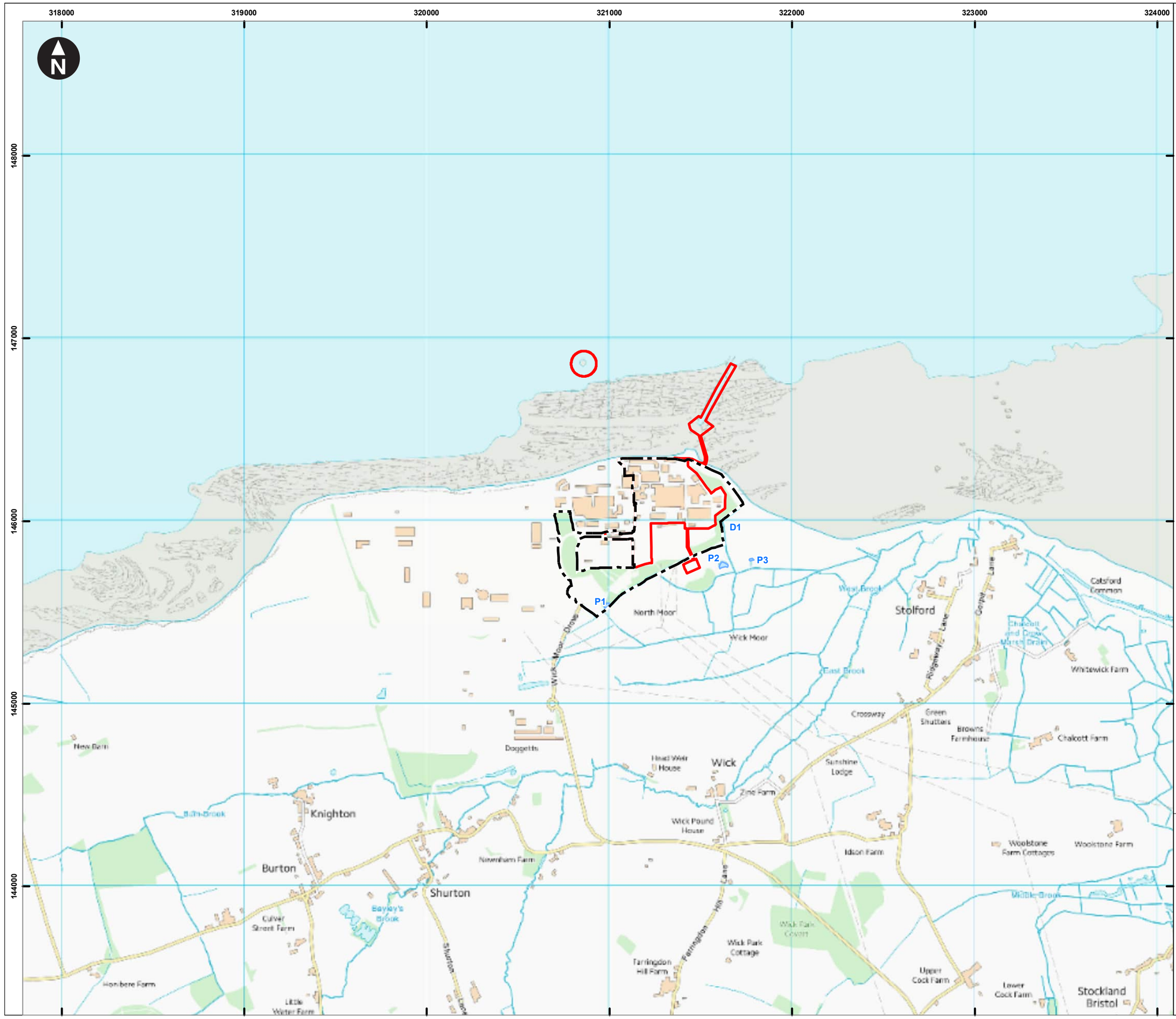
include deciduous woodland; maritime cliff and slope; coastal and floodplain grazing marsh; and open mosaic habitat, the latter categorisation being at 'Draft' status[20].

3.5.2 The distribution/status of these habitats has not been subject to updated/ground truth surveys, and it is likely that some of these habitat areas will have changed or been lost. An example is the loss of the two blocks of deciduous woodland to the west of the Site, which are within the footprint of the HPC development.

Table 3.8 Important habitats within 3 km of the Site

Important habitat	Closest proximity to the Site (Works Area reported in brackets)
Deciduous woodland	0 m (within the Site and at the perimeter of the Works Area).
Open Mosaic Habitat	0 m (within the Site and adjacent to Works Area).
Maritime cliff and slope	0 m (adjacent to south-east of Site and Works Area).
Coastal and floodplain grazing marsh	0 m (adjacent to south-east of Site and Works Area).
Intertidal mudflats	0m (adjacent to north perimeter of Site and within Works Area).
Good quality semi-improved grassland	~175 m south-east (210 m south-east).
Traditional orchard	~1.34 km south-west.
Lowland calcareous grassland	~1.51 km west (~1.77 km west).
Coastal saltmarsh	~1.62 km east (~1.72 km east).
Coastal vegetated shingle	~1.62 km east (~1.72 km east).
Purple moor-grass and rush pasture	~2.22 km south-west.
Lowland meadow	~2.22 km south-west
Saline lagoons	~2.59 km east (~2.66 km east).

Appendix A
Figures



Key

- Nuclear Site Licence Boundary ("The Site")
- Indicative Dismantling Works Area ("Works Area")
- Pond
- Ditch

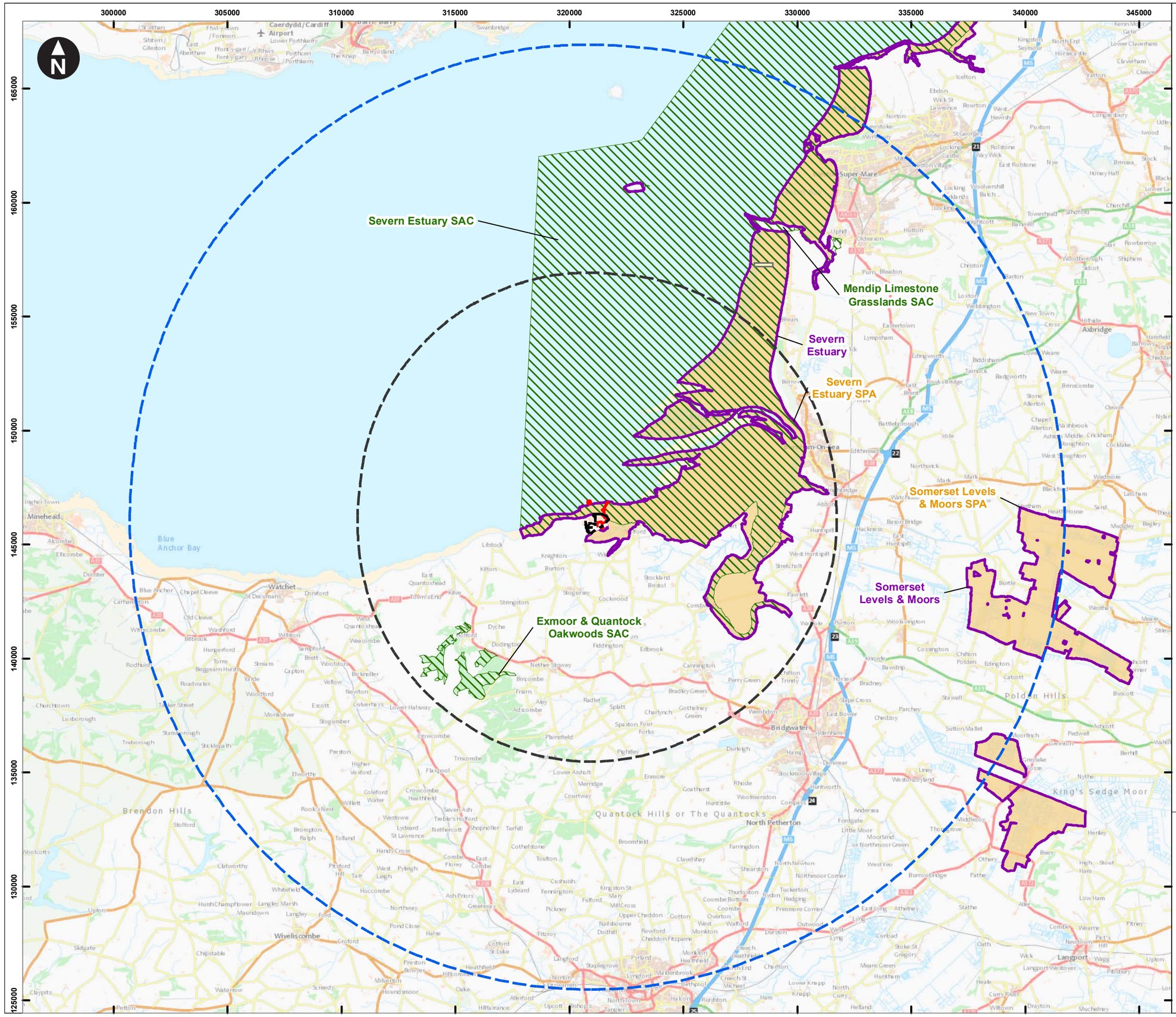
Decommissioning of Hinkley Point B Nuclear Power Station
Baseline Report: Desk Study (Terrestrial Ecology)

Figure 1.1
Site and Works area boundaries

December 2024

70112953_WSPE-FG_OE-00007_P01

\\uk.wspgroup.com\central data\Projects\70112xxx\70112953 - HNB and HPB Decommissioning Project\03 WIP\Drawings\GIS\MXD\70112953_WSPE-FG_OE-00007_P01.mxd Originator: UKJXP782



Key

- Nuclear Site Licence Boundary ("The Site")
- Indicative Dismantling Works Area ("Works Area")
- 20km search area
- 10km search area
- Ramsar site
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

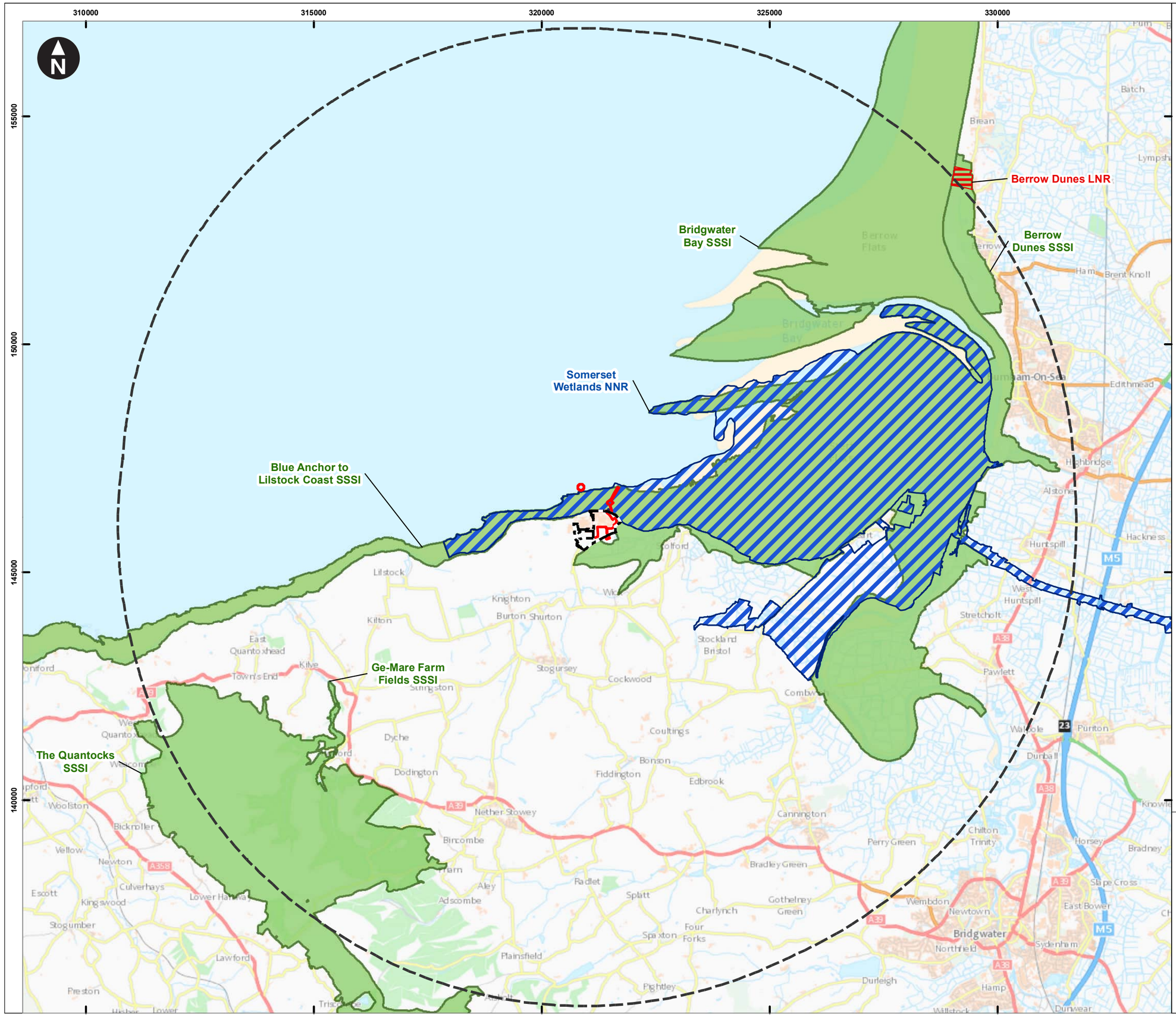
0 2,000 4,000 6,000 8,000 m

Scale at A3:1:160,000

Decommissioning of Hinkley Point B Nuclear Power Station
Baseline Report: Desk Study (Terrestrial Ecology)

Figure 3.1
Statutory biodiversity conservation sites: European sites

December 2024



Key

- Nuclear Site Licence Boundary ("The Site")
- Indicative Dismantling Works Area ("Works Area")
- 10km search area
- Site of Special Scientific Interest (SSSI)
- National Nature Reserve (NNR)
- Local Nature Reserve (LNR)

0 1,000 2,000 3,000 4,000 m

Scale at A3: 1:80,000

Decommissioning of Hinkley Point B Nuclear Power Station
Baseline Report: Desk Study (Terrestrial Ecology)

Figure 3.2
Statutory biodiversity conservation sites: National sites

December 2024

317000 318000 319000 320000 321000 322000 323000 324000 325000

150000 149000 148000 147000 146000 145000 144000 143000

N

Bridgwater Bay

Hinkley

Blue Anchor to Lilstock Cliff

Honibere Wood

Martin's Wood

Cole Pool Field

Fairfield House Park

Mud House Copse

Wick Park Covert

Monk Wood

Lilstock
New Barn
Poole's Barton
Cross Elms Hill
Knighton
Burton
Honibere Farm
Little Water Farm
Water Farm
Fairfield House
Lower Fairfield Lodge
Stogursey
Priory Hill
Stringston
Plud Farm
Wood Barn
Tet Hill Barn
Doggetts
Head Weir House
Wick
Zine Farm
Wick Pound House
Newnham Farm
Gunter's
Farringdon Hill Farm
Wick Park Cottage
Adam's La
Monkton La
Cathanger
Wick Moor Drove
Shurton La
Farmington Hill
Stolford
Gorpit La
Whitewick Farm
Browns Farmhouse
Crossway
Chalcott Farm
Sunshine Lodge
Idson Farm
Woolstone Farm Cottages
Woolstone Farm
Marsh Farm
Stert Drove
Upper Cock Farm
Lower Cock Farm
Stockland Bristol
Otterhampton
Juvenis
Lower Hill Farm
New Barn
Holm Barton
Kiln Close
Coxwood
Hill Farm House
Withycombe Hill
Combwich

Key

- Nuclear Site Licence Boundary ("The Site")
- Indicative Dismantling Works Area ("Works Area")
- 3km search area
- Ancient semi-natural woodland
- Local Wildlife Site (LWS)

Note:
The mapped extent of Hinkley LWS does not take into account the loss of part of this area to the west of the Nuclear Site Licence boundary which is within the footprint of the Hinkley Point C development.

0 500 1,000 1,500 m

Scale at A3: 1:30,000

Decommissioning of Hinkley Point B Nuclear Power Station
Baseline Report: Desk Study (Terrestrial Ecology)

Figure 3.3
Non-statutory biodiversity conservation sites

December 2024

317000 318000 319000 320000 321000 322000 323000 324000 325000

150000 149000 148000 147000 146000 145000 144000 143000

N

Bridgwater Bay

Key

- Nuclear Site Licence Boundary ("The Site")
- Indicative Dismantling Works Area ("Works Area")
- 3km search area

Habitats of Principal Importance for the Conservation of Biodiversity

- Coastal and floodplain grazing marsh
- Coastal saltmarsh
- Coastal vegetated shingle
- Lowland calcareous grassland
- Lowland meadows
- Maritime cliff and slope
- Mudflats
- Purple moor grass and rush pastures
- Saline lagoons
- Traditional orchard

Notable Habitats

- Deciduous woodland
- Good quality semi-improved grassland
- Open mosaic habitat (draft)

Note:
This habitat map is based on desk study data. The distribution/status of these habitats has not been subject to updated/ground truth surveys and it is likely that some of these habitat areas will have changed or been lost. An example is the loss of the two blocks of deciduous woodland to the west of the Nuclear Site Licence boundary, which are within the footprint of the Hinkley Point C development.

0 500 1,000 1,500 m

Scale at A3: 1:30,000

Decommissioning of Hinkley Point B Nuclear Power Station
Baseline Report: Desk Study (Terrestrial Ecology)

Figure 3.4
Important habitats

December 2024

Appendix B
Legally Protected/Important Species Records (SERC) within 3 km[42]

KEY	
HR[43]	Included on Schedule 2 or 5 of The Conservation of Habitats and Species Regulations 2017 (as amended).
W&C[44]	Included on Schedule 5 or 8 of the Wildlife and Countryside Act 1981 (as amended).
W&C Sch1	Included on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
W&C Sch9	Legally controlled species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
S41[45]	Species of Principal Importance for the Conservation of Biological Diversity in England, pursuant to Section 41 of the Natural Environment and Rural Communities Act 2006.
UKBAP	UK Biodiversity Action Plan Priority Species (excluding S41 species).
SERC-N	Notable species in Somerset[46].
LBAP[47]	Local Biodiversity Action Plan species.
NR	Nationally Rare species.
NS	Nationally Scarce species.
Red List	Birds included on the Red List of Birds of Conservation Concern (BoCC)[48].
Amber List	Birds included on the Amber List of Birds of Conservation Concern (BoCC)[26].

[42] A 3 km perimeter around the combined Site and Works Area boundaries. Distances are approximate and measured from this combined boundary to each species record's grid square. Distances to 1 km, 2 km, 5 km, 10 km or 100 km grid references are therefore not exact due to the limited resolution of the grid reference.

[43] UK Government (2017). The Conservation of Habitats and Species Regulations 2017 (online). Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents/made (Accessed January 2023).

[44] UK Government (1981). Wildlife and Countryside Act 1981 (online). Available at: https://www.legislation.gov.uk/ukpga/1981/69 (Accessed January 2023).

[45] Defra and Natural England (2022). Habitats and species of principal importance in England (online). Available at: https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england (Accessed January 2023).

[46] SERC (2000). Somerset Notable Species Dictionary. Fifth Edition. Available at: www.somerc.com/local-wildlife-sites/somerset-notables-dictionary (Accessed January 2023).

[47] Biodiversity South West (2022). LBAPs (online). Available at: http://www.biodiversitysouthwest.org.uk/link_lbap.html (Accessed January 2023). Local BAP priority species were identified by SERC.

[48] JNCC (2021). Birds of Conservation Concern 5 published (online). Available at: https://jncc.gov.uk/news/bocc5/#:~:text=Amongst%20the%20new%20additions%20to,the%20UK%20in%20recent%20decades (Accessed January 2023).

KEY	
RL-CR	Species included in the 'Critically Endangered' category on the national (Great Britain and/or England) red lists of threatened species[48.]
RL-VU	Species included in the 'Vulnerable' category on the national (Great Britain and/or England) red lists of threatened species[48].
RL-NT	Species included in the 'Near Threatened' category on the national (Great Britain and/or England) red lists of threatened species[48].
RL-RE	Species included in the 'Regionally Endangered' category on the national (Great Britain and/or England) red lists of threatened species[48].
RL-DD	Species included in the 'Data Deficient' category on the national (Great Britain and/or England) red lists of threatened species[48].

Birds

Species	Scientific (Latin) name	Legal/Priority status
Arctic Skua	*Stercorarius parasiticus*	Red List, UKBAP, RL-CR, LBAP
Arctic Tern	*Sterna paradisaea*	Amber List, LBAP, RL-VU
Bar-tailed Godwit	*Limosa lapponica*	Amber List, SERC-N
Black Tern	*Chlidonias niger*	W&C Sch.1, LBAP, RL-RE, SERC-N
Blackbird	*Turdus merula*	SERC-N
Black-headed Gull	*Chroicocephalus ridibundus*	RL-VU, Amber List
Black-tailed Godwit	*Limosa limosa*	W&C Sch.1, Red List, LBAP, RL-EN, S41, SERC-N
Blue Tit	*Cyanistes caeruleus*	-
Bullfinch	*Pyrrhula pyrrhula*	S41, Amber List, LBAP, SERC-N
Buzzard	*Buteo buteo*	-
Cetti's Warbler	*Cettia cetti*	W&C Sch.1, SERC-N
Chiffchaff	*Phylloscopus collybita*	LBAP
Common Guillemot	*Uria aalge*	Amber List, SERC-N
Common Gull	*Larus canus*	Amber List, SERC-N
Common Sandpiper	*Actitis hypoleucos*	Amber List, RL-VU

Species	Scientific (Latin) name	Legal/Priority status
Common Scoter	*Melanitta nigra*	W&C Sch.1, S41, Red List, LBAP, SERC-N
Cuckoo	*Cuculus canorus*	S41, Red List, LBAP, RL-VU
Curlew	*Numenius arquata*	S41, Red List, LBAP, RL-EN, SERC-N
Dotterel	*Charadrius morinellus*	W&C Sch.1, Red List, RL-EN
Dunnock	*Calidris alpina*	S41, Amber List, SERC-N
Eider	*Somateria mollissima*	Amber List, SERC-N, RL-VU
Fieldfare	*Turdus pilaris*	W&C Sch.1, Red List, SERC-N
Fulmar	*Fulmarus glacialis*	Amber List
Gadwall	*Anas strepera*	Amber List, SERC-N
Gannet	*Morus bassanus*	Amber List, SERC-N
Glossy Ibis	*Plegadis falcinellus*	-
Goldcrest	*Regulus regulus*	-
Goldfinch	*Carduelis carduelis*	SERC-N
Great Black-backed Gull	*Larus marinus*	RL-EN, Amber List
Great Crested Grebe	*Podiceps cristatus*	RL-VU, SERC-N
Grasshopper Warbler	*Locustella naevia*	S41, Red List, LBAP, SERC-N
Great Grey Shrike	*Lanius excubitor*	SERC-N
Great Northern Diver	*Gavia immer*	W&C Sch.1, Amber List, SERC-N
Great Skua	*Stercorarius skua*	Amber List, SERC-N
Great Tit	*Parus major*	-
Green Sandpiper	*Tringa ochropus*	W&C Sch.1, Amber List. RL-EN, SERC-N
Green Woodpecker	*Picus viridis*	SERC-N
Greenfinch	*Chloris chloris*	Red List, RL-EN
Grey Heron	*Ardea cinerea*	RL-NT, SERC-N

Species	Scientific (Latin) name	Legal/Priority status
Grey Phalarope	*Phalaropus fulicarius*	SERC-N
Grey Plover	*Pluvialis squatarola*	Amber List. RL-VU, SERC-N
Grey Wagtail	*Motacilla cinerea*	Red List, RL-NT
Greylag Goose	*Anser anser*	W&C Sch.1, Amber List, SERC-N
Hen Harrier	*Circus cyaneus*	W&C Sch.1, S41, Red List, LBAP, RL-VU, SERC-N
Herring Gull	*Larus argentatus*	S41, Red List, RL-EN, RL-DD SERC-N
House Martin	*Delichon urbicum*	Red List, RL-VU
House Sparrow	*Passer domesticus*	S41, Red List, LBAP
Jack Snipe	*Lymnocryptes minimus*	SERC-N
Kestrel	*Falco tinnunculus*	Amber List, RL-VU, SERC-N
Kittiwake	*Rissa tridactyla*	Red List, RL-CR
Knot	*Calidris canutus*	Amber List, SERC-N
Lapland Bunting	*Calcarius lapponicus*	W&C Sch.1, Amber List, RL-VU, SERC-N
Lapwing	*Vanellus vanellus*	S41, Red List, LBAP, RL-EN, RL-VU, SERC-N
Lesser Black-backed Gull	*Larus fuscus*	Amber List, RL-DD, SERC-N
Linnet	*Linaria cannabina*	S41, Red List, LBAP, RL-NT, SERC-N
Little Gull	*Hydrocoloeus minutus*	W&C Sch.1, LBAP, SERC-N
Long-tailed Duck	*Clangula hyemalis*	W&C Sch.1, Red List, RL-NT, SERC-N
Mallard	*Anas platyrhynchos*	Amber List, RL-NT
Manx Shearwater	*Puffinus puffinus*	Amber List, SERC-N
Meadow Pipit	*Anthus pratensis*	Amber List
Mediterranean Gull	*Larus melanocephalus*	W&C Sch.1, Amber List, LBAP, SERC-N
Moorhen	*Gallinula chloropus*	RL-VU, Amber List

Species	Scientific (Latin) name	Legal/Priority status
Mute Swan	*Cygnus olor*	-
Nightingale	*Luscinia megarhynchos*	Red List, RL-VU, SERC-N
Nuthatch	*Sitta europaea*	-
Oystercatcher	*Haematopus ostralegus*	Amber List, LBAP, SERC-N
Pied/White Wagtail	*Motacilla alba*	-
Pied Flycatcher	*Ficedula hypoleuca*	Amber List, RL-VU, SERC-N
Pink-footed Goose	*Anser brachyrhynchus*	Amber List, SERC N
Pintail	*Anas acuta*	W&C Sch.1, Amber List, RL-CR, SERC-N
Pochard	*Aythya ferina*	Red List, RL-EN, SERC-N
Purple Sandpiper	*Calidris maritima*	W&C Sch.1, Red List, RL-CR, RL-EN, SERC-N
Red-breasted Merganser	*Mergus serrator*	Amber List, RL-VU
Red-necked Grebe	*Podiceps grisegena*	Red List, RL-CR, SERC-N
Red-rumped Swallow	*Cecropis daurica*	-
Redstart	*Phoenicurus phoenicurus*	Amber List, SERC-N
Red-throated Diver	*Gavia stellata*	W&C Sch.1, SERC-N
Redwing	*Turdus iliacus*	W&C Sch.1, Amber List, RL-CR, SERC-N
Reed Bunting	*Emberiza schoeniclus*	S41, Amber List, LBAP, SERC-N
Richard's Pipit	*Anthus richardi*	-
Ring Ouzel	*Turdus torquatus*	S41, Red List, LBAP, RL-VU, SERC-N
Robin	*Erithacus rubecula*	-
Rock Pipit	*Anthus petrosus*	-
Sanderling	*Calidris alba*	Amber List, SERC-N
Scaup	*Aythya marila*	W&C Sch.1, S41, Red List, LBAP, RL-EN, SERC-N

Species	Scientific (Latin) name	Legal/Priority status
Sedge warbler	*Acrocephalus schoenobaenus*	Amber List, LBAP
Shag	*Phalacrocorax aristotelis*	Red List, RL-EN
Shoveler	*Anas clypeata*	Amber List, SERC-N
Siskin	*Spinus spinus*	-
Skylark	*Alauda arvensis*	S41, Red List, LBAP, SERC-N
Snipe	*Gallinago gallinago*	Amber List, RL-NT, SERC-N
Snow Bunting	*Plectrophenax nivalis*	W&C Sch.1, Amber List, RL-EN, SERC-N
Song Thrush	*Turdus philomelos*	S41, Amber List, LBAP, SERC-N
Sparrowhawk	*Accipiter nisus*	Amber List, RL-NT
Starling	*Sturnus vulgaris*	Red List, RL-VU, S41
Stonechat	*Saxicola rubicola*	SERC-N
Swallow	*Hirundo rustica*	SERC-N
Swift	*Apus apus*	Red List, RL-EN
Tawny Owl	*Strix aluco*	Amber List, RL-NT
Teal	*Anas crecca*	Amber List, SERC-N
Tree Pipit	*Anthus trivialis*	S41, Red List, LBAP
Treecreeper	*Certhia familiaris*	-
Turnstone	*Arenaria interpres*	Amber List, RL-VU, SERC-N
Wheatear	*Oenanthe oenanthe*	Amber List
Whimbrel	*Numenius phaeopus*	W&C Sch.1, Red List, RL-CR, SERC-N
Whooper Swan	*Cygnus cygnus*	W&C Sch.1, Amber List, RL-EN, SERC-N
Wigeon	*Anas penelope*	Amber List, RL-NT, SERC-N
Willow Warbler	*Phylloscopus trochilus*	Amber List, LBAP

Species	Scientific (Latin) name	Legal/Priority status
Wren	*Troglodytes troglodytes*	Amber List
Yellow Wagtail	*Motacilla flava*	S41, Red List, LBAP, RL-NT, SERC-N
Yellowhammer	*Emberiza citrinella*	S41, Red List, LBAP
Yellow-legged Gull	*Larus michahellis*	Amber List, RL-EN

Bats

Species	Scientific (Latin) name	Legal/Priority status
Bechstein's Bat	*Myotis bechsteinii*	HR, W&C, S41, LBAP, SERC-N
Brown Long-eared Bat	*Plecotus auritus*	HR, W&C, S41, LBAP, SERC-N
Common Pipistrelle	*Pipistrellus pipistrellus*	HR, W&C
Daubenton's Bat	*Myotis daubentonii*	HR, W&C, LBAP, SERC-N
Greater Horseshoe Bat	*Rhinolophus ferrumequinum*	HR, W&C, S41, LBAP, SERC-N
Grey Long-eared Bat	*Plecotus austriacus*	HR, W&C, S41, LBAP, RL-EN, SERC-N
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	HR, W&C, S41, LBAP, SERC-N
Long-eared Bat species	*Plecotus* sp.	HR, W&C, S41, LBAP
Nathusius' Pipistrelle	*Pipistrellus nathusii*	HR, W&C, LBAP, RL-NT, SERC-N
Natterer's Bat	*Myotis nattereri*	HR, W&C, LBAP, SERC-N
Noctule Bat	*Nyctalus noctula*	HR, W&C, S41, LBAP, SERC-N
Pipistrelle	*Pipistrellus* sp.	HR, W&C
Serotine	*Eptesicus serotinus*	HR, W&C, RL-VU, SERC-N
Soprano Pipistrelle	*Pipistrellus pygmaeus*	HR, W&C, S41, LBAP, SERC-N
Unidentified Bat	*Vespertilionidae/Rhinolophidae*	HR, W&C
Western Barbastelle	*Barbastella barbastellus*	HR, W&C, S41, LBAP, RL-VU, SERC-N
Whiskered Bat	*Myotis mystacinus*	HR, W&C, LBAP, RL-DD, SERC-N

Other mammals (Terrestrial**)**

Species	Scientific (Latin) name	Legal/Priority status
Eurasian Badger	*Meles meles*	Badgers Act 1992; SERC-N
European Otter	*Lutra lutra*	HR, W&C, S41, LBAP, SERC-N
European Water Vole	*Arvicola amphibius*	W&C, S41, LBAP, RL-EN, SERC-N

Invertebrates

Species	Scientific (Latin) name	Legal/Priority status
Brown Argus	*Aricia agestis*	SERC-N
Small Heath	*Coenonympha pamphilus*	S41, LBAP, RL-NT
Silver-washed Fritillary	*Argynnis paphia*	SERC-N
Wall	*Lasiommata megera*	S41, LBAP, RL-NT

Plants

Species	Scientific (Latin) name	Legal/Priority status
Annual Sea-blite	*Suaeda maritama*	SERC-N
Bee Orchid	*Orphyrs apifera*	SERC-N
Bird's foot Clover	*Trifolium ornithopodioides*	SERC-N
Black Mustard	*Brassica nigra*	LBAP
Black Poplar	*Populus nigra subsp. betulifolia*	SERC-N
Blue water speedwell	*Veronica anagallis-aquatica*	SERC-N
Bluebell	*Hyacinthoides non-scripta*	W&C
Brackish Water-crowfoot	*Ranunculus baudotii*	SERC-N
Broad-leaved Spurge	*Euphorbia platyphyllos*	LBAP, SERC-N
Buck's-horn Plantain	*Plantago coronopus*	SERC-N
Bulbous Foxtail	*Alopecurus bulbosus*	LBAP, NS
Bur Chervil	*Anthriscus caucalis*	LBAP, SERC-N
Canadian Waterweed	*Elodea canadensis*	W&C Sch9
Common Centaury	*Centaurium erythraea*	SERC-N
Common Club-rush	*Schoenoplectus lacustris*	SERC-N

Species	Scientific (Latin) name	Legal/Priority status
Common Cord-grass	*Spartina anglica*	SERC-N
Common Saltmarsh-grass	*Puccinellia maritima*	SERC-N
Common Sea-lavender	*Limonium vulgare*	RL-NT, SERC-N
Corn Parsley	*Petroselinum segetum*	LBAP
Curled Pondweed	*Potamogeton crispus*	SERC-N
Distant Sedge	*Carex distans*	SERC-N
Dwarf Mallow	*Malva neglecta*	LBAP
Dwarf Spurge	*Euphorbia exigua*	LBAP, RL-NT, RL-VU
English Scurvygrass	Cochlearia anglica	SERC-N
Field Pepperwort	*Lepidium campestre*	LBAP, RL-NT
Flowering-rush	*Butomus umbellatus*	SERC-N
Glabrous Whitlowgrass	*Erophila glabrescens*	SERC-N
Grass Vetchling	*Lathyrus nissolia*	SERC-N
Greater Knapweed	*Centaurea scabiosa*	SERC-N
Greater Sea-spurrey	*Spergularia media*	SERC-N
Grey Field-speedwell	*Veronica polita*	LBAP
Hairy Buttercup	*Ranunculus sardous*	LBAP, SERC-N
Hard-grass	*Parapholis strigosa*	SERC-N
Hare's-foot Clover	*Trifolium arvense*	SERC-N
Himalayan Balsam	*Impatiens glandulifera*	W&C Sch9
Ivy-leaved Duckweed	*Lemna trisulca*	LBAP

Species	Scientific (Latin) name	Legal/Priority status
Knotted Hedge-parsley	*Torilis nodosa*	LBAP
Lesser Chickweed	*Stellaria pallida*	SERC-N
Lesser Sea-spurrey	*Spergularia marina*	SERC-N
Lesser Water-parsnip	*Berula erecta*	SERC-N
Musk Stork's-bill	*Erodium moschatum*	LBAP, SERC-N
Pale Flax	*Linum bienne*	SERC-N
Pyramidal Orchid	*Anacamptis pyramidalis*	SERC-N
Rigid Hornwort	*Ceratophyllum demersum*	SERC-N
Rock Samphire	*Crithmum maritimum*	SERC-N
Rough Clover	*Trifolium scabrum*	SERC-N
Round-leaved Fluellen	*Kickxia spuria*	LBAP
Sainfoin	*Onobrychis viciifolia*	RL-NT, RL-VU
Saltmarsh Rush	*Juncus gerardii*	SERC-N
Sea Arrowgrass	*Triglochin maritimum*	SERC-N
Sea Aster	*Aster tripolium*	SERC-N
Sea Barley	*Hordeum marinum*	S41, LBAP, NS, RL-NT, RL-VU, SERC-N
Sea Beet	Beta vulgaris subsp. maritima	SERC-N
Sea Clover	*Trifolium squamosum*	NS, SERC-N
Sea Couch	*Elytrigia atherica*	SERC-N
Sea Pearlwort	*Sagina maritima*	SERC-N

Species	Scientific (Latin) name	Legal/Priority status
Sea Plantain	*Plantago maritima*	SERC-N
Sea Radish	*Raphanus raphanistrum subsp. maritimus*	SERC-N
Sea Wormwood	*Seriphidium maritimum*	RL-NT, SERC-N
Sea-milkwort	*Glaux maritima*	SERC-N
Sea-purslane	*Atriplex portulacoides*	SERC-N
Sharp-leaved Fluellen	*Kickxia elatine*	LBAP
Slender Hare's-ear	*Bupleurum tenuissimum*	S41, LBAP, NS, RL-NT, RL-VU, SERC-N
Slender Thistle	*Carduus tenuiflorus*	SERC-N
Small-flowered Buttercup	*Ranunculus parviflorus*	LBAP
Smooth Cat's-ear	*Hypochaeris glabra*	LBAP, RL-NT, RL-VU, SERC-N
Smooth Tare	*Vicia tetrasperma*	LBAP
Soft Hornwort	*Ceratophyllum submersum*	SERC-N
Stinking Chamomile	*Anthemis cotula*	LBAP, RL-NT, RL-VU
True Fox-Sedge	*Carex vulpina*	S41, NR, RL-NT, RL-VU
Turkey Oak	*Quercus cerris*	Considered a Non-Native Species in Somerset
White Horehound	*Marrubium vulgare*	NS, SERC-N
White Ramping-fumitory	*Fumaria capreolata*	LBAP, SERC-N
Wild Celery	*Apium graveolens*	SERC-N
Wild Parsnip	*Pastinaca sativa*	SERC-N
Wild Thyme	*Thymus polytrichus*	SERC-N

Species	Scientific (Latin) name	Legal/Priority status
Woolly Thistle	*Cirsium eriophorum*	SERC-N
Yellow-Horned poppy	*Glacium favum*	RL-NT, SERC-N
Yellow-wort	*Blackstonia perfoliata*	SERC-N

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8B

Phase 1 Habitat

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EDF Energy

Hinkley Point B Decommissioning EIA

Baseline Report: Phase 1 Habitat Survey

Wood Environment & Infrastructure Solutions UK Limited – December 2019

Report for

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Doc Ref. 41491-WOD-XX-XX-RP-OE-0012_S4_P01

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Document revisions

No.	Details	Date
1	Draft	October 2019
2	Final	December 2019

Contents

1. Introduction

1.1 Purpose of this report

EDF Energy proposes to start preparation for waste processing facilities (Operational and Decommissioning Waste) and waste stores (ILW Store) at Hinkley Point B (HPB) to support decommissioning activities following the End of Generation (EoG), which is currently scheduled to be in 2023. Prior to the construction of these facilities, planning permission from the Local Planning Authority (LPA) under The Town and Country Planning Act 1990 (TCPA) will be required. Other permissions and consents for the overall decommissioning project will be required separately under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning (EIAD)) Regulations, 1999, as amended, and EURATOM Article 37 (or an equivalent).

