MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Environmental Statement

Volume 3, Chapter 5: Historic environment

September 2024
Rev: ES Issue

MOR001-FLO-CON-ENV-RPT-0100
MRCNS-J3303-RPS-10128

PINS Reference: EN020028
APFP Regulations: 5(2)(a)
Document reference: F3.5

Document status					
Version	**Purpose of document**	**Approved by**	**Date**	**Approved by**	**Date**
ES	For issue	AS	September 2024	IM	September 2024

Prepared by:

RPS

Prepared for:

Morgan Offshore Wind Limited, Morecambe Offshore Windfarm Ltd

Contents

Tables

Annexes (See Volume 3, Annexes)

Annex number	Annex title
5.1	Historic environment desk based assessment
5.2	Onshore archaeological geophysical survey report
5.3	Intertidal archaeological survey report
5.4	Geoarchaeological desk based assessment report
5.5	Settings assessment
5.6	Interim trial trenching report

Figures (See Volume 3, Figures)

Figure number	Figure title
5.1	Site location and historic environment study areas
5.2	Designated heritage assets within the 1 km settings study area – Plot A
5.3	Designated heritage assets within the 1 km settings study area – Plot B
5.4	Designated heritage assets within the 1 km settings study area – Plot C
5.5	Designated heritage assets within the 1 km settings study area – Plot D
5.6	Designated heritage assets within the 5 km substations settings study area
5.7	Non-designated Undated, Prehistoric and Roman heritage assets – Plot A
5.8	Non-designated Undated, Prehistoric and Roman heritage assets – Plot B
5.9	Non-designated Undated, Prehistoric and Roman heritage assets – Plot C
5.10	Non-designated Undated, Prehistoric and Roman heritage assets – Plot D
5.11	Non-designated Early Medieval, Medieval and Post-medieval heritage assets – Plot A
5.12	Non-designated Early Medieval, Medieval and Post-medieval heritage assets – Plot B
5.13	Non-designated Early Medieval, Medieval and Post-medieval heritage assets – Plot C
5.14	Non-designated Early Medieval, Medieval and Post-medieval heritage assets – Plot D
5.15	Non-designated Modern heritage assets – Plot A
5.16	Non-designated Modern heritage assets – Plot B
5.17	Non-designated Modern heritage assets – Plot C
5.18	Non-designated Modern heritage assets – Plot D

Glossary

Term	Meaning
400 kV grid connection cables	Cables that will connect the proposed onshore substations to the existing National Grid Penwortham substation.
400 kV grid connection cable corridor	The corridor within which the 400 kV grid connection cables will be located.
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Ltd (Morecambe OWL).
Bronze Age	The time period 1,800 to 600 BC.
Code of Construction Practice	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes.
Commitment	This term is used interchangeably with mitigation and enhancement measures. The purpose of commitments is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects. Primary and tertiary commitments are taken into account and embedded within the assessment set out in this Environmental Statement. Secondary commitments are incorporated to reduce effects to environmentally acceptable levels following initial assessment.
Conservation Area	An area designated by a local authority as being of special architectural or historic interest.
Cumulative Effects	The combined effect of the Transmission Assets in combination with the effects from other proposed developments, on the same receptor or resource.
Design envelope	A description of the range of possible elements and parameters that make up the Transmission Assets options under consideration, as set out in detail in Volume 1, Chapter 3: Project Description of the ES. This envelope is used to define the Transmission Assets for EIA purposes when the exact engineering parameters are not yet known. This is also referred to as the Maximum Design Scenario or Rochdale Envelope approach.
Designated heritage asset	A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.
Direct pipe	The direct pipe installation is a fully cased system which reduces risks associated with frack out of drilling fluids or the collapse of the drill hole if unsuitable ground conditions are encountered along the drill profile.
Early Medieval Period	The time period AD 410 to 1066.
Effect	The term used to express the consequence of an impact. The significance of effect is determined by correlating magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.

Term	Meaning
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Evidence Plan Process	A voluntary consultation process with specialist stakeholders to agree the approach to, and information to support, the EIA and Habitats Regulations Assessment processes for certain topics.
Expert Working Group	A forum for targeted engagement with regulators and interested stakeholders through the Evidence Plan process.
Generation Assets	The generation assets associated with the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm include the offshore wind turbines, inter-array cables, offshore substation platforms and platform link (interconnector) cables to connect offshore substations.
Heritage asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest.
Heritage significance	The value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.
Historic Environment Record	Information service that provides access to resources relating to the archaeology and historic built environment of a defined geographic area.
Historic Landscape Classification	An aspect of more general landscape characterisation that seeks to provide an additional element of 'time-depth', allowing the historic evolution of the landscape to be perceived and understood.
Impact	Change that is caused by an action/proposed development, e.g., land clearing (action) during construction which results in habitat loss (impact).
Inter-related effects	Inter-related effects arise where an impact acts on a receptor repeatedly over time to produce a potential additive effect or where a number of separate impacts, such as noise and habitat loss, affect a single receptor.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
Intertidal Infrastructure Area	The temporary and permanent areas between MLWS and MHWS.
Iron Age	The time period 600 BC to AD 43.
Landfall	The area in which the offshore export cables make landfall (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Lytham St. Annes between Mean Low Water Springs and the transition joint bays inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Listed building	A building or structure placed on a statutory 'List' of buildings of special architectural or historic interest. There are three grades of listing, which are: • grade I (these are of exceptional interest); • grade II* (these are particularly important); and • grade II (these are of special interest).
Local Planning Authority	The local government body (e.g., Borough Council, District Council, etc.) responsible for determining planning applications within a specific area.

Term	Meaning
Magnetometer	A device that measures magnetic fields.
National Heritage List for England	List of nationally designated heritage assets maintained by Historic England.
Maximum design scenario	The realistic worst case scenario, selected on a topic-specific and impact-specific basis, from a range of potential parameters for the Transmission Assets.
Mean High Water Springs	The height of mean high water during spring tides in a year.
Medieval Period	The time period AD 1066 to 1485.
Mesolithic Period	The time period 12,000 to 4,000 BC.
Mitigation measures	This term is used interchangeably with Commitments. The purpose of such measures is to avoid, prevent, reduce or, if possible, offset significant adverse environmental effects.
Modern Period	The time period AD 1800 to present.
Morecambe OWL	Morecambe Offshore Windfarm LTD is a joint venture between Zero-E Offshore Wind S.L.U. (Spain) (a Cobra group company) and Flotation Energy Ltd.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The offshore and onshore infrastructure connecting the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the national grid. This includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure such as circuit breaker compounds. Also referred to in this report as the Transmission Assets, for ease of reading.
Morgan OWL	Morgan Offshore Wind Limited is a joint venture between bp Alternative Energy investments Ltd. and Energie Baden-Württemberg AG (EnBW).
National Grid Penwortham substation	The existing National Grid substation at Penwortham, Lancashire.
National Policy Statement(s)	The current national policy statements published by the Department for Energy Security and Net Zero in 2023 and adopted in 2024.
Neolithic Period	The time period 4,000 to 1,800 BC.
Non-statutory consultee	Organisations that an applicant may choose to consult in relation to a project who are not designated in law but are likely to have an interest in the project.
Offshore export cables	The cables which would bring electricity from the Generation Assets to the landfall.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore Infrastructure Area	The area within the Transmission Assets Order Limits landward of Mean High Water Springs. Comprising the offshore export cables from Mean High Water Springs to the transition joint bays, onshore export cables, onshore substations and 400 kV grid connection cables, and associated temporary and permanent infrastructure including temporary and permanent compound areas and accesses. Those parts of the Transmission Assets Order Limits proposed only for ecological mitigation/biodiversity benefit are excluded from this area.

Term	Meaning
Onshore substations	The onshore substations will include a substation for the Morgan Offshore Wind Project: Transmission Assets and a substation for the Morecambe Offshore Windfarm: Transmission Assets. These will each comprise a compound containing the electrical components for transforming the power supplied from the generation assets to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid.
Onshore Order Limits	See Transmission Assets Order Limits: Onshore (below).
Order limits	The limits within which the Transmission Assets may be carried out.
Palaeolithic Period	The time period 900,000 to 12,000 BC.
Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.
Policy	A set of decisions by governments and other political actors to influence, change, or frame a problem or issue that has been recognized as in the political realm by policy makers and/or the wider public.
Post-medieval Period	The time period AD 1486 to 1799.
Prehistoric Period	The general term used for the time period before the Roman invasion of AD 43.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project and which helps to inform consultation responses.
Registered Park and Garden	A park and/or garden of special historic interest placed on a non-statutory Register. There are three grades of registration: • grade I – these are of exceptional interest; • grade II* - these are particularly important; and • grade II – these are of special interest.
Roman Period	The time period AD 43 - 410.
Scheduled Monument	An archaeological site given legal protection by being placed on a ‘Schedule’ of monuments.
Scoping Opinion	Sets out the Planning Inspectorate’s response (on behalf of the Secretary of State) to the Scoping Report prepared by the Applicants. The Scoping Opinion contains the range of issues that the Planning Inspectorate, in consultation with statutory stakeholders, has identified should be considered within the Environmental Impact Assessment process.
Spatial extent	Geographical area over which the impact may occur.
Statutory consultee	Organisations that are required to be consulted by an applicant pursuant to section 42 of the Planning Act 2008 in relation to an application for development consent. Not all consultees will be statutory consultees (see non-statutory consultee definition).
Study area	This is an area which is defined for each environmental topic which includes the Transmission Assets Order Limits as well as potential spatial and temporal considerations of the impacts on relevant receptors. The study area for each topic is intended to cover the area within which an impact can be reasonably expected.
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.

Term	Meaning
The Secretary of State for Energy Security and Net Zero	The decision maker with regards to the application for development consent for the Transmission Assets.
Transboundary effects	Effects from a project within one state that affect the environment of another state(s).
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above)
Transmission Assets Order Limits	The area within which all components of the Transmission Assets will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).
Transmission Assets Order Limits: Onshore	The area within which all components of the Transmission Assets landward of Mean High Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds). Also referred to in this report as the Onshore Order Limits, for ease of reading.
Transmission Assets Scoping Boundary	The term used to define the boundary used at the time the Scoping Report was submitted.
Zone of Theoretical Visibility	A map, usually digitally produced, showing areas of land within which a development is theoretically visible.

Acronyms

Acronym	Meaning
AD	Anno Domini – after the birth of Christ
BC	Before Christ
BEIS	The former Department for Business, Energy & Industrial Strategy
c.	Circa
CIfA	Chartered Institute for Archaeology
CITiZAN	Coastal and Intertidal Zone Archaeological Network
CoCP	Code of Construction Practice
DBA	Desk-Based Assessment
DCO	Development Consent Order
DESNZ	Department for Energy Security and Net Zero
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
EPP	Evidence Plan Process
EWG	Expert Working Group
HER	Historic Environment Record

Acronym	Meaning
HET	Historic Environment Team
HLC	Historic Landscape Classification
IEMA	Institute for Environmental Management and Assessment
LPA	Local Planning Authority
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NHLE	National Heritage List for England
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NWWS	North West Wetlands Survey
PAS	Portable Antiquities Scheme
PEIR	Preliminary Environmental Information Report
PPG	Planning Practice Guidance
UK	United Kingdom
WSI	Written Scheme of Investigation
ZTV	Zone of Theoretical Visibility

Units

Unit	Description
km	Kilometres
kV	Kilovolt
m	Metre
m^2	Square Metre
m^3	Cubic Metre
nm	Nautical Miles

5 Historic environment

5.1 Introduction

5.1.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) undertaken for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets. For ease of reference, the Morgan and Morecambe Offshore Wind Farms Transmission Assets are referred to in this chapter as the 'Transmission Assets'. This ES accompanies the application to the Planning Inspectorate for development consent for the Transmission Assets.

5.1.1.2 The purpose of the Transmission Assets is to connect the Morgan Offshore Wind Project: Generation Assets and Morecambe Offshore Windfarm: Generation Assets (referred to collectively as the 'Generation Assets') to the National Grid. A description of the Transmission Assets can be found in Volume 1, Chapter 3: Project description of the ES.

5.1.1.3 This chapter considers the likely impacts and effects of the onshore elements of the Transmission Assets landward of Mean Low Water Springs (MLWS) on the historic environment during the construction, operation and maintenance, and decommissioning phases. The likely impacts and effects of those elements of the Transmission Assets seaward of MLWS are addressed in Volume 2, Chapter 8: Marine archaeology of the ES.

5.1.1.4 This ES chapter:

- identifies the key legislation, policy and guidance relevant to the historic environment;
- details the EIA scoping and consultation process undertaken to date for the historic environment;
- confirms the study areas for the assessment, the methodology used to identify baseline environmental conditions and sets out the existing and future environmental baseline conditions, established from desk studies, surveys and consultation;
- identifies the scope of the assessment;
- details the mitigation and/or monitoring measures that are proposed to prevent, minimise, reduce or offset the possible environmental effects identified in the EIA process;
- defines the project design parameters used to inform the impact assessment;
- identifies the impact assessment methodology and presents an assessment of the likely impacts and effects in relation to the construction, operation and maintenance and decommissioning phases of the Transmission Assets on the historic environment (and, where relevant, the impacts and effects of the historic environment on the Transmission Assets); and

- identifies any cumulative, transboundary and/or inter-related effects in relation to the construction, operation and maintenance and decommissioning phases of the Transmission Assets on the historic environment.

5.1.1.5 The assessment presented is informed by the following technical chapters:

- Volume 3, Chapter 10: Landscape and visual resources of the ES.

5.1.1.6 This chapter also draws upon additional information to support the assessment contained within:

- Volume 3, Annex 5.1: Historic environment desk based assessment of the ES;
- Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES;
- Volume 3, Annex 5.3: Intertidal archaeological survey report of the ES;
- Volume 3, Annex 5.4: Geoarchaeological desk based assessment report of the ES;
- Volume 3, Annex 5.5: Settings assessment of the ES; and
- Volume 3, Annex 5.6: Interim trial trenching report of the ES.

5.2 Legislation, policy and guidance

5.2.1 Legislation

5.2.1.1 A summary of the relevant legislation is provided below, with further details included in Volume 3, Annex 5.1: Historic environment desk based assessment of the ES.

5.2.1.2 Procedures for dealing with buried human remains are set out in the Burial Act 1857. Procedures for dealing with ‘treasure’ are set out in the Treasure Act 1996 and the Treasure (Designation) Amendment Order 2023.

5.2.1.3 Statutory protection for archaeological remains is principally enshrined in the Ancient Monuments and Archaeological Areas Act 1979. Nationally important archaeological sites are listed in a Schedule of Monuments and are afforded statutory protection.

5.2.1.4 The Planning (Listed Buildings and Conservation Areas) Act 1990 and the Town and County Planning Act 1990 provide statutory protection to listed buildings, and present measures to designate and preserve the character and appearance of Conservation Areas.

5.2.1.5 Historic Parks and Gardens, and Historic Battlefields, have received recognition under the National Heritage Acts 1980, 1983 and 2002. Such sites are described on registers maintained by Historic England for the Department for Culture, Media and Sport, but such a designation does not afford statutory protection.

5.2.1.6 The Hedgerows Regulations 1997 set out criteria for the identification of ‘Important Hedgerows’. According to the Hedgerows Regulations 1997, a hedgerow can be defined as ‘important’ if it has existed for 30 years or more

and falls into one of the criteria listed in Part II of Schedule 1. Consent from the local planning authority is usually required for the removal of an 'Important Hedgerow' during construction. However, the draft DCO (document reference C1) provides that such consent is not required for the carrying out of maintenance for the Transmission Assets.

5.2.1.7 The Infrastructure Planning (Decisions) Regulations 2010 require decision-makers to have regard for the desirability of:

- preserving Listed Buildings and their settings or any features of special architectural or historic interest that they possess;
- preserving or enhancing the character or appearance of Conservation Areas; and
- preserving Scheduled Monuments and their settings.

5.2.2 Planning policy context

5.2.2.1 A summary of the relevant planning policy context is provided below, with further details included in section 2 of Volume 3, Annex 5.1: Historic environment desk based assessment of the ES.

5.2.2.2 The Transmission Assets will be located in English offshore waters (beyond 12 nautical miles (nm) from the English coast) and inshore waters (within 12 nm from the English coast), with the onshore infrastructure located wholly within England. As set out in Volume 1, Chapter 1: Introduction of the ES, the Secretary of State for the Department for Business, Energy and Industrial Strategy (BEIS) (the department which preceded the Department for Energy Security and Net Zero (DESNZ) has directed that the Transmission Assets are to be treated as development for which development consent is required under section 35 of the Planning Act 2008, as amended.

National Policy Statements

5.2.2.3 There are currently six energy National Policy Statements (NPSs), three of which contain policy relevant to offshore wind development and the Transmission Assets, specifically:

- Overarching NPS for Energy (NPS EN-1) which sets out the UK Government's policy for the delivery of major energy infrastructure (Department for Energy Security & Net Zero 2023a);
- NPS for Renewable Energy Infrastructure (NPS EN-3) (Department for Energy Security & Net Zero 2023b); and
- NPS for Electricity Networks Infrastructure (NPS EN-5) (Department for Energy Security & Net Zero 2023c).

5.2.2.4 **Table 5.1** sets out a summary of the policies within these NPSs, relevant to the historic environment. A review of NPS EN-3 and NPS EN-5 identified no relevant policies to the historic environment and, therefore, these have not been considered further within this chapter.

5.2.2.5 The policies within the current NPSs relevant to all topics in the ES can be viewed in the National Policy Statement tracker (document reference J26)

and Planning Statement (document reference J28), submitted with the application.

Table 5.1: Summary of the NPS EN-1 provisions relevant to this chapter

Summary of NPS provision	How and where considered in the ES
NPS EN-1	
The applicant should undertake an assessment of any likely significant heritage impacts of the proposed development as part of the EIA, and describe these along with how the mitigation hierarchy has been applied in the ES. This should include consideration of heritage assets above, at, and below the surface of the ground. Consideration will also need to be given to the possible impacts, including cumulative, on the wider historic environment. The assessment should include reference to any historic landscape or seascape character assessment and associated studies as a means of assessing impacts relevant to the proposed project. [Paragraph 5.9.9 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. The assessment has included the consideration of embedded mitigation measures and proposal of secondary (further) measures, which are detailed in **Table 5.9**. Consideration has also been given to the possible cumulative impacts, which is presented within **section 5.13** of this ES chapter.
As part of the ES the applicant should provide a description of the significance of the heritage assets affected by the proposed development, including any contribution made by their setting. The level of detail should be proportionate to the importance of the heritage assets and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the applicant should have consulted the relevant Historic Environment Record and assessed the heritage assets themselves using expertise where necessary according to the proposed development's impact. [Paragraph 5.9.10 of NPS EN-1]	The baseline historic environment has been established through a review of available information acquired from appropriate sources including the National Heritage List for England (NHLE), the Lancashire Historic Environment Record (HER) and the Lancashire Archives. A description of the baseline heritage assets is provided in **section 5.6.2** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk based assessment of the ES. An assessment of the potential impacts and effects on heritage assets, resulting from the Transmission Assets, is presented within Volume 3, Annex 5.5: Settings assessment of the ES.
Where a site on which development is proposed includes, or the available evidence suggests it has the potential to include, heritage assets with an archaeological interest, the applicant should carry out appropriate desk-based assessment and, where such desk-based research is insufficient to properly assess the interest, a field evaluation. Where proposed development will affect the setting of a heritage asset, representative visualisations may be necessary to explain the impact. [Paragraph 5.9.11 of NPS EN-1]	The desk-based assessment is presented in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. Field evaluation has been undertaken and the available results are presented in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES, Volume 3, Annex 5.3: Intertidal archaeological survey report and Volume 3, Annex 5.6: Interim trial trenching report of the ES. Representative visualisations have been produced for the assessment presented in Volume 3, Chapter 10: Landscape and visual resources of the ES (see Volume 3, Figure 10.5). Where relevant these have been used to assist in the assessment of impacts related to the settings of heritage assets.

Summary of NPS provision	How and where considered in the ES
The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage assets affected can be adequately understood from the application and supporting documents. Studies will be required on those heritage assets affected by noise, vibration, light and indirect impacts, the extent and detail of these studies will be proportionate to the significance of the heritage asset affected. [Paragraph 5.9.12 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter, and supported by Volume 3, Annex 5.5: Settings assessment of the ES.
The applicant is encouraged, where opportunities exist, to prepare proposals which can make a positive contribution to the historic environment, and to consider how their scheme takes account of the significance of heritage assets affected. This can include, where possible: • enhancing, through a range of measures such a sensitive design, the significance of heritage assets or setting affected • considering where required the development of archive capacity which could deliver significant public benefits • considering how visual or noise impacts can affect heritage assets, and whether there may be opportunities to enhance access to, or interpretation, understanding and appreciation of, the heritage assets affected by the scheme. [Paragraph 5.9.13 of NPS EN-1]	No opportunities for enhancement of the significance of heritage assets have been identified.
Careful consideration in preparing the scheme will be required on whether the impacts on the historic environment will be direct or indirect, temporary, or permanent. [Paragraph 5.9.14 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This includes consideration of the nature and timescale of any impacts.
Applicants should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably. [Paragraph 5.9.15 of NPS EN-1]	No opportunities for enhancement of the significance of heritage assets have been identified.
A documentary record of our past is not as valuable as retaining the heritage asset, and therefore the ability to record evidence of the asset should not be a factor in deciding whether such loss should be permitted, and whether or not consent should be given. [Paragraph 5.9.16 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. Where recording evidence of an asset is proposed, this is regarded as offsetting the impact rather than mitigating the impact.
Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State will require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). The extent of the requirement should be proportionate to the asset's importance and significance and the impact. The applicant should be required to publish	An outline programme of further archaeological and geoarchaeological investigation is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9). This document provides an overview of the methodologies that would be used to record any heritage