The current strategy is for an EIA to be undertaken and a single Environmental Statement (ES) to be prepared to assess the environmental impacts of the proposed decommissioning project under both the TCPA and EIAD Regulations. Other consents for specific activities will also be required and can draw on the EIAs.

This report sets out information about the Phase 1 habitat survey that was undertaken to inform the EIA of the HPB Decommissioning Project. It includes a brief description of the proposed HPB Decommissioning Project before setting out information about the Phase 1 habitat survey methods, results and conclusions.

1.2 Scheme description

Decommissioning at HPB is expected to commence in 2023. The site location is shown on **Figure 1.1, Appendix A**. Once the necessary consent is in place, the decommissioning process would commence with the process of defueling and initial decommissioning, with spent fuel transferred to the Sellafield nuclear licensed site. Over approximately a 15-year period there would be a process of safe storage and management of intermediate and low-level waste, with intermediate level waste stored temporarily on-site, in sealed and shielded containers within designed stores that have similar characteristics to industrial units, and low-level waste being transferred to appropriate treatment or disposal facilities. In parallel with these tasks, redundant buildings will be de-planted and demolished.

This initial decommissioning phase will include construction of waste processing facilities and a secure, weathertight, Safestore structure- a clad, steel-framed structure based around the Reactor Building- will be constructed, to enclose the Advanced Gas-cooled Reactors, allowing the process of safe radioactive decay. The second phase of decommissioning – Care & Maintenance - will involve ongoing site/station care and maintenance over a period of approximately 70 years. The third phase will involve reactor building decommissioning and final site clearance, involving site-wide demolition of the remaining buildings and remediation to an extent conforming to the applicable regulations at the time, followed by back-filling. Aside from the defueling and management of waste storage and decay processes, the site will operate similar to a conventional construction/demolition site.

1.3 Site context

The HPB station ('the site' or 'the station') is approximately 12 km to the north west of Bridgwater, in Bridgwater Bay at the mouth of the River Severn and on the southern flank of the Bristol Channel. The

centre of the station is at approximate National Grid Reference (NGR) ST 212 459 and the area that is subject to the Nuclear Site Licence (NSL) extends to approximately 47ha.

The majority of the station is built structures and hard standing (mainly access and car parks). Bridgwater Bay is to the north. To the south, west and east of the site there is a fringe of woodland and scrub, with areas of open grassland. Hinkley Point A borders the HPB NSL boundary to the west and further west beyond this is the Hinkley Point C development. The wider landscape to the south and east is agricultural.

2. Methodology

2.1 Study area

The site includes the land inside the HPB double security fence and land within the HPB Nuclear Site Licence (NSL) boundary. The majority of the non-operational land within the Site is designated as Hinkley Local Wildlife Site (LWS), which is managed for biodiversity by EDF Energy and Somerset Wildlife Trust (SWT). The Study Area includes all land within a 50m perimeter of the HPB double security fence and was extended, within and outside the NSL boundary, to include areas of contiguous similar habitat, including habitat within Hinkley Local Wildlife Site (LWS). The LWS boundary is shown on **Figure 1.1,** however this does not take in to account the loss of part of this area to the west of the Nuclear Site Licence boundary, which is within the footprint of the Hinkley Point C development.

2.2 Desk Study

A desk-based study was undertaken to collate and review existing information on ecological features that are known to occur, or have previously been recorded, on land within and surrounding the Study Area defined in Section 2.1. These features include sites designated for nature conservation; habitats of importance for nature conservation ('important habitats'); and legally protected and/or otherwise important species ('important species'). The desk study is detailed in a separate report (*Hinkley Point B Decommissioning EIA – Baseline Report: Desk Study [Terrestrial Ecology*]).

Data collected from the Somerset Environmental Records Centre (SERC), includes details of species (including plants) recorded within approximately 3 km of the Site. The HPB Land Management Annual Reviews[1] (LMAR) and Integrated Land Management Plan[2] (ILMP) also include details of species (including plants) recorded within the Study Area.

2.3 Phase 1 Habitat survey

Data collection locations and survey objectives

The Phase 1 habitat survey covered the land within the Study Area as defined in **Section 2.1.** The purpose of the Phase 1 habitat survey was to map the extent of different habitat types within the Study Area and identify areas of habitat that are potentially of notable biodiversity conservation value. This survey has been completed to collect information on the baseline status of habitats within the Study Area against which the predicted effects of the HPB Decommissioning Project will be assessed. The Phase 1 habitat survey also informed the scope of more detailed surveys at the HPB site, including faunal surveys.

Data collection methods

The Phase 1 habitat survey was completed in accordance with good practice, whereby distinct habitat types were identified and mapped, applying standard habitat definitions (JNCC 2010[3]). The optimal survey period is between late April and mid-October i.e. during the main period of vegetation growth,

[1] EDF Energy Nuclear Generation Ltd (2014 to 2018). Hinkley Point B Land Management Annual Review
[2] EDF Energy Nuclear Generation Ltd (2018) Hinkley Point B Integrated Land Management Plan.
[3] Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. JNCC, Peterborough.

which is when different habitat types can be most accurately identified based on their component plant species. The survey was undertaken in June 2019, during this optimal survey period.

As part of the Phase 1 habitat survey method, Target Notes (TNs) are used to record the location and description (e.g. species composition and structure) of habitats of potentially notable importance for biodiversity conservation ('important habitats'). This includes Habitats of Principal Importance (HPI) for the Conservation of Biodiversity in England, which are identified/listed by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act 2006)[4]. These habitats are described in UK BAP Biodiversity Reporting and Information Group (BRIG) 2008[5]. TNs are also used to record habitats that are restricted to small areas that could not be mapped accurately, as well as habitat mosaics or areas of transition between different habitat types.

Target Notes are also used to record important species, including legally protected species, Species of Principal Importance (SPI) for the Conservation of Biodiversity in England, "Somerset Notable" species (SERC, 2000[6]) and Red Data Book/Red List species, as well as legally controlled invasive non-native species[7].

2.4 Constraints

In places the vegetation within the study area is dense/impenetrable, however these areas could still be observed/recorded adequately to obtain a robust appraisal of the baseline status of these habitats.

[4]https://webarchive.nationalarchives.gov.uk/20140605093420/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx
[5] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated 2011)
[6] Somerset Environmental Record Centre (SERC, 2000). *Somerset Notable Species Dictionary*. Fifth Edition.
[7] Legally controlled invasive non-native plant species are listed under Schedule 9 or the Wildlife and Countryside Act 1981 (*as amended)*.

3. Results

3.1 Desk Study

The desk study identified a total of 12 different habitats of potentially notable importance for biodiversity conservation ('important habitats') that are known to occur, or have previously been recorded, within 3km of the Site: coastal and floodplain grazing marsh; coastal saltmarsh; coastal vegetated shingle; lowland calcareous grassland; lowland meadows; maritime cliff and slope; intertidal mudflats; purple moor grass and rush pasture; saline lagoons; traditional orchard; deciduous woodland; and good quality semi-improved grassland. The deciduous woodland includes five areas of Ancient Woodland, the closest being Wick Park Covert, approximately 1.9km to the southeast of the site.

SERC hold records of a number of important plant species that have been recorded within 3km of the site within the past 10 years. These include nine species on the IUCN red list, two Species of Principal Importance for Biodiversity Conservation, plus 26 species listed on the local BAP. The HPB ILMP and LMAR reports include records of three invasive non-native species - Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*) and Canadian pondweed (*Elodea canadensis*), within areas surrounding the HPB Station. The desk study is detailed in a separate report (*Hinkley Point B Decommissioning EIA – Baseline Report: Desk Study [Terrestrial Ecology*]).

3.2 Phase 1 Habitat survey

The habitats within the Study Area are mapped on **Figure 3.1, Appendix A**. The accompanying Target Notes (TN) are included in **Appendix B**, with the corresponding locations mapped on **Figure 3.1.** The land within the HPB double security fence is predominantly hard standing, including buildings and roads associated with the operational station, with only small areas of vegetation in this area, mainly comprising amenity grassland.

To the west and south of the HPB double security fence there is a mosaic of broad-leaved plantation, semi-natural woodland, scrub, tall ruderal vegetation, short ephemeral/perennial vegetation and grassland/wildflower habitats. There are also two ponds within the Study Area, one to the south east and one to the south west of the double security fence. The majority of these habitats form part of Hinkley LWS. To the north of the station there are coastal habitats and Bridgwater Bay. Hinkley Point A and the Hinkley Point C construction site are to the west of the NSL. The surrounding wider landscape is predominantly pastoral farmland. No non-native invasive plant species were recorded.

Broadleaved semi-natural woodland

There are two areas of broad-leaved plantation woodland within the survey area (TN 1 and TN 2, **Figure 3.1** and **Appendix B**), each containing occasional mature ash (*Fraxinus excelsior*) and oak (Quercus sp.) trees, amongst an even-aged canopy of the same species. The understorey is generally sparse, with some hazel (*Corylus avellana*), elder (*Sambucus nigra*), privet (*Ligustrum vulgare*), holly (*Ilex aquifolium*), bramble (*Rubus fruticosus*) and elm (Ulmus sp.). The ground-flora is generally species-poor and dominated by ivy (*Hedera helix*), common cleavers (*Galium aparine*), common nettle (*Urtica dioica*) and some common ferns; with stinking iris (*Iris foetidissima*), sweet violet (*Viola odorata*) and common-dog violet (*Viola riviniana*) herb-Robert (*Geum robertianum*), enchanter's night-shade (*Circaea lutetiana*) and wild madder (*Rubia peregrina*) also recorded.

While these woodlands exhibit evidence of human intervention (supplementary planting, thinning etc.), they broadly correspond to a modified, species-poor and structurally poor W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland (Rodwell, 1992a[8]) and therefore meet the criteria for lowland mixed deciduous woodland, which is a Habitat of Principal Importance for biodiversity conservation.

Broadleaved plantation woodland

A belt of young broad-leaved plantation woodland lies along the north-eastern NSL boundary (TN3, **Figure 3.1** and **Appendix B**). The canopy comprises mainly ash and sycamore (*Acer pseudoplatanus*), with some oak also recorded. The understorey contains some planted field maple (*Acer campestre*), along with bramble and rose (Rosa sp.), with the ground-flora comprising areas of bare ground, common nettle and ivy, with pendulous sedge (*Carex pendula*) and false wood-brome (*Brachypodium sylvaticum*) also recorded. A narrow belt of English elm (*Ulmus procera*) has been planted along a hedge towards the south-west of the NSL area (TN4, **Figure 3.1** and **Appendix B**).

Scattered trees

There are three semi-mature sycamore trees within a small area of amenity grassland within the station. There are no trees of ancient/veteran status within the study area.

Dense continuous scrub

There are substantial areas of dense scrub outside the HPB double security fence, within the NSL area and LWS (TNs 5 to TN10, **Figure 3.1** and **Appendix B**). Some of these have clearly been planted, while others appear to have developed naturally. Some areas containing hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), dogwood (*Cornus sanguinea*), hazel and field maple are maturing to woodland. Grey willow (*Salix cinerea*), goat willow (*Salix caprea*), elder, roses and bramble also occur throughout the LWS as dense or scattered patches, and these species are likely to be naturally-occurring (e.g. TN11, **Figure 3.1** and **Appendix B**).

Semi-improved neutral grassland

There are areas of semi-improved, neutral grassland within the study area, including the area referred to as 'Pixie's Mound Field' (TN12, **Figure 3.1** and **Appendix B**), which is dominated by false oat-grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*) and perennial rye-grass (*Lolium perenne*), with soft brome (*Bromus hordeaceus*), meadow brome (*Bromus commutatus*), false wood-brome (*Brachypodium sylvaticum*), crested dog's tail (*Cynosurus cristatus*), meadow foxtail (*Alopecurus pratensis*) and cock's-foot (*Dactylis glomerata*) also present. This field also contains a wide range of forbs including red clover (*Trifolium repens*) and white clover (*Trifolium pratense*), common bird's-foot trefoil (*Lotus corniculatus*), ox-eye daisy (*Leucanthemum vulgare*), eyebright (Euphrasia sp.), common centaury (*Centaurium erythraea*), primrose (*Primula vulgaris*), red bartsia (*Odontites vernus*), yellow-wort (*Blackstonia perfoliata*), hairy violet (*Viola hirta*), hairy tare (*Vicia hirsuta*), smooth tare (*Vicia tetrasperma*), wild carrot (*Daucus carota*), wild parsnip (*Pastinaca sativa*), common knapweed (*Centaurea nigra*), pyramidal orchid (*Anacamptis pyramidalis*), common vetch (*Vicia sativa*), black medick (*Medicago lupulina*), lady's bedstraw (*Galium verum*), common broomrape (*Orobanche minor*) and grass vetchling (*Lathyrus nissolia*). Another area of grassland (TN13, **Figure 3.1** and **Appendix B,**

[8] Rodwell, J.S. (1992a). *British Plant Communities Volume 1. Woodlands and scrub*. Cambridge University Press, Cambridge.

referred to as 'Sewage Works') supports a similar range of species, with limited grass amongst the flowers and a particularly high cover of ox-eye daisy and abundant pyramidal orchid.

Other grassland areas (TN14, referred to as 'Triangle Field' and TN15, **Figure 3.1** and **Appendix B**) support swards of Yorkshire fog (*Holcus lanatus*), Timothy (*Phleum pratense*), meadow foxtail and perennial rye-grass, with forbs including common vetch, cut-leaved crane's-bill (*Geranium dissectum*) and creeping buttercup (*Ranunculus repens*) grading into tall ruderal vegetation, such as hogweed (*Heracleum sphondylium*) and broad-leaved dock (*Rumex obtusifolius*), at boundary hedge bases. The grassland areas indicated by TN 16 and TN 17 (**Figure 3.1** and **Appendix B** are referred to as 'The Maritime Strip (east)' and 'Old Eel Farm Mound') and are moderately species-rich, with the tall grass species listed above (TN12), plus meadow brome, common bent (*Agrostis tenuis*), pyramidal orchid and grass vetchling. Patches of teasel (*Dipsacus fullonum*), common mallow (*Malva sylvestris*), creeping thistle (*Cirsium arvense*) and scattered bramble and rose scrub occur throughout all these grasslands.

The grassland areas indicated by TN 12 and TN 15 to TN 17 resemble MG1 *Arrentheraum elatius* grasslands (Rodwell, 1992b[9]), while TN16 has such limited cover of grasses amongst the forbs that it can only loosely be described as a grassland and would not fit well to any NVC community.

None of the grasslands are considered to correspond to a HPI. However, some important plant species (bee orchid (*Ophrys apifera*), pyramidal orchid, eyebright, yellow-wort and grass vetchling) were recorded throughout, in varying abundance.

Tall ruderal

There are large areas of tall ruderal vegetation (TN 18 and TN 19, **Figure 3.1** and **Appendix B**), often in transition/mosaic with short ephemeral/short perennial vegetation, grassland and scrub habitats. Typically abundant species include teasel, great willowherb (*Epilobium hirsutum*), tansy (*Tanacetum vulgare*), common nettle, weld (*Reseda luteola*), mugwort (*Artemisia vulgaris*), common ragwort (*Senecio Jacobaea*), agrimony (*Agrimony eupatoria*), spear thistle (*Cirsium vulgare*), creeping thistles, rosebay willowherb (*Chamerion angustifolium*) and bristly ox-tongue (*Picris echioides*).

Swamp

There is an area of reedbed (TN20, **Figure 3.1** and **Appendix B**) around a pond, and small patches of similar vegetation along a small ditch that drains out of the south-eastern boundary of the site. Although reedbed is a HPI, the extent of this habitat within the study area is limited/localised.

Standing water

The small pond (TN21, **Figure 3.1** and **Appendix B**) to the south-west of HPB is approximately 3m in diameter and surrounded by mown amenity grassland and scattered scrub. The water is clear and supports a range of marginal/emergent plant species, including pondweed (Potamogeton sp.), water mint (*Mentha aquatic*), marsh marigold (*Caltha palustris*) and arrowhead (*Sagittaria sagittifolia*). The latter is an important species and was recorded in low numbers. The larger (approximately 20m diameter) pond (TN22, **Figure 3.1** and **Appendix B**) could not be safely accessed for close inspection, as it is fringed with common reed (*Phragmites australis*). Either of the two ponds could qualify as HPI. A narrow ditch that drains out of the south-eastern boundary of the site could not be safely accessed due to dense vegetation.

[9] Rodwell, J.S. (1992b). *British Plant Communities Volume 3. Grasslands and montane communities*. Cambridge University Press, Cambridge.

Coastal strandline vegetation

The site extends on to the coast of Bridgwater Bay (TN23, **Figure 3.1** and **Appendix B**), which is largely bare rock, with limited scattered plant species. These include sea couch (*Agropyron pungens*) and sea beet (*Beta vulgaris subsp. maritima*), both 'important species', as well as prickly sow-thistle (*Sonchus asper*) and spear-leaved orache (*Atriplex prostrata*).

Amenity grassland

There are small (i.e. less than 10m^2) areas of amenity grassland within the HPB double security fence. These are predominantly mown/rabbit-grazed turf, mainly comprising annual meadow-grass (*Poa annua*) and red fescue, with a range of common forbs including dove's-foot crane's-bill (*Geranium molle*), selfheal (*Prunella vulgaris*) and creeping buttercup.

Ephemeral/short perennial

There are areas of ephemeral/short perennial vegetation amongst hardstanding/gravel within the station, as well as in transition with tall ruderal vegetation and scrub (e.g. TN 18, TN 24 and TN 25, **Figure 3.1** and **Appendix B**). Species that are typical of these areas include selfheal, common centaury, scarlet pimpernel (*Anagallis arvensis*), yellow-wort and ground-ivy (*Glechoma hederacea*).

This habitat does not correspond to HPI, although important plant species, such as yellow-wort, bee orchid and pyramidal orchid were recorded throughout, in varying abundance.

Intact hedgerows

Two intact, species rich, hedgerows (TNs 26 and TN 27, **Figure 3.1** and **Appendix B**) form the boundaries of a triangular field, bordered by a road/footpath, just outside the southern-most extent of the NSL area and LWS. Woody species in the hedge include rose, blackthorn, hawthorn, field maple and dogwood, with a species-poor ground-flora including greater saxifrage (*Pimpinella major*), hedge woundwort (*Stachys sylvatica*), wood dock (*Rumex sanguineus*) and cleavers.

These hedgerows constitute HPI and LBAP habitat, potentially also meeting the criteria (ecology) to qualify as 'important' under *The Hedgerows Regulations 1997*.

Sea wall

There is a concrete sea wall along the north-eastern extent of the station. This is largely devoid of vegetation apart from rock sea-lavender (Limonium sp.), buck's-horn plantain (*Plantago coronopus*) and occasional lesser sea-spurrey (*Spergularia marina*)**,** all of which are important species, in cracks and crevices in the concrete sections (TN28, **Figure 3.1** and **Appendix B**). Sub-species of sea lavender and rock sea-lavender are difficult to separate (Rose 2006[10]) and some populations of these species are of potentially notable nature conservation value.

Bare ground

There are areas of bare gravel and exposed substrate both within the HPB double security fence and the wider NSL area and LWS.

[10] Rose, F. (2006). The Wildflower Key. Penguin, London.

4. Summary and Conclusions

4.1 Current baseline

Habitats within the HPB double security fence

The land within the HPB double security fence predominantly comprises buildings and hardstanding. There are also small areas of amenity grassland, ephemeral/short perennial vegetation and tall ruderal vegetation. These habitats are not Habitats of Principal Importance for biodiversity conservation and they do not support important species. The habitats within the security fence are of limited biodiversity conservation value.

Habitats outside the HPB double security fence

The mosaic of habitats outside the HPB double security fence, within the NSL boundary, is largely anthropogenic and maturing. The areas of semi-natural broadleaved woodland, hedgerows, ponds and swamp/reedbed are potentially Habitats of Principal Importance for biodiversity conservation. These habitats occur in mosaic with other habitats, including broadleaved and mixed plantation, semi-improved neutral grassland, scrub, tall ruderal vegetation and ephemeral/short perennial vegetation, and collectively form Hinkley Local Wildlife Site and support a number of important species.

Appendix A
Figures

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320000
321000
322000
146000
145000

N

Hinkley Point 'A'
Hinkley Point 'A'
North Moor
Wick Moor
Wick Moor Drove
West Brook
East Brook
Crossway
Doggetts
Head Weir House
Wick
Sunshine Lodge
Zine Farm
Wick Pound House
Gunter's
Idson Farm
Bum Brook
Knighton

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence
- Hinkley Local Wildlife Site (LWS)

Note:
The mapped extent of Hinkley LWS does not take into account the loss of part of this area to the west of the Nuclear Site Licence boundary, which is within the footprint of the Hinkley Point C development.

0 100 200 300 400 500 600 m
Scale at A3: 1:10,000

Hinkley Point B Decommissioning EIA
Baseline Report: Phase 1 Habitat Survey

Figure 1.1
Site location plan

December 2019

wood.

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321000

321500

146000

145500

Hinkley Point 'A'

Hinkley Point 'A'

North Moor

Brantend Copse

Key

- Hinkley Point B Nuclear Site Licence boundary
- Phase 1 habitat survey area
- Double security fence
- Double security fence boundary 50m buffer
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Scrub- dense/continous
- Neutral grassland - semi-improved
- Poor semi-improved grassland
- Tall ruderal
- Ephemeral/scrub/ruderal mosaic
- Swamp
- Standing water
- Amenity grassland
- Introduced shrub
- Buildings
- Bare ground
- Hardstanding
- Running water
- Intact hedge native species-rich
- Fence
- Sea wall
- Scrub - scattered
- Parkland and scattered trees-broad-leaved
- Short ephemeral
- Target note

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report: Phase 1 Habitat Survey

Figure 3.1
Phase 1 habitat map

December 2019

wood.

Appendix B
Phase 1 Habitat Survey - Target Notes

Target Note (Figure 3.1)	Description
1	Block of broadleaved semi-natural woodland, with ash/oak canopy
2	Block of broadleaved semi-natural woodland, with ash/oak canopy
3	Belt of broadleaved plantation woodland, mainly comprising young ash and sycamore
4	Narrow belt of English elm planted along an outgrown hedgerow
5	Substantial area of dense, mainly planted scrub, which is progressing to woodland in places
6	Substantial area of dense, mainly planted scrub, which is progressing to woodland in places
7	Substantial area of dense, mainly planted scrub, which is progressing to woodland in places
8	Substantial area of dense, mainly planted scrub, which is progressing to woodland in places
9	Substantial area of dense, mainly planted scrub, which is progressing to woodland in places
10	Substantial area of dense, mainly planted scrub, which is progressing to woodland in places
11	Area of dense bramble scrub
12	Species-rich, semi-improved, neutral grassland, with yellow-wort, pyramidal orchid and grass vetchling
13	Species-rich, semi-improved, neutral grassland (less than 10% cover of grasses), with yellow-wort, pyramidal orchid and grass vetchling.
14	Species-poor, semi-improved, neutral grassland with grass vetchling.
15	Semi-improved, neutral grassland with yellow-wort
16	Moderately species-rich, semi-improved neutral grassland, with pyramidal orchid and grass vetchling.
17	Moderately species-rich, semi-improved neutral grassland, with pyramidal orchid and grass vetchling.
18	Open mosaic of tall ruderal, ephemeral/short perennial and scattered scrub, with bare ground
19	Area of tall ruderal vegetation with scattered scrub
20	Reedbed around a pond
21	Small (5m diameter) pond surrounded by amenity grassland
22	Large (>10m diameter) pond surrounded by common reed and dense scrub
23	Coastal strandline
24	Gravel colonised by ephemeral/short perennial and tall ruderal vegetation with yellow-wort and pyramidal orchid
25	Gravel substrate colonised by ephemeral/short perennial and tall ruderal vegetation with yellow-wort
26	Intact species-rich hedgerow
27	Intact species-rich hedgerow

Target Note (Figure 3.1)	Description
28	Sea wall with rock sea-lavender, buck's-horn plantain and lesser sea-spurrey

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8C

Baseline Report: Otter and Water Vole

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Hinkley Point B Decommissioning EIA

Baseline Report: Otter and water vole

Wood Environment & Infrastructure Solutions UK Limited – December 2019

Report for

[redacted]

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Issued by

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This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

Document revisions

No.	Details	Date
1	Draft	October 2019
2	Final	December 2019

Contents

1. Introduction

1.1 Purpose of this report

EDF Energy proposes to start preparation for waste processing facilities (Operational and Decommissioning Waste) and waste stores (ILW Store) at Hinkley Point B (HPB) to support decommissioning activities following the End of Generation (EoG), which is currently scheduled to be in 2023. Prior to the construction of these facilities, planning permission from the Local Planning Authority (LPA) under The Town and Country Planning Act 1990 (TCPA) will be required. Other permissions and consents for the overall decommissioning project will be required separately under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning (EIAD)) Regulations, 1999, as amended, and EURATOM Article 37 (or an equivalent).

The current strategy is for an EIA to be undertaken and a single Environmental Statement (ES) to be prepared to assess the environmental impacts of the proposed decommissioning project under both the TCPA and EIAD Regulations. Other consents for specific activities will also be required and can draw on the EIAs.

This report sets out information about the otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) survey that was undertaken to inform the EIA of the HPB Decommissioning Project. It includes a brief description of the proposed HPB Decommissioning Project before setting out information about the otter and water vole survey methods, results and conclusions.

1.2 Scheme description

Decommissioning at HPB is expected to commence in 2023. The site location is shown on **Figure 1.1, Appendix A**. Once the necessary consent is in place, the decommissioning process would commence with the process of defueling and initial decommissioning, with spent fuel transferred to the Sellafield nuclear licensed site. Over approximately a 15-year period there would be a process of safe storage and management of intermediate and low-level waste, with intermediate level waste stored temporarily on-site, in sealed and shielded containers within designed stores that have similar characteristics to industrial units, and low-level waste being transferred to appropriate treatment or disposal facilities. In parallel with these tasks, redundant buildings will be de-planted and demolished.

This initial decommissioning phase will include construction of waste processing facilities and a secure, weathertight, Safestore structure - a clad, steel-framed structure based around the Reactor Building - will be constructed, to enclose the Advanced Gas-cooled Reactors, allowing the process of radioactive decay to reduce the dose to significantly lower levels. The second phase of decommissioning – Care & Maintenance - will involve ongoing site/station care and maintenance over a period of approximately 70 years. The third phase will involve reactor building decommissioning and final site clearance, involving site-wide demolition of the remaining buildings and remediation to an extent conforming to the applicable regulations at the time, followed by back-filling. Aside from the defueling and management of waste storage and decay processes, the site will operate similar to a conventional construction/demolition site.

1.3 Site context

The HPB station ('the site' or 'the station') is approximately 12 km to the north west of Bridgwater, in Bridgwater Bay at the mouth of the River Severn and on the southern flank of the Bristol Channel. The centre of the station is at approximate National Grid Reference (NGR) ST 212 459 and the area that is subject to the Nuclear Site Licence (NSL) extends to approximately 47ha.

The majority of the station is built structures and hard standing (mainly access and car parks). Bridgwater Bay is to the north. To the south, west and east of the site there is a fringe of woodland and scrub, with areas of open grassland. Hinkley Point A borders the HPB NSL boundary to the west and further west beyond this is the Hinkley Point C development. The wider landscape to the south and east is agricultural.

2. Methods

2.1 Study area

The site includes the land inside the HPB double security fence and the additional land that is covered by the HPB Nuclear Site Licence (NSL). The majority of the non-operational land within the Site is designated as Hinkley Local Wildlife Site (LWS), which is managed for biodiversity by EDF Energy and Somerset Wildlife Trust (SWT). The otter and water vole Study Area includes the Site and a 250m perimeter area. Within this area there are three ponds, one within the HPB site and two within the 250m perimeter area, and ten dry/water-filled ditches, as well as the coastline and foreshore along the northern edge of the Station. The Study Area reflects the distance of 250m, beyond which disturbance of otters from development activities is unlikely (Scottish Natural Heritage [SNH] [1]; and National Roads Authority, Ireland [NRA] 2008[2]). Similarly, noise and visual disturbance are, in most cases, unlikely to have significant effects on water voles (Dean et al 2016[3]) and 250m is well beyond the distance from development activity at which water vole populations would generally be a risk of significant disturbance effects. The study area along with pond, ditch and coastline locations are detailed on **Figure 2.1, Appendix A**.

2.2 Desk study

A desk-based study was undertaken to collate and review existing information on ecological features that are known to occur, or have previously been recorded, on land within and surrounding the Study Area defined in Section 2.1. These features include sites designated for nature conservation; habitats of importance for nature conservation; and legally protected and/or otherwise important species (including otter and water vole). The desk study is detailed in a separate report (*Hinkley Point B Decommissioning – Baseline Report: Desk Study [Terrestrial Ecology*]).

Data collected from the Somerset Environmental Records Centre (SERC), includes details of species (including otter and water vole) recorded within approximately 3 km of the Site. The HPB Land Management Annual Reviews[4] (LMAR) and Integrated Land Management Plan[5] (ILMP) also include details of species (including otter and water vole) recorded within the Study Area.

2.3 Otter and water vole survey

Survey objectives

Otter and water vole are legally protected species (**Appendix B**) and both are a Species of Principal Importance for the Conservation of Biological Diversity in England, having been identified as such by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act 2006). The potential effects of development on otter and water vole are therefore of material consideration in determining planning applications.

[1] https://www.nature.scot/sites/default/files/2019-01/Species%20Planning%20Advice%20Project%20-%20otter.pdf
[2] National Roads Authority (NRA) Ireland. (2008). Guidelines for the treatment of otters prior to the Construction of National Road Schemes. Environmental Series on Construction Impacts. National Roads Authority, Dublin.
[3] Dean, M., Strachan, R., Gow, D., and Andrews R. (2016). *The Water Vole Mitigation Handbook* (The Mammal Society Mitigation Guidance Series). Eds. Fiona Mathews and Paul Chanin. The Mammal Society. London.
[4] EDF Energy Nuclear Generation Ltd (2014 to 2018). Hinkley Point B Land Management Annual Review
[5] EDF Energy Nuclear Generation Ltd (2018) Hinkley Point B Integrated Land Management Plan.

The purpose of the otter and water vole survey was to determine the status of these species within the study area. These surveys derive the baseline status of otter and water vole against which the predicted effects of the HPB Decommissioning project on these species will be assessed. Where necessary, the survey data will also inform plans to mitigate any effects of the HPB Decommissioning project on otter and water vole.

Data collection locations

A review of 1:10,000 scale Ordnance survey (OS) maps[6] aerial imagery (Google Earth Pro) and the Multi Agency Geographic Information for the countryside (MAGIC) website[7] informed the targeting of survey effort, which focused on coastal areas and waterbodies, including three ponds and a network of drainage ditches, within the Study Area defined in Section 2.1. All waterbody locations within the Study Area were subject to surveys (**Figure 2.1, Appendix A**). The surveys were extended approximately 10m away from watercourses to include adjacent riparian, coastal and terrestrial habitat where these were judged by the surveyors to be suitable for otter and/or water vole.

Data collection methods

Habitat Suitability Assessment

The habitat characteristics of the watercourses and waterbodies throughout the Study Area, in terms of their suitability for otter and water voles, were recorded. This was undertaken concurrently with the presence/absence surveys described below. Each section of watercourse was categorised as having 'Negligible', 'Low', 'Moderate', or 'High' otter/water vole habitat suitability[8]. The reasons for each categorisation were also recorded. This rapid appraisal was based on professional judgement, rather than applying standard/fixed definitions, with reference to the following as a general guide.

- Otter habitat suitability:
  - 'High': watercourse is likely to provide foraging habitat and a commuting route and has bankside habitats that are likely to provide otter resting sites (e.g. exposed roots of mature bankside trees; dense areas of scrub/woodland and/or rank vegetation; large mammal burrows; holes/cavities in natural/artificial banks);
  - 'Moderate': watercourse is suitable as foraging habitat and a commuting route, with limited bankside habitat that is likely to provide potential otter resting sites;
  - 'Low': watercourse is suitable as foraging habitat and a commuting route, appearing to be largely deficient in bankside habitats that are likely to provide otter resting sites, with access to suitable resting sites likely to require dispersal away from the watercourse; and
  - 'Negligible': watercourse is likely to be poor foraging habitat and/or a poor commuting route and appears deficient in habitats that are likely to provide otter resting sites.
- Water vole habitat suitability:

[6] www.ordnancesurvey.co.uk
[7] https://magic.defra.gov.uk/home.htm.
[8] The term habitat 'suitability' is used in this report for the purpose of categorising otter and water vole habitat 'quality' in order to avoid confusion with river habitat quality. Sections of watercourse that vary in suitability for otter/water vole over relatively short distances were allocated the highest suitability category recorded - for example, habitat of 'Low' to 'Moderate' suitability for otter/water vole was categorised as being within the 'Moderate' suitability category.

- 'High': slow flowing water, depth approximately 1m or deeper (Strachan et al 2011[9] and Dean et al 2016), diverse bankside vegetation and banks with steep/moderate gradient and soft substrate;
- 'Moderate': diverse bankside vegetation and banks with steep/moderate gradient and soft substrate, water depth exceeds 0.3m with fast flow;
- 'Low': water less than 0.3m deep or limited bankside vegetation diversity or limited bank suitability for burrowing, for example predominantly shallow/flat gradients and/or limited substrates suitable for burrowing; and
- 'Negligible': poor bankside vegetation diversity and poor bank suitability for burrowing, for example predominantly shallow/flat gradients and/or limited substrates suitable for burrowing.

Watercourses that support otter/water vole vary in their habitat suitability/quality for these species and a 'Low' habitat suitability categorisation does not indicate absence of these species. Otters, for example, often have territories covering tens of kilometres of watercourse, incorporating reaches that vary widely in habitat suitability/quality for this species, with no clear correlation between levels of otter activity and specific habitat characteristics (Chanin 2003[10]). The categorisation is therefore a visual appraisal of relative otter/water vole habitat suitability, primarily to inform any plans to mitigate the effects of the HPB Project on these species.

Presence/absence surveys

Otter and water vole presence/absence surveys[11] were undertaken concurrently. The watercourses and other waterbodies, for example ponds, throughout the Study Area were systematically searched for signs of otter and/or water vole activity, employing methods based on good practice guidance (Chanin 2003[12], Dean et al 2016 and Strachan et al 2011). The survey focussed on the banks of watercourses/waterbodies within approximately 10m of the water's edge. The surveyor also walked in safely accessible parts of the channel to survey the water's edge.