Summary of NPS provision	How and where considered in the ES
this evidence and to deposit copies of the reports with the relevant Historic Environmental Record. They should also be required to deposit the archive generated in a local museum or other public repository willing to receive it. [Paragraph 5.9.17 of NPS EN-1]	asset that may be lost (wholly or in part) during construction of the Transmission Assets. It includes reference to the publication of evidence and the deposition of information with the Lancashire HER, also the deposition of the archive with the appropriate museum service. DCO Schedules 2A & 2B, Requirement 11 (onshore archaeology) within the draft DCO (document reference C1) establishes that a detailed Onshore and Intertidal Written Scheme of Investigation will be prepared in accordance with the Outline Onshore and Intertidal Written Scheme of Investigation and agreed with the appropriate stakeholders (CoT40).
Where appropriate, the Secretary of State will impose requirements on the Development Consent Order to ensure that the work is undertaken in a timely manner, in accordance with a written scheme of investigation that complies with the policy in this NPS and which has been agreed in writing with the relevant local authority, and to ensure that the completion of the exercise is properly secured. [Paragraph 5.9.18 of NPS EN-1]	DCO Schedules 2A & 2B, Requirement 11 (onshore archaeology) within the draft DCO (document reference C1) establishes that a detailed Onshore and Intertidal Written Scheme of Investigation will be prepared in accordance with the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).
Where the loss of significance of any heritage asset has been justified by the applicant on the merits of the new development and the significance of the asset in question, the Secretary of State should consider: • imposing a requirement in the Development Consent Order • requiring the applicant to enter into an obligation. That will prevent the loss occurring until the relevant part of the development has commenced, or it is reasonably certain that the relevant part of the development is to proceed. [Paragraph 5.9.19 and 5.9.20 of NPS EN-1]	DCO Schedules 2A & 2B, Requirement 11 (onshore archaeology) within the draft DCO (document reference C1) establishes that a detailed Onshore and Intertidal Written Scheme of Investigation will be prepared in accordance with the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).
Where there is a high probability (based on an adequate assessment) that a development site may include, as yet undiscovered heritage assets with archaeological interest, the Secretary of State will consider requirements to ensure appropriate procedures are in place for the identification and treatment of such assets discovered during construction. [Paragraph 5.9.21 of NPS EN-1]	DCO Schedules 2A & 2B, Requirement 11 (onshore archaeology) within the draft DCO (document reference C1) establishes that a detailed Onshore and Intertidal Written Scheme of Investigation will be prepared in accordance with the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9). This document sets out a programme of further archaeological and geoarchaeological investigation to be undertaken ahead of and during construction, including investigation of as yet undiscovered heritage assets with archaeological interest.

Summary of NPS provision	How and where considered in the ES
In determining applications, the Secretary of State should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development, including by development affecting the setting of a heritage asset (including assets whose setting may be affected by the proposed development), taking account of: • relevant information provided with the application and, where applicable, relevant information submitted during the examination of the application any designation records, including those on the National Heritage List for England • historic landscape character records • the relevant Historic Environment Record(s), and similar sources of information • representations made by interested parties during the examination process • expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it. [Paragraph 5.9.22 of NPS EN-1]	The baseline historic environment has been established through a review of available information acquired from appropriate sources including the NHLE, the Lancashire HER and the Lancashire Archives. The historic environment baseline is summarised in **section 5.6** of this ES chapter and presented in greater detail in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES and in Volume 3, Annex 5.4: Geoarchaeological desk-based assessment of the ES.
The Secretary of State must also comply with the requirements on listed buildings, conservation areas and scheduled monuments, set out in Regulation 3 of the Infrastructure Planning (Decisions) Regulations 2010. [Paragraph 5.9.23 of NPS EN-1]	The legislative context relevant to the historic environment, including the Infrastructure Planning (Decisions) Regulations 2010 is detailed in **section 5.2.1** of this ES chapter.
In considering the impact of a proposed development on any heritage assets, the Secretary of State should consider the particular nature of the significance of the heritage assets and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal. [Paragraph 5.9.24 of NPS EN-1]	The historic environment baseline is summarised in **section 5.6** of this ES chapter and presented in greater detail in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES and in Volume 3, Annex 5.4: Geoarchaeological desk-based assessment of the ES. The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This is supported by Volume 3, Annex 5.5: Settings assessment of the ES.
The Secretary of State should consider the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that their conservation can make to sustainable communities, including to their quality of life, their economic vitality, and to the public's enjoyment of these assets. [Paragraph 5.9.25 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This assessment is supported by Volume 3, Annex 5.5: Settings assessment of the ES. Mitigation measures are detailed in **Table 5.9** of this ES chapter. No opportunities for enhancement of the significance of heritage assets have been identified.
The Secretary of State should also consider the desirability of the new development making a positive contribution to the character and local distinctiveness of the historic	Volume 1, Chapter 3: Project description of the ES provides details of the design at the

Summary of NPS provision	How and where considered in the ES
environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example, screen planting). [Paragraph 5.9.26 of NPS EN-1]	time of the application for development consent. Mitigation measures relevant to the historic environment are detailed in **Table 5.9** of this ES chapter. No opportunities for enhancement of the significance of heritage assets have been identified.
When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight should be. This is irrespective of whether any potential harm amounts to substantial harm, total loss, or less than substantial harm to its significance. [Paragraph 5.9.27 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This is supported by Volume 3, Annex 5.5: Settings assessment of the ES.
The Secretary of State should give considerable importance and weight to the desirability of preserving all heritage assets. Any harm or loss of significance of a designated heritage asset (from its alteration or destruction, or from development within its setting) should require clear and convincing justification. [Paragraph 5.9.28 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This assessment is informed by Volume 3, Annex 5.5: Settings assessment of the ES. Mitigation measures are detailed in **Table 5.9** of this ES chapter.
Substantial harm to or loss of significance of a grade II Listed Building or a grade II Registered Park or Garden should be exceptional. Substantial harm to or loss of significance of assets of the highest significance, including Scheduled Monuments; Protected Wreck Sites; Registered Battlefields; grade I and II* Listed Buildings; grade I and II* Registered Parks and Gardens; and World Heritage Sites, should be wholly exceptional. Where the proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm to, or loss of, significance is necessary to achieve substantial public benefits that outweigh that harm or loss, or all the following apply: • the nature of the heritage asset prevents all reasonable uses of the site • no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation • the harm or loss is outweighed by the benefit of bringing the site back into use. [Paragraph 5.9.29 to 5.9.31 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This is informed by Volume 3, Annex 5.5: Settings assessment of the ES.
Where the proposed development will lead to less than substantial harm to the significance of the designated heritage asset, this harm should be weighed against the	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This is

Summary of NPS provision	How and where considered in the ES
public benefits of the proposal, including, where appropriate securing its optimum viable use. [Paragraph 5.9.32 of NPS EN-1]	informed by Volume 3, Annex 5.5: Settings assessment of the ES.
In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset. [Paragraph 5.9.33 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This is informed by Volume 3, Annex 5.5: Settings assessment of the ES.
Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 5.9.30 or less than substantial harm under paragraph 5.9.32, as appropriate, considering the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole. [Paragraph 5.9.34 of NPS EN-1]	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This is informed by Volume 3, Annex 5.5: Settings assessment of the ES.
Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the Secretary of State should not take its deteriorated state into account in any decision. [Paragraph 5.9.35 of NPS EN-1]	Information relating to the historic environment baseline (including heritage assets) is provided in **section 5.6** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
When considering applications for development affecting the setting of a designated heritage asset, the Secretary of State should give appropriate weight to the desirability of preserving the setting such assets and treat favourably applications that preserve those elements of the setting that make a positive contribution to, or better reveal the significance of, the asset. When considering applications that do not do this, the Secretary of State should give great weight to any negative effects, when weighing them against the wider benefits of the application. The greater the negative impact on the significance of the designated heritage asset, the greater the benefits that will be needed to justify approval. [Paragraph 5.9.36 of NPS EN-1]	The impact of the project on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment, which presents the results of the assessment of potential impacts and effects arising from changes within the settings of designated heritage assets as a result of the Transmission Assets.

The National Planning Policy Framework

5.2.2.6 The National Planning Policy Framework (NPPF) was published in 2012 and updated in 2018, 2019, 2021 and 2023 (Ministry of Housing, Communities & Local Government, 2023. The NPPF sets out the Government's planning policies for England.

5.2.2.7 The Government published proposed reforms to the NPPF for consultation on 30 July 2024, with the consultation period ending on 24 September 2024 (Ministry of Housing, Communities and Local Government, 2024). Following consultation, the NPPF will be updated.

5.2.2.8 Policies regarding the historic environment are set out in Chapter 16 of the NPPF and further details of these policies are provided in section 2 of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

5.2.2.9 **Table 5.2** sets out a summary of the NPPF policies relevant to this chapter.

Table 5.2: Summary of NPPF requirements relevant to this chapter

Policy	Key provisions	How and where considered in the ES
Paragraph 200	Applicants should provide a description of the significance of the heritage assets affected by the proposed development and the contribution of their setting towards that significance.	A description of the baseline heritage assets is provided in **section 5.6** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
Paragraph 201	Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.	The impact of the Transmission Assets on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment, which presents the results of the assessment of potential impacts and effects arising from changes within the settings of designated heritage assets as a result of the Transmission Assets.
Paragraph 202	Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the deteriorated state of the heritage asset should not be taken into account in any decision.	Information relating to the historic environment baseline (including heritage assets) is provided in **section 5.6** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
Paragraph 203	In determining applications, local planning authorities should take account of: a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and c) the desirability of new development making a positive contribution to local character and distinctiveness.	Information relating to the historic environment baseline (including heritage assets) is provided in **section 5.6** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
Paragraph 205	When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.	The impact of the Transmission Assets on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment of the ES. The assessment of cumulative impacts is presented within **section 5.13** of this ES chapter.

Policy	Key provisions	How and where considered in the ES
Paragraph 206	Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of: a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional; b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.	The impact of the Transmission Assets on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment of the ES. The assessment of cumulative impacts is presented within **section 5.13** of this ES chapter.
Paragraph 207	Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply: a) the nature of the heritage asset prevents all reasonable uses of the site; and b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and d) the harm or loss is outweighed by the benefit of bringing the site back into use.	The impact of the Transmission Assets on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment, which presents the results of the assessment of potential impacts and effects arising from changes within the settings of designated heritage assets as a result of the Transmission Assets. The assessment of cumulative impacts is presented within **section 5.13** of this ES chapter.
Paragraph 208	Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.	The impact of the Transmission Assets on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment, which presents the results of the assessment of potential impacts and effects arising from changes within the settings of designated heritage assets as a result of the Transmission Assets. The assessment of cumulative impacts is presented within **section 5.13** of this ES chapter.
Paragraph 209	The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be	The impact of the Transmission Assets on the significance of designated and non-designated heritage assets is assessed within **section 5.11** of this ES chapter. This chapter is informed by Volume 3, Annex 5.5: Settings assessment, which presents the results of the

Policy	Key provisions	How and where considered in the ES
	required having regard to the scale of any harm or loss and the significance of the heritage asset.	assessment of potential impacts and effects arising from changes within the settings of designated heritage assets as a result of the Transmission Assets. The assessment of cumulative impacts is presented within **section 5.13**.
Paragraph 212	Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.	The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. This assessment is supported by Volume 3, Annex 5.5: Settings assessment of the ES. Mitigation measures are detailed in **Table 5.9** of this ES chapter. However, no opportunities for enhancement of the significance of heritage assets have been identified.

5.2.2.10 The consultation draft includes similar provisions as the designated NPPF. The consultation draft NPPF has been reviewed and there are no material updates for historic environment.

5.2.2.11 The Planning Practice Guidance (PPG) (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government, 2019) supports the NPPF and provides guidance across a range of topic areas.

5.2.2.12 The PPG provides advice on specific matters such as '*What is* 'significance'' and '*What is the setting of a heritage asset and how should it be taken into account?*'. Further details of this guidance are provided in Section 1.4 of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

Local planning policy

5.2.2.13 The onshore elements of the Transmission Assets are located within the administrative areas of Fylde Council, Blackpool Council, South Ribble Borough Council and Preston City Council (and Lancashire County Council at the county level).