Any signs of otter activity (resting sites[13], spraints (otter droppings), footprints, slides[14] or feeding/prey remains) and/or water vole activity (burrows, latrines/droppings, footprints, feeding remains or 'lawns' of grazed vegetation) were mapped and recorded. Signs (e.g. footprints and droppings) of the presence of water vole predators (American mink and brown rat) or competitors (brown rat) were also recorded.

Habitat features that appeared to be particularly suitable as potential otter resting sites were recorded and mapped. For example:

- Large holes in watercourse banks (artificial or man-made);
- Cavities in bridges, culverts and amongst exposed rocks or bank reinforcements;

[9] Strachan, R. and Moorhouse, T. (2011). *Water Vole Conservation Handbook*. 3rd Edition. Wildlife Conservation Research Unit (WildCRU), Oxford

[10] Chanin, P. (2003). *Ecology of the European Otter*. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

[11] The surveys are referred to as presence/absence surveys, however where surveys of a watercourse/waterbody do not record otter/water vole it is only possible to conclude that these species are 'likely' to be absent from that watercourse/waterbody.

[12] Chanin, P. (2003). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough

[13] This report refers to two types of otter resting site: 'holt' refers to an underground ('covered') den/resting site that is used by otter; and 'couch' refers to an above ground ('uncovered') den/resting site that is used by otter.

[14] In this report the term 'slide' refers to any marks on the river bank where an otter has slid down the bank and into the watercourse, for example flattened/smoothed vegetation/mud.

- Mature bankside trees exposed root systems;
- Mammal burrows; and
- Areas of dense vegetation, for example scrub and marshy grassland or tall ruderal vegetation.

Similarly, any habitat adjacent to waterbodies/watercourses that appeared to be particularly suitable for water voles was recorded, for example diverse bankside/marginal vegetation and earth banks suitable for burrowing.

Otter resting sites can be difficult to identify with certainty (Chanin 2003). Therefore, each potential otter shelter/refuge/resting site identified during the survey was inspected to record any evidence of otter activity and categorised according to the likelihood that it is used by otters:

- 'Low': no evidence of otter activity at/near the potential rest site;
- 'Moderate': evidence of otter activity at/near the potential rest site that is not recent i.e. appears old or observed during previous survey work; or
- 'High': evidence of recent otter activity at/near the potential rest site.

2.4 Constraints

Access to watercourses was restricted in places, mainly to avoid risks to surveyor safety. However, inaccessible areas of banks were observed from a distance, using binoculars.

3. Results

3.1 Desk study

Otter

There are records of otter activity within 3km of the Site. These records are included in a separate report (*HPB Decommissioning EIA – Baseline Report: Desk Study [Terrestrial Ecology]*). SERC hold 12 records of otter within 3km of the Site, dated between 2015 and 2017, the closest of which is approximately 20m southeast of the site boundary.

Somerset Wildlife Trust (Ben Bryant 2019 *pers. comm.*) reported otter spraints observed on approximately 10 separate occasions over the past four years, usually around the tilting weir on Cole Lane (National Grid Reference ST 21635 45873), directly outwith the eastern NSL boundary, with the last of these observations approximately one year ago. Otter records within the Study Area in 2006 are also noted in the LMARs.

Otter is a qualifying feature (not a primary reason for site selection) of The Exmoor & Quantock Oakwoods SAC, located 6.7km south west of the site. Huntspill River NNR, located 7.7km east of the site, is an artificial river created in 1940 that holds a large stock of coarse fish and supports otters.

Water vole

There are records of water vole activity within 3km of the Site. These records are included in a separate report (HPB Decommissioning EIA – Baseline Report: Desk Study [Terrestrial Ecology]). SERC hold two records of water vole within 3km of the Site, dated between 2013 and 2015, the closest of which is approximately 700m west of the site. Water vole records within the Study Area in 2006 are also noted in the LMARs.

Somerset Wildlife Trust (Ben Bryant 2019 pers. comm.) reported that the local drainage board dredge the ditch system around HPB on an annual basis during the winter months and that water levels within the ditch system are extremely variable, with changes of up to 1.5m often observed. These factors are likely to limit the suitability of the ditch network for water voles.

3.2 Otter and water vole survey

Habitat suitability assessment

Ponds

There are three ponds within the Study Area (**Figure 2.1**):

- Pond 1 (Pixie's Pond) is within the south west of the HPB nuclear site licence area and appears to support diverse aquatic plant and invertebrate assemblages and the water quality appears to be good. No fish were observed during this survey or during the great crested newt (*Triturus cristatus*) survey (*HPB Decommissioning EIA – Baseline Report: great crested newt*). The banks and surrounding area are regularly managed/mown. The pond is of low suitability for otter and/or water vole;
- Pond 2 (Otter Pond) is approximately 75m south of the HPB nuclear site licence boundary and supports dense common reed (*Phragmites australis*), which dominates the banks of the pond. The surface of the pond is covered with duckweed (Lemna sp.). The pond appears to offer

limited foraging habitat for otter and water vole and no suitable habitat for holt creation. The pond is of negligible suitability for otter and/or water vole; and

- Pond 3 (unnamed) is approximately 145m south east from the HBP nuclear site licence boundary. It has poor water quality and little bankside vegetation. It is located within an arable field, grazed by cattle up to a distance of approximately 0.5m from the water's edge. The pond is of negligible suitability for otter and/or water vole.

Ditches

There are ten ditches within the Study Area (A to J, **Figure 2.1, Appendix A)**. These are detailed in **Table 3.1**.

Table 3.1 Ditches

Ditch (Fig. 2.1)	Description	Suitability (otter/ water vole)
A	Dry ditch, chocked with vegetation including nettle (*Urtica dioica*), brambles (*Rubus fruticosus*) and other scrub species. There are no opportunities for otter holt creation.	Negligible / Negligible
B	Ditch is not fully accessible (electric fence and cattle). Water depth <10cm and the ditch is chocked with vegetation, dominated by common reed. There is limited opportunity for foraging water vole despite areas of suitable bank substrate. Potential for commuting otter.	Low / Low
C	Dry ditch heavily shaded by a hedgerow along this entire section. The ditch is vegetated with iris (Iris sp.) and bramble.	Negligible / Negligible
D	Ditch on the north/northeast boundary of a cattle-grazed field. The southern/south-western bank is heavily poached. Water depth approximately 30cm and dry in places. The ditch is likely to be seasonally dry. There is duckweed on the water surface and the banks are dominated by common reed and willowherb species. Half of this ditch section is shaded by willow (Salix sp.). and hawthorn (*Crataegus monogyna*) scrub on the northern bank. Limited suitability for water vole foraging and burrow creation and otter commuting. No opportunities for otter holt creation.	Low / Low
E	Narrow drainage ditch extending west to east across an arable field grazed by cattle. It is 10cm deep and likely to be seasonally dry. There are shallow grassy banks, poached on both sides. There is a small amount of soft rush (*Juncus effusus*) on the banks and within the channel.	Negligible / Negligible
F	Wider section of ditch, with water approximately 50cm deep, ending at a small sluice gate (Target Note 1, Figure 2.1) at the eastern extent. The water quality appears to be good and appears to support a diverse invertebrate assemblage. The southern bank of the ditch is poached by cattle in places. The southern bank is 1m high, has vegetation suitable for water vole foraging and has a	Moderate / Moderate

	substrate suitable for burrow creation. The aquatic habitat is dominated by common reed. Although no opportunities for holt creation are apparent, there is potential for otter foraging and commuting.	
G	A water filled ditch at least 1m deep with a silt substrate. Aquatic vegetation is predominantly duckweed, with common reed prevalent on the banks. Both banks are accessible to cattle resulting in localised poaching. The habitat is of limited suitability for water vole and is potential commuting and foraging habitat for otter.	Low / Low
H	Water-filled ditch flowing from east to west towards a small weir (Target Note 2, Figure 2.1). The aquatic vegetation is predominantly duckweed, with common reed prevalent on the banks. Both banks are fully accessible to cattle resulting in localised poaching. The habitat is of limited suitability for water vole but does offer potential commuting and foraging habitat for otter.	Low / Low
I	Ditch is choked with vegetation such a common reed, willowherb species, meadowsweet (*Filipendula ulmaria*) and common nettle and has steep banks. The water is shallow (<15cm) and flows north/north east towards a culvert and sluice gate (Target Note 3, Figure 2.1) which leads to an outfall on the foreshore. There are no opportunities for holt creation, however there is suitable habitat for otter foraging and commuting. Suitable habitat for water vole is limited and likely to be reduced further by changing water levels.	Low / Low
J	This ditch was wet at the time of the survey and the water was shallow, with no measurable depth. It is densely vegetated with bulrush (*Typha latifolia*), bramble and common reed and almost entirely shaded. There is limited potential for otter holt creation or foraging, although it may be used for commuting. There is negligible suitable habitat for water vole.	Negligible / Negligible

Foreshore

The foreshore is unsuitable for water vole, however it provides suitable habitat for commuting and foraging otters. There is also limited potential for the creation of otter couches/resting sites amongst gaps between the boulders that form part of the sea defences. Therefore, the foreshore has moderate suitability for otter.

Presence/ absence survey

No otter holts or water vole burrows (or other resting sites) or evidence of otter or water vole activity was recorded during the survey.

4. Summary and conclusions

4.1 Current baseline

Otter

No evidence of otter activity or rest sites were recorded within the Study Area. The majority of waterbodies within the Study Area are of negligible/low suitability for otters, although most of the ditches are suitable for use by commuting otters. There are records of otters within the Study Area and it is likely that this species commutes through and/or forages within the Study Area intermittently. The intermittent, low level of otter activity within the Study Area is likely to be attributable to the ditch management regime and limited suitable locations/habitats for holt creation.

Water vole

No evidence of water vole activity or rest sites were recorded within the Study Area. The majority of waterbodies within this area are of low/negligible suitability for water vole, with banks lacking diverse macrophytes favoured by foraging water voles, plus widely fluctuating water levels that affect the ditch system. Brown rats (*Rattus norvegicus*) were observed inside the double security fence during the bat surveys (*HPB Decommissioning EIA – Baseline Report: Bats*). Rats tend to displace water voles and this may be a further factor reducing the suitability of the Study Area for this species. The last record of water vole within the Study Area was in 2006 and it is likely that this species no longer occurs within this area.

Appendix A
Figures

H:\Projects\41491 NTH Ecology EIA Scoping for Phase 1 Decommissioning (subfolder)\D Design Technical\HPB\Drawings\ArcGIS\41491-WOD-XX-XX-FG-OE-0029_S2_P01.mxd Originator: jacqui.parkin

320000 321000 322000

146000 145000

N

Hinkley Point 'A'

Hinkley Point 'A'

West Brook

Stolford

North Moor

Wick Moor

Wick Moor Drove

East Brook

Ridgeway Lane

Crossway

Green Shutters

Doggetts

Head Weir House

Wick

Sunshine Lodge

Zine Farm

Wick Pound House

Key

Hinkley Point B Nuclear Site Licence boundary

Double security fence

0 100 200 300 400 500 m

Scale at A3: 1:10,000

Hinkley Point B Decommissioning EIA
Baseline Report: Otter and Water Vole

Figure 1.1
Site location plan

December 2019

wood.

H:\Projects\41491 NTH Ecology EIA Scoping for Phase 1 Decommissioning (subfolder)\D Design Technical\HPB\Drawings\ArcGIS\41491-WOD-XX-XX-FG-OE-0030_S2_P01.mxd Originator: jacqui.parkin

320500 321000 321500

146500 146000 145500

N

Hinkley Point 'A'

Hinkley Point 'A'

K

J

C

E

D

F

G

H

A

B

1 2 3

Pond 1 - Pixie's Pond

Pond 2 - Otter Pond

Pond 3

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence
- Otter and water vole survey buffer
- Pond location
- Waterbody survey section
- 1 Target note

0 100 200 300 m

Scale at A3: 1:5,000

Hinkley Point B Decommissioning EIA
Baseline Report: Otter and Water Vole

Figure 2.1
Otter and water vole survey

December 2019

wood.

Appendix B
Relevant Legislation (Summary)

Otter

This species is listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. It is afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, inter alia, to:

- Deliberately capture, injure or kill an otter;
- Deliberately disturb an otter, in particular in such a way as to be likely to:
  - Impair their ability to survive, breed or reproduce, or rear or nurture their young;
  - Impair their ability to hibernate or migrate; and
  - Affect significantly the local distribution or abundance of that species.
- Damage or destroy a breeding site or resting place of an otter;
- Intentionally or recklessly disturb an otter while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that an otter uses for shelter or protection.

Water vole

The water vole is listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is afforded limited protection under Section 9 of this Act. This makes it an offence, inter alia, to:

- Intentionally kill, injure, or take (handle) a water vole;
- Intentionally or recklessly disturb water voles while they are using such a structure or place; or
- Intentionally or recklessly damage or destroy or obstruct access to any structure or place which water voles use for shelter or protection.

8D

Baseline Report: Badger

PUBLIC

This appendix is confidential and has been removed.

8E

Baseline Report: Bats

PUBLIC

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EDF Energy

Hinkley Point B Decommissioning EIA

Baseline Report: Bats

Wood Group UK Limited – January 2021

Report for

[redacted]

Main contributors

[redacted]

Issued by

[redacted]

Approved by

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Doc Ref. 41491-WOD-XX-XX-RP-OE-0017_S4_P01

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Document revisions

No.	Details	Date
1	Draft for client comment	April 2020
2	Final	January 2021

Contents

1. Introduction

1.1 Purpose of this report

EDF Energy proposes to start preparation for waste processing facilities (Operational and Decommissioning Waste) and waste stores (ILW Store) at Hinkley Point B (HPB) to support decommissioning activities following the End of Generation (EoG), which is currently scheduled to be in 2023. Prior to the construction of these facilities, planning permission from the Local Planning Authority (LPA) under The Town and Country Planning Act 1990 (TCPA) will be required. Other permissions and consents for the overall decommissioning project will be required separately under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning (EIAD)) Regulations, 1999, as amended, and EURATOM Article 37 (or an equivalent).

The current strategy is for an EIA to be undertaken and a single Environmental Statement (ES) to be prepared to assess the environmental impacts of the proposed decommissioning project under both the TCPA and EIAD Regulations. Other consents for specific activities will also be required and can draw on the EIAs.

This report sets out information about the bat survey that was undertaken to inform the EIA of the HPB Decommissioning Project. It includes a brief description of the proposed HPB Decommissioning Project before setting out information about the bat survey methods, results and conclusions.

1.2 Scheme description

Decommissioning at HPB is expected to commence in 2023. The site location is shown on **Figure 1.1, Appendix A**. Once the necessary consent is in place, the decommissioning process ('the Project') would commence with the process of defueling and initial decommissioning, with spent fuel transferred to the Sellafield nuclear licensed site. Over approximately a 15-year period there would be a process of safe storage and management of intermediate and low-level waste, with intermediate level waste stored temporarily on-site, in sealed and shielded containers within designed stores that have similar characteristics to industrial units, and low-level waste being transferred to appropriate treatment or disposal facilities. In parallel with these tasks, redundant buildings will be de-planted and demolished.

This initial decommissioning phase will include construction of waste processing facilities and a secure, weathertight, Safestore structure - a clad, steel-framed structure based around the Reactor Building - will be constructed, to enclose the Advanced Gas-cooled Reactors, allowing the process of radioactive decay to reduce dose to significantly lower levels. The second phase of decommissioning – Care & Maintenance - will involve ongoing site/station care and maintenance over a period of approximately 70 years. The third phase will involve reactor building decommissioning and final site clearance, involving site-wide demolition of the remaining buildings and remediation to an extent conforming to the applicable regulations at the time, followed by back-filling. Aside from the defueling and management of waste storage and decay processes, the site will operate similar to a conventional construction/demolition site.

1.3 Site context

The HPB station ('the site' or 'the station') is approximately 12 km to the north west of Bridgwater, in Bridgwater Bay at the mouth of the River Severn and on the southern flank of the Bristol Channel. The centre of the station is at approximate National Grid Reference (NGR) ST 212 459 and the area that is subject to the Nuclear Site Licence (NSL) extends to approximately 47ha.

The majority of the HPB station is built structures and hard standing (mainly access and car parks). Bridgwater Bay is to the north. To the south, west and east of the site there is a fringe of woodland and scrub, with areas of open grassland. Hinkley Point A borders the HPB NSL boundary to the west and further west beyond this is the Hinkley Point C development. The wider landscape to the south and east is agricultural.

2. Methods

2.1 Study Area

The Site includes the land inside the HPB double security fence and the land that is covered by the HPB Nuclear Site Licence (NSL). The majority of the non-operational land within the Site is designated as Hinkley Local Wildlife Site (LWS), which is managed for biodiversity by EDF Energy and Somerset Wildlife Trust (SWT). The Study Area focuses on suitable bat habitats within the Site, plus the part of Hinkley LWS that is outwith and adjacent to the south-east boundary of the Site, with roost surveys focusing on a 50m perimeter around the double security fence. The Study Area is shown on **Figure 2.1** (**Appendix A)** and is defined on a precautionary basis to encompass those areas within which bats are most likely to be susceptible to the effects of the HPB decommissioning project.

2.2 Desk Study

A desk-based study was undertaken to collate and review existing information on ecological features that are known to occur, or have previously been recorded, on land within and surrounding the Study Area defined in Section 2.1. These features include sites designated for nature conservation; habitats of importance for nature conservation; and legally protected and/or otherwise important species (including bats). The desk study is detailed in a separate report (Hinkley Point B Decommissioning – Baseline Report: Desk Study [Terrestrial Ecology]).

Data collected from the Somerset Environmental Records Centre (SERC), includes details of bat species recorded within approximately 5 km of the Site1. The HPB Land Management Annual Reviews2 (LMAR) and Integrated Land Management Plan3 (ILMP) also include details of species (including bats) recorded within the Study Area. The Multi Agency Geographical Information for the Countryside (MAGIC) website4 includes details of locations subject to European Protected Species Licences (EPSLs) within 5km of the Site. Hinkley Point C Annual Ecological Monitoring Report 20185 includes recent bat monitoring data pertaining to the adjacent Hinkley Point C (HPC) station; and Hinkley Point B Bat Box Survey (2012-2019)6 details the results of monitoring of bat boxes within Hinkley LWS.

2.3 Field surveys

Survey objectives

All UK bat species are legally protected (**Appendix B**). A number of bat species are also Species of Principal Importance for the Conservation of Biological Diversity in England, having been identified as such by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act). The potential effects of development on native bat species are therefore a material consideration in determining planning applications.

[1] Bat records were also requested from Somerset Bat Group (SBG) - no additional records obtained.
[2] EDF Energy Nuclear Generation Ltd (2014 to 2018). Hinkley Point B Land Management Annual Review
[3] EDF Energy Nuclear Generation Ltd (2018) Hinkley Point B Integrated Land Management Plan.
[4] Department for Environment Farming and Rural Affairs (Defra) - Multi Agency Geographical Information for the Countryside (MAGIC) website (https://magic.defra.gov.uk/ accessed 25th June 2019 & 4th March 2020)
[5] Mott Macdonald (2018) Hinkley Point C Annual Ecological Monitoring Report 2018
[6] J. Bates (2020) Letter confirming bat licence handover to T. Bradford for Hinkley Point C dated February 2020;

A suite of survey methods was applied in accordance with good practice (Collins 2016[7] and Mitchell-Jones 2004[8]) as outlined below and described in more detail in the following sections:

- **Roost surveys:** -
  - Preliminary Roost Assessment (PRA) - to determine the suitability of built structures for roosting bats;
  - Preliminary Ground-level Roost Assessment (PGRA) - to determine the suitability of trees for roosting bats;
  - Bat emergence and re-entry surveys – to determine presence/absence of bat roosts (built structures);
  - Endoscope inspections - to determine presence/absence of bat roosts (trees); and
  - Hibernation surveys – to determine presence/absence of hibernation roosts.
- **Bat activity surveys:** -
  - Manual transect surveys – manual sampling of bat activity along pre-defined transects;
  - Automated monitoring – deploying static detectors to record bat activity; and
  - Trapping – to aid species identification and identify breeding females and juveniles.

The purpose of the bat surveys was to determine the status of bat species within the Study Area. These surveys derive the baseline status of bats against which the predicted effects of the HPB Decommissioning project on these species will be assessed. Where necessary, the survey data will also inform plans to mitigate the effects of the HPB Decommissioning project on bats.

Data collection locations

A review of 1:10,000 scale Ordnance survey (OS) maps9, aerial imagery (Google Earth Pro) and the Phase 1 Habitat survey, which is reported separately (HPB Decommissioning EIA – Baseline Report: Phase 1 Habitat Survey), informed the targeting of survey effort. The survey targeted the habitats that are potentially suitable for roosting and foraging/commuting bats within the Study Area defined in Section 2.1. Within the Study Area potential bat roosts include built structures and mature trees and suitable foraging/commuting habitats include semi-improved grassland, tall ruderal vegetation, standing water (pond), woodland (including Branland Copse and Hankley Brake) and scrub, as well as mosaics of these habitat types.

The surveys of potentially suitable bat roosts ('roost surveys') focused on built structures and trees within 50m of the HPB double security fence, extended to include a 50m perimeter around the sewage treatment works (STW) compound and associated access track (**Figure 2.1, Appendix A**). These are the areas within which potential bat roosts are most likely to be susceptible to disturbance associated with HPB decommissioning activities. A small number of buildings within Hinkley Point A (HPA) and within 50m of the western edge of the HPB double security fence were not surveyed for the reasons set out below ('Survey Constraints').

[7] Collins, J. (ed.). (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd Edition. Bat Conservation Trust, London.
[8] Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. Natural England, Peterborough.
[9] www.ordnancesurvey.co.uk

Roost surveys

Preliminary Roost Assessment (PRA)

The PRA within the NSL boundary was undertaken in suitable weather conditions on 9 and 10 May 2019, by surveyors who hold Natural England (NE) bat survey licences: Tim Bradford (Level 2 licence number 2015-12885-CLS-CLS) and Fiona Cargill (Level 2 licence number 2018-33646-CLS-CLS). The PRA of the two buildings within the STW compound was undertaken separately by an Ecologist (Craig Brookes) on 10 March 2020.

The buildings within the Study Area (**Figure 2.1, Appendix A**) were inspected during daylight, and any features suitable for roosting bats were recorded. This can include, for example, weatherboarding, hanging tiles, soffit boxes, gaps in brickwork, cracks, crevices, slipped or broken tiles and gaps around ridge tiles and lead flashing. Roof coverings/features were viewed from ground-level using close-focussing binoculars. Any potential bat roost entry/exit points were identified and inspected for evidence of roosting bats, for example:

- Bat droppings on the ground or stuck to walls beneath potential roost entrances;
- Live bats, bat corpses or skeletons; and,
- Oily marks (from fur), or localised clean spots, around possible roosts/roost access points.

In accordance with good practice (Collins 2016) the buildings were categorised according to their suitability for roosting bats (**Table 2.1**). Potential hibernation roosts were also identified.

Table 2.1 Guidelines on potential suitability of buildings (and trees) for roosting bats

Suitability	Description
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[b]).
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.

[a] For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

[b] Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015[10] in Collins 2016). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

[10] Korsten, E., Schillemans, M., Limpens, H. and Jansen, E. (2015) *On the trail of the hibernating common pipistrelle (Pipistrellus pipistrellus): Strategies for locating mass hibernation sites in the urban environment*. National Bat Conference 2015 abstracts, Bat Conservation Trust, London.

Dusk emergence and dawn re-entry surveys

The results/conclusions of the PRA informed the scope of follow-up dusk emergence and dawn re-entry surveys of buildings to determine presence/absence of roosting bats:

- High suitability – two emergence surveys and one re-entry survey;
- Moderate suitability – one emergence survey or one re-entry survey; and
- Low suitability – one emergence survey or re-entry transect survey[11].

This follow-up survey work was led by Tim Bradford (Level 2 licence number 2015-12885-CLS-CLS) during the period May to October inclusive, when there was little or no rain or wind and with temperatures above 10°C. In these weather conditions bats are unlikely to be deterred from flying. Dawn surveys were undertaken within the period July to mid-August, when bats are most likely to remain active throughout the night, avoiding spring and autumn, when bats are more likely to return to roost early and not emerge again before sunrise.

Temperature, humidity, cloud cover and rainfall were recorded during each survey. Other environmental conditions that can affect bat activity, such as noise disturbance or artificial light levels, were also noted. The survey parameters, including weather conditions, are included in **Table C.1 (Appendix C)**.

Dusk emergence survey

The results of the PRA determined the scope and locations/buildings targeted by the dusk emergence surveys as set out in **Section 3.2.** Dusk emergence surveys began at least 15 minutes before sunset and ended 90-120 minutes after sunset, encompassing the typical emergence periods for UK bat species. Surveyors were located around the building to ensure all aspects were observed. Canon XA30 video cameras with infrared capabilities, accompanied by separate powerful infrared light sources, were used to aid the surveyors. Where deemed necessary potential roosts were monitored using standalone infrared cameras and light sources, with the video recordings reviewed subsequently by an ecologist to check for any emerging bats that may have been recorded.

Bat activity was monitored using a combination of visual observation and aural full spectrum detectors (Elekon BatLogger M), which enable bats' ultrasonic calls to be heard. All bat calls were recorded digitally using the in-built recording feature. Calls were subsequently analysed using BatExplorer software to aid species identification.

Dawn re-entry survey

Buildings that are of low suitability for roosting bats were subject to dawn re-entry surveys, with clusters of buildings surveyed on the same date from walked transects. These dawn re-entry surveys began two hours before and ended 15 minutes after sunrise, encompassing the likely peak pre-dawn foraging and subsequent roost re-entry periods. On each survey date the surveyors walked one of four short transect routes (**Figure 2.2, Appendix A**), predetermined to provide visibility of low suitability buildings, in order to monitor bat re-entry into roosts and taking a maximum of ten minutes to complete a transect circuit. Where necessary surveyors deviated slightly from the transect in response to bat activity close to sunrise and to track individuals back to roosts. This short transect method can pinpoint small roosts, as bats tend to 'swarm' near roost entrances before entering. Bat activity was recorded and analysed using the same equipment and methods as the dusk emergence surveys.

[11] A survey of a predefined transect around a cluster of low suitability buildings. Isolated or difficult to access buildings were surveyed separately.

Hibernation survey

Two buildings identified as potential hibernation roosts (hibernacula) during the PRA were subject to internal inspection during the winter to record any hibernating bats. Hibernation surveys were led by Tim Bradford (Level 2 licence number 2015-12885-CLS-CLS). In accordance with good practice (Collins 2016), a visual check of the two structures took place in mid-January and mid-February 2020. Any location (interior and exterior) where bats could hibernate (e.g. hanging from the ceiling or in cracks and crevices) was inspected using a torch and/or Rigid Seesnake endoscope. A static/automated bat detector (Elekon BatLogger A+) was deployed in each building to record for a minimum of two weeks each month between November 2019 and February 2020 inclusive. Recordings were analysed using BatExplorer software and the timing and type of any calls were assessed to establish the likelihood of a roost being present[12]. The survey details are included in **Table 2.2**.

Table 2.2 Hibernation survey schedule

Date	Survey details
11/11/2019	Internal inspection and deploy static/automated detectors
11/12/2019	Replacement of detector batteries and download data
14/01/2020	Visual hibernation survey; replacement of detector batteries
04/02/2020	Visual hibernation survey; replacement of detector batteries
03/03/2020	Retrieval of static/automated detectors

Preliminary Ground-level Roost Assessment

Trees within 50m of the HPB security fence and STW (inc. access track) were inspected from ground level on 02 July 2020, using close-focussing binoculars and a powerful light source to search for Potential Roost Features (PRFs). These include, for example (arboriculture terminology), rot holes; knot holes; tear outs; hazard beams; wounds; cankers; and other cavities, splits or lifting bark. Details of each PRF were recorded:

- Grid reference;
- Tree species;
- Tree diameter at breast height (DBH);
- Approximate tree height;
- Number and type of PRF(s); and
- Approximate height of PRF(s) and location (stem or limb).

In accordance with good practice (Collins 2016) the trees were categorised according to their suitability for roosting bats (**Table 2.1**).

Endoscope Inspections

The conclusions of the PGRA informed the scope of follow-up surveys of trees to determine presence/ absence of roosting bats:

[12] Bats regularly 'wake up' on mild nights during the hibernation period and forage, most likely at or around sunset.

- High suitability (including confirmed roosts) – three surveys; and
- Moderate suitability – two surveys;

The surveys were carried out by [redacted] using a Ridgid CA300 inspection camera and torch to inspect the trees (PRFs) in detail on 11 August, 10 September and 24 October 2020.

Bat activity surveys

Habitat assessment

An initial habitat assessment within the Study Area on 8 and 9 May 2019 informed the route of a bat activity survey transect (approximately 3km in length) and locations of three automated/static bat detectors (**Figure 2.3, Appendix A**). The transect route and detector locations were defined to sample bat activity within representative habitats within the Study Area, avoiding transects through areas that are potentially unsafe at night, for example part of a public footpath east of 'Pixie's Mound' was avoided to prevent cattle from being startled.

Manual transect survey

The transect route was surveyed twice each month (May to October inclusive). On each occasion the surveyor walked at least two circuits of the transect, from sunset until around three hours after sunset, recording the number of bat passes[13] by each species and the type of activity heard (foraging or social). The surveyors observed bat activity (light levels permitting) and monitored bat calls using Elekon BatLogger M detectors, with subsequent analysis of sound recordings, using similar methods to those described above (dusk emergence survey). The location of each recording was logged by the detector for mapping.

During July the transect survey was repeated at dawn, immediately following the dusk survey. The starting point of the transect was varied between survey visits to sample different sections of the transect at different times after sunset and occasionally the survey direction along the transect was reversed. It was not possible to complete surveys scheduled for April due to poor weather, however data collected in May is likely to be representative of the early stage of the bats' active season.

Automated monitoring

Static bat detectors (Elekon BatLogger A+) were deployed at three locations (**Figure 2.3**, **Appendix A**) to record bat calls continuously from 30 minutes before sunset to 30 minutes after sunrise, for a minimum of five consecutive nights per month (May to October inclusive). In circumstances where the detectors were left to record for more than five nights in a month, the five consecutive nights with the highest number of recordings were selected for analysis, representing comparatively good conditions for bat activity during the recording period. The data were analysed using BatExplorer software.

The total number of bat passes recorded were converted into an average number of recordings per night. The units of bat activity used for automated monitoring are 'recordings', which differs from discrete 'passes' recorded by transect surveys. This is because a bat passing a static detector triggers a recording lasting up to 20 seconds, potentially encompassing several bat passes. Where possible, multiple bat passes captured in a single recording were separated during subsequent data analysis.

[13] A "pass" is defined as the sequence of calls a bat makes as it flies past, typically getting louder and then quieter as the distance between bat and surveyor changes. Bat "calls" are the individual clicks made by bats as they echolocate.

Trapping

Bat species that specialise in woodland habitats tend to be more difficult to detect and identify using aural detectors, partly due to the cluttered habitat (dense foliage) and the quiet calls that are typical of woodland bats. Some of these species also have overlapping calls parameters, making them difficult to distinguish acoustically or by sound analysis. Trapping enables accurate species identification and an assessment of sex, age and reproductive status.

Trapping was led by Katheryn Leggat (Level 4 licence number 2015-14084-CLS-CLS). Two discrete habitat blocks (HT1 and HT2) that incorporate woodland were subject to trapping surveys (**Figure 2.4, Appendix A**) on three separate occasions (May, July and August) within the bats' active season, avoiding the main maternity period, which can extend from the end of May to the end of June (species dependant). A different location within each habitat block was surveyed on each survey visit.

During each survey visit, two three-bank harp traps (Austbat, Faunatech) were deployed/operated from sunset until at least 4 hours after sunset. An AT100 acoustic lure (Binary Acoustic Technology), playing repeated sequences of simulated woodland bat social calls, was set behind or in front of each trap to attract bats. The direction in which the lure faced was changed intermittently during the survey in order to prevent bats becoming habituated to the simulated calls.

The traps were located at least 50m from the nearest known roost (in accordance with Natural England survey licence 2015-14084-CLS-CLS). The trap locations targeted habitats that appear to provide good foraging opportunities for bats (e.g. adjacent to water), potential flight-lines (e.g. woodland ride or stream) and/or positions where the trap could be enclosed by vegetation to help 'funnel' bats into the trap.

The traps were checked and bats removed/inspected approximately every 15 minutes. The species, age (adult or juvenile), sex and reproductive status of each bat caught was recorded. All bats were released within approximately 15 minutes of removal from the trap. The survey does not confirm absence of any bat species and was not designed to allow direct comparisons of species abundance between two trap locations, given the number of variables that can affect trapping success.

Survey parameters

All bat activity surveys were undertaken during the period May to October inclusive, when there was little or no rain or wind and with temperatures above 10°C. Dawn surveys were undertaken within the period July to mid-August, when bats are most likely to remain active throughout the night, avoiding spring and autumn, when bats are more likely to return to roost early and not emerge again before sunrise. Temperature, humidity, cloud cover and rainfall were recorded during each survey. Other environmental conditions that can affect bat activity, such as noise disturbance or artificial light levels, were also noted. The survey parameters, including weather conditions, are included in **Table C.1 (Appendix C)**.

Species identification

Analysis of bat recordings was carried out with reference to Russ 2012[14] to aid species identification. Where bats recorded by the bat detector surveys (dusk emergence, dawn re-entry, transect surveys and automated/static monitoring) could not be identified to species-level due to the overlapping call parameters of some species, these records were identified to genus/group:

- *Myotis* sp. - bat species in the genus *Myotis*;
- *Nyctalus* sp. - noctule (*Nyctalus noctule*) or Leisler's (*Nyctalus leisleri*);
- Big bats - noctule, Leisler's or serotine (*Eptisicus serotinus*);

[14] Russ, J. (2012). British Bat Calls a Guide to Species Identification. Pelagic Publishing, Exeter.

- *Pipistrellus* sp. - common pipistrelle (*Pipistrellus pipistrellus*) or soprano pipistrelle (*Pipistrellus pygmeaus*);
- *Pipistrellus* sp. - Nathusius' pipistrelle (*Pipistrellus nathusii*) or common pipistrelle;
- *Plecotus* sp. - brown long-eared (*Plecotus auratus*) or grey long-eared (*Plecotus austriacus*); and
- Bat sp. - calls that could not be ascribed to a species group.

The majority of recordings of bats in the genus *Myotis* are grouped together, as these species in particular have overlapping call parameters. However, where behaviour and habitat context can be observed, some Myotis records can be identified to species level. Similarly, it is difficult to distinguish between the two British species of long-eared bat through flight observations and sound recordings alone, therefore recordings of these species are grouped as *Plecotus* sp. The Nyctalus sp. group is also a component of the 'big bats' group.

Survey Constraints

The majority of the buildings within the Study Area are in use, with restricted access. Combined with constraints associated with the operation of the HPB station, this resulted in the PRA focusing on the exterior of buildings. However, the majority are of simple construction and features suitable for bats were visible. In circumstances where there was any residual uncertainty regarding the suitability of buildings for roosting bats, these buildings were subject to follow-up surveys. It is therefore unlikely that roosts were missed.

A small number of buildings within HPA are within 50m of the western edge of the HPB double security fence. These buildings were not surveyed due to access restrictions. These buildings will however not be demolished or modified by the HPB decommissioning project and the comprehensive surveys of buildings throughout the rest of the Study Area are adequate to characterise the baseline status of bats and inform the decommissioning EIA.

The PGRA was carried out on 02/07/2020, which is within the sub-optimal period for ground-level roost assessments, recognising that summer foliage can restrict/impede visibility of PRFs. However, a thorough PGRA was undertaken and this constraint is unlikely to have had a substantive influence on the survey conclusions or baseline.

The dusk emergence survey of Buildings 524 and 525 was delayed into September due to poor weather (high winds) and constraints (access restrictions) associated with the operation of the HPB Station. However, buildings located nearby were surveyed earlier in the survey period and no bats were recorded during the typical emergence period, which tends to indicate that there is unlikely to be a roost associated with these buildings.

The calls of different bat species vary in volume and species with louder calls, that carry further, are more likely to be detected. However, the detectors used during the survey have advanced, highly sensitive microphones which enhance detection of quieter species and therefore the presence of these species is unlikely to have been overlooked.

Bat activity surveys (transects and automated monitoring) provide an indication of relative levels of bat activity, and do not represent actual numbers of bats, recognising that a bat may pass the same location repeatedly, or multiple monitoring locations, in one night.

During data storage and analysis an IT failure resulted in a limited amount of data being corrupted, including manual transect survey data for August and the geolocation element of the transect data from September. It is therefore not possible to fully evaluate bat activity levels in late summer and early Autumn. However, static/automated detector data was collected in August and September and bat observations were recorded in field notes during the August and September manual (transect) surveys. These August and September

data, combined with the otherwise complete dataset, employing a combination of survey techniques, are sufficient to inform an evaluation of the bat assemblage.

3. Results

3.1 Desk study

Biodiversity sites

There is one statutory biodiversity site within 10km of the Site that has been designated for bats. This is summarised in **Table 3.1** and marked on **Figure 3.1a (Appendix A)**. There are no non-statutory biodiversity sites designated for bats within 3km of the Site.

Table 3.1 Statutory sites (designated for bats) within 10km

Designation	Proximity to the site	Reasons for designation (relating to bats)
Exmoor and Quantock Oakwoods Special Area of Conservation (SAC)	6.8km south west	Barbastelle (*Barbastella barbastellus*) are a primary reason for site selection - a maternity colony of barbastelles utilises a range of tree roosts in this area of predominantly oak (Quercus spp.) woodland. Bechstein's bat (*Myotis bechsteinii*) are a qualifying feature of the site, but not a primary reason for site selection.

European Protected Species Licences

A total of 13 locations within 10km of the Site have been subject to EPSLs relating to bats, two of these (**Table 3.2**) are within 5km. These are adjacent to the western boundary of the site associated with Hinkley Point C and relate to the removal of barn and tree roosts and destruction of transitional/summer resting places for common pipistrelle, soprano pipistrelle, brown long-eared, serotine, Natterer's (*Myotis nattereri*) and whiskered (*Myotis mystacinus)* bats. Other species covered by EPSLs within 10km of the Site include lesser horseshoe (*Rhinolophus hipposideros*) and Daubenton's (*Myotis daubenentonii)* bats.

Table 3.2 European Protected Species licenses (bats) within 5km.

Case reference	License start date – end date	Species
2015-14447-EPS-MIT	23/09/2015 - 28/02/2021	Brown long-eared (*Plecotus aurltus*); common pipistrelle; Natterer's (*Myotis nattereri*); serotine (*Eptesicus serotinus*); soprano pipistrelle (*Pipistrellus pygmaeus*); whiskered
EPS2010-2436	26/03/2012 – 28/02/2021	Brown long-eared; common pipistrelle; Natterer's; serotine; soprano pipistrelle; whiskered

Bat records

Somerset Environmental Records Centre hold records of fourteen species of bat within 5km of the site: Bechstein's, brown long-eared, common pipistrelle, Daubenton's, greater horseshoe, grey long-eared, lesser horseshoe, Nathusius' pipistrelle, Natterer's, noctule, serotine, soprano pipistrelle, barbastelle, whiskered. This includes records of common pipistrelle, Nathusius' pipistrelle and whiskered bats within the Site boundary.

Monthly (May to September 2018) bat activity (transect) surveys have been undertaken as part of monitoring of the effects of the HPC development on bats and compared to similar surveys in previous years (Mott Macdonald 2018). The surveys recorded common pipistrelle as the most frequently encountered species. Activity levels of other species remained similar over a number of years throughout the monitoring period: soprano pipistrelle, serotine, noctule and Leisler's bat. Myotis species and brown long-eared bat activity levels increased over the monitoring period, possibly attributable in part to improved detector and sound analysis technology, improving detection of these quieter species. Barbastelle, greater horseshoe and lesser horseshoe bats were also recorded. One of the transect surveys was within the south of the HPB site, recording common pipistrelle, soprano pipistrelle, Myotis sp., brown long-eared bat, lesser horseshoe and barbastelle, as well as 'big bats'.

Annual monitoring of 60 bat boxes, erected in 2011 to compensate for loss of potential tree roost habitat at the HPC development, recorded at least seven species of roosting bats: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, brown long-eared bat, Natterer's bat, noctule and Leisler's bat (**Table 3.3**). The locations of the bat boxes, combined with the results of the recent (2016-2019) bat box inspections, are summarised on **Figure 3.1b** (**Appendix A**). Eight of the boxes are situated within c.50m of the HPB double security fence, with four of these having been used by bats (soprano pipistrelle or unidentified bats) between 2017 and 2019 inclusive. Records of juvenile common pipistrelle in bat boxes 1 and 5, which are within the northern part of Branland Copse, signify the presence of a maternity colony nearby in 2016.

Table 3.3 Bat box monitoring at HPB (2012 to 2019)

Year	Summary of results
2019	Common pipistrelle (x3 roosts; x7 bats); soprano pipistrelle (x6 roosts; x12 bats); unconfirmed species (x2 bats).
2018	Common pipistrelle (x3 bats; soprano pipistrelle (x2 roosts; x3 bats)
2017	Common pipistrelle (x4 roosts; x6 bats); soprano pipistrelle (x3 roosts; x6 bats); droppings typical of brown long-eared bat
2016	Common pipistrelle (x6 roosts; x14 bats inc. juveniles); Leisler's (x2 bats); brown long-eared (x1 bat)
2015	Soprano pipistrelle (x5); common pipistrelle (x2); Leisler's bat (x1)
2014	Soprano pipistrelle (x6); common pipistrelle (x2); noctule (x1)
2013	Soprano pipistrelle (x2); common pipistrelle (x5)
2012	Soprano pipistrelle (x4); common pipistrelle (x1); Nathusius' pipistrelle (x1); Natterer's (x1)

3.2 Bat surveys

Roost surveys

Preliminary Roost Assessment

A total of 101 buildings/building complexes were subject to PRA. The majority (68) are of negligible suitability for roosting bats, being of modern construction, lacking obvious potential roost features and prone to disturbance from noise/lighting.

A total of 33 buildings or building complexes within the Study Area are categorised as suitable (moderate or low suitability) for roosting bats as summarised in **Table 3.4**. The locations of buildings that are potentially suitable for roosting bats are shown on **Figure 3.2 (Appendix A)**. Further details of these buildings and

associated features that are potentially suitable for roosting bats are included in the PRA results (**Table C.2, Appendix C)**. Buildings omitted from the numbering sequence have either been demolished, lack a built structure (i.e. areas marked on the map) or could not be accessed.

Table 3.4 Preliminary Roost Assessment (categorisation of roost suitability)

Suitable hibernacula	Moderate	Low (dusk emergence survey[2])	Low (dawn re-entry - walked transect[2])	Negligible
501[1],619	524, 525	515, 516, 520, 520A, 526, 527, 530, 540, 561A, 563, 565, 600, 619, STW1.	504, 512/513, 531, 532, 533, 535, 538, 539, 549, 554, 555, 566*, 569, 588*, 612E*, 621.	502, 503, 505 A/B, 505C, 506, 507, 508, 510, 511, 514, 517, 518, 519, 521, 522, 522B/C, 523, 528, 529, 534, 536, 537, 541, 542, 543, 544, 545, 546, 547, 548, 553, 556, 561, 570, 571, 572, 574, 575, 576, 577/578, 579, 580, 581, 585, 586, 587, 589, 590, 590A, 593, 594, 595, 602, 611, 612 A-D, 613A/B, 623, 624, 625, 626 627, 628, 631, 631A/B, 632, 633, 634, STW2.

[1] Negligible suitability for bats during their active season (April to October).

[2] Low suitability buildings are separated according to the follow-up survey work that is required to determine likely presence/absence of roosting bats. A number of buildings have subsequently been surveyed using walked transects around the building at dawn, whereas other low suitability buildings have been subject to dusk emergence surveys. These follow-up surveys are described below.

*Buildings 566, 588 and 612E are at or over 50m from the double security fence and have not been subject to follow-up roost surveys.

Preliminary Ground-level Roost Assessment

In addition to the bat boxes (**Figure 3.1b**) described above, there are five trees within approximately 50m of the double security fence that are potentially suitable for roosting bats. These are marked on **Figure 3.2** and summarised in **Table 3.5**. One of these trees (TR4) was confirmed as a roost, with noise and movement apparent within a fissure ('tear-out') in the trunk. The roost feature is >20cm deep and approximately 2cm wide and is unlikely to support large numbers of roosting bats. Thick vegetation adjacent to the double security fence is likely to limit light-spill from HPB onto the roost/potential roosts identified, at least during summer months. The other vegetation within 50m of the double security fence is otherwise of negligible suitability for roosting bats, predominantly comprising young trees and scrub, with a number of mature trees to the east being in generally good condition and lacking PRFs.

Table 3.5 Preliminary Ground-level Roost Assessment (categorisation of roost suitability)

Tree (Fig 3.2)	National Grid Reference	Roost suitability	Approx. distance from fence (m)	DBH	Approx. height (m)	PRF	Species	Notes
TR1	ST 21259 45739	Low	45	15	5	Tear out in the trunk (c. 0.5m)	Field maple	Hollow at base, extending ~15cm up into trunk.
TR2	ST 21600 45963	Low	25	35	25	Woodpecker hole in the trunk (c. 2m)	Ash	Extends up ~10cm. Relatively exposed
TR3	ST 21594 46022	Moderate	14	20	30	Tear out in the trunk (c.2m)	Ash	Tear out extends ~50cm up the trunk. Narrows to ~3-4cm wide

Tree (Fig 3.2)	National Grid Reference	Roost suitability	Approx. distance from fence (m)	DBH	Approx. height (m)	PRF	Species	Notes
TR4	ST 21612 46008	Confirmed roost	33	20	25	Tear out in the trunk (c.1.5m)	Sycamore	Roost feature is >20cm deep; ~2cm wide.
TR5	ST 21649 46068	Low	17	10	20	Tear out in the trunk (c.1.5m)	Sycamore	Narrow entrance hole. Extends ~10cm intro trunk

Dusk emergence survey

Based on the conclusions of the PRA a total of 16 buildings (Low and Moderate suitability for roosting bats) were subject to emergence surveys (**Table 3.4** and **Figure 3.2**). The results of the emergence surveys are included in **Table C.3 (Appendix C).** No bat roosts were recorded. The suitability of Buildings 524 and 525 was downgraded to low after one emergence survey, due to bright security lighting and/or presence of nesting gulls. Bat activity recorded incidentally around buildings during dusk emergence surveys was low (less than ten passes per survey), with only one species (noctule) recorded and only during surveys of Buildings 530, 563 and 600.

Dawn re-entry survey

A total of 13 buildings[15] (low roost suitability) were surveyed from one of four transect routes. No bats were observed returning to the buildings. The results of the re-entry surveys are included in **Table C.3 (Appendix C)**. Low levels of bat activity (up to 10 passes per survey) were recorded/heard on sections of the transects that are near woodland adjoining the double security fence. The only species recorded was common pipistrelle.

Hibernation survey

Two buildings within the Study Area have underground features where the temperatures would be likely to remain relatively stable over winter, providing potentially suitable conditions for hibernating bats. No roosting/hibernating bats were recorded. The results of the survey are included in **Table 3.6.**

Table 3.6 Hibernation survey results

Building number	Description of internal features	Inspection		Static monitoring			
		Jan	Feb	Nov	Dec	Jan	Feb
501	Shaft leading to a water inlet. The above ground structure is a concrete box with corrugated metal roof. The joints of the concrete wall panels were inspected along with the areas behind the supporting struts. While the survey was being carried out in January and February, high winds were lifting the roof slightly and may have made the internal conditions less stable.	No bats recorded		No bats recorded			

[15] Buildings 566, 588 and 612E are >50m from the double security fence and have not been subject to follow-up roost surveys.

Building number	Description of internal features	Inspection		Static monitoring			
		Jan	Feb	Nov	Dec	Jan	Feb
619 (basement)	Three approximately equal-sized chambers. The western most has double rows of metal 'Dexion' shelves. The eastern-most (entrance area) is emptier, with two sections of shelving and an open area with wood pallets, on which files have been placed. Storage of files (many present) has been discontinued as the basement is damp and prone to flooding. The files potentially provide roosting opportunities for bat species that hang free when hibernating (e.g. horseshoe species).	No bats recorded		No bats recorded			

Endoscope inspections

The endoscope inspections of two trees that are of moderate (TR3) and high/confirmed (TR4) suitability for roosting bats (**Figure 3.2**) did not record any roosting bats. The roost previously recorded in TR4 during the PGRA was no longer apparent. It is likely to be a day roost, used by individual bats or small groups of males during the day, occasionally, which is typical of common and soprano pipistrelle which often switch between a high number of roosts across their colony range.

Activity surveys

Habitat assessment

The habitats within the Study Area that are likely to be most suitable for foraging or commuting bats are outside of the double security fence. The manual (transect) bat activity surveys focussed on these habitats, which include two woodland areas: Branland Copse to the west and Hankley Brake to the east (**Figure 2.1**). These are predominantly secondary woodland habitats with few mature trees, providing relatively dark areas, with the woodland edges illuminated by the HPB Station and surrounding roads.

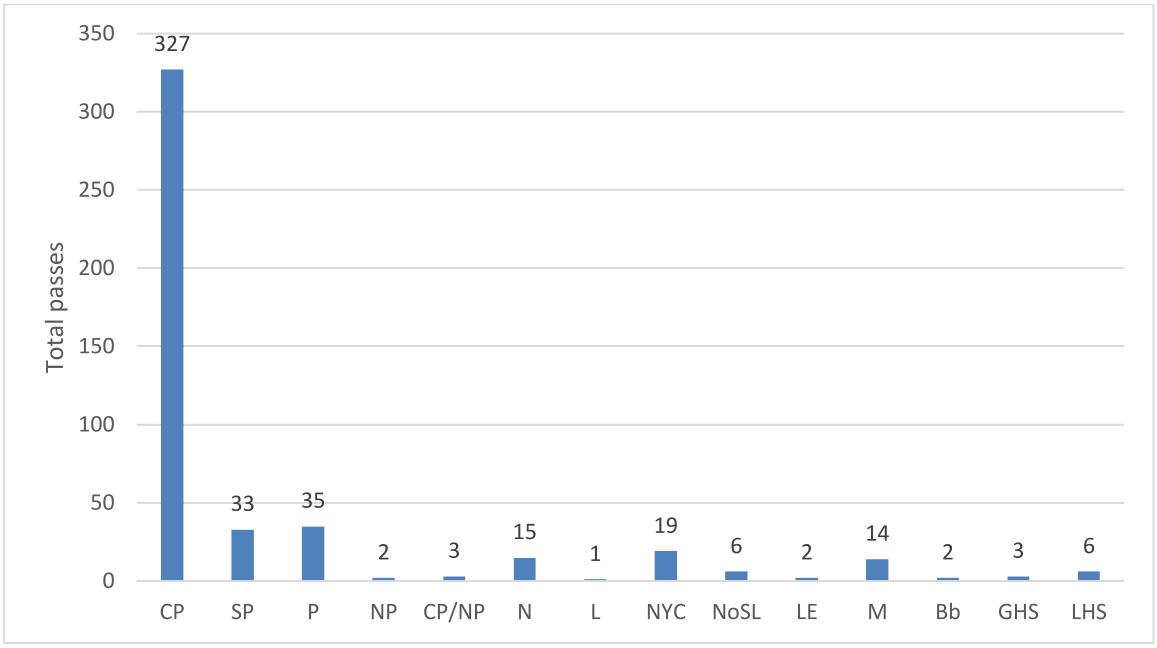
South of Branland Copse is Pixie's Mound (a tumulus) and to the south east of this there is a small pond (Pixie's Pond) fringed by trees. There are ditches to the south and east of Hankley Brake. The pond to the south east of the STW, was largely dry during the survey. Between Branland Copse and Hankley Brake there are areas of scrub, tall ruderal vegetation and grassland, including mosaics of these habitats. These have the potential to support diverse invertebrate assemblages and provide suitable foraging habitat for bats.

Manual (transect) survey

At least ten species of bat were recorded using the Study Area: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, Leisler's, Plecotus sp., Barbastelle, greater horseshoe, lesser horseshoe and at least one Myotis species. **Table C.4 (Appendix C)** summarises the number of passes by each species recorded during each survey visit. **Chart 3.1** summarises the total recorded passes by each species and **Chart 3.2** summarises the mean number of passes by each species in spring (x3 dusk surveys), summer (x5 dusk; x2 dawn surveys) and autumn (x4 dusk surveys).

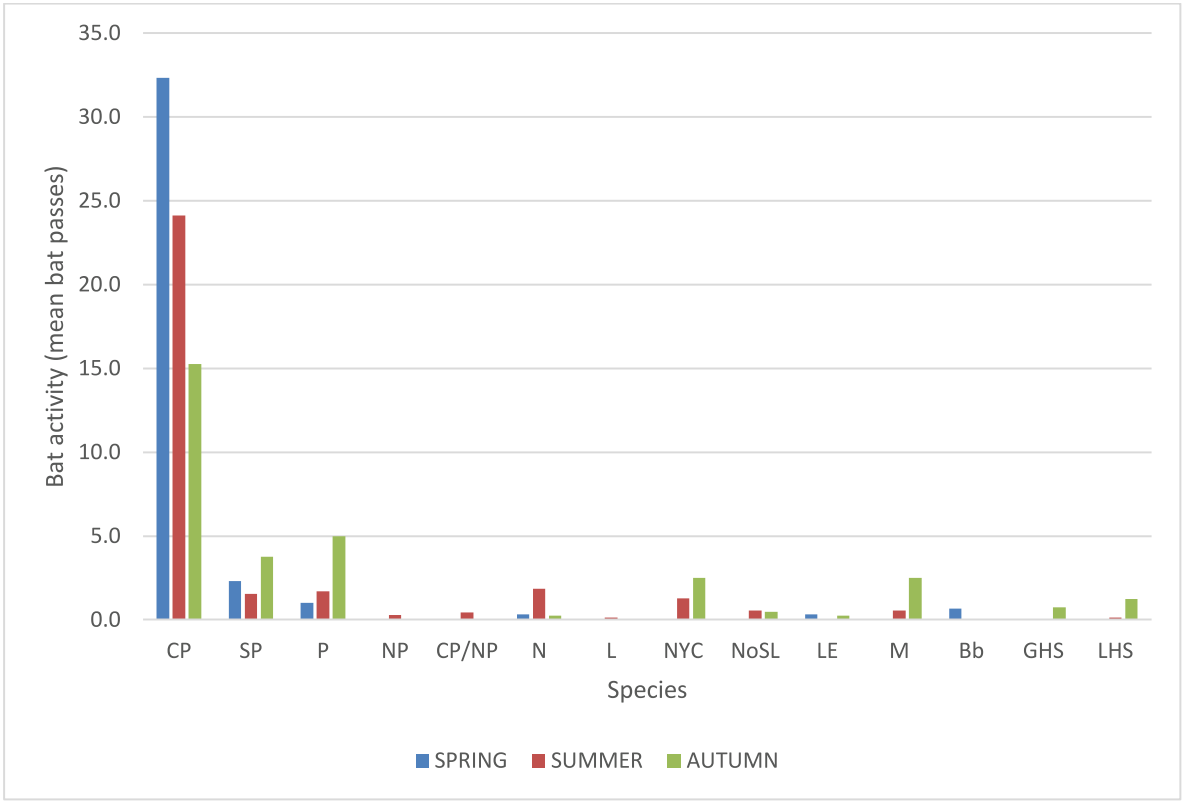
Common pipistrelle was the most frequently recorded species, accounting for approximately 70% (327 of 469) of all passes recorded, followed by *Pipistrellus* sp. group and soprano pipistrelle which each accounted for approximately 7% of passes. Bat activity remained relatively constant throughout the year, with nine of the 14 surveys recording between 20 and 40 bat passes in total (**Table C.4**).

Chart 3.1 Bat passes (total) recorded by manual (transect) bat activity surveys



CP = common pipistrelle; **SP** = soprano pipistrelle; **P** = pipistrellus sp.; **NP** = Nathusius' pipistrelle; **CP/NP** = common or Nathusius' pipistrelle; **N** = noctule; **L** = Leisler's; **NYC** = Nyctalus sp; **NoSL** = noctule, serotine or Leisler's; **LE** = Plecotus sp.; **M** = Myotis sp.; **Bb** = barbastelle; **GHS** = greater horseshoe; **LHS** = lesser horseshoe.

Chart 3.2 Bat passes (seasonal) recorded by manual (transect) bat activity surveys



CP = common pipistrelle; **SP** = soprano pipistrelle; **P** = pipistrellus sp.; **NP** = Nathusius' pipistrelle; **CP/NP** = common or Nathusius' pipistrelle; **N** = noctule; **L** = Leisler's; **NYC** = Nyctalus sp; **NoSL** = noctule, serotine or Leisler's; **LE** = Plecotus sp.; **M** = Myotis sp.; **Bb** = barbastelle; **GHS** = greater horseshoe; **LHS** = lesser horseshoe.

Bat activity was recorded throughout the transect (**Figure 3.3** and **Figure 3.4[16], Appendix A)**, with greater activity recorded around water bodies, including the pond near Pixie's Mound and ditches to the south and east of Hankley Brake. Bat activity levels were lower in open areas of habitat between Pixie's Mound and Hankley Brake. These areas are subject to illumination from the HPB Station and from HPC construction lights to the west and south-west. Bat activity levels were lower in Branland Copse compared to Hankley Brake. The distribution of bat activity is summarised below:

- **Common pipistrelle:** recorded relatively frequently throughout the transect route, often around ponds and ditches;
- **Soprano pipistrelle:** recorded frequently around water bodies, including the pond near Pixie's Mound within the south west of the Study Area and ditches at the eastern end of the Study Area;
- **Nathusius pipistrelle:** two passes in summer, to the east of Pixie's Mound, which is mainly scrub, tall ruderal vegetation and grassland;
- **Nyctalus species:** this group (noctule and/or Leisler's bat) was recorded mainly around ditches, tall ruderal/scrub and woodland (including Hankley Brake), within the eastern and north-eastern edge of the Study Area, with the area around Pixie's Mound to the south east also being a focus of noctule activity;
- **Myotis species:** recorded in low numbers throughout the transect route, with the exception of the majority of the area between Pixie's Mound and Hankley Brake;
- **Barbastelle:** two passes around the south east of the Study Area, within one minute of each other and potentially foraging over ditches;
- **Lesser horseshoe bat:** six passes in woodland edge habitat, including on the eastern edge of Branland Copse, south west of Hankley Brake and at the eastern edge of Hankley Brake;
- **Greater horseshoe bat:** three passes within a short period of time (2-3 minutes) in the same area, at the eastern edge of Branland Copse (woodland edge);
- **Long-eared bats (Plecotus sp.):** a small number (two) of passes, including within the south east of the Study Area, south of the NSL boundary; and
- **Leisler's:** a single pass in summer, to the north east of Pixie's Mound, around areas of scrub and tall ruderal vegetation**.**

[16] **Figure 3.4** is the same as **Figure 3.3** with common pipistrelle activity omitted, providing a clearer map of the activity of other species (potential/unconfirmed common pipistrelle records due to overlapping call parameters are included on both figures). A small number of bat passes that are included in the survey results (Table C4, Appendix C) are not mapped for the reasons set out in Section 2.3 (constraints).

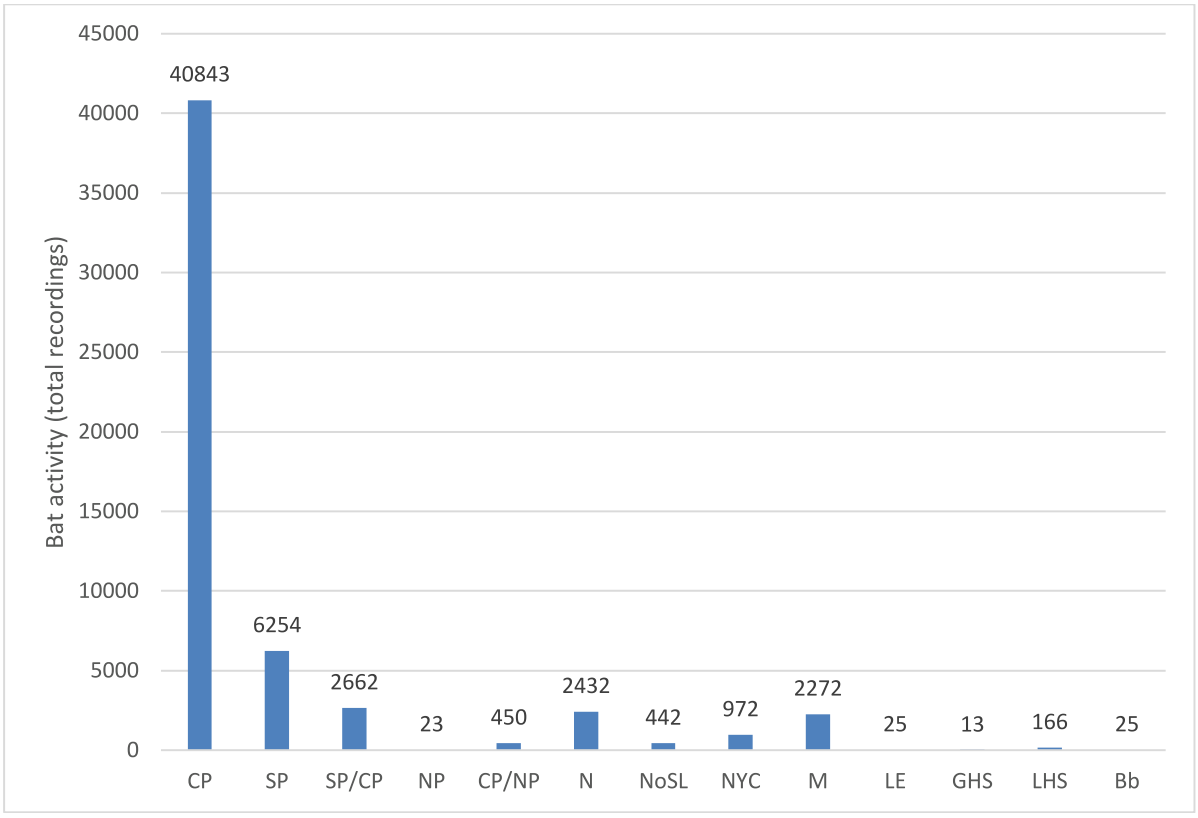
Automated monitoring

Overview

The location of each static detector is shown in **Figure 2.3**. The results of the automated monitoring are included in **Table C.5** (**Appendix C)** and summarised in **Table C.6 (Appendix C)**. The latter includes average (mean) number of recordings per night of each species, at each static detector location, during spring (May) summer (June, July and August) and autumn (September and October).

At least nine bat species were recorded: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, Plecotus sp., barbastelle, greater horseshoe, lesser horseshoe and at least one Myotis sp. The two most frequently recorded species were common pipistrelle and soprano pipistrelle (followed by noctule and Myotis sp.), with the number of recordings of other species/groups being substantially lower (**Chart 3.3**).

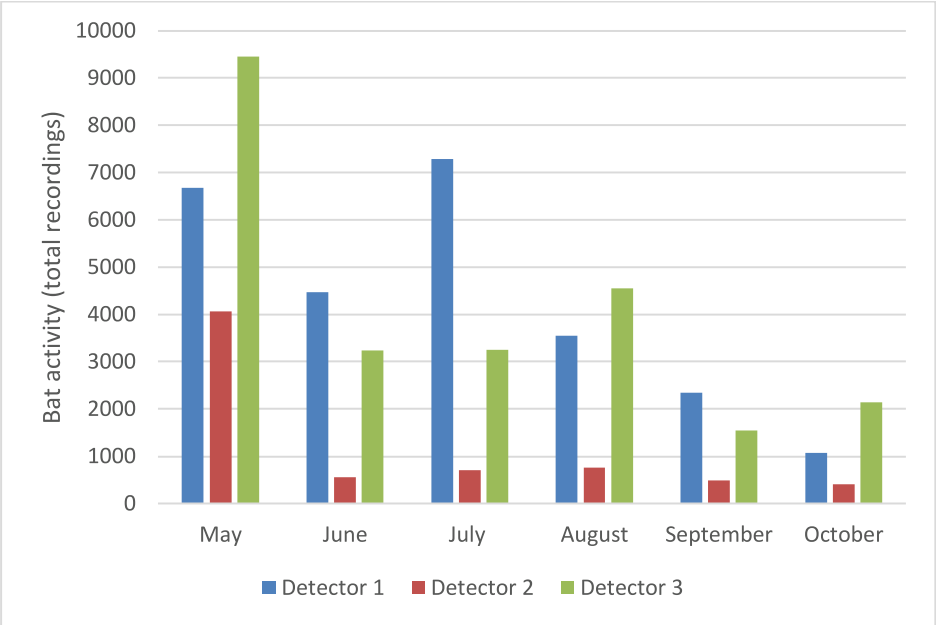
Chart 3.3.Total bat recordings (x3 detectors; x5 days per month - May to October inclusive)



CP = common pipistrelle; **SP** = soprano pipistrelle; **SP/CP** = soprano or common pipistrelle; **NP** = Nathusius' pipistrelle; **CP/NP** = common or Nathusius' pipistrelle; **N** = noctule (confirmed); **NoSL** = noctule, serotine or Leisler's; **NYC** = Nyctalus sp.; **M** = Myotis sp.; **LE** = Plecotus sp.; **GHS** = greater horseshoe bat; **LHS** = lesser horseshoe bat and **Bb** = barbastelle.

Monthly variation in the total number of bat recordings (all species combined) at each static detector location is summarised in **Chart 3.4**. Peak bat activity was recorded in spring (May) and summer (in particular July/August), coinciding with the lead into, and out of, the maternity period/season. Overall bat activity tended to be highest at Pixie's Pond (Static Detector 1) and Hankley Brake (Static Detector 3), with peaks in activity in May and July at Detector 1 and in May at Detector 3.

Chart 3.4 Monthly bat recordings (all species combined)

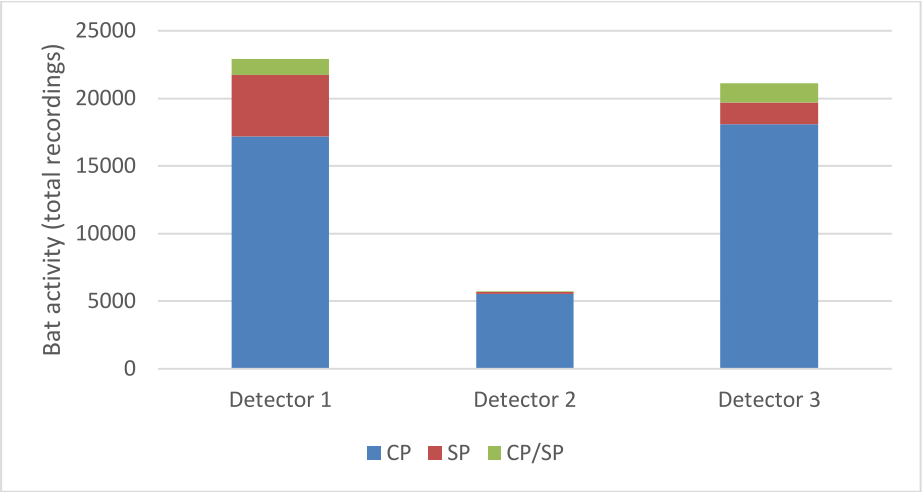


Common pipistrelle and soprano pipistrelle

Common pipistrelle and soprano pipistrelle activity combined accounted for 88% (49,759 out of 56,579) of all bat activity within the Study Area (**Chart 3.3**), the majority of which (40,843/82% of all common/soprano pipistrelle recordings) was attributable to common pipistrelle.

The distribution of common pipistrelle and soprano pipistrelle activity across the three static detector locations is summarised in **Chart 3.5**. Common and soprano pipistrelle were recorded most frequently at Detector 1 near Pixie's Pond (46%/22,907 of all common and soprano pipistrelle recordings), with similar activity levels at Detector 3 in Hankley Brake woodland (43%/21,130). Comparatively lower levels of common and soprano pipistrelle activity were recorded at Detector 2 (11%/5,722), amongst open scrub/tall ruderal habitats east of Pixie's Pond. Notably, 72% (4,528 recordings) of all confirmed soprano pipistrelle activity was recorded at Detector 1 (Pixie's Pond).

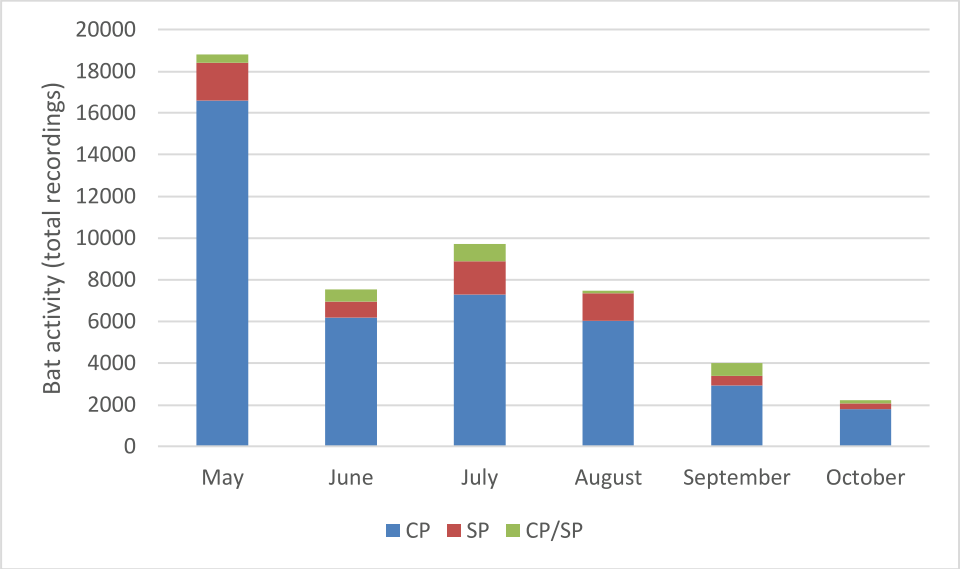
Chart 3.5 Distribution of common and soprano pipistrelle activity



CP = common pipistrelle; **SP** = soprano pipistrelle; **CP/SP** = common or soprano pipistrelle

Monthly variation in common and soprano pipistrelle activity is summarised in **Chart 3.6**, with the highest levels of activity recorded in spring/May (18,813 recordings), followed by July (9,733 recordings) and August (7,468 recordings). As indicated above peak activity in spring (May) and summer (in particular July/August) coincides with the lead into, and out of, the maternity period/season.

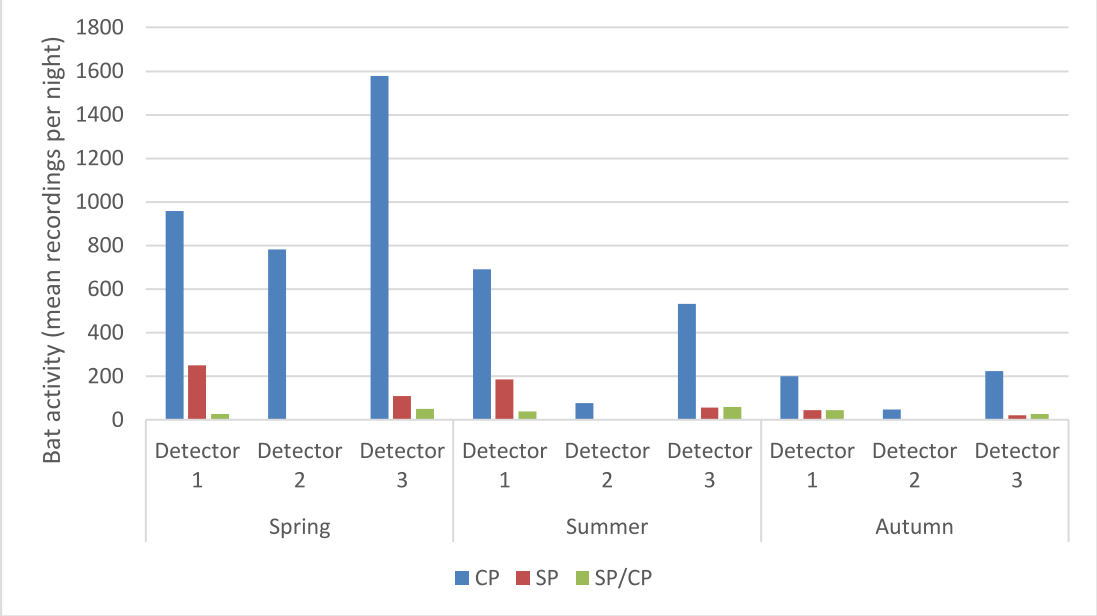
Chart 3.6 Monthly variation in common and soprano pipistrelle activity



CP = common pipistrelle; **SP** = soprano pipistrelle; **CP/SP** = common or soprano pipistrelle

Seasonal variation in levels of common and soprano pipistrelle activity at each static detector location is summarised in **Chart 3.7**. Peaks in common pipistrelle (mean of 1,579 recordings/night) and soprano pipistrelle (mean 252 recordings/night) activity were recorded in Spring at Detector 3 and Detector 1 respectively,

Chart 3.7 Seasonal and spatial variation in common and soprano pipistrelle activity



CP = common pipistrelle; **SP** = soprano pipistrelle; **SP/CP** = soprano or common pipistrelle.