5.2.2.14 The relevant local planning policies applicable to the historic environment based on the extent of the study areas for this assessment are summarised in **Table 5.3**, with further details provided in section 2.3 of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

Table 5.3: Summary of local planning policy relevant to this chapter

Policy	Key provisions	How and where considered in the ES
Adopted Fylde Local Plan to 2032 (incorporating Partial Review)		
ENV5: Historic Environment	Proposals for development should conserve, protect and, where appropriate, enhance the character, appearance and significance and historic value of Fylde's undesignated heritage assets.	Where possible, conservation and protection of non-designated heritage assets has been achieved through the design of the Transmission Assets as described in **section 5.8** of this ES chapter.
Adopted Blackpool Local Plan Part 1: Core Strategy 2012-2027		
CS8: Heritage	Developers must demonstrate how any development affecting heritage assets (including conservation areas) will conserve and enhance the asset, its significance and its setting.	Where possible, the conservation of heritage assets, including their settings, has been achieved through the design of the Transmission Assets as described in **section 5.8** of this ES chapter.
Blackpool Local Plan Part 2: Site Allocations and Development Management Policies (Blackpool Council, 2022)		
DM28: Non-designated heritage assets	Development which would remove, harm or undermine the significance of a non-designated heritage asset will only be permitted where robust evidence can demonstrate that the benefits of the development clearly outweigh the harm. Proposals must be accompanied by a heritage statement. Where permission is granted for development which would result in the loss of a non-designated heritage asset, approval will be conditional upon the asset being fully recorded and the information deposited with the Local Planning Authority and the Historic Environment Record.	The impact of the Transmission Assets on the significance of heritage assets is clearly assessed within **section 5.11** of this ES chapter. A description of the baseline heritage assets is provided in **section 5.6.2** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. An outline programme of further archaeological and geoarchaeological investigation is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9). This includes reference to the publication of evidence and the deposition of information with the Lancashire HER.
DM30: Archaeology	Development which would result in harm to or loss of the significance of a scheduled monument (or a site of national significance) will not be permitted unless it can be demonstrated that the public benefits which cannot be met in any other way would clearly outweigh the harm. Where there is knowledge of archaeological remains or reasonable grounds for the potential of archaeology, proposals will be expected to be accompanied by an assessment of the significance of any archaeology prior to the determination of an application for the site and how it will be affected by the proposed development.	The assessment presented in **section 5.11** of this ES chapter has not identified any impact that would result in substantial harm or loss of a designated heritage asset. The impact of the Transmission Assets on the significance of heritage assets is assessed within **section 5.11** of this ES chapter. An outline programme of further archaeological and geoarchaeological investigation is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9). This includes reference to the publication of evidence and the deposition of information with the Lancashire HER.

Policy	Key provisions	How and where considered in the ES
Central Lancashire Adopted Core Strategy 2012-26		
16: Heritage Assets	Heritage assets should be safeguarded from inappropriate development that would cause harm to their significance.	Where possible, safeguarding of heritage assets has been achieved through the design of the Transmission Assets as described in **section 5.8** of this ES chapter.
Preston Local Plan 2012-26		
EN8: Development and Heritage Assets	Proposals which affect a heritage asset will be permitted if several criteria are met, including the submission of a heritage statement that fully explains the impact on the significance of the asset.	A description of the baseline heritage assets is provided in **section 5.6.2** of this ES chapter and in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. The impact of the Transmission Assets on the significance of heritage assets is clearly assessed within **section 5.11** of this ES chapter.
South Ribble Local Plan 2012-26		
G17: Design Criteria for New Development	Developments should conserve and, where appropriate, enhance the significance, appearance, character and setting of a heritage asset and the surrounding historic environment. Where a proposed development would lead to substantial harm or loss of significance of a designated heritage asset, planning permission will only be granted where it can be demonstrated that the substantial public benefits of the proposal outweigh the harm or loss to the asset.	Where possible, conservation and protection of non-designated heritage assets has been achieved through the design of the Transmission Assets as described in **section 5.8** of this ES chapter. The assessment presented in **section 5.11** of this ES chapter has not identified any impact that would result in substantial harm or loss of a designated heritage asset.

5.2.3 Relevant guidance

5.2.3.1 The following guidance documents have been considered in the compilation of the historic environment baseline and the subsequent assessment of impacts and effects.

- Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage, 2008).
- Standard and Guidance for Historic Environment Desk-based Assessment (Chartered Institute for Archaeologists (CIfA), 2020a).
- Standard and Guidance for Archaeological Geophysical Survey (CIfA, 2020b).
- Universal Guidance for Archaeological Field Evaluation (CIfA, 2023).
- Managing Significance in Decision-Taking in the Historic Environment (Historic England, 2015).
- The Setting of Heritage Assets (Historic England, 2017).

- Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England, 2019).
- Principles of Cultural Heritage Impact Assessment in the UK (Institute of Environmental Management and Assessment (IEMA), Institute of Historic Building Conservation and CIfA, 2021).

5.3 Consultation

5.3.1 Scoping

5.3.1.1 On 28 October 2022, the Applicants submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects for the construction, operation and maintenance and decommissioning phases of the Transmission Assets. It also described those topics or sub-topics which were proposed to be scoped out of the EIA process and provided justification as to why the Transmission Assets would not have the potential to give rise to significant environmental effects in these areas.

5.3.1.2 Following consultation with the appropriate statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 8 December 2022.

5.3.2 Evidence plan process

5.3.2.1 Following scoping, consultation and engagement with interested parties specific to the historic environment has continued. An Evidence Plan Process (EPP) has been developed for the Transmission Assets, seeking to ensure engagement with the relevant aspects of the EIA process throughout the pre-application phase. The development and monitoring of the Evidence Plan and its subsequent progress has been undertaken by the EPP Steering Group. The Steering Group comprises the Planning Inspectorate, the Applicants, the Marine Management Organisation, Natural England, Historic England, the Environment Agency and the Local Planning Authorities as the key regulatory and bodies.

5.3.2.2 As part of the EPP, Expert Working Groups (EWGs) were set up to discuss and agree topic specific matters with the relevant stakeholders. An EWG was established for the onshore historic environment. This includes representatives from the Applicants, the project team, Historic England and Lancashire County Council (in their capacity as historic environment advisors to the local planning authorities).

5.3.3 Statutory consultation responses

5.3.3.1 The preliminary findings of the EIA process were published in the Preliminary Environmental Information Report (PEIR) in October 2023. The PEIR was prepared to provide the basis for formal consultation under the Planning Act 2008. This included consultation with statutory and non-statutory bodies

under sections 42 and 47 of the Planning Act 2008 as presented in **Table 5.4**.

5.3.4 Summary of consultation responses received

5.3.4.1 A summary of the key items raised specific to the historic environment is presented in **Table 5.4**, together with how these comments have been considered in the production of this chapter. It should however be noted that formal responses are provided for all consultation responses received and can be accessed in the Consultation Report (document reference E1).

Table 5.4: Summary of key consultation comments raised during consultation activities undertaken for the Transmission Assets relevant to the historic environment

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
December 2022	Planning Inspectorate (Scoping)	The Inspectorate is satisfied that operational impacts to historic landscape character (other than the onshore substations) can be scoped out of the ES.	Operational impacts to historic landscape character (other than the onshore substations) are not considered in the assessment. The impact of the onshore substations on the historic landscape character is considered in **section 5.11.4** of this ES chapter.
December 2022	Planning Inspectorate (Scoping)	Given that the operation, maintenance and decommissioning of the onshore elements of the Transmission Assets will not require additional land take and are unlikely to damage or result in the permanent loss of buried archaeological resource, the Inspectorate agrees that this matter is unlikely to give rise to significant effects. However, consideration should be given to the potential for changes to groundwater levels and/or heat output from buried cables to result in the deterioration of buried archaeological assets and how the risk of such impacts would be managed. Where significant effects are likely, this matter should be scoped into the ES.	The cable trenches would be backfilled with the excavated material, which would not affect the current permeability of the subsurface deposit sequence, thus there would be no dewatering of organic deposits. During transmission of power, buried cables generate heat which dissipates to the surrounding ground. The heat loss from electrical cables has the potential to alter the environment and therefore, damage any waterlogged archaeological remains. Until the final engineering design and soil structure are known, it is not possible to determine the maximum heat loss and subsequent dissipation of heat. However, as set out in Volume 3, Chapter 1: Geology, hydrology and ground conditions of the ES, the onshore export cables themselves will consist of copper or aluminium conductors wrapped with various materials for insulation, protection, and sealing. Once installed, the electrical cables must be suitably spaced out in order to minimise the mutual heating effect of one cable circuit on another, this enables the cables to effectively carry the large power volumes required without overheating and damaging the cable. Therefore, it is likely that any heat dissipation will be localised to the areas immediately surrounding the onshore cables and ducts. These same areas, including any sub-surface archaeological/geoarchaeological remains, will have been disturbed during the installation of the onshore export cables and the 400 kV grid connection cables during the

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
			construction phase. Said remains, if present, will have been considered during the construction phase and effects mitigated where possible (see **section 5.11.2** of this ES chapter).
December 2022	Planning Inspectorate (Scoping)	The Inspectorate considers it unlikely that significant effects would arise in respect of impacts of the settings of above ground heritage assets from the operation and maintenance of onshore elements (excluding onshore substations) but at this stage has insufficient information about the cable route and the potential for changes in screening to scope the matter out. Consideration should be given to the potential for operational phase effects on the setting of above ground heritage assets as a result of vegetation clearance and planting restrictions imposed by any cabling easements.	This comment is addressed in **section 5.11.3** of this ES chapter.
December 2022	Planning Inspectorate (Scoping)	Effort should be made to agree the final study areas with relevant consultation bodies, e.g., Historic England and the local authorities.	The final study areas have been agreed through consultation with Historic England and the relevant advisors to the local authorities, including EWG consultation. This is described within this table.
December 2022	Planning Inspectorate (Scoping)	The Inspectorate notes that there is a designated Conservation Area extending from the shoreline at Blackpool. Consideration should be given to any potential impacts on the setting of the heritage asset from the construction, decommissioning and/or operation of the offshore infrastructure, i.e., substation and booster station platforms.	The offshore substation platforms and the offshore booster station are no longer part of the Transmission Assets application. There is therefore no visible offshore infrastructure which could impact on the setting of the Conservation Area.
December 2022	Planning Inspectorate (Scoping)	The desk based assessment (DBA) should incorporate an element of geoarchaeological deposit modelling to identify areas of archaeological/palaeoenvironmental potential (i.e., peat) and to guide the scope of any geophysical survey or intrusive investigations. Where the DBA indicates potential for survival of palaeoenvironmental remains, specialist palaeoenvironmental assessment should be undertaken.	The proposed scope of survey work has been presented and discussed at the historic environment EWG, which included Historic England and archaeological advisors from Lancashire County Council. A separate geoarchaeological desk-based assessment has been undertaken by a specialist team to identify areas of archaeological / palaeoenvironmental potential. This is described in Volume 3, Annex 5.4: Geoarchaeological desk-