Other bat species[17]

The distribution of all bat activity recorded at the three static detector locations is summarised in **Chart 3.8**, with the two most common species (common pipistrelle and soprano pipistrelle) omitted. Seasonal variation in the average (mean) number of bat recordings per night is summarised in **Chart 3.9**. The distribution of bat activity recorded in spring (**Chart 3.10**), summer (**Chart 3.11**) and autumn (**Chart 3.12**) across the three static detector locations is also summarised. The recorded activity of each species/group is summarised below:

- **Nathusius' pipistrelle: -** This species was recorded in low numbers (23 recordings), accounting for <0.1% of all recordings and was recorded at all three static detector locations (**Chart 3.8**). It was recorded most frequently associated with open habitat (scrub/tall ruderal) at Detector 2 (52% (12) of Nathusius pipistrelle recordings), followed by woodland at Detector 3 (31%/7) and Detector 1 near Pixie's Pond (17%/4). It was recorded in all survey seasons (**Chart 3.9**), with higher levels of activity recorded in autumn (mean of 0.4 recordings per night), compared to spring and summer (mean of 0.2 recordings per night). It was recorded at all three static detector locations in summer (**Chart 3.11**) and autumn (**Chart 3.12**) and only at Detector 2 in spring (**Chart 3.10**);

- **Noctule: -** This species accounted for approximately 4% (2,432) of all bat recordings and was recorded at all three detector locations (**Chart 3.8**). Comparatively higher levels of noctule activity were associated with Hankley Brake woodland at Detector 3 (68%/1,662 of noctule recordings), followed by Detector 1 (19%/451) and Detector 2 (13%/319). This species was recorded throughout spring, summer and autumn (**Chart 3.9**) in all monitoring months. Noctule activity was highest in summer (mean of 33 recordings per night), followed by autumn (24 recordings per night) and spring (14 recordings per night). It was recorded at all three static detector locations in spring (**Chart 3.10**), summer (**Chart 3.11**) and autumn (**Chart 3.12**), with activity consistently highest at Hankley Brake (Detector 3) across the three seasons;

- **Big bats (Noctule, Leisler's and/or Serotine): -** This group combines noctule bats (N), Nyctalus sp (NYC) and bats that could not be distinguished between noctule, serotine and Leisler's (NoSL). Collectively this group accounted for approximately 7% (3,846) of all bat recordings, the majority of which were attributable to noctule (described above), with no definitive/confirmed records of Leisler's or serotine. Big bat species were recorded most frequently associated with woodland at Detector 3 (67%/2,594 of big bat recordings), followed by Detector 1 at Pixie's Pond (20%/758) and then scrub/tall ruderal at Detector 2 (13%/489). Activity of 'big bats' was highest in summer (mean of 50 recordings per night), followed by spring (mean of 47 recordings per night) and autumn (mean of 29 recordings per night);

- **Myotis sp.: -** Myotis sp. accounted for approximately 4% (2,272) of all bat recordings and was recorded by all three detectors (**Chart 3.8**). This group was recorded most frequently near Pixie's Pond at Detector 1 (63%/1438 of recordings of this group), followed by scrub/open habitat at Detector 2 (29%/655) and Hankley Brake woodland at Detector 3 (8%/179). The group was recorded during all monitoring months, throughout spring, summer and autumn (**Chart 3.9**). Myotis sp. activity was relatively consistent across seasons: spring (mean of 29 recordings per night), followed by summer (27 per night) and autumn (21 per night) and was consistently highest at Detector 1 (Pixie's Pond) across seasons (**Charts 3.10** to **3.12**);

- **Long-eared bats (Plecotus sp.): -** Plecotus sp. was recorded occasionally, in low numbers (25 recordings), accounting for <0.1% of recordings (**Chart 3.8**). It was recorded most frequently at Detectors 1 (44%/11) and 2 (44%/11), followed by Detector 3 (12%/3). It was recorded in spring, summer and autumn (**Chart 3.9**), in all monitoring months except July. Plecotus sp. activity was slightly higher in summer (mean of 0.4 recordings per night), followed by spring

[17] The two most common species (common pipistrelle and soprano pipistrelle) omitted.

and autumn (mean of 0.2 recordings per night). This species was recorded at Detector 2 (east of Pixie's Mound) and Detector 3 (Hankley Brake) in spring, summer and autumn and was only recorded at Detector 1 (Pixie's Pond) in summer (**Charts 3.10** to **3.12**);

- **Greater horseshoe: -** This species was recorded occasionally, in low numbers (13 recordings), accounting for <0.1% of all recordings (**Chart 3.8**), typically one or two recordings each month, except May. It was recorded by all three detectors: Detector 1 (46%/6); Detector 2 (31%/4); and Detector 3 (23%/3). It was recorded at all three detector locations in summer, at detector locations 2 (east of Pixie's Mound) and 3 (Hankley Brake) in autumn and at none of the detector locations in spring (**Charts 3.10** to **3.12**);
- **Lesser horseshoe: -** This species was recorded in low numbers (166 recordings), accounting for approximately 0.3% of all recordings (**Chart 3.8**). Approximately half (82) of the recordings of this species were close to Pixie's Pond at Detector 1, with the other recordings associated with scrub and open habitat at Detector 2 (37%/62) and woodland at Detector 3 (13%/22). This species was recorded in spring, summer and autumn (**Chart 3.9**). Lesser horseshoe activity was highest in autumn (mean of 3.7 recordings per night), followed by spring (1.5 recordings per night) and summer (0.7 recordings per night)[18]. Higher levels of activity in autumn were largely attributable to relative peaks in the number of recordings at Detector 2 (25) in October and at Detector 1 in September (12) and October (15). This species was recorded at all three detector locations in spring, summer and autumn, with activity consistently highest at Detector 1 (Pixie's Pond) across seasons (**Chart 3.10** to **3.12**); and
- **Barbastelle: -** This species was recorded in low numbers (25 recordings), accounting for <0.1% of all recordings (**Chart 3.8**). It was recorded mainly at Detector 1 near Pixie's Pond (80%/20), with the other recordings at Detector 2 east of Pixie's Mound (20%/5). It was not recorded at Hankley Brake (Detector 3). This species was recorded in all seasons (**Chart 3.9**), with highest activity recorded in spring (mean of 1.5 recordings per night), followed by Autumn (0.03 recordings per night) and summer (0.02 recordings per night). A relative peak in barbastelle activity in spring at Detector 1/Pixie's Pond (**Chart 3.10**) is largely attributable to 12 recordings on one night in the middle of May, with fewer/occasional (one or two) recordings at Detector 1 in autumn (October) and at Detector 2 in spring (May) and early summer (June).

[18] It was recorded by all detectors in May, June, September and October and only by Detector 1 in July and only Detectors 1 and 2 in August.

Chart 3.8 Distribution of bat activity

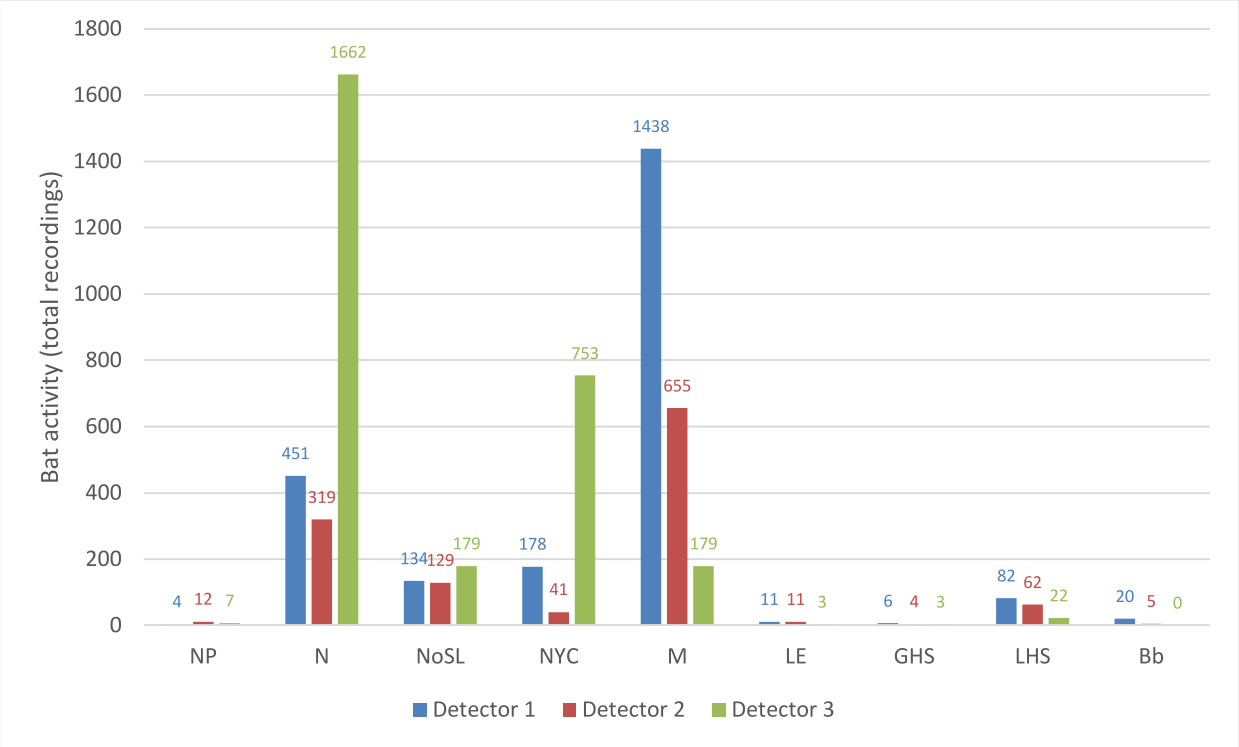
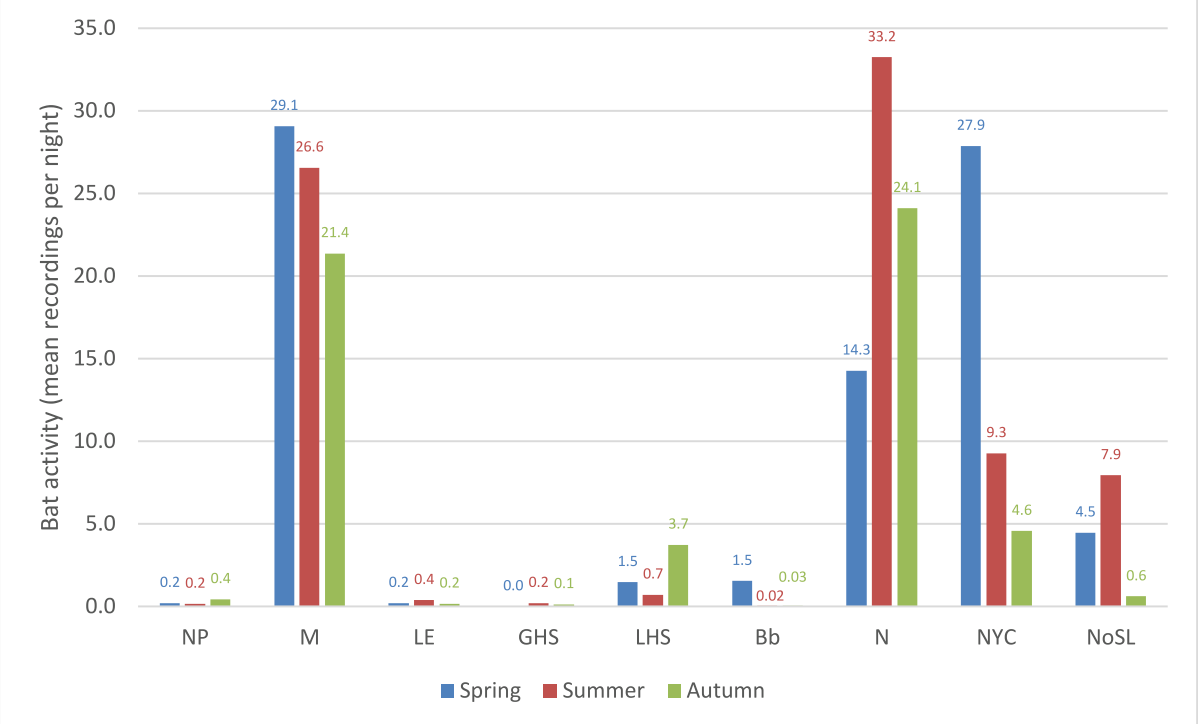


Chart 1.9 Seasonal variation in bat activity[19]



NP = Nathusius' pipistrelle; **N** = noctule; **NoSL** = noctule/serotine/Leisler's (**confirmed N excluded*); **NYC** = Nyctalus sp.; **M** = Myotis sp; **LE** = Plecotus sp.; **GHS** = greater horseshoe bat; **LHS** = lesser horseshoe; and **Bb** = barbastelle.

[19] Total recordings are shown/labelled to one or two decimal places to avoid obscuring mean recordings of <0.5/night.

Chart 3.10 Bat activity – **Spring**

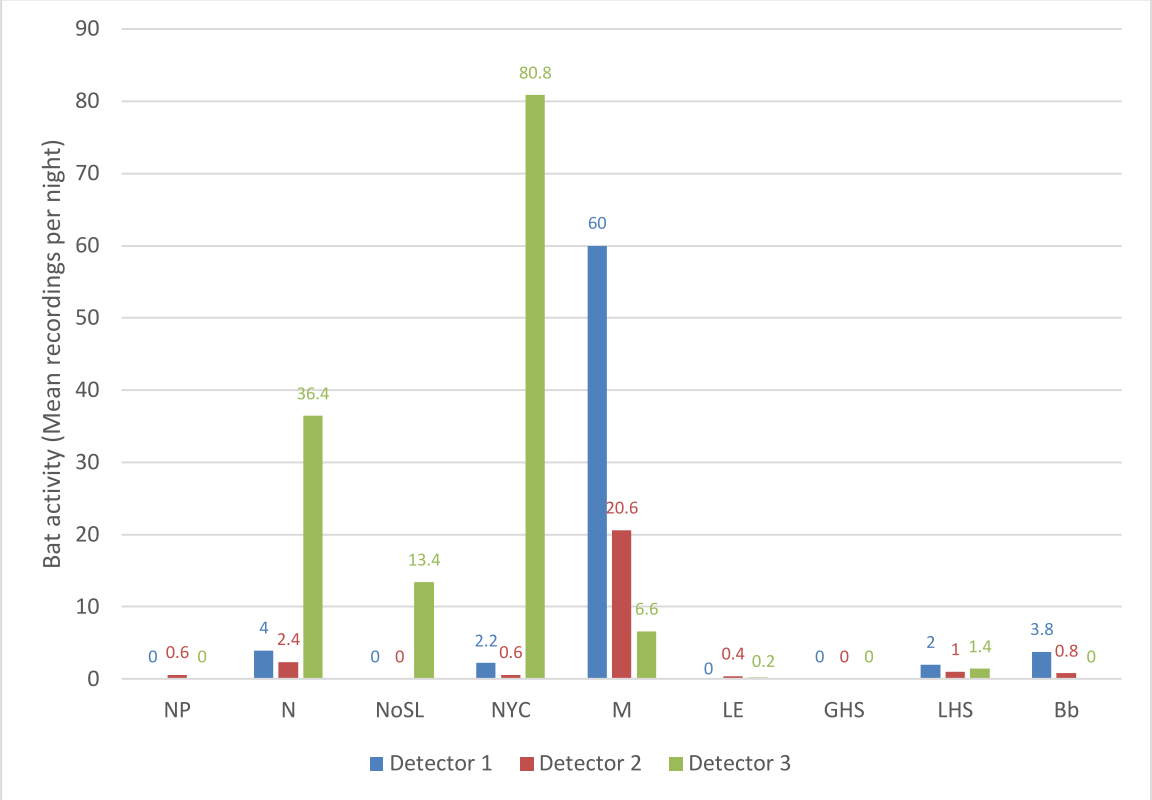
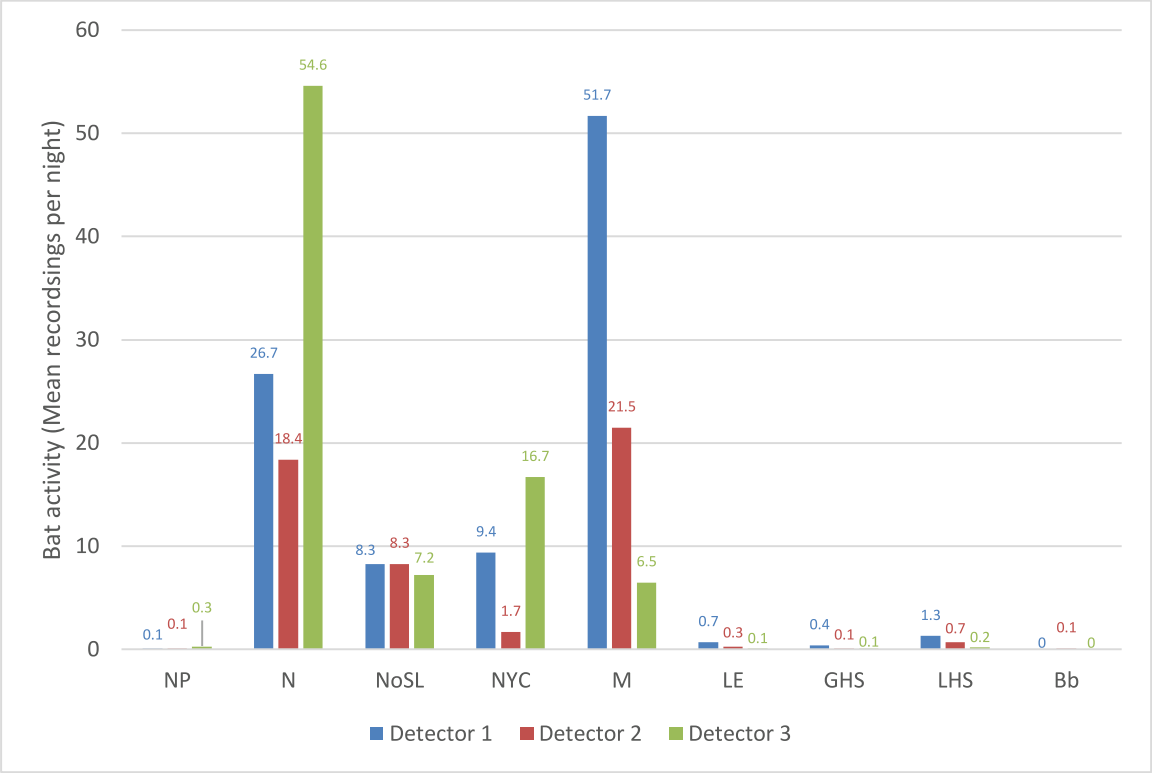
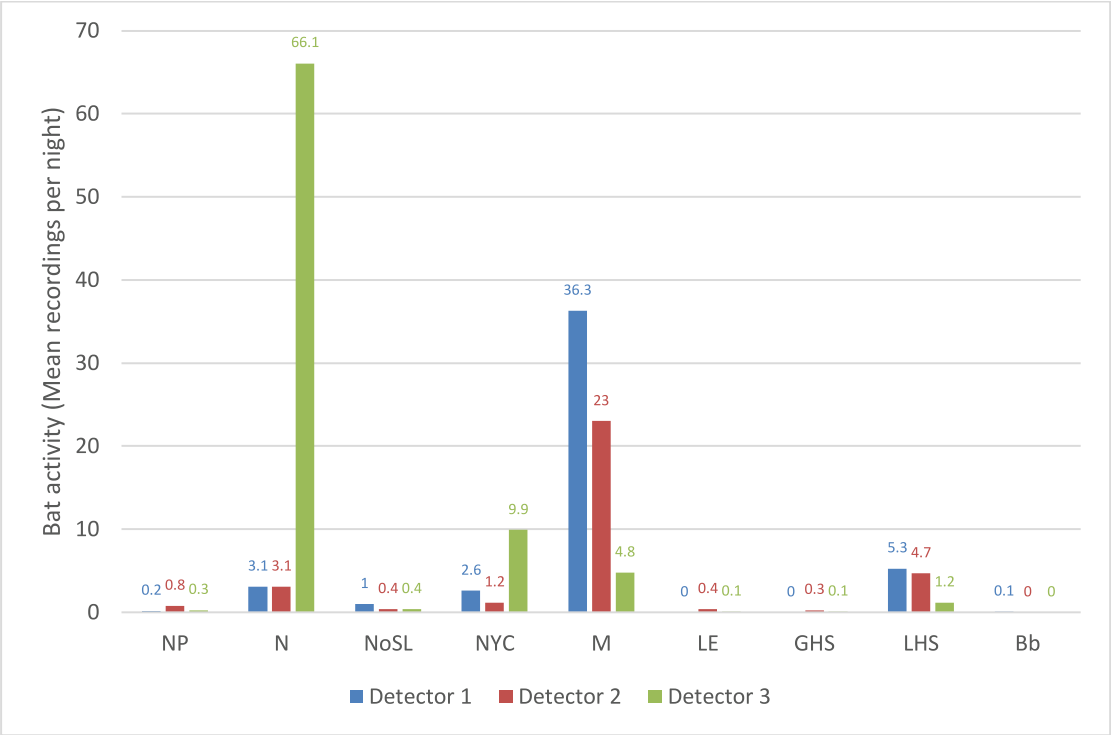


Chart 3.11 Bat activity – **Summer**



NP = Nathusius' pipistrelle; **N** = noctule; **NoSL** = noctule/serotine/Leisler's (**confirmed N excluded*); **NYC** = Nyctalus sp.; **M** = Myotis sp; **LE** = Plecotus sp.; **GHS** = greater horseshoe bat; **LHS** = lesser horseshoe; and **Bb** = barbastelle.

Chart 3.12 Bat activity – **Autumn**



NP = Nathusius' pipistrelle; **N** = noctule; **NoSL** = noctule/serotine/Leisler's (**confirmed N excluded*); **NYC** = Nyctalus sp.; **M** = Myotis sp; **LE** = Plecotus sp.; **GHS** = greater horseshoe bat; **LHS** = lesser horseshoe; and **Bb** = barbastelle.

Trapping survey

The survey results are included in **Table C.7** (**Appendix C**) and summarised in **Table 3.7.** Five bat species (31 bats) were caught across all trapping locations (**Figure 2.4**, **Appendix A)**:

- Soprano pipistrelle – a total of 20 bats (65% of all bats captured), including adults and juveniles, males and females, including seven pregnant females at HT2 (May) indicating a maternity colony nearby. All three males were caught at HT1;
- Common pipistrelle – adults and juvenile, males and females (including a male with signs of testicular development);
- Natterer's bat – an adult and a juvenile, both male;
- Daubenton's bat – a post-lactating female; and
- Greater horseshoe bat – a non-breeding male.

Table 3.7 Summary of trapping survey results

Survey area	CP			SP			NAT		D	GHS
	M	F	J	M	F	J	M	J	F	M
HT1	2		1	2	2	5			1	1
HT2	2	2			9	2	1	1		

CP = common pipistrelle; **SP** = soprano pipistrelle; **NAT** = Natterer's; **D**= Daubenton's; and **GHS** = greater horseshoe

4. Summary and conclusions

4.1 Current baseline

Bat habitats

The land within the HPB double security fence is of low suitability for bats, predominantly comprising hard standing and lacking semi-natural habitats that are favoured by foraging/commuting bats. The majority of the built structures are of negligible or low suitability for roosting bats, being of modern construction, lacking obvious potential roost features, with poor connectivity to surrounding semi-natural habitats and prone to disturbance from noise and artificial lighting, as well as being used by gulls. This is reflected in low levels of bat activity inside the HPB double security fence.

The semi-natural habitats in other parts of the Study Area, extending around the perimeter of the HPB security fence, are considerably more suitable for foraging and commuting bats, incorporating semi-improved grassland, tall ruderal vegetation, standing water (ponds/ditches), woodland (Hankley Brake to the east and Branland Copse to the west) and scrub, as well as mosaics of these habitat types. Wooded areas include suitable bat roost habitat, including trees and approximately 60 bat boxes. This is reflected in the notable assemblage of bats, comprising at least 11 species, that uses the Study Area as set out below[20].

Common pipistrelle

One of the most common and widespread bat species in the UK. Populations of this species previously declined, mainly due to modern agricultural practices, however monitoring data collected through the National Bat Monitoring Programme (NBMP) and in the field by professionals indicate that common pipistrelle populations are increasing (BCT 2017[21]). This species frequently roosts in buildings, making it vulnerable to renovation/demolition. It was the most abundant bat species recorded throughout the Study Area, accounting for 40,843 static detector recordings over the 35-day sample. Combined with soprano pipistrelle it accounted for approximately 90% of all bat activity (static/automated bat detector recordings) recorded within the Study Area. Peak common pipistrelle activity within the Study Area was recorded in spring, followed by summer and autumn. This species forages over a range of habitats, including woodland, hedgerows, grassland, farmland, as well as suburban and urban areas and within the Study Area was recorded most frequently around Pixie's Pond and Hankley Brake woodland. Small numbers (typically <10; sometimes including juveniles) are recorded annually (2016-2019) in bat boxes within the Study Area, although, to date, none have been within 50m of the HPB security fence.

Soprano pipistrelle

A species of Principal Importance for the Conservation of Biological Diversity and one of the most common and widespread UK bat species. Like common pipistrelle, populations of this species previously declined due to modern agricultural practices. This species also often roosts in buildings, making it vulnerable to renovation/demolition. However, monitoring data collected by the National Bat Monitoring Programme (NBMP) and in the field by professionals, indicate that soprano pipistrelle populations are increasing (BCT 2017). It was the second most abundant bat species recorded in the Study Area (6,254 static recordings over the 35-day sample). As for common pipistrelle, peak soprano pipistrelle activity within the Study Area was in

[20] Information on the ecology and national status/trends in bat populations is from the Bat Conservation Trust (BCT) website: https://www.bats.org.uk/about-bats/what-are-bats/uk-bats

[21] Bat Conservation Trust (2017). *The State of the UK's Bats – National Bat Monitoring Programme Population Trends* (http://www.bats.org.uk/pages/nbmp_reports.html)

spring, followed by summer and autumn. This species often forages over wetland habitats and was recorded most frequently around Pixie's Pond. Small numbers (typically <10) of soprano pipistrelle roost almost annually (2016-2019) in the bat boxes within the Study Area, including within 50m of the HPB security fence in 2017 and 2019. Seven pregnant soprano pipistrelles captured within a 2.5-hour period in May, in Hankley Brake, close to the HPB double security fence, signifies that a maternity roost is likely to be within 3km, reflecting the available information on the Core Sustenance Zone (CSZ)[22] of this species (Collins 2016), with juveniles also using the area around Pixies Pond from July.

Nathusius' pipistrelle

A rare species in the UK, with sparse records, albeit increasing in recent years. A migratory species, mostly recorded in autumn, although it is resident and breeds in the UK. This species often roosts in crevices, cracks in walls, under soffit boards, fissures in rocks and tree hollows, which are frequently in close proximity to lakes. This species is typically recorded foraging along rivers and canals, as well as over/around lakes, waterlogged areas and woodland rides/edges. Nathusius' pipistrelle (a single bat) was recorded roosting in a bat box in 2012 in the Study Area. During the survey period it occurred in low numbers (23 static detector recordings), mainly in late summer and autumn, at all three static detector locations (Pixie's Pond, Hankley Brake and between these two areas), most frequently associated with open habitat (scrub/tall ruderal vegetation) to the east of Pixie's Mound.

Noctule

A species of Principal Importance for the Conservation of Biological Diversity that is relatively widespread in the UK. It has become scarce in some areas of intensive agriculture, due to loss of suitable foraging habitat, such as permanent pasture and woodland edge/hedgerows. Loss of suitable trees for roosting is also a major factor. The UK population has been estimated at 50,000 (Battersby, 2005[23]), with more recent monitoring data (BCT 2017) indicating that populations are increasing. This species typically roosts in rot holes and woodpecker holes in trees and is rarely (single noctule in 2014) recorded in bat boxes within the Study Area. Noctule activity occurred throughout the Study Area, all through the spring, summer and autumn of the survey period, accounting for approximately 4% of bat activity (static detector recordings). Comparatively high noctule activity (68% of noctules recorded by static detector) is associated with woodland (Hankley Brake) within the Study Area, with the area around Pixie's Mound also being a focus of noctule activity. Noctule activity was highest in summer, followed by autumn and spring. This species was occasionally recorded around buildings (after dusk) close to the eastern and western limits of the double security fence.

Brown long-eared

A species of Principal Importance for the Conservation of Biological Diversity that is relatively widespread in the UK. It has declined in the UK due to changing land use, including modern agricultural practices and barn conversions. It roosts in trees and buildings and forages in open flight and low amongst foliage. Individual bats and/or droppings have occasionally been recorded in bat boxes within the Study Area, including at Hankley Brake in 2016 and Branland Copse in 2017. The low levels (<0.1% of static detector recordings) of Plecotus sp. activity within the Study Area, most frequently around Pixie's Pond and east of the pond (Static Detectors 1 and 2), are likely to be partly attributable to this species. A slight increase in Plecotus sp. activity was observed during the summer period, compared to the spring and autumn.

[22] Core Sustenance Zone (CSZ) is the area surrounding a roost, within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost (Collins 2016).
[23] Battersby, J. (Ed) & Tracking Mammals Partnership. 2005. UK Mammals: Species Status and Population Trends. First Report by the Tracking Mammals Partnership. JNCC/Tracking Mammals Partnership, Peterborough

Leisler's

A woodland species that often roosts in tree holes, as well as buildings, often moving between roosts after a period of days. A rare species in the UK that has occasionally been recorded in bat boxes within the Study Area, including in Hankley Brake in 2016. It appears to occur in low numbers within the Study Area, including a single pass of this species recorded in the summer, to the north east of Pixie's Mound in an area of scrub and tall ruderal vegetation. It is likely that Leisler's bat activity contributes to the recorded activity of 'big bats'[24] within the Study Area (which was mainly attributable to noctule) and was highest in summer, and then spring, and frequently associated with woodland (Hankley Brake).

Daubenton's

A widespread species in the UK, with populations increasing in parts of its range, potentially linked to the creation of artificial waterbodies. It tends to roost in humid, underground, sites near water (e.g. tunnels or bridges and caves, mines and cellars). It is occasionally found in buildings, often old stone structures and waterworks, although tree-roosts may be under-recorded. The capture of a post-lactating Daubenton's bat to the north of Pixie's mound, in late August, signifies the presence of a maternity colony, which is likely to be within 2km, reflecting the available information on the CSZ of this species (Collins 2016). It is likely that activity by Daubenton's bat contributes to Myotis sp.[25] activity recorded within the Study Area. This group was recorded at all three static detector locations, most frequently near Pixie's Pond, and throughout the study period[26]. It accounted for approximately 4% of all bat activity (static detector recordings) within the Study Area.

Natterer's

This species frequently flies amongst trees and sometimes over water and most summer roosts have been recorded in old stone buildings. A scarce, poorly known species that is widespread in the UK, which supports populations of international importance. This species has seldom been recorded in bat boxes within the Study Area (single record in 2012) and has been recorded in roosts to the west, associated with HPC. Two male bats were trapped in Hankley Brake in July and August respectively, one being a juvenile (July) within the northern part of Hankley Brake, potentially signifying the presence of a maternity colony within 4km, reflecting the available information on the CSZ of this species (Collins 2016). It is likely that activity by Natterer's bat, along with Daubenton's activity (as explained above), contribute to the Myotis sp.[27] activity recorded within the Study Area.

Lesser horseshoe

A species of Principal Importance for the Conservation of Biological Diversity that is rare in the UK. It is confined to Wales and Western England and has exhibited a decline in population and distribution, although there is evidence of a recent increase in numbers of this species in Wales. The decline is attributed mainly to intensive agricultural practices and disturbance of roosts. Summer colonies are usually found in roof spaces of larger rural houses and stable blocks. Lesser horseshoe bats feed amongst vegetation in sheltered lowland valleys, often taking prey to a temporary night roost. Low levels of lesser horseshoe bat activity were

[24] Serotine bats have been recorded roosting within 5km of the Study Area (including associated with HPC to the west) and may also have contributed to 'big bat' activity, although the surveys did not confirm the presence of this species within the Study Area.

[25] Whiskered bats have been recorded roosting within 5km of the Study Area (including associated with HPC to the west) and may also have contributed to Myotis sp. activity, although the surveys did not record/confirm the presence of this species within the Study Area.

[26] Elevated Myotis sp. activity (approximately 30% of static detector recordings) in open areas (scrub/tall ruderal) between Pixie's Mound and Hankley Brake, in August and September could signify mating activity.

[27] Whiskered bats have been recorded roosting within 5km of the Study Area (including associated with HPC to the west) and may also have contributed to Myotis sp. activity, although the surveys did not record/confirm the presence of this species within the Study Area.

recorded within the Study Area (0.3% (166) of static detector recordings) at all three static detector locations (Pixies Pond, habitats to the east of Pixie's Pond and Hankley Brake woodland) in May, June, September and October. It was recorded only at Pixie's Pond in July and at Pixies Pond and east of Pixie's Mound in August. The area around Pixie's Pond is a focus of activity for this species, with approximately half (82 static detector recordings) of lesser horseshoe recordings associated with this area. Within the Study Area, lesser horseshoe activity was highest in autumn, followed by spring and summer. Relative peaks in lesser horseshoe activity occurred to the east of Pixie's Mound in October (25 recordings) and at Pixie's Pond in September (12 recordings) and October (15 recordings), potentially signifying a mating area nearby. Occasional lesser horseshoe activity was recorded at the eastern edge of Branland Copse, south west of Hankley Brake and at the eastern edge of Hankley Brake.

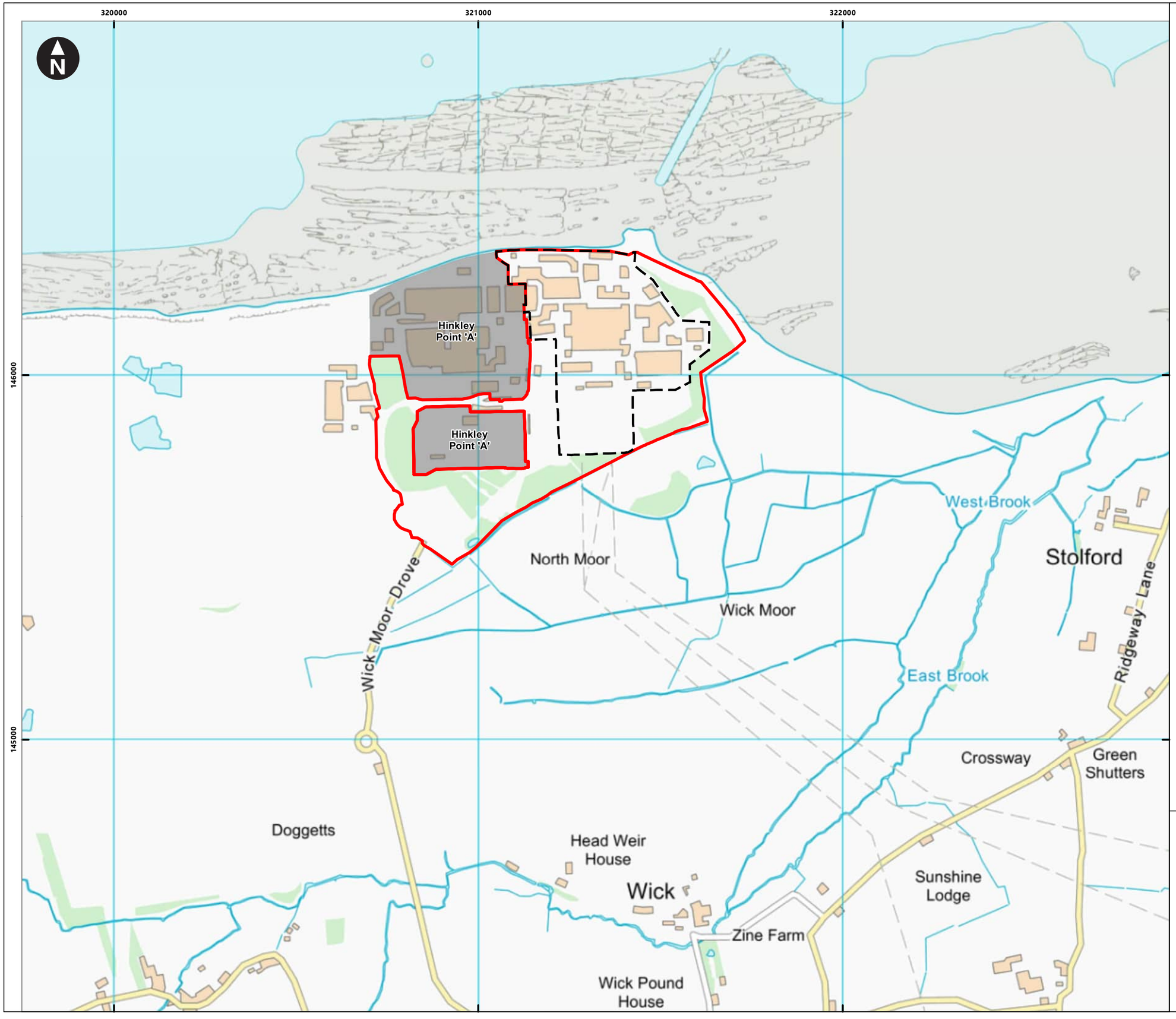
Greater horseshoe

A species of Principal Importance for the Conservation of Biological Diversity that has been subject to a steep decline and is now rare and confined to south west England and south Wales. The decline is likely to be attributed mainly to intensive agricultural practices, including loss of permanent pasture, and disturbance of roosts. Hibernating in caves, disused mines, cellars and tunnels, few use caves in summer and breeding females mainly use buildings. This species flies low, sometimes from a regular perch, to catch insects. Low levels of greater horseshoe bat activity (<0.1% (13) of static recordings) were recorded within the Study Area, typically with one or two recorded each month (except May). These were recorded at Pixies Pond (adult male trapped in May), Hankley Brake and between these two areas (all three static detector locations), as well as at the eastern edge of Branland Copse.

Barbastelle

A species of Principal Importance for the Conservation of Biological Diversity and a rare species that is found in central and southern England, as well as Wales. It prefers pastoral landscapes with deciduous woodland, wet meadows and water bodies. It is poorly known, with few breeding sites having been identified. Low levels of barbastelle bat activity were recorded within the Study Area (<0.1% (25) of bats recorded by static detector), mainly associated with Pixie's Pond in spring/May (80% of Barbastelle recordings, including a peak of 12). This species was also occasionally recorded (one or two recordings) at Pixie's Pond in autumn (October) and in the habitats directly to the east of Pixie's Mound in spring (May) and early summer (June), as well as near ditches within the south-east limit of the Study Area. The Study Area is potentially within the CSZ of the barbastelle roosts located within Exmoor and Quantock Oakwoods SAC, with this species being a primary reason for the selection/designation of this SAC. The CSZ for this species is at least 6 km (Collins 2016), whilst the SAC is 6.8 km from the Study Area. It is feasible therefore that barbastelles from the SAC could visit the Study Area.

Appendix A
Figures



Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence

0 100 200 300 400 500 m

Scale at A3: 1:10,000

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 1.1
Site location

November 2020

wood.

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321000

321500

146000

145500

Boulders, Mud and Rock

Rock

Shingle

Mean High Water

Outfalls

7.8m

Mast (telecommunication)

Hinkley Point 'A'

Hinkley Point 'A'

El Sub Sta

Branland Copse

Pixies Mound

Pixie's Pond

Bowl barrow

Tank

Travelling Crane

Tanks

Slipway

7.9m

Track

Hankley Brake

Chimney

Outfall

Sewage Treatment Works

Sewage Works

Sluice

FB

Drain

Pond

Path (um)

ETL

North Moor

11.2m

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence
- 50m perimeter around security fence and Sewage Treatment Works
- Hinkley Local Wildlife Site (LWS)
- Building

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 2.1
Study Area

November 2020

wood.

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321000

321500

146000

145500

Boulders, Mud and Rock

Rock

Shingle

Mean High Water

Slipway

Tank

Travelling Crane

Tanks

Chy

Track

7.9m

Outfalls

7.8m

Hankley Brake

Chimney

Outfall

Mast (telecommunication)

Hinkley Point 'A'

A

B

C

D

11.0m

WB

Tanks

El Sub Sta

17.0m

Branland Copse

16.6m

Mast

Path (um)

Issues

Drain

Pond

Sewage Works

FB

Sluice

Pixies Mound

Pixie's Mound Tumulus

12.0m

11.2m

ETL

North Moor

6.7m

Key

Hinkley Point B Nuclear Site Licence boundary

Double security fence

Transect A

Transect B

Transect C

Transect D

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 2.2
Dawn re-entry survey (transects)

November 2020

wood.

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321000

321500

146000

145500

Boulders, Mud and Rock

Rock

Shingle

Mean High Water

Outfalls

7.8m

Slipway

7.9m

Tank

Travelling Crane

Tanks

Track

Hankley Brake

Chimney

Outfall

M-HW

Mast (telecommunication)

Hinkley Point 'A'

Tanks

FB

Sub Sta

Static detector 3

Hinkley Point 'A'

Branland Copse

17.0m

16.6m

Mast

Path (um)

Static detector 2

Pixies Mound

Pixie's Mound Tumulus

Pixie's Pond

12.0m

11.2m

Static detector 1

Drain

Track

North Moor

Issues

Sewage Works

Pond

Sluice

ETL

Key

Hinkley Point B Nuclear Site Licence boundary

Double security fence

Survey transect

Static detector location

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 2.3
Bat activity survey

November 2020

wood.

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321000

321500

146000

145500

Hinkley Point 'A'

Hinkley Point 'A'

Hankley Brake

Branland Copse

Pixies Mound

North Moor

HT1

HT2

HT1a

HT1b

HT1c

HT2a

HT2b

HT2c

Pixie's Pond

Mean High Water

Shingle

Rock

Slipway

Outfalls

Travelling Crane

Tank

Tanks

Chimney

Track

Drain

Path (um)

Mast (telecommunication)

Mast

El Sub Sta

Sewage Works

Pond

Sluice

FB

ETL

Pixie's Mound Tumulus

Key

Hinkley Point B Nuclear Site Licence boundary

Double security fence

Bat trapping sample area

HT1

HT2

Harp trap location

a) May
b) July
c) August

0 50 100 150 200 m

Scale at A3: 1:3,500

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 2.4
Trapping locations

November 2020

wood.

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 3.1a
Statutory biodiversity sites (designated for bats)

November 2020

wood.

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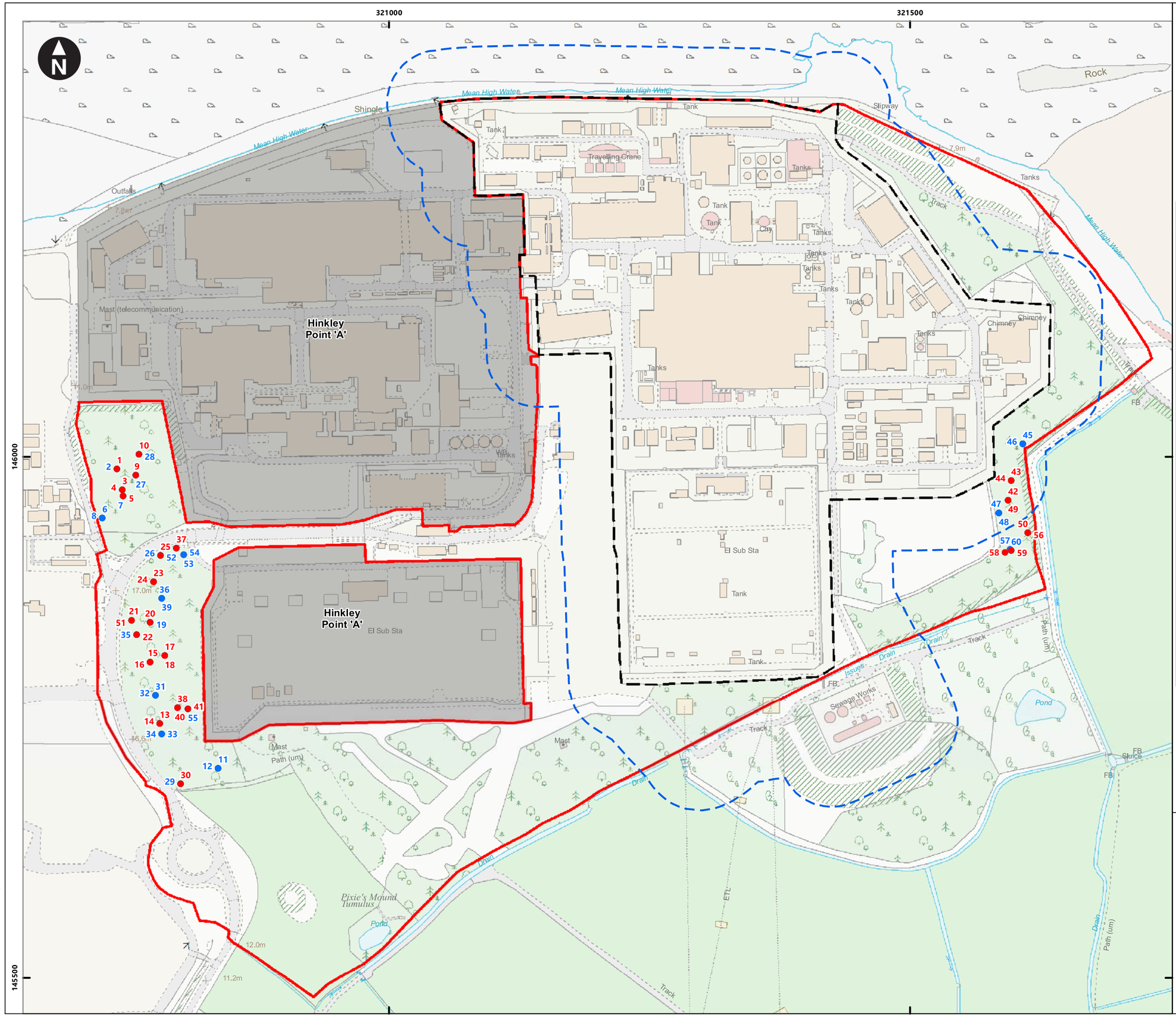

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence
- 50m perimeter around security fence and Sewage Treatment Works
- Bat box (bats recorded)
- Bat box (no bats recorded)

BAT RECORDS IN BAT BOXES (2016 - 2019)

Box	2016	2017	2018	2019
1	CP (f & j)	CP (m & f)		SP (f x2)
3			CP (x3)	UBD, Nycteribiid pupal cases
4		CP (f)		
5	CP (f and j)			CP (f x4)
9	CP (f x3; m x1)	CP (f x2)		CP (f)
10		CP (m)		
13	UBD	BLE droppings		
14	UBD			
15	CP (f x3, m x1)			UBD
16		SP (f x2; m x1)		
17	UBD			
18	UBD			
20		SP (f & m)		SP (m x2)
21				UBD
22		BLE droppings		
23			UBD	UBD
24		UBD		
25	UBD			
30	CP (m)			
37	UBD	UBD	SP (x3)	CP (m x3)
38				UBD
40			SP & UBD	SP (f x3)
41	CP (m)		UBD	SP (f x2)
42		SP (f)		
43				UBD
44				UBD
49				SP (f)
50	L (m & f)			SP (m x2)
51		UBD		
56			UBD & staining	
58				UB
59	BLE			UB

CP = Common pipistrelle
BLE = Brown long-eared
UB - unidentified bat
f = female
m = male
j = juvenile

SP = Soprano pipistrelle
L = Leisler's
UBD - unidentified bat droppings

0 50 100 150 200 m

Scale at A3: 1:3,500

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 3.1b
Bat box inspections (2016 - 2019)

November 2020

wood.

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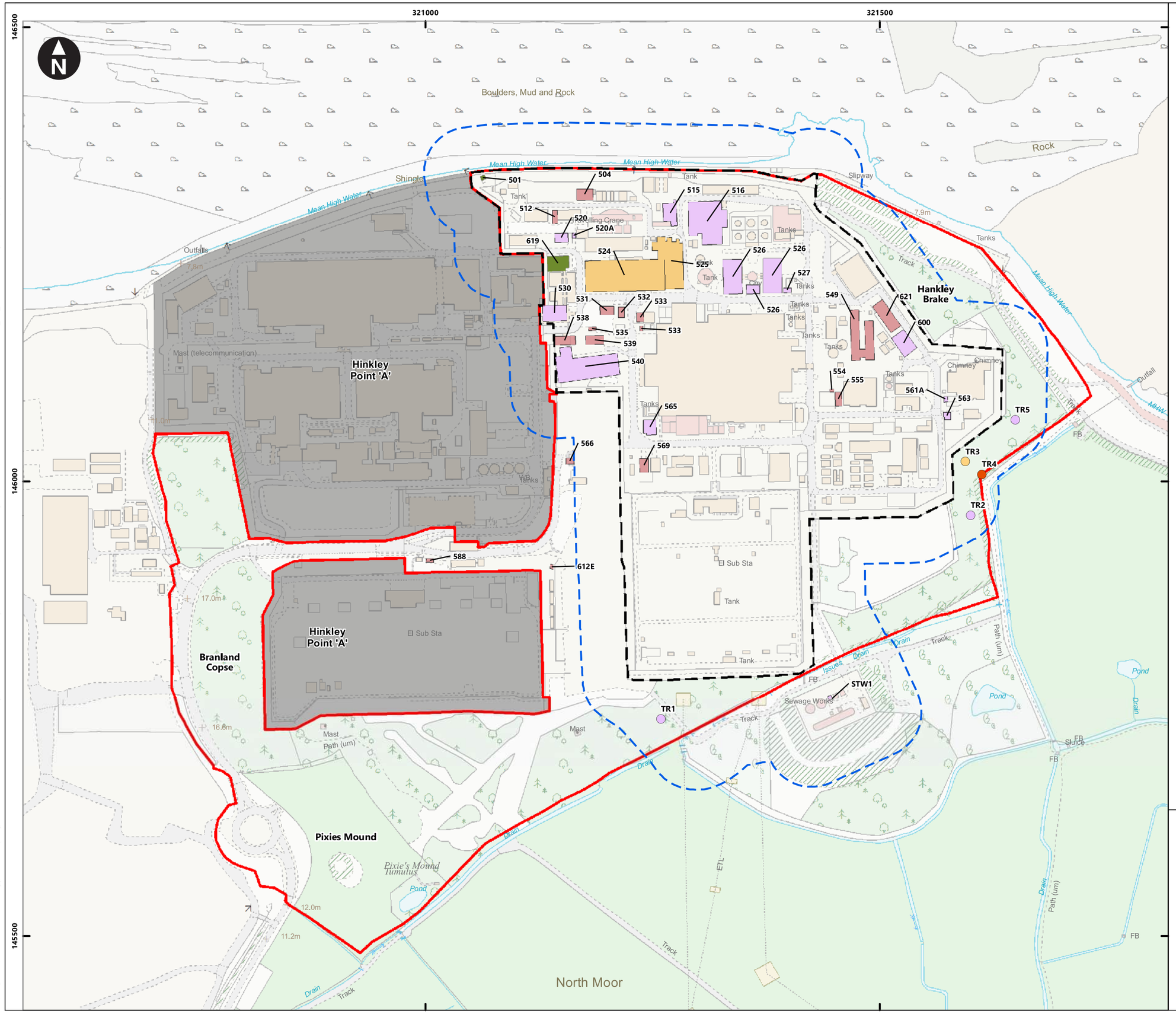

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence

Bat Roost Suitability

- Hibernacula
- Moderate
- Low
- Low (walked transect)

Tree Roost Suitability

- Confirmed roost
- Moderate
- Low

Note
Other buildings and trees within the survey area have negligible roost suitability.

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 3.2
Preliminary roost assessment

November 2020

wood.

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321000

321500

146000

145500

N

Hankley Brake

Branland Copse

Pixies Mound

Pixies Pond

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence
- Barbastelle *(Barbastella barbastellus)*
- Myotis sp.
- Leisler's *(Nyctalus leisleri)*
- Noctule *(Nyctalus noctula)*
- Nyctalus sp.
- Nyctalus/Eptesicus sp.
- Pipistrellus sp.
- Nathusius' pipistrelle *(Pipistrellus nathusii)*
- Pipistrellus pipistrellus
- Common pipistrelle (Pipistrellus pipistrellus) / Nathusius' pipistrelle *(Pipistrellus nathusii)*
- Common pipistrelle (Pipistrellus pipistrellus) / Soprano pipistrelle *(Pipistrellus pygmaeus)*
- Soprano pipistrelle *(Pipistrellus pygmaeus)*
- Plecotus sp.
- Greater horseshoe *(Rhinolophus ferrumequinum)*
- Lesser horseshoe *(Rhinolophus hipposideros)*

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report: Bats

Figure 3.3
Bat activity heat map

November 2020

wood.

321000

321500

146000

145500

N

Hankley Brake

Branland Copse

Pixies Mound

Pixie's Pond

Key

- Hinkley Point B Nuclear Site Licence boundary
- Double security fence
- Barbastelle *(Barbastella barbastellus)*
- Myotis sp.
- Leisler's *(Nyctalus leisleri)*
- Noctule *(Nyctalus noctula)*
- Nyctalus sp.
- Nyctalus/Eptesicus sp.
- Pipistrellus sp.
- Nathusius' pipistrelle *(Pipistrellus nathusii)*
- Common pipistrelle (Pipistrellus pipistrellus) / Nathusius' pipistrelle *(Pipistrellus nathusii)*
- Common pipistrelle (Pipistrellus pipistrellus) / Soprano pipistrelle *(Pipistrellus pygmaeus)*
- Soprano pipistrelle *(Pipistrellus pygmaeus)*
- Plecotus sp.
- Greater horseshoe *(Rhinolophus ferrumequinum)*
- Lesser horseshoe *(Rhinolophus hipposideros)*

0 50 100 150 200 m

Scale at A3: 1:4,000

Hinkley Point B Decommissioning EIA
Baseline Report : Bats

Figure 3.4
Bat activity heat map (common pipistrelle omitted)

November 2020

wood.

Appendix B
Relevant legislation (bats)

All British bat species are listed in Schedule 5 of *The Wildlife and Countryside Act 1981 (as amended)*. The Act transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the 'Bern Convention'). All British bat species are listed on Schedule 5 of the Act in respect of Section 9, which makes it an offence, *inter alia*, to:

- Intentionally or recklessly kill, injure, or take (handle) a bat;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection; or
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.

British bat species receive further protection under Regulation 43 of *The Conservation of Habitats and Species Regulations 2017 (as amended)*, which make provision for the purpose of implementing European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992. All British bat species are listed on Annex IV of the Directive, which means that member states are required to put in place a system of strict protection as outlined in Article 12, and this is done through inclusion on Schedule 2 of the Regulations, which makes it an offence, *inter alia*, to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb a bat, in particular any disturbance which is likely:
  - (a) To impair their ability
    - (i) To survive, to breed or reproduce, or to rear or nurture their young, or
    - (ii) To hibernate or migrate
  - (b) To affect significantly the local distribution or abundance of the bat species; or
- Damage or destroy a breeding site or resting place of a bat.

In addition, five British bat species are listed on Annex II of the *Habitats Directive*. These are:

- Greater horseshoe bat;
- Lesser horseshoe bat;
- Bechstein's bat;
- Barbastelle; and
- Greater mouse-eared bat.

As Annex II species under the Habitats Regulations, the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favourable conservation status. Where bats occur outside SACs the level of legal protection that these species receive is the same as for other bat species, however their inclusion on Annex II serves to underline their conservation significance and it is therefore less likely that adequate mitigation for loss of roosts of these species will be possible.

For projects in England: Further details of the above legislation, and of the roles and responsibilities of developers and planners in relation to bats, can be found in Natural England's *Bat Mitigation Guidelines*, which can be viewed on the NE website: https://www.gov.uk/guidance/bats-surveys-and-mitigation-for-development-projects

Appendix C
Survey results and survey parameters

Table C.1 Bat activity surveys: survey parameters

Date	Survey type	Structure ref	Sunset/ sunrise time	Survey times	Temperature (start-end °C)	Relative humidity (start-end %)	Rainfall	Cloud cover (%)	Wind Speed	Moon (% where visible)
09/05/19	Activity	N/A	20:46	20:46-23:49	9-8	65-85	None	70	Moderate	20
16/05/19	Activity	N/A	20:57	20:57-23:57	14	61-67	None	95	Calm	Not visible
23/05/19	Activity	N/A	21:08	21:08-00:08	15-12	80	None	60	Moderate	Not visible
29/05/19	Trapping	N/A	21:14	21:15-04:08	18-16	91-96	None	75	Light	25
06/06/19	Activity	N/A	21:27	21:27-00:27	14	66	None	80	Calm	10
20/06/19	Activity	N/A	21:31	21:31-00:31	16-13	62	None	50	Light	90
03/07/19	Emergence	515	21:30	21:00-23:15	22-19	59-60	None	0	Light	New moon
04/07/19	Activity	N/A	21:30	21:30-00:30	19-15	57-51	None	5	Calm	5
05/07/19	Activity	N/A	05:05	03:05-05:05	15	66	None	10	Calm	Not visible
09/07/19	Re-entry	Transect A	05:07	02:07-05:07	14-13	60-90	None	100	Calm	25
11/07/19	Emergence	516	21:25	20:55-22:55	18-16	75-84	None	90	Light	75
17/07/19	Re entry	Transect B	05:16	02:16-05:16	13-11	89-94	None	100	Light	Not visible
18/07/19	Activity	N/A	21:18	21:18-00:18	18	62	None	20	Moderate	100
19/07/19	Activity	N/A	05:19	02:19-05:19	18	59	Light[1]	80	Calm	100
22/07/19	Trapping	N/A	21:19	21:40-04:30	21-19	77-86	None	100	Calm	90

Date	Survey type	Structure ref	Sunset/ sunrise time	Survey times	Temperature (start-end °C)	Relative humidity (start-end %)	Rainfall	Cloud cover (%)	Wind Speed	Moon (% where visible)
23/07/19	Emergence	520	21:12	20:42-22:42	27-25	60-78	None	80	Light	Not visible
24/07/19	Emergence	530	21:11	20:41-22:44	25-19	64-90	None	10	Light	Not visible
25/07/19	Emergence	600	21:09	20:39-22:39	24-20	68-74	None	10	Light	Not visible
01/08/19	Activity	N/A	20:58	20:58-23:58	20	75-80	None	5	Light	New moon
07/08/19	Emergence	526	20:49	20:19-22:19	19-15	82-82	None	10	Moderate	50
12/08/19	Emergence	540	20:41	20:11-21:56[2]	18-16	58.7-rain	Heavy rain at end	10	Moderate	95
13/08/19	Emergence	563	20:37	20:07-22:07	14-13	87-94	None	50	Light	Not visible
16/08/19	Re-entry	Transect C	05:59	02:59-06:00	14	72	None	80	Calm	100
20/08/19	Activity	N/A	20:24	20:24-23:24	15-13	70-86	None	75	Light	80
23/08/19	Re-entry	Transect D	06:11	03:11-06:11	12	72	None	80	Light	65
30/08/19	Trapping	N/A	20:03	20:30-02:00	16-15	78-95	None	<10	Calm	New moon
04/09/19	Activity	N/A	19:50	19:50-22:50	12-10	61	None	20	Strong	35
12/09/19	Emergence	524/525	19:33	19:13-21:03	17 - 16	80 - 95	None	100	Moderate	Not visible
18/09/19	Activity	N/A	19:21	19:21-22:21	16-14	62-73	None	0	Calm	85
02/10/19	Activity	N/A	18:48	18:48-21:48	15-13	62	None	15	Calm	20
15/10/19	Activity	N/A	18:20	18:20-21:20	11-11	75-94	Showers	75	Moderate	Full moon

[1] Light rain briefly at 03:42, 04:02 and 04:25 - no effect on insect activity was noted
[2] Survey halted early due to sudden onset of heavy rain.

Table C.2 Assessment (roost suitability) of built structures within HPB station

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
501	1 storey; 30-50 years	Concrete	Plastic	None	None	None	Hibernacula
502	1 Storey; 30-50yrs	Breeze block	Concrete	None	None	None	Negligible
503	1 Storey; 5-10 yrs	Metal	Inflatable plastic	None	None	None	Negligible
504	1 Storey	Metal with concrete cladding	Metal	Gaps behind metal cladding	Gaps at 2 m	None	Low (transect)
505c	1 Storey	Metal	Metal	None	None	None	Negligible
505 A&B	1 Storey; 10-20 years	Metal	Metal	None	None	None	Negligible
506	30-50yrs	Breeze block	Moulded plastic	None	None	None	Negligible
507	1 Storey; 30-50yrs	Breeze block	Metal	None	None	None	Negligible
508	1 storey; 30-50yrs	Breeze block	Metal	None	None	None	Negligible
510	1 storey; 30-50 years	Metal	Metal	None	None	None	Negligible
511	1 storey; 30-50 years	Breeze block	Metal	None	None	None	Negligible
512/513	1 Storey; 30-50yrs	Breeze block	Moulded plastic	Under facias	Gaps under facia boards, all around building at 2 m	None	Low (transect)
514	1 storey; 30-50yrs	Breeze block	Concrete	None	None	None	Negligible

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
515	1 storey; 30-50 years	Concrete metal clad	Metal	None	Hole on east side, -1.5 m high. Gaps in facia board at 2 m.	None	Low
516	2 storey; 30-50 years	Breeze block	Metal	None	Gaps in mortar (north) at 2m	None	Low
517	1 Storey; 30-50 years	Concrete	Concrete	None	None	None	Negligible
518	1 Storey; 30-50 years	Breeze block	Metal	None	None	None	Negligible
519	1 Storey; 10-20 years	Plastic	Metal	None	None	None	Negligible
520	1 Storey; 30-50 years	Breeze block	Plastic and metal	Facias	Behind facia board on all aspects 3 m height	None	Low
520A	1 Storey; 30-50 years	Breeze block	Plastic and metal	Facias	Behind facia board on all aspects 2 m height	None	Low
521	1 storey; 30-50 years	Breeze block	Corrugated metal	None	None	None	Negligible
522	3 storey; 30-50 years	Concrete, metal and glass	Metal/moulded plastic	None	None	None	Negligible
522B/C	1 storey; 30-50 years	Metal	Metal	None	None	None	Negligible
523	2 Storey; 30-50 years	Concrete; metal clad	Metal?	None	None	None	Negligible
524/525	3 storey; 30-50 years	Breeze block, metal and glass	Metal/moulded plastic	Expansion joints	Gaps in expansion joints (fallen mastic) 2-10 m, all aspects	None	Moderate
526/527	2-5 storey; 30-50 years	Concrete	Moulded plastic	None	Gaps and holes in walls, various heights and all aspects	None	Low
528	2 storey; 10 years	Breeze block	Metal	None	None	None	Negligible

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
529	2 storeys; 20-30 years	Plastic and metal	Plastic and metal	None	None	None	Negligible
530	4 storeys; 30-50 years	Concrete	Flat, moulded plastic	Flashing	Gaps under flashing (E & S aspects)	None	Low
531	1 storey; 30-50 years	Breeze blocks	Plastic moulded	None	Gaps in walls	None	Low (transect)
532	1 storey; 30-50 years	Breeze blocks	Plastic moulded	None	Gaps in walls	None	Low (transect)
533	1 storey; 30-50 years	Breeze blocks	Plastic moulded	None	Gaps in walls	None	Low (transect)
534	1 storey; 10-20 years	Plastic	Plastic moulded	None	None	None	Negligible
535	1 storey; 30-50 years	Breeze blocks	Plastic moulded	None	Gaps in walls	None	Low (transect)
536	Metal structure	Metal	None	None	None	None	Negligible
537	Metal structure	Metal	None	None	None	None	Negligible
538	1 storey; 30-50 years	Breeze blocks	Plastic moulded	None	Gaps in walls	None	Low (transect)
539	1 storey; 30-50 years	Breeze blocks	Plastic moulded	None	Gaps in walls	None	Low (transect)
540	3 storeys; 20-30 years	Brick	Metal	None	None	None	Low
541/542/543	6-8 storeys; ca.50 years	Concrete, metal and glass	Metal/moulded plastic	None	None	None	Negligible
544	1 storey, 30-50 years	Concrete	Metal	None	None	None	Negligible
545/546	2 Storey; 30-50 years	Breeze block	Moulded plastic	None	None	None	Negligible
547	1 Storey; 30-50 years	Concrete	Metal	None	None	None	Negligible
548	1 storey; 10 20 years	Breeze block	Moulded plastic	None	None	None	Negligible

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
549	2 storey; 10-20 years	Plastic	Plastic	None	minor gaps in facia (3 m height)	None	Low (transect)
553	1 Storey; 20-40 years	Breeze block	None	None	None	None	Negligible
554/555	1 Storey; 30-50 years	Breeze block	Metal	None	Cavities in the mortar at various heights, all aspects	None	Low (transect)
556	2 storeys; 5 Years (rebuilt)	Breeze block and metal cladding	Metal	None	None	None	Negligible
561	2 storey; 30-50 years	Breeze block	Moulded metal	None	None	None	Negligible
561A	1 Storey; 30-50 years	Breeze block	Felt	Facia boards	Behind facia board at 2 m on SE aspect	None	Low
563	1 Storey; 30-50 years	Breeze block	Metal	None	None	None	Low
565	2 Storey; 30-50 years	Breeze block	Metal	Flashing	Gaps under flashing and in walls on all aspects	None	Low
566	2 Storeys; 30-50 years	Breeze block	Moulded plastic	None	Gap in E wall at 3 m	None	Low (transect)
569	2 storey; 20-40 years	Breeze block	Moulded plastic	None	Hole on south-east side wall at 1.5 m height	None	Low (transect)
570	2 storey; 20-40 years	Breeze block	Moulded plastic	None	None	None	Negligible
571	1-2 storey; 5-10 years	Plastic and metal	Moulded plastic	None	None	None	Negligible
572	1 Storey; 30-50 years	Breeze block	Metal	None	None	None	Negligible
574	1-2 storey; 5-10 years	Plastic and metal	Moulded plastic	None	None	None	Negligible

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
575	2 storey; 10-20 years	Metal	Metal	None	None	None	Negligible
576	1 Storey; 5-10 years	Metal	Metal	None	None	None	Negligible
577-579	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
580	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
581	1 Storey; 5-10 years	Metal	Metal	None	None	None	Negligible
585	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
586	1 Storey; 5-10 years	Metal	Metal	None	None	None	Negligible
587	1 storey; 20-40 years	Brick	Moulded plastic	None	None	None	Negligible
588	1 storey; 20-40 years	Breeze block	Metal	None	Gap in joint between wall and roof	None	Low (transect)
589	1 storey; 20-40 years	Breeze block	Moulded plastic	None	None	None	Negligible
590	2 Storeys; 10-20 years	Plastic	Plastic	None	None	None	Negligible
590A	1 Storey; 5 years	Plastic	Plastic	None	None	None	Negligible
593/594	Single storey; 5-10 years	Metal	Metal	None	None	None	Negligible
595	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
600	1 storey; 10-20 years	Breeze block	Metal	Facia boards	Behind facia board at 2 m on NE aspect	None	Low
602	1 Storey; 10-20 years	Concrete	Metal	None	None	None	Negligible

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
611	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
612 A-D	1 Storey; 5-10 years	Plastic and metal	Plastic	None	None	None	Negligible
612 E	1 Storey; 5-10 years	Brick	Metal	None	Gaps in mortar	None	Low (transect)
613A/B	1 Storey; 5-10 years	Metal	Metal	None	None	None	Negligible
619	1 Storey+ cellar; 30-50 years	Brick	Plastic and metal	Facias	Behind facia board, and crack, 1- 3 m on E and N aspects	None	Low/ Hibernacula
621	2 storey; 10-20 years	Plastic	Plastic	None	Slight gaps in facia at 3 m height	None	Low (transect)
623	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
624	1 Storey; 5-10 years	Metal	Metal	None	None	None	Negligible
625	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
626	1 Storey; 5-10 years	Metal	Metal	None	None	None	Negligible
627	2 Storey; <5 years	Metal	Metal	None	None	None	Negligible
628	1 storey; <10 years	Plastic and metal	Plastic	None	None	None	Negligible
631A/B	1 storey; 5-10 years	Metal	Metal	None	None	None	Negligible
631	1 storey; 30-50 years	Concrete	Part missing, corrugated metal	None	None	None	Negligible
632	1 storey; 30-50 years	Plastic	Plastic	None	None	None	Negligible
633	1 Storey; 30-50yrs	Plastic	Moulded plastic	None	None	None	Negligible

Building (Figure 3.2)	No. storeys & est. age	Wall construction	Roof construction	External features	Potential roost access	Evidence of bats?	Roost suitability (transect survey?)
634	1 storey; < 5 years	Metal	Metal	None	None	None	Negligible
STW1	1 storey; 5-10 years	Large bricks	Bitumen	Air bricks	Air bricks (beneath roofline)	None	Low
STW2	1 storey; 5-10 years	Large bricks	Bitumen	None	None	None	Negligible

Table C.3 Dusk emergence and dawn re-entry survey results (built structures)

Structure Ref (Figure 3.2)	Emergence survey Results	Re-entry survey results	General notes on bat activity nearby during survey work, including earliest/latest timings of bat registrations
504	-	No bat re-entry recorded.	No activity recorded
512/513	-	No bat re-entry recorded.	No activity recorded
515	No bat emergence recorded.	-	No activity recorded
516	No bat emergence recorded.	-	No activity recorded
520	No bat emergence recorded.	-	No activity recorded
520A	No bat emergence recorded.	-	No activity recorded
524/525	No bat emergence recorded.	-	No activity recorded
526/527	No bat emergence recorded.	-	No activity recorded
530	No bat emergence recorded.	-	Noctule 71 minutes after sunset
531	-	No bat re-entry recorded.	No activity recorded
532	-	No bat re-entry recorded.	No activity recorded
533	-	No bat re-entry recorded.	No activity recorded
535	-	No bat re-entry recorded.	No activity recorded
538	-	No bat re-entry recorded.	No activity recorded
539	-	No bat re-entry recorded.	No activity recorded
540	No bat emergence recorded.	-	No activity recorded
549	-	No bat re-entry recorded.	No activity recorded
554/555	-	No bat re-entry recorded.	No activity recorded
561A	No bat emergence recorded.	-	No activity recorded
563	No bat emergence recorded.	-	Single Noctule pass
565	No bat emergence recorded.	-	No activity recorded
569	-	No bat re-entry recorded.	No activity recorded
600	No bat emergence recorded.	-	Noctule 2 minutes before sunset
619	No bat emergence recorded.	-	No activity recorded
621	-	No bat re-entry recorded.	No activity recorded
STW1	No bat emergence recorded.	-	No activity recorded

Table C.4 Summary of manual bat activity (transect) survey results (number of passes)

Date	CP	SP	P	NP	CP/NP	N	L	NYC	NoSL	LE	M	Bb	GHS	LHS	Bat	TOTAL
09/05/19	49	0	2	0	0	1	0	0	0	0	0	0	0	0	0	52
16/05/19	27	4	1	0	0	0	0	0	0	1	0	0	0	0	1	34
23/05/19	21	3	0	0	0	0	0	0	0	0	0	2	0	0	0	26
06/06/19	33	2	0	1	3	4	0	3	2	0	2	0	0	1	0	51
20/06/19	33	0	0	0	0	0	0	1	0	0	0	0	0	0	0	34
04/07/19 (dusk)	24	2	0	1	0	5	1	4	0	0	0	0	0	0	0	37
05/07/19 (dawn)	13	1	0	0	0	0	0	1	0	0	2	0	0	0	0	17
18/07/19 (dusk)	26	2	6	0	0	3	0	0	1	0	0	0	0	0	0	38
19/07/19 (dawn)	18	3	3	0	0	1	0	0	0	0	0	0	0	0	0	25
01/08/19	22	1	3	0	0	0	0	0	1	0	0	0	0	0	0	27
04/09/19	4	0	3	0	0	0	0	0	2	0	0	0	0	0	0	9
18/09/19	18	5	4	0	0	0	0	0	0	1	0	0	0	0	0	28
02/10/19	8	1	6	0	0	1	0	9	0	0	4	0	3	5	0	37
15/10/19	31	9	7	0	0	0	0	1	0	0	6	0	0	0	0	54
TOTAL	327	33	35	2	3	15	1	19	6	2	14	2	3	6	1	469

CP = common pipistrelle; **SP** = soprano pipistrelle; **P** = common or soprano pipistrelle; **NP** = Nathusius' pipistrelle; **N** = noctule; **L** = Leisler's bat; **NYC** = Nyctalus sp.; **NoSL** = noctule/serotine/Leisler's bat; **LE** = Plecotus sp.; **M** = Myotis sp.;, **Bb**= Barbastelle, **GHS** = Greater horseshoe, **LHS** lesser horseshoe and **Bat** = unidentified bat species.