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		Effort should be made to agree the detailed scope of the survey work with Historic England, in addition to the archaeological advisors of the relevant planning authorities. Cross reference can be made in the ES where relevant to the assessment of marine archaeology to avoid duplication of effort.	based assessment report of the ES and summarised in **section 5.6.1** of this ES chapter. Purposive fieldwork has been undertaken which has provided information to feed into the production of geoarchaeological deposit models. More fieldwork will be carried out prior to construction as part of the programme of further archaeological and geoarchaeological investigation set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9), and this too will feed into the production of geoarchaeological deposit models The historic environment desk-based assessment (Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES) has been used to guide the scope of the geophysical survey with results presented in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES. The results of the geophysical survey, along with the information presented in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES, have been used to guide the intrusive investigations that will be provide the information required for the production of the geoarchaeological deposit models. The detailed scope of the geoarchaeological desk-based assessment was agreed with Historic England in addition to the archaeological advisors to the relevant planning authorities. This is described within this table.
December 2022	Planning Inspectorate (Scoping)	Paragraph 8.1.4.11 [of the EIA Scoping Report] identifies potential for '*important archaeological and palaeoenvironmental remains to be present within the intertidal areas in the vicinity of the landfall*'. The Inspectorate notes that it is proposed to undertake an assessment of '*construction of the onshore elements …on buried archaeology resources*'. Potential impacts to resources within the intertidal areas should also be included within the assessment.	Potential impacts on buried archaeological resources and deposits of geoarchaeological and palaeoenvironmental interest remains within the intertidal zone are described in **section 5.11.2** of this ES chapter.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
December 2022	Blackpool Council (Scoping)	Lancashire County Council's Historic Environment Team have confirmed that the proposed assessment methodology outlined in section 8 of the Scoping Report is one that the Historic Environment Team (HET) would consider entirely appropriate and necessary. The HET would welcome consultation on the proposed sources to be used in compiling the initial EIA.	Lancashire County Council's Historic Environment Team, who provide the heritage planning advice to Blackpool Council, have been included in the historic environment EWGs.
December 2022	Historic England (Scoping)	We would also recommend assessment of the following resources is included to inform production of any Preliminary Environmental Information Report (PEIR) and Environmental Statement (ES): • The Rapid Coastal Zone Assessment for Lancashire where prehistoric activity has been recorded including Neolithic red deer prints. Estuaries are favoured areas for settlement by Stone Age hunter gatherers and so it should be anticipated that finds and sites could be exposed during development; • The Wetlands of North Lancashire should also be consulted for further details on deposits and research within the site boundary: Middleton et al (1995) The Wetlands of North Lancashire. Lancaster imprints; and • The intertidal and coastal peat database should be consulted for nearby deposits. The site boundary for the onshore cable goes through two areas of peat east of Lytham St Annes.	All of these recommended sources have been examined with the results presented in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES and/or in Volume 3; Annex 5.4: Geoarchaeological desk-based assessment report of the ES, as appropriate.
December 2022	Historic England (Scoping)	Table 6.2 impacts on geology and hydrogeology – changes in groundwater can also impact on buried and waterlogged archaeological deposits, including the dewatering of organic deposits leading to deterioration and loss of heritage assets. Furthermore, the heat output from cables can lead to drying out and deterioration of surrounding deposits which may include unknown buried archaeological assets. It is also vital to make sure the transmission cables will not suffer from bentonite	The cable trench would be backfilled with the excavated material that would not affect the current permeability of the subsurface deposit sequence, thus there would be no dewatering of organic deposits. During transmission of power, buried cables generate heat which dissipates to the surrounding ground. The heat loss from electrical cables has the potential to alter the environment and

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		slurry leakage which can contaminate surrounding archaeological deposits. The potential impact and mitigation of risk will need to be covered in the WSI.	therefore, damage any waterlogged archaeological remains. Until the final engineering design and soil structure are known, it is not possible to determine the maximum heat loss and subsequent dissipation of heat. Regardless, any heat dissipation will be localised to the areas immediately surrounding the onshore cables and ducts. These same areas, including any sub-surface archaeological/geoarchaeological remains, will have been disturbed during the installation of the onshore export cables and the 400 kV grid connection cables during the construction phase. Said remains, if present, will have been considered during the construction phase and effects mitigated where possible (see **section 5.11.3** of this ES chapter). Bentonite would only be used during Horizontal Directional Drilling (HDD) and direct pipe installation. An Outline Bentonite Breakout Plan (document reference J1.13) has been prepared and will be secured as part of the Construction Code of Practice (document reference J1). This identifies procedures which would ensure that bentonite slurry does not contaminate the adjacent ground.
December 2022	Historic England (Scoping)	Paragraph 8.1.2.2 [of the Scoping Report] – this paragraph discusses the extent of the assessment study area in terms of distance from the landfall and onshore cable corridor. We understand that the extent of the TASB (and the cable corridor and substation locations) will be determined during the EIA process, based on constraints etc. It is therefore our advice that the Applicant should consider the assessment area to be the Transmission Assets Scoping Boundary (TASB) plus relevant distance quoted on asset type. We are also aware at this stage of project development that there is a relative lack of archaeological fieldwork within much of the TASB. However, we must also consider the appropriateness of selecting a distance of 250 m either side of the corridor (or TASB) and	The study areas have been agreed following consultation with Historic England and other appropriate stakeholders and are set out in **section 5.4** of this ES chapter.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		whether or not it is sufficient to capture data to make a judgement on the potential for currently unknown archaeological remains. Paragraph 8.1.2.3 notes that study area distances chosen have been used on similar projects, however, this assessment needs to take account of regional variation in types and density of archaeological sites/remains as relevant to this location. It is suggested that a distance of 500 m either side should strike a balance between the amount of data to be assessed and the robustness of judgements on archaeological potential.	
December 2022	Historic England (Scoping)	Table 8.1 [of the Scoping Report] – the second line should state 'Lancashire Historic Environment Record' rather than 'Historic England – Historic Environment Records'. The table should also have included the Lancashire Archives, which we would expect to be accessed accordingly to prepare any subsequent PEIR and ES for this proposed project.	The Lancashire HER and the Lancashire Archives have been accessed, with results reported in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
December 2022	Historic England (Scoping)	Paragraph 8.1.4 [of the Scoping Report] – As a general principle, all designated heritage assets should be considered inclusive of Registered Battlefields. Furthermore, for clarity, the baseline should include 'non-designated heritage assets' or 'above and below ground non-designated heritage assets.	Designated and non-designated heritage assets within the defined study areas have been identified within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES and assessed as appropriate within **section 5.11** of this ES chapter.
December 2022	Historic England (Scoping)	Paragraph 8.1.4.6 [of the Scoping Report] – it is important for this EIA exercise to include the potential of uncovering prehistoric activity during the scheme, particularly around Lytham Moss and the estuarine areas. We recommend a specialist palaeoenvironmental assessment is undertaken where Desk Based Assessment (DBA) and other surveys indicate potential for the survival of palaeoenvironmental remains. This will enable the nature, extent and survival of subsurface archaeological and geoarchaeological remains to be established and presented in the PEIR and ES.	A geoarchaeological desk-based assessment has been prepared by a specialist team. This examines the potential for the survival of palaeoenvironmental remains and is presented as Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
December 2022	Historic England (Scoping)	Paragraph 8.1.4.11 [of the Scoping Report] – as well as the intertidal areas, there are large areas of the TASB with peat subsoils, sometimes up to several metres deep which have very high palaeoenvironmental potential. These areas also have very high archaeological potential, as demonstrated by the recent archaeological work on the Windy Harbour to Skippool road improvement scheme NSIP project (PINS Reference: TR010035).	This high archaeological potential is acknowledged within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES and the separate geoarchaeological desk based assessment (Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES) which was prepared by the same team who undertook the archaeological work on the Windy Harbour to Skippool road improvement scheme.
December 2022	Historic England (Scoping)	Table 8.3 [of the Scoping Report] – the second sentence of the data collection column should state 'subject to consultation with the Local Planning Authority's nominated archaeological advisor and Historic England'.	The Local Planning Authority's nominated archaeological advisor and Historic England have been consulted on all aspects of the work undertaken for the ES.
December 2022	Historic England (Scoping)	Paragraph 8.2.4.6 [of the Scoping Report] – we note that the presence of peat deposits is identified within the site boundary. The impact the cable route will have on these deposits needs to be considered, including loss of deposits, assessment of the preservation and heritage potential of the resource, and danger of dewatering or overheating the organic deposits from the cables.	Potential impacts on deposits of geoarchaeological and palaeoenvironmental interest (including peat deposits) are described in **section 5.11.2** of this ES chapter.
December 2022	Historic England (Scoping)	A walkover survey of the entire study area should be undertaken as part of the DBA, rather than just designated assets based on the DBA.	It would not be proportionate to carry out a walkover survey of all land within the study area presented within the Scoping Report, as this extended for a distance of 5 kilometres (km) from the onshore substation sites. Where possible, all land within the onshore export cable corridor, the 400 kV grid connection corridor and the onshore substation sites has been subject to geophysical survey and/or walkover survey. Individual designated heritage assets have been visited in order to develop an understanding of their current setting.
December 2022	Historic England (Scoping)	The DBA should also include an element of geoarchaeological deposit modelling to identify areas of archaeological/palaeoenvironmental potential (i.e., areas of	Areas of archaeological/palaeoenvironmental potential have been identified within the separate geoarchaeological desk based assessment (Volume 3, Annex 5.4: Geoarchaeological

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		peat) and to guide any subsequent geophysical survey (to ensure that the most appropriate techniques are used) or intrusive investigations.	desk-based assessment report of the ES). This work has guided subsequent intrusive work which has provided some additional information to feed into the production of geoarchaeological deposit models. More fieldwork will be carried out ahead of construction as part of the programme of further archaeological and geoarchaeological investigation set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9), and this too will feed into the production of geoarchaeological deposit models
December 2022	Historic England (Scoping)	A crucial contributing factor to the EIA exercise will be optimising corroboration between desk-based sources of information (published and 'grey literature') and bespoke survey campaigns (geophysical and geotechnical) with analysis conducted by an accredited, professional and experienced archaeological contractor/ consultant. The reporting of such analysis should feature within any PEIR and ES produced.	The ES has been informed by a review of desk-based sources of information and bespoke survey campaigns (walkover surveys, geophysical surveys, intertidal survey, trial trenching). All work has been undertaken by professional and experienced personnel, as appropriate.
December 2022	Lancashire County Council (Scoping)	It is noted that the Scoping Report makes mention of the location of a number of environmental records some of which are held by the Council – for instance the HET are curators for Lancashire's Historic Environment Record and, under the Lancashire Environment Record Network, the Council is also the local environmental record centre. The Council would therefore welcome any further consultation on proposed sources to be used in compiling the environmental impact assessment and assistance with requests from the Applicant for local information held in the preparation of the environmental impact assessment wherever possible.	The sources used in compiling the baseline for the assessment presented in this chapter are identified in **section 5.6** of this ES chapter. The HET at Lancashire County Council have been consulted with regard to local information. This consultation is described in **Table 5.4** of this ES chapter.
18 January 2023	EWG consultation meeting with Historic England, Fylde	The study area for non-designated heritage assets should be increased from the proposed 250 m buffer to 500 m.	This revision was agreed and a 500 m study area taken forward – the study areas are identified in **section 5.4** of this ES chapter (ON-HE-1.1*).