Table C.5 Results of automated/static monitoring

Date	Detector location (Figure 2.3)	Species* (number of recordings)													
		CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GHS	LHS	Bb	Total
10/05/2019	1	1675	129	34	0	28	11	0	1	21	0	0	0	0	1899
11/05/2019	1	1666	115	22	0	5	0	0	0	34	0	0	1	1	1844
12/05/2019	1	672	691	13	0	22	4	0	4	230	0	0	2	4	1642
13/05/2019	1	455	133	32	0	40	0	0	2	7	0	0	6	2	677
14/05/2019	1	328	193	42	0	30	5	0	4	8	0	0	1	12	623
18/05/19	2	608	0	0	1	0	6	0	3	7	0	0	1	2	628
19/05/19	2	412	0	0	2	19	1	0	0	8	0	0	3	0	445
20/05/19	2	1083	0	1	0	6	5	0	0	17	2	0	0	1	1115
21/05/19	2	799	1	1	0	0	0	0	0	49	0	0	0	1	851
22/05/19	2	1009	0	2	0	1	0	0	0	22	0	0	1	0	1035
10/05/2019	3	334	60	97	0	0	2	0	310	0	0	0	1	0	804
11/05/2019	3	975	56	78	0	0	0	0	31	2	0	0	0	0	1142
12/05/2019	3	1027	22	56	0	52	35	67	62	19	0	0	2	0	1342
13/05/2019	3	2641	49	23	0	1	44	0	0	9	1	0	4	0	2772
14/05/2019	3	2918	355	6	0	7	101	0	1	3	0	0	0	0	3391
20/06/2019	1	534	55	0	0	0	4	7	0	44	0	0	3	0	647

Date	Detector location (Figure 2.3)	Species* (number of recordings)													
		CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GHS	LHS	Bb	Total
21/06/2019	1	762	64	3	0	0	0	3	0	38	0	0	2	0	872
22/06/2019	1	867	162	1	0	0	26	1	0	113	0	0	1	0	1171
23/06/2019	1	591	146	0	0	0	24	23	0	76	1	0	3	0	864
24/06/2019	1	750	130	0	0	0	2	17	0	5	7	0	0	0	911
20/06/2019	2	44	0	1	0	0	4	0	0	1	0	0	1	0	51
21/06/2019	2	67	0	1	0	0	0	0	0	7	0	0	5	0	80
22/06/2019	2	97	1	0	0	0	21	12	0	2	0	0	0	0	133
23/06/2019	2	127	3	0	0	0	13	19	0	12	0	0	0	1	175
24/06/2019	2	95	1	0	0	0	3	3	0	11	0	0	0	0	113
20/06/2019	3	179	39	180	0	0	0	0	0	0	0	0	3	0	401
21/06/2019	3	611	59	140	0	0	1	0	0	1	0	0	0	0	812
22/06/2019	3	745	16	83	0	40	24	0	95	4	1	1	0	0	1009
23/06/2019	3	266	20	78	0	2	21	0	0	3	0	0	0	0	390
24/06/2019	3	452	81	82	0	0	0	0	10	1	0	0	0	0	626
03/07/2019	1	885	45	107	0	8	22	3	10	8	0	1	2	0	1091
04/07/2019	1	1409	253	109	0	5	33	0	39	150	0	1	2	0	2001
05/07/2019	1	841	173	104	0	8	74	0	59	67	0	0	0	0	1326

Date	Detector location (Figure 2.3)	Species* (number of recordings)													
		CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GHS	LHS	Bb	Total
06/07/2019	1	726	332	41	0	21	48	3	13	3	0	0	0	0	1187
07/07/2019	1	882	269	219	0	9	56	2	20	229	0	0	0	0	1686
03/07/2019	2	129	4	0	0	1	10	5	1	6	0	0	0	0	156
04/07/2019	2	97	1	1	0	2	14	2	9	2	0	0	0	0	128
05/07/2019	2	96	2	0	0	0	11	9	6	0	0	0	0	0	124
06/07/2019	2	94	0	0	0	0	26	4	7	1	0	0	0	0	132
07/07/2019	2	74	8	0	0	0	26	28	3	28	0	0	0	0	167
03/07/2019	3	717	108	67	0	11	60	0	3	13	0	0	0	0	979
04/07/2019	3	319	105	44	0	3	47	1	25	8	0	0	0	0	552
05/07/2019	3	432	114	87	0	0	9	1	25	0	0	0	0	0	668
06/07/2019	3	192	70	18	0	0	23	0	17	0	0	0	0	0	320
07/07/2019	3	393	134	32	0	0	63	0	75	33	0	0	0	0	730
21/08/2019	1	335	243	4	1	0	3	6	0	7	0	2	1	0	602
22/08/2019	1	473	581	4	0	0	40	24	0	29	0	0	1	0	1152
23/08/2019	1	325	25	6	1	0	7	8	0	0	2	2	3	0	379
24/08/2019	1	429	21	3	0	0	54	22	0	0	1	0	0	0	530
25/08/2019	1	565	309	2	0	0	7	5	0	6	0	0	1	0	895

Date	Detector location (Figure 2.3)	Species* (number of recordings)													
		CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GHS	LHS	Bb	Total
21/08/2019	2	36	8	0	0	0	5	5	0	140	0	0	1	0	195
22/08/2019	2	21	3	0	0	0	11	0	0	3	1	0	1	0	40
23/08/2019	2	48	18	0	0	0	21	8	0	0	0	1	0	0	96
24/08/2019	2	93	17	3	0	0	105	27	0	29	2	0	0	0	276
25/08/2019	2	49	15	1	1	0	6	3	0	80	2	0	2	0	159
21/08/2019	3	585	5	9	4	0	4	0	0	4	0	1	0	0	612
22/08/2019	3	284	9	23	0	0	86	3	0	1	0	0	0	0	406
23/08/2019	3	972	9	4	0	0	56	0	0	8	0	0	0	0	1049
24/08/2019	3	693	14	24	0	0	411	103	0	13	0	0	0	0	1258
25/08/2019	3	1129	54	17	0	0	14	0	0	9	0	0	0	0	1223
04/09/2019	1	541	90	57	0	0	0	0	0	0	0	0	0	0	688
05/09/2019	1	168	95	43	0	0	1	1	2	5	0	0	1	0	316
06/09/2019	1	387	61	190	0	0	7	1	1	7	0	0	0	0	654
07/09/2019	1	251	35	88	2	0	6	6	5	27	0	0	8	0	428
08/09/2019	1	104	88	38	0	0	0	0	0	12	0	0	12	0	254
04/09/2019	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05/09/2019	2	62	1	2	0	0	0	0	0	63	0	1	1	0	130

Date	Detector location (Figure 2.3)	Species* (number of recordings)													
		CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GHS	LHS	Bb	Total
06/09/2019	2	81	1	4	0	0	1	1	1	0	0	0	2	0	91
07/09/2019	2	98	14	8	0	1	4	3	7	23	1	0	3	0	162
08/09/2019	2	27	3	3	0	0	0	0	4	58	0	0	2	0	97
04/09/2019	3	3	10	1	0	0	0	0	0	0	0	0	0	0	14
05/09/2019	3	253	1	78	0	0	1	0	1	2	1	0	1	0	338
06/09/2019	3	35	1	22	0	0	0	0	9	1	0	0	0	0	68
07/09/2019	3	826	35	76	3	0	9	3	44	5	0	0	0	0	1001
08/09/2019	3	90	7	14	0	0	1	0	7	3	0	0	1	0	123
02/10/2019	1	156	24	22	0	2	2	1	5	136	0		15	0	363
03/10/2019	1	105	33	0	0	0	4	0	2	3	0	0	0	0	147
04/10/2019	1	77	18	10	0	7	3	1	1	20	0	0	7	1	145
05/10/2019	1	84	3	0	0	0	3	0	10	26	0	0	9	0	135
06/10/2019	1	142	12	0	0	0	5	0	0	127	0	0	1	0	287
02/10/2019	2	147	20	1	2	0	13	0	0	23	3	1	25	0	235
03/10/2019	2	0	0	0	0	0	1	0	0	1	0	0	0	0	2
04/10/2019	2	9	1	1	1	0	3	0	0	2	0	1	0	0	18
05/10/2019	2	0	0	6	0	0	2	0	0	1	0	0	0	0	9

Date	Detector location (Figure 2.3)	Species* (number of recordings)													
		CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GHS	LHS	Bb	Total
06/10/2019	2	48	12	0	5	0	7	0	0	59	0	0	14	0	145
02/10/2019	3	458	75	20	0	0	198	0	14	20	0	1	4	0	790
03/10/2019	3	15	25	18	0	2	8	0	6	2	0	0	1	0	77
04/10/2019	3	225	19	30	0	0	185	0	0	5	0	0	0	0	464
05/10/2019	3	73	13	14	0	0	29	0	9	1	0	0	0	0	139
06/10/2019	3	264	27	11	0	117	230	1	9	9	0	0	5	0	673

* **CP** = common pipistrelle; **SP** = soprano pipistrelle; **P** = common or soprano pipistrelle; **NP** = Nathusius' pipistrelle; **N** = noctule; **NoSL** = noctule/serotine/Leisler's; **NYC** = Nyctalus sp.; **M** = Myotis sp.; **LE** = Plecotus sp.; **GHS** = Greater horseshoe; **LHS** = lesser horseshoe and **Bb** = Barbastelle.

Table C.6 Bat activity (mean bat recordings per night) at each detector (spring, summer and autumn)

Season	Static Detector (Fig. 2.3)	No. nights analysed	CP	SP	SP/CP	NP	CP/NP	N	NoSL	NYC	M	LE	GH	LH	Bb
Spring	1	5	959.2	252.2	28.6	0	25	4.0	0	2.2	60.0	0	0	2.0	3.8
	2	5	782.2	0.2	0.8	0.6	5.2	2.4	0	0.6	20.6	0.4	0	1.0	0.8
	3	5	1,579	108.4	52	0	12.0	36.4	13.4	80.8	6.6	0.2	0	1.4	0
Summer	1	15	691.6	187.2	40.2	0.1	3.4	26.7	8.3	9.4	51.7	0.7	0.4	1.3	0
	2	15	77.8	5.4	0.5	0.1	0.2	18.4	8.3	1.7	21.5	0.3	0.1	0.7	0.1
	3	15	531.3	55.8	59.2	0.3	3.7	54.6	7.2	16.7	6.5	0.1	0.1	0.2	0
Autumn	1	10	201.5	45.9	44.8	0.2	0.9	3.1	1.0	2.6	36.3	0	0	5.3	0.1
	2	10	47.4	5.2	2.5	0.8	0.1	3.1	0.4	1.2	23.0	0.4	0.3	4.7	0
	3	10	224.2	21.3	28.4	0.3	11.9	66.1	0.4	9.9	4.8	0.1	0.1	1.2	0

CP = common pipistrelle; **SP** = soprano pipistrelle; **SP/CP** = soprano or common pipistrelle; **NP** = Nathusius' pipistrelle; **CP/NP** = common or Nathusius' pipistrelle; **N** = noctule; **NoSL** = noctule/serotine/Leisler's; **NYC** = Nyctalus sp.; **M** = Myotis sp.; **LE** = Plecotus sp.; **GHS** = greater horseshoe bat; **LHS** = lesser horseshoe bat and **Bb** = barbastelle.

Table C.7 Harp trapping survey results

Survey area (Figure 2.4)	Date*	Time of Capture	Species**	Sex	Adult/juvenile	Breeding status***	Notes
HT1	29/05/19	02:05	CP	M	Adult	Non-breeding	
HT1	29/05/19	02:05	GHS	M	Adult	Non-breeding	Forearm length 54.6 mm
HT1	22/07/19	22:48	SP	M	Adult	Large testes	
HT1	22/07/19	22:48	SP	F	Adult	Lactating	
HT1	22/07/19	22:48	SP	F	Juvenile	N/A	
HT1	22/07/19	23:30	SP	F	Juvenile	N/A	
HT1	22/07/19	23:30	SP	F	Adult	Nulliparous	
HT1	22/07/19	23:55	SP	F	Juvenile	N/A	
HT1	22/07/19	23:55	SP	F	Juvenile	N/A	
HT1	22/07/19	00:38	CP	M	Adult	Large testes	
HT1	22/07/19	00:38	CP	M	Juvenile	N/A	
HT1	30/08/19	21:45	SP	M	Adult	Small testes	
HT1	30/08/19	21:45	SP	M	Juvenile	N/A	
HT1	30/08/19	23:45	D	F	Adult	Parous	

Survey area (Figure 2.4)	Date*	Time of Capture	Species**	Sex	Adult/juvenile	Breeding status***	Notes
HT2	29/05/19	22:25	SP	F	Adult	Gravid	
HT2	29/05/19	22:25	SP	F	Adult	Gravid	
HT2	29/05/19	22:25	SP	F	Adult	Gravid	
HT2	29/05/19	22:25	SP	F	Adult	Parous	
HT2	29/05/19	22:25	SP	F	Adult	Gravid	
HT2	29/05/19	22:25	SP	F	Adult	Gravid	
HT2	29/05/19	22:25	CP	M	Adult	Non-breeding	
HT2	29/05/19	23:05	SP	F	Adult	Gravid	
HT2	29/05/19	23:45	CP	F	Adult	Nulliparous	
HT2	29/05/19	00:40	SP	F	Adult	Gravid	
HT2	29/05/19	01:30	CP	M	Adult	Non-breeding	
HT2	29/05/19	04:05	CP	F	Adult	Parous	
HT2	22/07/19	23:45	NAT	M	Juvenile	N/A	
HT2	22/07/19	23:45	SP	F	Adult	Nulliparous	
HT2	30/08/19	22:15	SP	F	Juvenile	Nulliparous	
HT2	30/08/19	22:15	SP	F	Juvenile	Nulliparous	
HT2	30/08/19	01:30	NAT	M	Adult	Non-breeding	

* Trap deployment date - surveys continued overnight

** **CP** = common pipistrelle; **SP** = soprano pipistrelle; **D** = Daubenton's; **NAT** = Natterer's; **GHS** = greater horseshoe

***Breeding status of female bats is categorised by assessing the nipple and surrounding fur: 'nulliparous' (never given birth); 'parous' (given birth, not necessarily in the current year); 'gravid' (pregnant); 'lactating'; or 'post-lactating' (detectable for up to 10 weeks after lactating, indicating breeding in the current year). Male bats are categorised by assessing size and coloration of the epididymides and testes: 'non-breeding' (no evidence of sperm production in the current year); 'small testes' (testes and/or epididymides have begun to fill with sperm); or 'large testes' (testes active and swollen with sperm).

8F

Baseline Report: Breeding and Non-Breeding Birds

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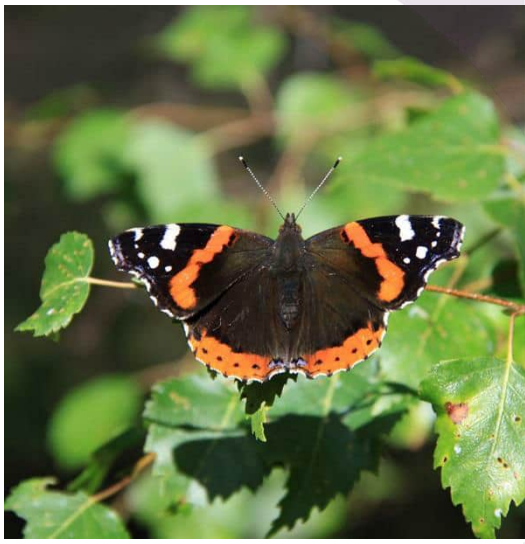
EDF Energy

Hinkley Point B Decommissioning EIA

Baseline Report: Breeding and non-breeding birds



Wood Environment & Infrastructure Solutions UK Limited – October 2020

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Issued by

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Approved by

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Doc Ref. 41491-WOD-XX-XX-RP-OE-0016_S4_P01

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Document revisions

No.	Details	Date
1	Draft	May 2020
2	Final	October 2020

Contents

1. Introduction

1.1 Purpose of this report

EDF Energy proposes to start preparation for waste processing facilities (Operational and Decommissioning Waste) and waste stores (ILW Store) at Hinkley Point B (HPB) to support decommissioning activities following the End of Generation (EoG), which is currently scheduled to be in 2023. Prior to the construction of these facilities, planning permission from the Local Planning Authority (LPA) under The Town and Country Planning Act 1990 (TCPA) will be required. Other permissions and consents for the overall decommissioning project will be required separately under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning (EIAD)) Regulations, 1999, as amended, and EURATOM Article 37 (or an equivalent).

The current strategy is for an EIA to be undertaken and a single Environmental Statement (ES) to be prepared to assess the environmental impacts of the proposed decommissioning project under both the TCPA and EIAD Regulations. Other consents for specific activities will also be required and can draw on the EIAs.

This report sets out information about the bird surveys that were undertaken to inform the EIA of the HPB Decommissioning Project. It includes a brief description of the proposed HPB Decommissioning Project before setting out information about the bird survey methods, results and conclusions.

1.2 Scheme description

Decommissioning at HPB is expected to commence in 2023. The site location is shown on **Figure 1.1, Appendix A**. Once the necessary consent is in place, the decommissioning process ('the Project') would commence with the process of defueling and initial decommissioning, with spent fuel transferred to the Sellafield nuclear licensed site. Over approximately a 15-year period there would be a process of safe storage and management of intermediate and low-level waste, with intermediate level waste stored temporarily on-site, in sealed and shielded containers within designed stores that have similar characteristics to industrial units, and low-level waste being transferred to appropriate treatment or disposal facilities. In parallel with these tasks, redundant buildings will be de-planted and demolished.

This initial decommissioning phase will include construction of waste processing facilities and a secure, weathertight, Safestore structure - a clad, steel-framed structure based around the Reactor Building - will be constructed, to enclose the Advanced Gas-cooled Reactors, allowing the process of radioactive decay to reduce dose to significantly lower levels. The second phase of decommissioning – Care & Maintenance - will involve ongoing site/station care and maintenance over a period of approximately 70 years. The third phase will involve reactor building decommissioning and final site clearance, involving site-wide demolition of the remaining buildings and remediation to an extent conforming to the applicable regulations at the time, followed by back-filling. Aside from the defueling and management of waste storage and decay processes, the site will operate similar to a conventional construction/demolition site.

1.3 Site Context

The HPB station ('the site' or 'the station') is approximately 12 km to the north west of Bridgwater, in Bridgwater Bay at the mouth of the River Severn and on the southern flank of the Bristol Channel. The centre of the station is at approximate National Grid Reference (NGR) ST 212 459 and the area that is subject to the Nuclear Site Licence (NSL) extends to approximately 47 ha.

The majority of the station is built structures and hard standing (mainly access and car parks). Bridgwater Bay is to the north. To the south, west and east of the site there is a fringe of woodland and scrub, with areas of open grassland. Hinkley Point A (HPA) borders the HPB NSL boundary to the west and further west beyond this is the Hinkley Point C (HPC) development. The wider landscape to the south and east is agricultural.

2. Methodology

2.1 Study Area

The Site includes the land inside the HPB double security fence and the land that is covered by the HPB Nuclear Site Licence (NSL). The majority of the non-operational land within the Site is designated as Hinkley Local Wildlife Site (LWS), which is managed for biodiversity by EDF Energy and Somerset Wildlife Trust (SWT). The Study Area includes the land within the Site, plus the part of Hinkley LWS that is outwith and adjacent to the south-east boundary of the Site. The Study Area was extended for non-breeding birds to include the land within 500m of the Site, focusing on coastal/intertidal areas. The Study Area is marked on **Figure 2.1** (**Appendix A**) and is defined on a precautionary basis to encompass those areas within which birds are most likely to be susceptible to the effects of the HPB decommissioning project.

2.2 Desk Study

A desk-based study was undertaken to collate and review existing information on ecological features that are known to occur, or have previously been recorded, on land within and surrounding the Study Area defined in **Section 2.1**. These features include sites designated for biodiversity conservation; habitats of importance for biodiversity conservation; and legally protected and/or otherwise important species (including birds). The desk study is detailed in a separate report (*Hinkley Point B Decommissioning – Baseline Report: Desk Study* [*Terrestrial Ecology*]). The elements of the desk study that are relevant to ornithology are summarised below and are expanded to include additional ornithology data.

The categories of ornithological features that could be significantly affected by the HPB Decommissioning Project are summarised below. These are the sites (designated for birds) and bird species that are of sufficient biodiversity conservation importance that impacts on them could result in significant effects:

- Statutorily designated biodiversity conservation sites of national and international importance (statutory biodiversity sites):
- Important bird species:
  - Species of Principal Importance for the Conservation of Biological Diversity in England, having been identified as such by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act 2006);
  - Bird species on the Birds of Conservation Concern (BoCC) Red List[1] (Eaton et al 2015); and
- Legally protected bird species, including those species that are afforded enhanced protection through inclusion on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

The area over which ornithological features may be subject to significant effects, as a result of the HPB Decommissioning Project, is referred to as the potential 'Zone of Influence' (Chartered Institute of Ecology and Environmental Management ([CIEEM], 2018[2]), which varies for different ornithological features

[1] Eaton, M.A., Aebischer, N.J., Brown, A.F., Hearn, R.D., Lock, L., Musgrove, A.J., Noble, D.G., Stroud, D.A, Gregory, R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746

[2] Chartered Institute of Ecology and Environmental Management (CIEEM). (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management, Winchester.

depending on their sensitivity to environmental change together with the nature of the proposed works. The extent of the desk-based study was therefore expanded around the Site on a precautionary basis, informed by the professional judgement of experienced ornithologists and good practice guidance (e.g. CIEEM, 2018):

- The locations of statutory biodiversity sites of ornithological importance situated within 10 km of the Site, extended to 20 km for sites of international importance (SPAs and Ramsar sites) and 200 km for sites of international importance for particularly mobile sea bird species, were obtained from the Multi-Agency Geographical Information for the Countryside (MAGIC) website[3]. Details of the reasons for the designation of these sites were obtained from the Joint Nature Conservation Committee (JNCC) website[4] and the Natural England website[5];
- Records of notable and protected bird species within 3 km of the Site and details of non-statutory biodiversity sites (identified for their ornithological interest) within 10 km of the site were obtained from Somerset Environmental Records Centre (SERC); and
- Breeding seabird data for Somerset (including that for the Hinkley Power Stations) was extracted from the JNCC, Seabird Monitoring Programme (SMP) [6] Database (http://archive.jncc.gov.uk/smp/searchCounts.aspx, accessed 5 September 2019).

This desk study also includes information from the following sources:

- HPB Land Management Annual Reviews[7] (LMAR) and Integrated Land Management Plan[8] (ILMP), which include details of species (including birds) recorded within the Study Area; and
- Reports that include details of recent bird surveys and monitoring at the HPB site and adjacent (west) HPC station (EDF 2018).

The nomenclature in this report follows that of the British Ornithologists' Union (BOU) 2017. A list of the species referred to in this report (including scientific names) is included in **Appendix B**. Details of relevant legislation and policy pertaining to birds is included in **Appendix C**.

2.3 Breeding Bird Survey

Survey objectives

All UK breeding bird species are legally protected, with species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) receiving additional protection from disturbance (**Appendix C**). A number of bird species are also Species of Principal Importance for the Conservation of Biological Diversity in England, having been identified as such by the Secretary of State in accordance with Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act). The potential effects of development on breeding bird species are therefore a material consideration in determining planning applications.

The purpose of the breeding bird survey was to collect data to describe the breeding bird community within the Study Area and estimate the number of territories/ breeding pairs of each species within this area. These

[3] https://magic.defra.gov.uk/ (accessed 4 September 2019)

[4] http://archive.jncc.gov.uk/page-4 (accessed 4 September 2019)

[5] https://designatedsites.naturalengland.org.uk/SiteSearch.aspx (accessed 4 September 2019)

[6] The JNCC Seabird Monitoring Programme (SMP) is an ongoing annual monitoring programme, established in 1986, of 25 species of seabird that breed regularly in Britain and Ireland. This programme is co-ordinated by the Joint Nature Conservation Committee (JNCC). It aims to ensure that sample data on breeding numbers and breeding success of seabirds are collected, both regionally and nationally, to enable their conservation status to be assessed.

[7] EDF Energy Nuclear Generation Ltd (2014 to 2017). Hinkley Point B Land Management Annual Review

[8] EDF Energy Nuclear Generation Ltd (2018) Hinkley Point B Integrated Land Management Plan.

surveys derive the baseline status of breeding birds within the Study Area, against which the predicted effects of the HPB Decommissioning Project on this group of species will be assessed. Where necessary the survey data will also inform plans to mitigate the effects of the HPB Decommissioning Project on birds.

Data collection locations

The survey targeted suitable habitats for breeding birds within the Study Area (**Figure 2.1, Appendix A**). Outwith the HPB and HPA security fences, all areas of suitable breeding habitat (scrub, trees, hedges and fields) within the HPB NSL were accessible to within 50m. The parts of the Study Area that are outside the HPB NSL were surveyed from publicly accessible areas, or from within the NSL. The survey also covered potentially suitable nest sites for Schedule 1 bird species, for example tall, built structures within the Site are potentially suitable nest sites for peregrine.

Data collection methods: all breeding birds

A territory mapping survey based on the British Trust for Ornithology (BTO) Common Bird Census (CBC) methodology (Marchant[9], Gilbert *et al*[10]) was carried out within the Study Area between April and July 2019. Eight to ten survey visits are the standard for CBC sites being monitored over the long-term, however where territory mapping is being used for the purpose of assessing potential environmental impacts, six visits are sufficient to determine the numbers and distribution of breeding bird territories.

Surveys were undertaken until midday (at the latest), and in appropriate weather conditions (not during periods of strong wind and/or heavy rain). A different route was used by each surveyor on each survey visit to ensure that certain parts of the Study Area did not receive greater survey effort at certain times of day, recognising that there tends to be a decline in bird song later in the morning. The location of each bird detected (visually and/or aurally) was mapped using standard BTO species codes, and bird activity was recorded using standard behaviour codes (Marchant 1983).

Data collection methods: Schedule 1 species

An initial site visit identified habitats within the Site that are potentially suitable for Schedule 1 species. Built structures within HPB station could be used by breeding peregrine and black redstart and the surrounding scrub could be used by breeding Cetti's warbler. Due to their high aural detectability throughout the breeding season, Cetti's warbler and black redstart can be detected using the territory mapping methods described above and dedicated surveys for these species are not required.

Separate (species-specific) surveys of the Site for breeding peregrine were undertaken, comprising four survey visits between April and June 2019 inclusive. The surveys recorded peregrine presence, locations and any breeding behaviour (paired birds, calling, food pass, feeding young). All observations of peregrine were mapped. Two surveyors undertook the first survey at opposite ends of the Study Area (NGR ST 21430 46304 and ST 21466 45793) and it was determined that the Site could subsequently be surveyed by a single surveyor at location ST 21430 46304. The surveys commenced during early morning to maximise the likelihood of also recording breeding black redstart.

Data analysis

Survey results were collated and analysed, including mapping indicative territory centre-points, across all survey visits. Territory mapping analysis was based on criteria adapted from Amar *et al.* 2006**.** The territory mapping process involved an experienced ornithologist looking for spatial groupings of song and other

[9] Marchant, J.H. (1983). Common Birds Census instructions. BTO, Tring

[10] Gilbert, G., Gibbons, D.W., AND Evans, J. (1998). Bird Monitoring Methods. RSPB.

registrations indicative of potential breeding. The presence of a singing/displaying bird, or a pair of birds in potential nesting habitat (in any location on two or more survey dates) were treated as signifying a breeding territory. This data was used to determine the number and distribution of species and overall breeding assemblage within the Study Area.

The territory locations were derived from a combination of each visit map (CBC methodology) and the locations do not represent specific nest locations. The term 'territory' applied in this report denotes that a pair of breeding birds was present, or that a male was holding territory in that area.

2.4 Non-breeding Bird Survey

Survey objectives

There is the potential for important numbers of non-breeding birds to occur within the Study Area, particularly along the coastline. The purpose of the non-breeding bird survey is to collect data on the distribution and assemblages of waterbird species that use parts of the Severn Estuary SPA/Ramsar that are in close proximity to the Site. The surveys focussed on diurnal distribution and movements across tidal cycles. The survey method also recorded the responses of waterbird species to various disturbance stimuli, for example dog walkers, vessels, predators and aircraft. These surveys derive the baseline status of non-breeding birds within the Study Area, against which the predicted effects of the HPB Decommissioning Project on this group will be assessed. Where necessary these survey data will also inform plans to mitigate the effects of the HPB Decommissioning Project on birds.

Data collection locations

The survey focused on intertidal habitats within 500m of the Site, which are divided into two survey sectors. These survey sectors were observed from two observation points (**Figure 2.1, Appendix A**). Observation Point (OP) 1 is located at National Grid Reference (NGR) ST 20912 46306 and OP 2 is at ST 21753 46088

Data collection methods

Instantaneous Scan Samples

Instantaneous Scan Samples (ISS) are 'snapshots' that record how waterbirds use each survey sector within the Study Area. On each survey date two surveyors undertook six hours of simultaneous survey, one located at each OP in order to observe any changes/patterns in the distribution of waterbirds across the tide. During each six-hour period, a series of seven ISS counts were undertaken at 60-minute intervals from the same OP, the first being at the start of the survey. The species, number and behaviour of all waterbirds (except gulls) was recorded on a new field map for each ISS.

Both surveyors started at exactly the same time and remained in contact throughout the survey in order to minimise the risk of double counting at count sector boundaries. Bird activity was recorded using four categories:

- Feeding/foraging;
- Loafing/preening;
- Roosting; and
- Other (specified by the surveyor).

Each ISS count plotted flocks or single birds accurately on the field map and counts were tallied for each species and activity.

Disturbance monitoring

Between each hourly count all disturbance activity within the sector was recorded on disturbance record sheets. In each case the disturbance stimulus and number of individuals of each species that responded was recorded. This included recording flight responses and other responses, such as roosting birds becoming awake or alert, also noting the duration of the response. The approximate numbers of birds that did not appear to respond to the stimulus was also recorded. Additional relevant details were noted, such as where birds relocated to. All anthropogenic disturbance stimuli were recorded regardless of response (e.g. presence of a dog walker that did not appear to disturb birds) so that the baseline level of disturbance in the area could be characterised.

Stimuli were categorised using two-letter codes:

- VE (other large vessel), JS (jet-ski), SB (speedboat), LB (light boat, vessel);
- HG (Heavy goods vehicle), LG (Light goods vehicle/van), VH (vehicle);
- AC (aircraft), HC (helicopter);
- GS (gunshot generally related to wildfowling), CN (construction noise);
- WN (walker without dog), WD (walker with dog in close proximity), UD (uncontrolled dog), CY (cyclist), H (horse), BD (bait-digger), FM (fisherman), JO (Jogger);
- PD (disturbance from a predator, e.g. fox, peregrine, merlin etc);
- UN (unknown disturbance, e.g. flock flies/ reacts without any perceived disturbance); and
- OTH (other disturbance).

The level of each disturbance response was also categorised:

- Level 5: Flushed from count sector, movement of > 500m;
- Level 4: Remaining in sector but movement of > 100m;
- Level 3: Movement within zone < 100m (area of mud, feeding or roosting area etc);
- Level 2: Behavioural change (alarm calls/posture, change in feeding/roosting activity etc); and
- Level 1: No response.

2.5 Constraints

Breeding bird survey

The CBC method identifies numbers of territory-holding birds during the breeding season and does not confirm that breeding has taken place at locations within the Study Area, which would require nests with eggs/young to be identified for many species. The latter is not required to inform the EIA or HRA.

Parts of the Study Area were inaccessible, however these were almost entirely built structures and hard-standing within the security fence, providing potentially suitable breeding sites for a limited range of species, primarily (excluding Schedule 1 species) jackdaw, pied wagtail, swallow, herring gull, lesser black-backed gull

and great black-backed gull. These areas were surveyed from the security fence perimeter, which was sufficient to detect the majority of potential territories/pairs of swallow, jackdaw and pied wagtail.

CBC methods are not designed to census breeding gull populations and it was not possible to obtain accurate counts of breeding gull species that nest on top of the high buildings, as these birds could not be seen from the security fence perimeter. Evaluation of breeding gull populations therefore relies on desk study data, specifically the JNCC SMP database, which includes counts of breeding gulls at the Hinkley Power Stations.

It was not possible to obtain accurate counts of occupied nests within the rookery, as the nests tended to be obscured by the tree canopy and/or as a result of their locations on top of built structures/dilapidated platforms. Estimates in previous years have been undertaken before the trees were in full leaf and/or in subsequent winters, affording greater visibility and more accurate counts from ground level.

Non-breeding bird survey

Surveyor health and safety precautions limited survey coverage around coastal rock shelves/beds during certain tidal phases. A steep rock shelf around the low water mark restricted the survey at that location to observations of birds entering or exiting the area behind the shelf on the tide and/or in flight. The OPs otherwise afforded visibility of the majority of foreshore and intertidal habitats that are likely to be used by wintering birds. The rock shelf is also used by anglers and the associated disturbance has the potential to influence birds' use of the area around the rock shelf/beds. These constraints are unlikely to have a substantive influence on the survey results/conclusions.

3. Results

3.1 Desk Study

Statutory biodiversity sites (ornithological importance)

There are four statutory biodiversity sites of international (ornithological) importance (two SPAs and two Ramsar sites) within 20 km of the Site; and three sites of national (ornithological) importance (two SSSIs and one NNR) within 10 km. The sites are detailed in **Table 3.1** and **Table 3.2** and are marked on **Figure 3.1, Appendix A.**

Table 3.1 Statutory biodiversity sites of international ornithological importance within 20km

Designation	Size and proximity to the Site	Qualifying features
Severn Estuary SPA	24,700.91 ha (Adjacent to north, east and south)	**ARTICLE 4.1 QUALIFICATION (79/409/EEC)** Over winter the area regularly supports: • Bewick's swan (*Cygnus columbianus bewickii*) (Western Siberia/North-eastern & North-western Europe) 3.9% of the GB population (5 year peak mean 1991/92-1995/96) **ARTICLE 4.2 QUALIFICATION (79/409/EEC)** Over winter the area regularly supports: • Gadwall (*Anas Strepera*) (North-western Europe) 0.9% of the population (5 year peak mean 1991/92-1995/96) • White-fronted goose (*Anser albifrons albifrons*) (North-western Siberia/North-eastern & North-western Europe) 0.4% of the population (5 year peak mean 1991/92-1995/96) • Dunlin (*Calidris alpina alpine*) (Northern Siberia/Europe/Western Africa) 3.3% of the population 5 year peak mean 1991/92-1995/96 • Shelduck (*Tadorna tadorna*) (North-western Europe) 1.1% of the population 5 year peak mean 1991/92-1995/96 • Redshank (*Tringa totanus*) (Eastern Atlantic - wintering) 1.3% of the population 5 year peak mean 1991/92-1995/96 **ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS** Over winter the area regularly supports: 84317 waterfowl (5 year peak mean 1991/92-1995/96), including: Bewick's swan, shelduck, gadwall, dunlin and redshank.
Severn Estuary Ramsar	24,662.98ha. (Adjacent to north, east and south)	**Ramsar criterion 5 Assemblages of international importance** Species with peak counts in winter 70919 waterfowl (5 year peak mean 1998/99-2002/2003). **Ramsar criterion 6 Species/populations occurring at levels of international importance.** Species with peak counts in winter: • Tundra swan (*Cygnus columbianus bewickii*) NW Europe 229 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9-2002/3) • Greater white-fronted goose (*Anser albifrons albifrons*) NW Europe 2076 individuals, representing an average of 35.8% of the GB population (5 year peak mean for 1996/7-2000/01) • Common shelduck (*Tadorna tadorna*) NW Europe 3223 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3) • Gadwall (*Anas strepera Strepera*) NW Europe 241 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3)

Designation	Size and proximity to the Site	Qualifying features
		• Dunlin (*Calidris alpina alpine*) W Siberia/W Europe 25082 individuals, representing an average of 1.8% of the population (5 year peak mean 1998/9-2002/3) • Common redshank (*Tringa totanus tetanus*) 2616 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3) **Species/populations identified subsequent to designation for possible future consideration under criterion 6** Species regularly supported during the breeding season: • Lesser black-backed gull (*Larus fuscus graellsii*) W Europe/Mediterranean/W Africa 4167 apparently occupied nests, representing an average of 2.8% of the breeding population (Seabird 2000 Census) Species with peak counts in spring/autumn: • Ringed plover (*Charadrius hiaticula*) Europe/Northwest Africa 740 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3) Species with peak counts in winter: • Eurasian teal (*Anas crecca*) NW Europe 4456 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3) • Northern pintail (*Anas acuta*) NW Europe 756 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)
Somerset Levels and Moors SPA	15.9km (East)	**ARTICLE 4.1 QUALIFICATION (79/409/EEC)** Over winter the area regularly supports: • Bewick's swan (*Cygnus columbianus bewickii*) (Western Siberia/North-eastern & North-western Europe) 2.7% of the GB population (5 year peak mean 1991/92-1995/96) • Golden plover (*Pluvialis apricaria*) (North-western Europe - breeding] 1.2% of the GB population 5 year peak mean 1991/92-1995/96 **ARTICLE 4.2 QUALIFICATION (79/409/EEC)** Over winter the area regularly supports: • Teal (*Anas crecca*) (North-western Europe) 13,307 individuals representing an average 3.3% of the population 5 year peak mean 1991/92-1995/96 • Lapwing (*Vanellus vanellus*) (Europe - breeding) 36,316 individuals representing an average 0.5% of the population 5 year peak mean 1991/92-1995/96 **ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS** Over winter the area regularly supports: 73014 waterfowl (5 year peak mean 1991/92-1995/96) Including: Bewicks swan, teal, golden plover and lapwing (*Vanellus vanellus*)
Somerset Levels and Moors Ramsar	15.9km (East)	**Ramsar criterion 5 Assemblages of international importance** Species with peak counts in winter: 97,155 waterfowl (5 year peak mean 1998/99-2002/2003) **Ramsar criterion 6 Species/populations occurring at levels of international importance** Species with peak counts in winter • Eurasian teal (*Anas crecca*) NW Europe 21,231 individuals, representing an average of 4.2% of the population (5 year peak mean 1998/9-2002/3) • Northern lapwing (*Vanellus vanellus*), Europe – breeding 36,580 individuals, representing an average of 1.8% of the population (5 year peak mean 1998/9-2002/3) teal, lapwing. **Species/populations identified subsequent to designation for possible future consideration under criterion 6.** Species with peak counts in winter:

Designation	Size and proximity to the Site	Qualifying features
		• Eurasian wigeon (*Anas Penelope*) NW Europe 25,759 individuals, representing an average of 1.7% of the population (5 year peak mean 1998/9-2002/3) • Mute swan (*Cygnus olor*) Britain 842 individuals, representing an average of 2.6% of the population (5 year peak mean 1998/9-2002/3) • Northern pintail (*Anas acuta*), NW Europe 927 individuals, representing an average of 1.5% of the population (5 year peak mean 1998/9-2002/3) • Northern shoveler (*Anas clypeata*), NW & C Europe 1,094 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9-2002/3)

Table 3.2 Statutory biodiversity sites of national ornithological importance within 10km

Site name	Proximity to the Site	Bird interest
Bridgwater Bay SSSI	0 m (North, East and South)	Bridgwater Bay is a critical feeding ground for passage and over-wintering waders and wildfowl. It supports internationally important numbers of whimbrel (*Numenius phaeopus)* and black-tailed godwit (*Limosa limosa)* on passage. Of the overwintering species it attracts, nationally important numbers of dunlin (*Calidris alpina)* and wigeon (*Anas penelope)*. Shelduck (*Tadorna tadorna)* use the Bay as a moulting ground and are also present in nationally important numbers. The Bay forms an integral part of the Severn Estuary system and is used by a substantial proportion of the overall waterbird population which is of international importance. The assemblage of wildfowl and waders contains individual populations present in internationally important numbers: dunlin, shelduck, wigeon, curlew (*Numenius arquata)*, redshank (*Tringa totanus)* and teal (*Anas crecca)*. Populations of national importance are those of ringed plover (*Charadrius hiaticula)* and grey plover (*Pluvialis squatarola)*. Significant numbers of knot (*Calidris canutus)*, turnstone (*Arenaria interpres)*, snipe (*Gallinago gallinago)* and mallard (*Anas platyrhynchos)* also occur.
Bridgwater Bay NNR	0 m (North)	The NNR (covering 3,571 ha) provides internationally important feeding and roosting sites for many waterfowl and wading birds. The primary habitats within the NNR include intertidal mudflats, saltmarsh, sandflats and shingle ridges.
The Quantocks SSSI	6.5 km (SW)	The SSSI (covering 2,474 ha) is primarily notified for its heath and woodland habitats but also for its assemblage of breeding bird species associated with woodland.