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
	Borough Council and Lancashire County Council.	The proposed geophysical (magnetometer) survey was agreed as appropriate, but it was noted that this survey methodology would not locate all archaeological sites and deposits. No other methodology for geophysical survey was found to be appropriate. Magnetometer survey is not generally suitable in areas of former wetlands as it is unlikely to locate or identify the types of archaeological sites/deposits typically present in such areas.	Magnetometer survey has been undertaken across much of the land within the onshore export cable corridor, the 400 kV grid connection corridor and the onshore substation sites where the land use is suitable for this technique. The extent of the magnetometer survey is indicated in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES. Other techniques have been utilised in the investigation of the archaeological and geoarchaeological potential of areas of former wetland. These techniques were agreed in advance with Historic England and the HET at Lancashire County Council.
		Higher areas of ground with free-draining sandy soils should be identified as these have an enhanced archaeological potential.	Topographical surveys have been used in order to identify areas of higher ground; these are indicated within the geoarchaeological desk-based assessment (Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES) (ON-HE-1.2*).
		Geoarchaeological deposit modelling will be key in areas of former wetlands and tidal mudflats.	A geoarchaeological desk-based assessment has been prepared for the ES (Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES). The results of the programme of geoarchaeological deposit modelling will be presented ahead of or during Examination of the application for consent (ON-HE-1.3*).
09 August 2023	EWG consultation meeting with Historic England and Lancashire County Council.	No further comments were raised that need consideration within the ES.	The minutes of this meeting are presented within the Technical Engagement Plan (document reference E5).
November 2023	Historic England (Statutory Consultation)	Table 5.13 (Sensitivity criteria) – grade II listed buildings are identified as being of Medium sensitivity. We disagree with this as grade II listed buildings are considered to be nationally significant and, therefore, warrant identification as being of High sensitivity.	National planning policy as set out in the NPPF (paragraph 206) and in NPS EN-1 (paragraphs 5.9.29 and 5.9.30) makes a clear distinction between designated heritage assets of the highest significance (including grade I and II* listed buildings) and other designated heritage assets (including grade II listed

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
			buildings). The sensitivity or value of heritage assets as used within the assessment methodology for this chapter of the ES as set out in **Table 5.11** retains that distinction.
November 2023	Historic England (Statutory Consultation)	It is noted that the result of the geophysical surveys presented in Volume 3, Annex 5.2 represent work undertaken up to the end of June 2023. It is also noted that geophysical surveys are ongoing and aim to examine all relevant land as appropriate.	Magnetometer surveys have been undertaken across much of the land within the onshore export cable corridor, the 400 kV grid connection corridor and the onshore substation sites where the land use is suitable for this technique. The extent of the magnetometer survey is indicated in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES.
November 2023	Historic England (Statutory Consultation)	It is noted that purposive fieldwork will be undertaken leading to the production of geoarchaeological deposit models as appropriate, the results of which will be reported in the ES. It would be beneficial to see the WSI for the proposed works based on the geoarchaeological desk-based assessment (DBA) and subsequent results.	The WSI for the programme of trial trenching and geoarchaeological investigation was agreed in advance with Historic England. The methodologies for any further pre-construction fieldwork aimed at retrieving information to assist in the production of geoarchaeological deposit models will be agreed in advance with Historic England.
November 2023	Historic England (Statutory Consultation)	It is noted that geophysical survey will be carried out within the export cable route area and that land identified as having potential for geoarchaeological deposit modelling will not be subjected to surface geophysical survey. It would be beneficial to understand the reasoning behind this choice of survey area; for instance, is it highlighting areas of deep alluvium that will form part of the deposit model but made up of sediments that will mask any features normally picked up in the geophysical survey? It is usually advised to carry out geoarchaeological surveys before geophysical surveys in order to understand the geology, sediments and topography of the area before further surveys are chosen.	Magnetometer survey has been undertaken across much of the land within the onshore export cable corridor, the 400 kV grid connection corridor and the onshore substation sites where the land use is suitable for this technique. The extent of the magnetometer survey is indicated in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES. Other techniques have been utilised in the investigation of the archaeological and geoarchaeological potential of areas of former wetland. These techniques were agreed in advance with Historic England and the HET at Lancashire County Council.
November 2023	Historic England (Statutory Consultation)	We support a further phase of intertidal surveys following refinement of the cable route in the form of a borehole survey to examine the potential for deposits of geoarchaeological and/or palaeoenvironmental interest.	The proposed programme of intertidal survey is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
November 2023	Historic England (Statutory Consultation)	Volume 3 Annex 5.4 Geoarchaeological desk-based assessment report. We welcome the thorough Geoarchaeological DBA that has highlighted the potential of palaeoenvironmental organic remains and stratigraphic sequences that could contribute to a deposit model for the study area. It has been identified that much of the existing British Geological Survey (BGS) data is inadequate, reiterating the importance of carrying out further Geotechnical Investigation (GI) works and geoarchaeological prospection across the area. We support recommendations that a watching brief on planned GI works would allow a geoarchaeologist to directly observe the potential of sediment sequences as the two disciplines use different recording methodologies. Therefore, having a geoarchaeologist present will result in more meaningful datasets being generated. Further purposive borehole/trial pit surveys will allow for the development of a deposit model and enable samples for palaeoenvironmental assessments and radiocarbon dating. We look forward to seeing a WSI for planned GI works and a geoarchaeological assessment for the onshore cable route.	All available information from the Geotechnical Investigation has been incorporated into the updated geoarchaeological desk-based assessment (Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES). The information will be used to guide the design of any programme of purposive geoarchaeological investigation that may be required to inform the programme of geoarchaeological deposit modelling.
November 2023	Historic England (Statutory Consultation)	Vol 3 Annex 5.3 Intertidal archaeological survey report. The survey has provided some evidence for the potential of archaeological remains within the intertidal zone. There is potential for the survival of peat deposits on the shore and it would be beneficial to carry out further palaeoenvironmental investigations in the form of borehole transects as part of the geotechnical investigations on the onshore cable route phase once the specific route in the intertidal zone has been refined and clarified.	The proposed programme of intertidal survey is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).
November 2023	Lancashire County Council (Statutory Consultation)	Historic Environment The HET will not be providing any detailed comment on the geoarchaeological survey as this is an that lies outside our	Noted.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		professional competence, and we would in any case defer to the opinions expressed by Historic England's Regional Science Advisor. The HET's SLA with the relevant LPAs does not include provision to offer advice on the impact of proposals on the setting of designated heritage assets. We would defer in this matter to the relevant LPA Conservation Officers and/or Historic England.	
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment I note the use of both non-designated and undesignated throughout the PEIR, it should be non-designated, except of course where it is being quoted from another document.	Noted. This terminology has been corrected during the development of the ES, including the Annexes.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment p. 5, Table 5.1 in the section 'How and where considered in the PEIR' – Field evaluation has been undertaken should more accurately read "Limited and, as yet, non-intrusive field evaluation has been undertaken".	Noted. **Section 5.6** of this ES chapter sets out the current situation regarding field evaluation.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment p. 12 – the lack of a full walkover is a problem. This is an important part of any assessment, as it has the potential to identify previously unknown sites of interest. See my comments below in relation to the DBA.	Noted. **Section 5.6** of this ES chapter sets out the current situation regarding the walkover survey.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment p. 19, 5.4.4.4-5.4.4.8 – Site specifics surveys. As the assessment is yet to be finished, it should be acknowledged that the current stated archaeological potential of the proposals may therefore change.	Noted. **Section 5.5** of this ES chapter sets out the current situation regarding field evaluation, whilst **section 5.6** of this ES chapter describes the archaeological potential based on current information.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.5.1.1. – I have no record of being consulted as to the content of the DBA, and this is the first time we have had sight of the DBA (it is subject to separate comments that follow these).	Noted. The DBA has been updated following comments received as part of the Statutory Consultation and also from additional research and fieldwork. It is presented as Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES and is summarised in **section 5.6** of this ES chapter.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.5.5.3 – inconsistent, and therefore incomplete use of PRNs, this doesn't make it easy to cross-check.	This has been updated within **section 5.6** of this ES chapter and also within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment p. 40, Table 5.13 – Are the Low & Negligible Sensitivity definition/examples meant to be the same?	No – this was an error which has now been corrected within **Table 5.12** of this ES chapter.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment p. 42, Table 5.15 – Surely the negligible column for magnitude of impact on a Very High sensitivity receptor should be Minor or Moderate, not just Minor.	Yes – this has now been corrected within **Table 5.13** of this ES chapter.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.9.2.6 – Why is the potential here considered to be very low?	This has been reconsidered. **Section 5.6** of this ES chapter describes the archaeological potential based on current information.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.9.2.12 – preferably ahead of construction, but if as part of construction, still ahead of the actual construction work.	Yes, other than where the proposed programme of further archaeological work includes archaeological monitoring during construction. The proposed programme of further archaeological work is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.9.2.13 – Surely a permanent and irreversible impact should be assessed as being high, even if the receptor is of a low significance.	The magnitude of impact includes consideration of the spatial extent of the archaeological site or the deposit of geoarchaeological interest i.e., if a deposit extends or is likely to extend over a wide area and the impact of the proposed

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
			development on that deposit it within a small part of that extent, then the magnitude of impact may be low or even negligible.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.9.4.7 – On the basis of what evidence?	**Section 5.6** of this ES chapter describes the archaeological potential based on current information.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.9.5.11 – The preparation of the Outline Landscape Management Plan in itself will not reduce the overall impact and effect, but that will rather be achieved through the implementation of the proposed mitigation measures, whatever they might be.	Agreed. The embedded mitigation is set out in **Table 5.9** of this ES chapter. Further details are provided within the Outline Landscape Management Plan (document reference J2).
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.14.1.3 – This statement is considered to be somewhat premature – the non-intrusive archaeological surveys of the site remain to be completed, and no intrusive work has yet to be undertaken. Indeed the word 'unknown' appears 17 times in the document. I would suggest that it therefore cannot be said, at the moment, there will be no significant effects, but rather that none has so far been identified. Consequently I would refer you to 5.9.2.8 "As survey work is ongoing, the potential discovery of features or deposits of national importance during construction cannot be entirely ruled out. At this stage when surveys are yet to be completed, the sensitivity of the receptor is therefore considered to be unknown." The HET would consider this to be a better starting point from which to operate, and could be accompanied by a statement of intent such as '*appropriate mitigation measures, such as open-area archaeological excavation and recording, where necessary, will be undertaken to reduce the impact and effects on the receptor(s) to an acceptable level*.'	Agreed. The assessment presented within **section 5.6** of this ES chapter has been updated since publication of the PEIR and is based on all available information.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment We would also advise that consideration, even at this early stage, should be given to the wider social benefits of the archaeological works that could be achieved through activities such as educational visits and public open days, if warranted and practicable, being offered to the local public and the results, if necessary, being disseminated to as wide an audience as possible through talks to interested local groups, publication in a regional journal and/or a monograph, such as that produced for the Heysham to M6 Link – From Mesolithic Encampment to Medieval Estate: The Archaeology of the Bay Gateway (OAN, 2018).	Agreed. Further information on this is presented within the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.15.1.1 – Given the poor quality of the extant BGS data and the high level of geoarchaeological potential across the proposed development the suggested further works would seem entirely reasonable and necessary.	Noted.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Chapter 5: Historic environment 5.15.1.5 – The intention to carry out the works as recommended in 3.2.1.2 of the Intertidal archaeological survey report is noted.	Noted. The proposed programme of intertidal survey is set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment I have no record of the HET being consulted on the content of the DBA, but we had expected that section 3.2.4 would be followed. “For desk-based assessment within the planning framework, a brief/project outline will usually be prepared by the planning archaeologist or curator and issued by the commissioning body or their agents. The brief/project outline or a specification may	This was discussed at the EWG in February 2024 – see comments within this table.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		be prepared by the commissioning body or their agents but should be agreed in advance with the planning archaeologist.", or that the HET would at least be able to see a draft version prior to its publication.	
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment 1.2.3.1 – This is not the latest version of the CifA Standard & guidance for Archaeological Desk Based Assessment, subject to minor revision in 2020.	The most up-to-date versions of the CifA guidance documents are now referenced within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment 1.2.3.3 – What is meant by good coverage? Which parts of the redline boundary weren't accessed during the site visit? What records are there for the site visit? Why aren't those areas mapped? A walkover of the whole of the site is usually a standard requirement the HET expects contractors to work to, but in this instance, given the large land-take (and possible access issues) it might be best undertaken once the route has been finalised (see also my comments above in relation to Vol. 3, Chapter 5).	Much of the land within the onshore export cable corridor, the 400 kV grid connection corridor and the onshore substation sites has now been subject to geophysical survey and/or walkover survey. Further information on this is set out within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment The reproduction of the tithe maps should be such that the numbers are legible, and they should be accompanied by the apportionments. A list of potentially significant sites identified by the field names accompanied by their mapping would be helpful.	Agreed. The information regarding the tithe maps is set out in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES, with the tithe maps reproduced in Appendix G of that annex.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment	The relevant text within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES has been updated.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		4.1.1.7 – Mesolithic to Bronze Age sites could be of regional or even national significance/importance, but no level of significance/importance has been given to those of an Iron Age/Romano-British date in 4.1.1.9.	
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment 4.1.1.10 – We would suggest that Medieval sites should be considered to have the potential to be of regional or national rather than local significance/importance.	Agreed. The relevant text within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES has been updated.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment 4.1.1.11 – Do I take it from the absence of any mention of any potential for sites dating to the Post-medieval or later periods of any significance/importance to be found that none are anticipated?	The relevant text within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES has been updated.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment There is no mention of the North West Regional Research Framework (NWRRF) research questions that the project has the potential to address, despite the fact that the NWRRF has been included in the Bibliography.	The relevant text within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES has been updated.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.1 Historic Environment desk based assessment The Figures do not have the full title of the mapping used, e.g. Yates' 1786 map has the title The county Palatine of Lancaster, 1842 Ordnance Survey Map (this is missing whether this is the published or surveyed date, the Sheet No., edition & scale).	The relevant information within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES has been updated.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.2: Onshore archaeological geophysical survey report • A1 Table of Survey Considerations – No survey areas 30 & 31 • No list of figures • No figures 22 & 23 • Figures 20 & 21 – Area 30 shown simply as text • No figures showing area 31	The results of the programme of geophysical survey are presented within Volume 3, Annex 5.2: Onshore geophysical survey report of the ES.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.2: Onshore archaeological geophysical survey report The report is however considered to have identified a number of areas which will require a further stage of archaeological investigation (trial trenching) should they be directly impacted by the proposed development.	A programme of archaeological investigation by way of trial trenching has been agreed with the HET at Lancashire County Council. The locations of the trial trenches are based to some extent on the results of the geophysical survey. The locations of trial trenches are provided within Volume 3, Annex 5.6: Interim trial trenching report, and the results of the geophysical survey are detailed in Volume 3, Annex 5.2: Onshore geophysical survey report of the ES.
November 2023	Lancashire County Council (Statutory Consultation)	Volume 3, Annex 5.3: Intertidal archaeological survey report The recommendations for further work seem to be both appropriate and necessary.	Noted.
November 2023	Lancashire County Council (Statutory Consultation)	Vol 3, Annex 5.4: Geoarchaeological desk-based assessment report The recommendations for further work seem to be both appropriate and necessary.	Noted.
November 2023	Lancashire County Council (Statutory Consultation)	The above should however not be taken as an indication that the HET is unhappy with the methodology being followed. The mitigation proposed in Table 5.12 of Volume 3, Chapter 5 is considered to be appropriate and does contain within it the means to ensure that proportionate measures will be employed	Noted.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
		to mitigate any adverse impacts on the archaeological resource that might result from the proposals.	
November 2023	South Ribble Council (Statutory Consultation)	Visual impact of the proposed infrastructure at Penwortham substation would be significant when viewed from neighbouring residential properties, and concerns have already been received from residents to the Council relating to the height and proximity of the same infrastructure to adjacent properties, including a Grade II listed dwelling (Hesketh Farm). That being said, the proposal does sit against a backdrop of existing substation equipment, and in an extremely secluded, otherwise rural locale.	The assessment of residual effects arising from changes within the settings of listed buildings is set out within Volume 3, Annex 5.5: Settings assessment of the ES and summarised in **section 5.11** of this ES chapter.
November 2023	Freckleton Parish Council (Statutory Consultation)	Further, there is a historic burial ground situated at what is now known as Quakers Wood, which is marked on the Freckleton Tithe map of 1838. The latest burials here took place in the late 19th century. However, on the other side of Lower Lane opposite Quakers Wood, there are two other Burial Yards marked. These are extensions to the Burial Ground that were used to bury members of the Quaker community in Freckleton once the Burial Ground was full.	The historic area around Quakers Wood has been subject to further review following comments received as part of the Statutory Consultation. This information is presented within in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. The nature of the proposed works in this area are set out in Volume 1, Chapter 3: Project description of the ES.
November 2023	Newton with Clifton Parish Council (Statutory Consultation)	The character of Newton-with-Scales as a small rural village will be irreparably damaged if consent is given for the proposed development. The character of the village which should be protected was outlined by Fylde Borough Council in its opposition to the residential development at Woodlands Close. This initiative will have a greater impact. There are four Grade 2 listed heritage buildings along Grange Lane to the south of Newton-with-Scales. This would be a major change adversely impacting a rural setting by being surrounded by an industrial landscape. Some listed buildings will have an uninterrupted line of sight to the south substation option.	The assessment of residual effects arising from changes within the settings of listed buildings at Newton-with-Scales is set out within Volume 3, Annex 5.5: Settings assessment of the ES and summarised in **section 5.11** of this ES chapter.

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
November 2023	Blackpool & The Fylde College (Statutory Consultation)	Need to ensure continue to work with the local authorities and Historic England to ensure all negative impacts of the project are mitigated and the historic environment is preserved as it the current status where possible.	The project team has worked closely with the HET at Lancashire County Council and with Historic England to ensure that adverse effects on the historic environment have been avoided, reduced or offset wherever possible. The assessment of residual effects is set out within **section 5.11** of this ES chapter.
November 2023	M Threlfall Transport Ltd (Statutory Consultation)	Your lack of knowledge of the local area is worrying, the substations you propose are again taking quality farmland and the historic area around Quakers Wood.	The historic area around Quakers Wood has been subject to further review following comments received as part of the Statutory Consultation. This information is presented within in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. The nature of the proposed works in this area are set out in Volume 1, Chapter 3: Project description of the ES.
November 2023	M Threlfall Transport Ltd (Statutory Consultation)	There are also Roman Roads that run from the Kirkham front across to Marsh Coate which also needs to be considered.	The potential for archaeological remains of all periods to be present within the Onshore Order Limits and Intertidal Infrastructure Area is set out in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. A phased programme of archaeological evaluation is being undertaken in accordance with best practice and with methodologies approved in advance by relevant stakeholders including the HET at Lancashire County Council. Further archaeological fieldwork will be undertaken ahead of and during construction to reduce or offset any impacts on buried archaeological remains.
November 2023	Explorer Scouts (Statutory Consultation)	In the River Dow, significant Roman artefacts have been found. The likelihood of important findings is high due to the large scale excavation.	The potential for archaeological remains of all periods to be present within the Onshore Order Limits and Intertidal Infrastructure Area is set out in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES. A phased programme of archaeological evaluation is being undertaken in accordance with best practice and with methodologies approved in advance by relevant stakeholders including the HET at Lancashire County Council. Further archaeological

Date	Consultee and type of response	Comments raised	Response to comment raised and/or where considered in this chapter
			fieldwork will be undertaken ahead of and during construction to reduce or offset any impacts on buried archaeological remains.
08 February 2024	EWG consultation meeting with Historic England and Lancashire County Council.	No further comments were raised that need consideration within the ES.	No response necessary.
08 February 2024	EWG consultation meeting with Historic England and Lancashire County Council.	There is a need for the walkover survey as this may lead to a need to alter the trial trench locations based on findings. The geophysical survey can double as a walkover as long as it can be evidenced that the team on ground has had a look around, but there will be a need for a walkover to be completed where no other surveys have been undertaken. There will be gaps, but as much walkover should be completed as possible. A coverage map is required showing the areas where a walkover has been completed.	The use of the geophysical surveys as a proxy for the site walkover was agreed to as long as this can be evidenced. It was noted that there may still be gaps, but as much of the route should be covered. The extent of the completed geophysical survey is indicated on Figures 1.23 – 1.25 of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES, with further details provided in Volume 3, Annex 5.2: Onshore geophysical survey report of the ES. Further onshore geophysical survey will be undertaken post-consent and prior to construction. Any land where geophysical survey is not possible will be examined as part of a purposive walkover survey. This will be undertaken ahead of the agreement of trial trench locations should this land be suitable for trial trenching.

*These references relate to the commitments log which has been used to capture all agreements reached as part of the EWGs. These are detailed, along with meeting minutes, within the Technical Engagement Plan (document reference E6).

5.4 Study area

5.4.1.1 The historic environment study area is made up of all land within the following.

- The 5 km substations settings study area – a buffer zone (for all categories of designated heritage assets) extending for 5 km from the edge of the onshore substation sites. Together with the Zone of Theoretical Visibility (ZTV) for the onshore substations, this enables the identification of designated heritage assets whose settings may change during and following the construction of one or both of the onshore substations.
- The 1 km settings study area – a buffer zone (for all categories of designated heritage assets) extending for 1 km from the edge of the Onshore Infrastructure Area. The 1 km settings study area focuses on the export cable corridor and 400 kV grid connection cable corridor, as well as the construction compounds. This enables the identification of designated heritage assets whose settings may change during construction of the export cables and the 400 kV grid connection cables. It is limited to 1 km as there would be no above ground visible infrastructure in place during operation and maintenance (excluding the onshore substations, which are the focus of the 5 km substations settings study area above), therefore any impacts would only occur during the construction and decommissioning phases.
- The 500 m historic environment study area – a buffer zone (for non-designated heritage assets including buried archaeological remains) extending for 500 m from the edge of the Onshore Infrastructure Area. This enables the identification of the general potential for buried archaeological remains and deposits of geoarchaeological interest to be present within the Onshore Infrastructure Area and the Intertidal Infrastructure Area. It also enables the identification of other non-designated heritage assets such as locally listed buildings within this defined study area.

5.4.1.2 These study areas have been agreed with Historic England and with the HET at Lancashire County Council (who are the archaeological advisor to the local authorities) and are identified on Figure 5.1 (see Volume 3, Figures).

5.5 Baseline methodology

5.5.1 Methodology for baseline studies

Desk studies

5.5.1.1 A comprehensive desk-based review was undertaken to inform the baseline for historic environment. The existing studies and datasets referred to as part of the desk-based review are summarised in **Table 5.5** below.