There are two SPAs within 200 km of the Site that have marine seabird qualifying features: Skokholm and Skomer; and Grassholm. The foraging range of qualifying features of both sites overlap the Study Area, however these species primarily forage in the wider offshore environment, beyond the marine elements of HPB infrastructure:

- **Skokholm and Skomer SPA** is approximately 90 km to the north-west. The foraging range of one qualifying feature (breeding manx shearwater) overlap the Study Area; and
- **Grassholm SPA** is approximately 154 km to the north-west. The foraging range of one qualifying feature (breeding gannet) overlaps the Study Area.

Non-statutory biodiversity sites (ornithological importance)

There are seven Local Wildlife Sites (LWSs) that are designated (partly or entirely) for the conservation of birds or for habitat types (large areas of wetland / waterbodies) that are likely to support important numbers of birds (**Table 3.3**). Much of Hinkley LWS is within the Site boundary, the details of which are also included

in **Table 3.3**. The locations of these sites are included on **Figure 3.2, Appendix A**. The location of Hinkley LWS in relation to the Study Area is also shown on **Figure 3.3, Appendix A**.

Table 3.3 Non-statutory biodiversity sites of ornithological importance within 10 km

Local Wildlife Site	Site size (ha)	Proximity to the Site	Description
Hinkley	35.2	Within the Site boundary	Species-rich scrub, coastal grassland and broadleaved woodland with ponds and areas of improved grassland. **Note:** The mapped extent of Hinkley LWS (**Figure 3.2** and **Figure 3.3**) does not take into account the loss of part of this area to the west of the Nuclear Site Licence boundary, which is within the footprint of the Hinkley Point C development.
Puriton Rhynes and Ponds	4.5	4.9 km (SW)	Rhyne network, ponds and reed beds with legally protected species, likely to support a diverse range of wetland bird species
Combwich Brick Pit	12.5	5.4 km (SE)	Open water and reed beds with ornithological interest
Combwich Wharf	30.0	5.5 km (SE)	Site of coastal saltmarsh and water bodies supporting protected, UK BAP and Somerset notable species. Likely to support important numbers of waterbirds, including qualifying species of the Severn Estuary SPA/Ramsar.
Ashford Reservoir	4.7	7.4 km (S)	Reservoir site with important ornithological interest
West Huntspill Heronry	1.2	8.6 km (E)	Breeding colony of grey heron
Hawkridge Reservoir	16.3	8.9 km (S)	Drinking water/angling reservoir, dam and fish-farm, with surrounding grassland, woodland and hedges. Likely to support potentially important numbers of waterbirds.
Apex Gardens	15.6	9.1 km (E)	Leisure park with reed-fringed ponds providing habitat for protected and notable birds

Species records and monitoring data

Somerset Environmental Records Centre

Details of bird records within 3km of the Site, obtained from Somerset Environmental Records Centre (SERC) are included in a separate report (*Hinkley Point B Decommissioning – Baseline Report: Desk Study [Terrestrial Ecology*]).

Hinkley Point B Breeding Bird Report (EDF 2018)

The results of breeding bird surveys within the HPB NSL area in 2016, 2017 and 2018 are summarised in **Table 3.4**. The 2018 surveys comprised three survey visits (April, May and June). The survey area included scrub and woodland to the west and south of the HPB security fence (similar to the Study Area) and excluded land to the east of HPB and land within the security fence. In some cases the results are presented as a range (e.g. 0 - 12), capturing the minimum 'confirmed/probable' and maximum possible territories.

Table 3.4 Breeding Bird Surveys (EDF 2018): Number of Territories

SPECIES	2018	2017	2016
Blackbird	0-12	5	7
Blackcap	9	8	10
Blue tit	10	11	10
Bullfinch	2	1-2	2
Carrion crow	1+	1	0-2
Chaffinch	6-7	4	7
Chiffchaff	14	11	15
Cuckoo	P	P	P
Dunnock	0-7	2-4	2-3
Goldcrest	1-2	1-2	1-2
Goldfinch	1+	5-7	7
Great spotted woodpecker	1	P	P
Great tit	1	8	7
Green woodpecker	P	P	P
Greenfinch	1	0-1	1-2
Kestrel	P	P	P
Jackdaw	P	0-1	0-1
Lesser whitethroat	5	5	4
Linnet	2	1-2	2
Long-tailed tit	4	3	5
Magpie	1+	0-3	0-3
Mallard	P	P	P
Marsh tit	P		
Moorhen	1-2	P	0-1
Pheasant	P	P	P
Redstart		P	P
Reed bunting	2	2-3	3
Reed warbler	15	8-12	9-11
Robin	1-7	3-5	0-5

SPECIES	2018	2017	2016
Rook	100+ nests	50+ nests	50+ nests
Sedge warbler	1	1	0-1
Song thrush	2-3	1-2	1-2
Sparrowhawk	1	P	P
Stock dove		P	P
Treecreeper		P	P
Whitethroat	3	3-5	4
Willow warbler	P	P	P
Wood pigeon	1+	0-3	2-4
Wren	1-6	3-4	5

P = Present (no evidence of breeding recorded)

3.2 Breeding bird survey (Schedule 1 species)

Four survey visits were undertaken between April and June 2019 inclusive. The survey parameters (dates, times and weather conditions) are included in **Table D1, Appendix D**. Details of all observations of Schedule 1 bird species are included in **Table 3.5**, including records obtained from the breeding bird survey (all species) and incidental observations during other baseline ecology surveys.

Table 3.5 Observations of Schedule 1 species

Species	Description
Peregrine	The survey on 26 April recorded observations of a pair of adults calling to each other in the vicinity of HPA. An individual was heard calling during the survey on 24 May. The paired birds were recorded carrying food towards HPA on the 11 July.
Cetti's warbler	Two territories within the Study Area: one adjacent to a pond in the east and the other in scrub in the centre of the Site. Birds were recorded singing in separate locations during surveys on 9 May and 4 June. Further records of the male holding territory (singing) in the east of the Site during surveys on 26 April and 24 May.
Black redstart	A single black redstart was observed - a male near the sea wall during the survey on 26 April. No further observations of the species and it is concluded that this record relates to a bird on migration.

3.3 Breeding bird survey (all species)

Six survey visits were completed between April to July 2019 inclusive. The survey parameters (dates, times and weather conditions) are included in **Table D.2, Appendix D**. The estimated number of territories of each species (and their conservation status) within the Study Area is summarised in **Table 3.6**. Indicative territory

locations are shown on **Figure 3.4, Appendix A**. A total of 31 species were recorded breeding or holding territory within the Study Area, including:

- One species (Cetti's warbler) listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended);
- Five Species of Principal Importance (SPI) for Biodiversity Conservation (dunnock, herring gull, linnet, skylark and song thrush); and
- Four species that are on the Birds of Conservation Concern (BoCC) Red-List (herring gull, linnet, skylark and song thrush).

Table 3.6 Estimated number of breeding bird territories within Study Area

Species name	No. of Territories	WCA Schedule 1	BoCC List (Red/Amber/Green)	SPI
Blackbird	6		Green	
Blackcap	32		Green	
Blue tit	13		Green	
Carrion crow	6		Green	
Cetti's warbler	2	✓	Green	
Chaffinch	5		Green	
Chiffchaff	8		Green	
Dunnock	6		Amber	✓
Garden warbler	1		Green	
Goldfinch	4		Green	
Great spotted woodpecker	1		Green	
Great tit	2		Green	
Herring gull	Breeding (1+)*		Red	✓
Jackdaw	Breeding (1+)*		Green	
Lesser black-backed gull	Breeding (1+)*		Amber	
Linnet	2		Red	✓
Little grebe	1		Green	
Long-tailed tit	1		Green	
Magpie	3		Green	
Mallard	1		Amber	
Moorhen	1		Green	
Oystercatcher	1		Amber	
Reed warbler	4		Green	

Species name	No. of Territories	WCA Schedule 1	BoCC List (Red/Amber/Green)	SPI
Robin	12		Green	
Rock pipit	2		Green	
Rook	Breeding (1+)*		Green	
Skylark	2		Red	✓
Song thrush	3		Red	✓
Sparrowhawk	1		Green	
Whitethroat	9		Green	
Woodpigeon	13		Green	
Wren	30		Green	

* The numbers of breeding pairs/territories of certain species could not be accurately estimated/mapped due to constraints set out above (Section 2.5).

A further 28 species (not recorded as 'breeding') were recorded during the breeding bird survey (**Table 3.7)**. Four of these are likely to have bred within the HPB security fence: lesser black-backed gull, feral pigeon, pied wagtail and swallow. The Study Area provides potentially suitable breeding habitat for a number of other species recorded during the survey, including:

- **Woodland and scrub:** bullfinch, coal tit, green woodpecker, goldcrest, lesser whitethroat, pheasant, stock dove, treecreeper and willow warbler;
- **Wetland scrub and ditches:** reed bunting and sedge warbler;
- **Rough grassland:** meadow pipit;
- **Ponds:** coot; and
- **Built areas:** starling and swift.

Records of the other species are likely to relate to passage migrant birds (black redstart, siskin, whimbrel and yellow wagtail); or non-breeding visitors (black-headed gull, buzzard, little egret, raven and shelduck).

Table 3.7 Non-breeding species recorded within the Study area

Species	Peak Count (single survey)	Description
Black redstart	1	Single record (26 April) of a male - likely to have been a migrant bird.
Black-headed Gull	1	Single record (12 July) of a flyover, heading north west over Bridgwater bay
Bullfinch	5	Recorded on 26 April and 9 May. Neither record provided sufficient evidence of the species holding territory. A parent birds and three fledged juveniles were observed on 27 June suggesting that the species nested within the vicinity, not necessarily within the Study Area.
Buzzard	1	Flyover observations (26 April and 27 June)

Species	Peak Count (single survey)	Description
Coal tit	1	Two records: singing bird on 27 June (in the west of the Site) and a juvenile observed in the east
Coot	1	A single record (24 May) - calling on the pond in the south west of the Site
Feral pigeon	70	Eight records observed throughout the survey season of flocks flying around HPB Station. Likely to have bred within the built area of HPB.
Goldcrest	1	Two records of an individual bird on 9 May and 27 June
Great black-backed gull		Birds seen in the built areas of HPB throughout much of the survey period. Although no conclusive evidence of breeding.
Green woodpecker	3	Five observations during surveys on 9 and 24 May and 4 and 27 June. Three birds calling within close proximity on 24 May. The observations were not deemed to be in close enough proximity to form a territory.
Lesser whitethroat	1	Records of singing and calling birds throughout the survey season, though not within close enough proximity to form a territory.
Little egret	1	Two fly-over on 4 June
Meadow pipit	1	Single record of a bird singing in the north of the Site on 24 May
Peregrine	2	A pair observed in flight over the HPB Station on 26 April and 12 June. A single bird observed calling on 24 May. No conclusive breeding behaviour was observed.
Pheasant	1	Single record of a calling bird in the south of the Site on 24 May
Pied wagtail	2	Five observations across the survey season. An adult and juvenile seen together on 10 June, suggesting the species bred in the vicinity. This species is very likely to have bred within the built area of HPB.
Raven	2	Two calling birds on 26 April
Reed bunting	1	Single record of a calling bird on 27 June
Sedge warbler	1	Single record of a bird singing in the north of the Site on 24 May
Shelduck	3	Three birds flying north east over Bridgwater Bay on 24 May
Siskin	2	Two birds observed in flight on 26 April
Starling	1	Single record of a singing bird in the north east of the Site
Stock dove	1+	Records of singing, calling and flyover birds throughout the survey season, not within close enough proximity to form a territory.
Swallow	10	Birds seen foraging over the Site throughout the survey season, but no territories were located. It is possible that swallow bred within the built area of HPB.

Species	Peak Count (single survey)	Description
Swift	1+	Birds seen foraging over the Site throughout the survey season, but no territories or likely nest sites located.
Treecreeper	1	Single record of a calling bird on 12 July
Whimbrel	3	Single record of three birds flying south over the Site on 26 April
Willow warbler	2	Two birds singing on 26 April and no further records were obtained, therefore these were deemed to be migrant birds.
Yellow wagtail	1	Single flyover record of a bird on 9 May

3.4 Non-breeding bird survey

Instantaneous Scan Samples

Two survey visits each month (fourteen in total) were completed between September 2019 and March 2020 inclusive. The survey parameters (dates, times and weather conditions) are included in **Table D.3, Appendix D**. Target species were derived from all overwintering and non-breeding species listed as individual qualifying features of designated sites[11] (**Table 3.1**):

- **SPA and Ramsar listed:** Bewick's swan, dunlin, gadwall, golden plover, Greenland white-fronted goose, lapwing, redshank, shelduck and teal; and
- **SSSI listed:** black-tailed godwit, curlew, grey plover, knot, mallard, ringed plover, snipe, turnstone, whimbrel and wigeon.

All other wildfowl and wader species recorded during the surveys are secondary species considered to form part of the waterbird assemblage qualifying feature of the Severn Estuary SPA/Ramsar and Somerset Levels and Moors SPA/Ramsar sites.

The monthly peak counts of waterbirds are outlined in **Table 3.8**. A total of 24 target and secondary species were recorded within the Study Area, including 11 target species that are a qualifying feature of Severn Estuary SPA/Ramsar, Somerset Levels SPA/Ramsar or Bridgwater Bay SSSI:

- **Three** species are listed as individual qualifying features of the Severn Estuary SPA and Severn Estuary Ramsar (dunlin, redshank and shelduck);
- **Two** species are listed as individual qualifying features of the Somerset Levels and Moors SPA and Ramsar (lapwing and teal);
- **Ten** species are listed on the citation for the Bridgwater Bay SSSI (curlew, dunlin, knot, mallard, redshank, ringed plover, shelduck, teal, turnstone and wigeon);
- **Five** species are listed on Annex I of the Birds Directive (black tern, common tern, little egret, Mediterranean gull and peregrine);

[11] Excluding Ramsar species identified subsequent to designation, for possible future consideration under Criterion 6.

- **Three** species of Principal Importance (brent goose[12], herring gull, and lapwing);
- **Three** species listed on the Birds of Conservation Concern (BoCC) red-list (Eaton et al., 2015) (curlew, herring gull and lapwing); and
- **Nineteen** species on the BoCC Amber-list (black tern, black-headed gull, brent goose, common sandpiper, common tern, dunlin, knot, lesser black-backed gull, mallard, Mediterranean gull, oystercatcher, pintail, purple sandpiper, redshank, shelduck, teal, turnstone and wigeon).

Table 3.8 Monthly peak counts of waterbirds

Species	Conservation Status*	September	October	November	December	January	February	March
TARGET SPECIES								
Curlew	Red	**62**	14	7	7	14	10	10
Dunlin	Amber	**4**	-	-	-	-	-	-
Knot	Amber	**35**	-	-	-	-	-	-
Lapwing	SPI, Red	-	-	-	**79**	-	-	-
Mallard	Amber	**47**	30	17	44	30	12	2
Redshank	Amber	-	-	-	-	**24**	2	-
Ringed plover	Red	-	**14**	-	-	-	-	-
Shelduck	Amber	**437**	47	290	11	36	4	37
Teal	Amber	-	3	3	3	**11**	-	-
Turnstone	Amber	**25**	1	1	4	1	5	1
Wigeon	Amber	-	-	26	**75**	19	29	37
SECONDARY SPECIES								
Black tern	Annex 1	**1**	-	-	-	-	-	-
Black-headed gull	Amber	**254**	102	-	-	-	-	-
Brent goose	SPI, Amber	-	9	-	26	39	**114**	52
Common sandpiper	Amber	**1**	-	-	-	-	-	-
Common tern	Annex 1, Amber	-	**2**	-	-	-	-	-
Cormorant		**8**	-	1	1	1	1	-
Herring gull	SPI, Red	37	-	172	**246**	190	-	-

[12] Brent goose also encompasses dark-bellied and light-bellied sub-species.

Species	Conservation Status*	September	October	November	December	January	February	March
Lesser black backed gull	Amber	-	-	**2**	-	-	-	-
Little egret	Annex 1	**9**	7	3	-	1	-	-
Mediterranean gull	Annex 1, Amber	1	**2**	-	-	-	-	-
Oystercatcher	Amber	**68**	47	26	48	29	27	30
Pintail	Amber	59	28	**270**	61	9	13	15
Purple sandpiper	Amber	-	-	-	1	1	**6**	2

* Annex I = Annex I of the EU Birds Directive; SPI = Species of Principal Importance; Red / Amber = BoCC red / amber listed species

Target species

Five target species were recorded on more than 60% of survey visits (nine or more of the 14 survey visits), with other target species (dunlin, knot, lapwing, redshank, ringed plover and teal) occurring infrequently throughout the survey period:

- **Curlew** were recorded on all 14 survey visits in small numbers. Birds were recorded foraging on rock beds and beach/strandline within 500m of the Site regularly (**Figure 3.5, Appendix A**). Evidence of a small high-tide roost on rock beds near the outflow from HPB station was recorded. The peak curlew count was 62 individuals (20/09/19), which coincides with the peak autumn passage period for this species. Peak counts between October 2019 and March 2020 were between 10 and 15 birds;
- **Mallard** were recorded on 13 of the 14 survey visits, over 95% of all records being observed in Sector 2 (**Figure 3.6, Appendix A**). Birds were regularly recorded roosting and loafing on rock beds and beach/strandline within 500m of the Site. The peak count was on the 20 September 2019;
- **Shelduck** were recorded on 12 of the 14 survey visits and in every survey month (September 2019 to March 2020 inclusive), with over 93% of all observations recorded from Sector 2 (**Figure 3.7, Appendix A**). Numbers of birds utilising the Study Area fluctuated during different tidal phases and across the survey period, although peak counts were usually between two to three hours either side of high tide, with autumnal/passage peaks also observed. The peak count throughout the survey period was 437 counted two-hours before high tide on 20 September 2019, during autumn passage;
- **Turnstone** were recorded on nine of the 14 survey visits and in every survey month (September 2019 to March 2020 inclusive), with observations spread across the two sectors (**Figure 3.8, Appendix A**). Numbers of birds utilising the Study Area fluctuated during different tidal phases and across the survey period. The peak count was 25, three hours after high tide on 20 September 2019; and
- **Wigeon** were recorded on 10 of the 14 survey visits and monthly (November 2019 to March 2020 inclusive), with distribution bias towards Sector 2 (**Figure 3.9, Appendix A**). Numbers of birds utilising the Study Area fluctuated during different tidal phases and across the survey period. The peak count of birds was 75 at high tide on 20 December 2019.

Secondary species

Three secondary species were recorded on more than 60% of survey visits:

- **Brent goose** were recorded on nine of the 14 survey visits, with peak numbers ranging from 5 to 114 individuals recorded on the 21 February 2020. Observations were spread across the two sectors (**Figure 3.10, Appendix A**) and the tidal range. A colour-ringed pale-bellied brent goose was observed in March, with anecdotal reports suggesting that this bird was ringed in Northern Ireland and regularly winters between Ireland and Bridgwater Bay;
- **Oystercatcher** was the most frequently recorded species throughout the survey period with 513 records across 14 visits (**Figure 3.11, Appendix A**). Small numbers of oystercatcher were recorded utilising rock beds to forage during all survey periods and across all tidal cycles. Throughout the survey period a high-tide roost of oystercatcher was present within Sector 2, with up to 40 birds regularly recorded roosting and a peak count of 50 during the initial count on 06 September 2019; and
- **Pintail** were recorded on 11 of the 14 survey visits, with peak numbers ranging from 2 to 270 recorded three hours after high tide on the 1 November 2019 (**Figure 3.12, Appendix A**). There was a bias in distribution towards Sector 2. Numbers of birds utilising the Study Area fluctuated during different tidal phases and across the survey period.

Other records of notable species included four species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended): kingfisher (20 September 2019 – an individual foraging in a tidal lagoon); barn owl (20 September 2019 – an individual observed near OP1 (**Figure 2.1**) flew west along the foreshore towards HPC, having been flushed from a perch/outbuilding at the western limit of the HPB fence, on the HPA/HPB boundary, or from an outbuilding/fence along the northern edge of HPA); peregrine (several sightings across the winter of a pair of adults foraging in the air or on the rock beds, peak count of 2 birds 07 January 2020) and osprey (19 March 2020 – an adult female, migrating north).

Disturbance surveys

Background disturbance

The results of disturbance monitoring are summarised in **Table 3.9**. In the event two potential disturbance stimuli were noted, the bird data relate to the first stimulus that was recorded.

Table 3.9 Disturbance monitoring results

Background disturbance stimulus	Number of events (Levels 1-5)	Number of responses (Level 2-5)	Average number of responses (Level 2-5)
Walker No dog	72	64	0.89
Jogger	43	25	0.58
Predator	27	570	21.11
Vehicle	24	222	9.25
Fisherman	24	117	4.88
Heavy goods vehicle	20	31	1.55
Cyclist	19	126	6.63

Background disturbance stimulus	Number of events (Levels 1-5)	Number of responses (Level 2-5)	Average number of responses (Level 2-5)
Helicopter	17	146	8.59
Walker dog off	15	26	1.73
Other	10	211	21.10
Light goods vehicle	9	35	3.89
Walker dog on lead	7	0	0.00
Bait digger	6	16	2.67
Aircraft	5	7	1.40
Small vessel	5	0	0.00
Unknown	1	11	11.00
Large vessel	1	0	0.00
	305	**1,607**	

With the exclusion of 'unknown' stimuli, the most frequent disturbance events were associated with:

- Walkers without dogs (24%);
- Joggers (14%); and
- Predators (9%).

The largest numbers of birds (with the exclusion of 'unknown' stimuli) were disturbed by:

- Predators (36%);
- Vehicles (14%); and
- Other events (13%).

'Other' disturbance events included activity associated with HPC, a digger on the beach and movement/noise associated with tractors.

On average the largest numbers of birds responding to a single disturbance event (with the exclusion of 'unknown' and 'other' reasons) were disturbed by:

- Predators (21.11);
- Vehicles (9.25); and
- Helicopter (8.59).

Disturbance Responses

Level 4 and 5 responses (**Table 3.10**) are considered to equate most closely to significant disturbance. A total of 61 Level 4 and 30 Level 5 disturbance events comprised 30% of all recorded disturbance events.

Table 3.10 Level 4 and 5 disturbance events.

Visit Date	Level 4 Events		Level 5 Events	
	Total number of events recorded	Total number of individual responses	Total number of events recorded	Total number of individual responses
September 2019	17	354	3	4
October 2019	9	65	10	83
November 2019	3	14	9	98
December 2019	12	77	1	1
January 2020	6	18	2	2
February 2020	3	20	1	2
March 2020	11	525	4	5

A total of 14 species exhibited a Level 4 or 5 response (brent goose, cormorant, curlew, heron, herring gull, lesser black-backed gull, little egret, mallard, oystercatcher, pintail, redshank, shelduck, turnstone and wigeon) as summarised in **Table 3.11**.

Table 3.11 Level 4 and 5 Disturbance Responses

Species	Number of individual responses (at all levels) caused by all stimuli	Number of birds showing level 4 responses	Number of birds showing level 5 responses	Most common disturbance stimuli (excluding unknown)
Brent goose	84	59	19	Predator and fishermen
Cormorant	1	-	1	Walkers
Curlew	77	48	13	Predator, helicopters and other
Heron	3	1	1	Predator and walkers
Herring gull	350	350	-	Predator
Lesser black-backed gull	50	50	-	Predators
Little egret	11	3	3	Fishermen
Mallard	119	91	20	Predator, helicopters and other
Oystercatcher	279	107	34	Predator, helicopters, walkers and other
Pintail	96	34	62	Fishermen
Redshank	4	-	2	Predator
Shelduck	456	254	40	Predator, cyclist and other

Species	Number of individual responses (at all levels) caused by all stimuli	Number of birds showing level 4 responses	Number of birds showing level 5 responses	Most common disturbance stimuli (excluding unknown)
Turnstone	34	33	-	Light goods vehicle
Wigeon	43	43	-	Predator

4. Conclusions

4.1 Current Baseline (breeding birds)

The breeding bird community within the Study Area primarily comprises relatively low numbers of common and widespread species that are typical of the county (Somerset) and the habitats present (scrub, trees, hedgerows and buildings). A total of eight species of notable nature conservation value (listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); qualifying species of the Severn Estuary SPA/Ramsar; BoCC red-listed (Eaton *et al*., 2015) species; and/or Species of Principal Importance [SPI] for the Conservation of Biodiversity) were recorded as breeding or potentially breeding within the Study Area as outlined below.

Cetti's Warbler

Cetti's warbler is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and is therefore afforded additional legal protection from disturbance during the breeding season. The UK breeding population of Cetti's warbler was estimated to be 2,000 pairs during 2006-10 (Musgrove, 2013). The species is widespread in Somerset during the breeding season, with 210 pairs/territories reported in 2016 (Holling, 2018), although this is likely to be an under-estimate of the true population in the county due to the extensive areas of suitable (wetland scrub) habitat available.

Two territories of Cetti's warbler were recorded in the LWS, associated with areas of scrub outside the NSL, within the southern part of the Study Area and are unlikely to represent more than 1%[13] of the county (Somerset) population.

Herring Gull

Herring gull is a SPI and BoCC red-listed due to a severe decline in the UK breeding population (Eaton *et al*., 2015), estimated at 140,000 pairs during 1998-2002 (Musgrove *et al*., 2013). During the last full census of breeding seabirds in 1998-2002, a total of 531 pairs of herring gull were recorded in Somerset, including 107 pairs at HPA and HPB (Mitchell *et al*. 2004). The county total is likely to have increased since, with numbers at Portishead, Clevedon and Burnham-on-sea having risen from 14 pairs in 1998-2002 to 283 pairs in 2016 (JNCC, SMP database) Similarly, a total of 439 pairs were estimated for the Hinkley Point Power Station (HPA and HPB) in 2011 (JNCC, SMP database).

This species nests on buildings/built structures at Hinkley Point and observations during the breeding bird survey in 2019 indicate that the breeding population at HPB is likely to be in the region of 100-200 pairs. Numbers at the Hinkley Point Power Station are likely to have declined since 2016, due to the removal and destruction of roofing at HPA, although this species was recorded in high numbers at HPB in 2019. Allowing for an increase in the overall Somerset population, the numbers breeding at the Site are likely to represent a considerable proportion (>10%) of the county total.

[13] There is no fundamental biological reason to take 1% of a population as the threshold level for establishing the level of importance of a site. Nevertheless, this percentage is widely considered to be of value in developing measures that give an appropriate level of protection to populations and has gained acceptance on this basis throughout the world. The criterion was, for example, adopted by parties involved in the Ramsar Convention 1971. Thereafter, the 1% level of national species totals has been taken as the basis of assessment in various countries, including Britain (Stroud, Mudge & Pienkowski, 1990).

Lesser Black-backed Gull

The breeding population of lesser black-backed gull is listed for future consideration as a qualifying species under Ramsar Criterion 6 for the Severn Estuary Ramsar site/SPA (4,167 occupied nests, Seabird 2000 Census). The species is also BoCC amber-listed due to the localised distribution of the UK breeding population, which is an important proportion (>20%) of the European total (Eaton *et al*., 2015). The UK breeding population was estimated at 110,000 pairs during 1998-2002 (Musgrove *et al*., 2013).

During the last full census of breeding seabirds (1998-2002) a total of 74 pairs of lesser black-backed gull were recorded in Somerset, including 27 pairs at HPA and HPB (Mitchell *et al*., 2004). This county total is likely to have increased since, with numbers at Highbridge having risen from 6 pairs (1998-2002) to 131 pairs in 2016 (JNCC, SMP database). Similarly, a total of 46 pairs were estimated for the Hinkley Point Power Station in 2011 (JNCC, SMP database).

This species nests on buildings/built structures at Hinkley Point and observations during the breeding bird survey in 2019 indicate that the breeding population at HPB is likely to be somewhere in the region of 20 pairs, which represents 0.5% of the Severn Estuary Ramsar site population. The overall numbers at Hinkley Point Power Station are likely to have declined since 2016 due to the removal of roofing at HPA. Allowing for an increase in the overall Somerset population, the numbers breeding at the Site (HPB) are likely to represent a considerable proportion (>5%) of the county total.

Peregrine

Peregrine is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and Annex I of the Birds Directive. During the last full census of the species in 2014, a total of 1,694 pairs were estimated for the UK and Isle of Man (Wilson *et al*. 2018) of which 11 were in Somerset (Holling, 2016).

Breeding peregrine where not recorded by the previous breeding bird surveys (EDF 2018), however there are records of peregrine throughout the year, including a pair of peregrine observed sporadically within the vicinity of the Study Area during the 2019 surveys (April-July). There is also anecdotal evidence (Nick Wall, HPC Site Project Control) that there may be two pairs in the area and peregrine have previously nested at HPA, HPB and a cliff site approximately 1.5km to the west of HPC:

- 2018: nest on artificial nest platform on HPB failed due egg predation;
- 2019: nest on cliffs and possible cliff fall destroyed nest: and
- 2020: active nest site at cliff west of the site.

Other Notable Species

The number of territories of other notable species (dunnock, linnet, skylark and song thrush) within the Study Area are low, and likely to represent a very small proportion of the county populations of these species.

4.2 Current Baseline (Non-breeding birds)

Distribution and Abundance

The non-breeding bird assemblage within the Study Area primarily comprises relatively low numbers of common and widespread species that are typical of the county (Somerset) and the habitats present (beach, shale, rock bed and open estuary). A total of 11 target species and 13 secondary species were recorded on passage or wintering within the Study Area.

Five target species and three secondary species (brent goose, oystercatcher and pintail) were recorded on more than 60% of survey visits (nine or more of the 14 survey visits). The status of these species is summarised in **Table 4.1**. The occurrence of other target species (dunlin, knot, lapwing, redshank, ringed plover and teal) within the Study Area was infrequent throughout the survey period.

Table 4.1 Summary of baseline status of non-breeding birds (Target and Secondary Species)

Species	Bridgewater Bay SSSI	Severn Estuary SPA	2019/20 Non-breeding bird survey (% of SPA population)	BTO WeBS Severn Estuary peak average (2014/2015-2018/19)[14]	2019/20 peak count (% of Webs peak average).
TARGET SPECIES					
Curlew	Internationally important numbers over winter	-	-	3,398	1.8%
Mallard	Significant numbers over winter	-	-	2,379	2%
Shelduck	Internationally important numbers over winter	3,330 wintering individuals	13.1%	5,462	8%
Turnstone	Significant numbers over winter	-	-	580	4.3%
Wigeon	Significant numbers over winter	-	-	7,881 wintering individuals	0.9%
SECONDARY SPECIES					
Brent goose	-	-	-	108	105%
Oystercatcher	-	-	-	1,146	5.9%
Pintail	-	-	-	786	34%

[14] Frost et al., 2020. Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2018/19 © copyright and database right 2020. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, in association with WWT, with fieldwork conducted by volunteers. The 'five-year peak average' is the average of the annual peak count for the five-year period in question.

Disturbance

The most common disturbance stimuli recorded were walkers without dogs, joggers and predators. The greatest response by individuals was recorded during disturbance events consisting of the presence of predators, vehicles and helicopters.

The four wildfowl species documented in **Table 3.11** (mallard, pintail, shelduck and wigeon) were disturbed most frequently by predators and fishermen. The four wader species (curlew, oystercatcher, redshank and turnstone) were disturbed most frequently by predators, helicopters and light goods vehicles.

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Appendix A Figures

H:\Projects\41491 NTH Ecology EIA Scoping for Phase 1 Decommissioning (subfolder)\D Design Technical\HPB\Drawings\ArcGIS\41491-WOD-XX-XX-FG-OE-0021_S2_P01.mxd Originator: jacqui.parkin

319000 320000 321000 322000 323000

147000 146000 145000 144000

N

47 46 45 44

Caisson (Water Intake)

Submarine Forest

England Coast Path

Hinkley Point 'A'

Hinkley Point 'A'

Hankley Brake

Chys

Groynes

Hinkley Point Power Station

Great Arch

North Ham

Goose Marsh

Sharpham

Little Dowden's Farm

Sewage Works

Pixies Mound

North Moor

Wick Moor

Stolford

Trighern Farm

Gorpit Lane

West Brook

East Brook

Brown's Cottage

Wick Moor Drove

STOGURSEY CP

Wick Farm

Wick

Zine Farm

Idson Farm

Mud House Copse

Buffen Farm

FB

Ford

Knighton

Knighton Farm

Ford

Shurton

England Coast Path

Doggetts

Newnham Bridge

Newnham House

Gunter's Grove

Burton

Warren's Farm

Shurton Lodge

Culver Street Farm

Caravan Park

Middle Brook

Cole Pool

Bayley's Brook

Shurton Lane

Farringdon Hill Plantation

Farringdon Hill Farm

Wick Park Cottage

Wick Park Covert

Upper Cock Farm

Lower Cock

Key

Hinkley Point B Nuclear Site Licence boundary

Double security fence

0 200 400 600 800 m

Scale at A3: 1:15,000

Hinkley Point B Decommissioning EIA Baseline Report: Breeding and Non-breeding Birds

Figure 1.1
Site location plan

May 2020

wood.