5.5.1.2 More detailed information on the baseline historic environment within the study area is presented within Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

Table 5.5: Summary of desk study sources

Title	Source	Year	Author	Notes
National Heritage List for England (NHLE)	Historic England	N/A	N/A	Web-based resource regarding designated heritage assets in England.
Lancashire HER	Lancashire County Council	N/A	N/A	Record of all aspects of the historic environment, maintained by Lancashire County Council.
Intertidal and Coastal Peat Database	Historic England	N/A	N/A	Web-based resource regarding intertidal and coastal peat deposits in England.
The Wetlands of North Lancashire	North West Wetland Survey (NWWS)	1995	Middleton, R, Wells, CE and Huckerby, E.	Report on the results of a survey of the wetlands across north Lancashire.
North West Rapid Coastal Zone Assessment	Historic England	2017	Eadie, G.	Report identifying heritage assets along the coast of North West England.
Coastal and Intertidal Zone Archaeological Network (CITiZAN)	Museum of London Archaeology	N/A	N/A	Web-based resource identifying heritage assets on the foreshore and within intertidal areas.
Portable Antiquities Scheme (PAS)	British Museum	N/A	N/A	Web-based resource managed by the British Museum and Museum Wales to encourage the recording of archaeological objects found by members of the public in England and Wales.
Documents held by the Lancashire Archives (Preston)	Lancashire Archives	N/A	N/A	Documents held by the Lancashire Archives (Preston) were examined by an experienced researcher.
19th century tithe maps, historic county maps and early Ordnance Survey (OS) maps	Lancashire Archives	N/A	N/A	Historic maps held by the Lancashire Archives (Preston) were examined by an experienced researcher.
Aerial Photographs Online	Historic England	2023b	N/A	The online collection of aerial photographs held by Historic England were examined by an experienced researcher.
British Geological Survey (2023) data	British Geological Survey	2023	N/A	The online records of the British Geological Survey were examined by an experienced researcher.
ArchSearch	Archaeology Data Service	2023	N/A	The online records held by the Archaeological Data Service Survey were examined by an experienced researcher.

5.5.1.3 A separate desk-based assessment has been undertaken specifically to examine the geoarchaeological potential of land within the study area. A summary of the results of that assessment is presented within this section of the ES chapter, with the full assessment provided as Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES.

5.5.1.4 The methodology for the geoarchaeological desk-based assessment has been agreed with the relevant stakeholders (see **Table 5.4**).

Site-specific surveys

5.5.1.5 A programme of archaeological geophysical survey has been carried out to inform the ES. This has been undertaken on land within the landfall, onshore export cable corridor, the onshore substation sites and the 400 kV grid connection cable corridor, together with associated construction compounds including the onshore substation construction compounds. The survey has been undertaken within most land in these areas which is suitable for survey, and within which access for the survey could be obtained. The extent of the land covered by the geophysical survey is indicated on Figure 1.23 to Figure 1.25 of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

5.5.1.6 A summary of the results of the geophysical survey is presented within this chapter, with the full assessment provided in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES. The geophysical survey methodology comprises magnetometry (fluxgate gradiometry). This methodology was agreed with the HET at Lancashire County Council and with Historic England.

5.5.1.7 There are some small areas of land within the Onshore Infrastructure Area where geophysical survey has not been possible. Survey of these areas will be undertaken post-consent and prior to construction if the land here is suitable for such survey.

5.5.1.8 A programme of archaeological trial trenching and geoarchaeological investigation has been undertaken in order to inform the ES. This work has been undertaken within land that had been subject to geophysical survey, with the results of the geophysical survey being used to guide the locations of some of the trial trenches. A report on the results of the trial trenching is provided in Volume 3, Annex 5.6: Interim trial trenching report of the ES.

5.5.1.9 The trial trenching includes examination of the deposit sequences within the areas subject to trenching, in order to obtain information regarding the geoarchaeological potential of these areas. The methodology for the trial trenching and geoarchaeological investigation was agreed with the HET at Lancashire County Council and with Historic England.

5.5.1.10 Further trial trenching and geoarchaeological investigation will be undertaken post-consent and prior to construction, with trench locations guided by the results of the geophysical survey where appropriate. The results of the programme of trial trenching and geoarchaeological investigation will be used in the design and implementation of any further archaeological and geoarchaeological fieldwork that may be undertaken post-consent and prior to construction, in consultation with the HET at Lancashire County Council

and with Historic England. The results may also be used to inform the location of the cables and other works.

5.5.1.11 A survey has also been undertaken within the Intertidal Infrastructure Area, and the results of this work are presented within Volume 3, Annex 5.3: Intertidal archaeological survey report of the ES.

5.5.1.12 The methodology for the historic environment intertidal survey comprised a detailed walkover at low tide with the recording of identified features and deposits of archaeological and/or palaeoenvironmental interest. This methodology was agreed with the HET at Lancashire County Council and with Historic England.

5.6 Baseline environment

5.6.1 Desk study

5.6.1.1 Information on the historic environment within the study area was collected through a detailed review of existing studies and datasets. These are summarised at **Table 5.5.**

5.6.1.2 The desk-based assessment (Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES) examined data from a number of sources in order to identify known historic environment resources and also to identify the potential for the presence of such resources within the study area.

5.6.1.3 The separate geoarchaeological desk-based assessment (Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES) included review of additional appropriate sources.

5.6.2 Identification of designated heritage assets

5.6.2.1 No designated heritage assets would be directly physically impacted by the construction, operation and maintenance of the Transmission Assets. Any impacts on designated heritage assets would be indirect (non-physical) and would arise from a change within the setting of the asset.

5.6.2.2 All designated heritage assets within or directly adjacent to the 1 km settings study area that could be indirectly affected by the construction and decommissioning phases of the Transmission Assets are set out in **Table 5.6**. The first column in the table shows the NHLE identification number where this is available. The locations of these designated heritage assets are indicated on Figures 5.2 to 5.5 (see Volume 3, Figures).

5.6.2.3 No World Heritage Sites, Registered Battlefields or Scheduled Monuments are within the 1 km settings study area.

Table 5.6: Designated heritage assets within the 1 km settings study area

NHLE No.	Name	Designation
1000949	Lytham Hall.	Grade II Registered Historic Park and Garden.
1001377	Ashton Gardens.	Grade II Registered Historic Park and Garden.
N/A	Porritt Houses/Ashton Gardens Conservation Area.	Conservation Area.
N/A	St Anne's Road East Conservation Area.	Conservation Area.
1219217	Church of St Anne, St Anne's on the Sea.	Grade II listed building.
1423954	Gravestone of Sir Charles Wright Macara, churchyard of Church of St Anne, St Anne's on the Sea.	Grade II listed building.
1423950	Laura Janet Memorial Cross, churchyard of Church of St Anne, St Anne's on the Sea.	Grade II listed building.
1196379	Lychgate and boundary wall to churchyard of Church of St Anne, St Anne's on the Sea.	Grade II listed building.
1205755	Cottage known as Blowing Sands and attached wall to north, Stanley.	Grade II listed building.
1205761	Nos. 1 and 2 Fishers Lane, Stanley.	Grade II listed building.
1362389	White House, Lower Balham.	Grade II listed building.
1072058	Hall Cross Farmhouse, Freckleton.	Grade II listed building.
N/A	Kirkham Conservation Area.	Conservation Area.
1362357	Church of St Michael, Kirkham.	Grade II* listed building.
1072022	Sundial in churchyard of Church of St Michael, Kirkham.	Grade II listed building.
1072023	Tomb of Edward and Dorothy King in churchyard of Church of St Michael, Kirkham.	Grade II listed building.
1163974	Tomb of Edward and Elizabeth Birley in churchyard of Church of St Michael, Kirkham.	Grade II listed building.
1362358	Tomb of William Birley and others in churchyard of Church of St Michael, Kirkham.	Grade II listed building.
1072020	No. 2 Church Street, Kirkham.	Grade II listed building.
1072021	No. 4 Church Street, Kirkham.	Grade II listed building.
1163984	Nos. 4 and 6 Freckleton Street, Kirkham.	Grade II listed building.
1164005	No. 14 Preston Street, Kirkham.	Grade II listed building.
1163996	No. 32 Poulton Street, Kirkham.	Grade II listed building.
1072025	Hillside and attached wings, Preston Street, Kirkham.	Grade II listed building.
1362359	Trustee Savings Bank, Poulton Street, Kirkham.	Grade II listed building.
1072024	Fishstones and lamp, Market Square, Kirkham.	Grade II listed building.

NHLE No.	Name	Designation
1405186	Jubilee Lamp, Poulton Street, Kirkham.	Grade II listed building.
1264897	K6 telephone kiosk, Poulton Street, Kirkham.	Grade II listed building.
1407288	United Reform Church, Poulton Street, Kirkham.	Grade II listed building.
1072034	Newton Hall Farmhouse, Newtown-with-Scales.	Grade II listed building.
1072035	Dixon's Farmhouse, Newtown-with-Scales.	Grade II listed building.
1164146	No. 8 Grange Lane, Newtown-with-Scales.	Grade II listed building.
1164155	Dagger Cottage, Newtown-with-Scales.	Grade II listed building.
1072036	Clifton Hall, Clifton.	Grade II listed building.
1165074	Raikes Farmhouse, Lea Town.	Grade II listed building.
1361663	Old Lea Hall Farmhouse, Blackpool Road, Lea.	Grade I listed building.
1073511	Stable block *c*. 50 m south of Old Lea Hall Farmhouse.	Grade II listed building.
1317447	Barn *c*. 120 m south east of Old Lea Hall Farmhouse.	Grade II listed building.
1165029	Barn c. 75 m north of New Hall Farmhouse, Blackpool Road, Lea.	Grade II listed building.
1073060	Hesketh Farmhouse, Howick Cross Lane, Penwortham.	Grade II listed building.
1073061	Howick Cross, Liverpool Road, Penwortham.	Grade II listed building.
1361897	Nos. 138 and 140 Ratten Lane, Hutton.	Grade II listed building.
1210426	No. 150 Ratten Lane, Hutton.	Grade II listed building.

5.6.2.4 All designated heritage assets within or directly adjacent to the 5 km substations settings study area that could be affected by the construction, operation and maintenance, and decommissioning phases of the onshore substations (i.e., those which are within the ZTV established for the onshore substations) are set out in **Table 5.7**.

5.6.2.5 The first column in the table shows the NHLE identification number. The locations of all designated heritage assets within or directly adjacent to the 5 km substation settings study are indicated on Figure 5.6 (see Volume 3, Figures). Those assets which are not within the combined ZTV established for the onshore substations are indicated with a symbol, but their NHLE identification number is not provided on the figures.

5.6.2.6 There are no Scheduled Monuments, Registered Parks and Gardens, Registered Battlefields or Conservation Areas within the 5 km substations settings study area and within the combined ZTV established for the onshore substations.

Table 5.7: Designated heritage assets within the 5 km substations settings study area and within the combined ZTV established for the onshore substations

NHLE No.	Name	Designation
1071999	Treales Church of England Primary School, Church Road, Treales.	Grade II listed building.
1072000	Rhododendron Cottage, Cross Lane, Treales.	Grade II listed building.
1362386	Derby Arms Inn, Treales.	Grade II listed building.
1072001	Ivy Dene Farmhouse and integral barn, Moorside Lane, Treales.	Grade II listed building.
1072002	Treales Windmill.	Grade II listed building.
1317931	Windmill Tavern, Newton-with-Clifton.	Grade II listed building.
1072034	Newton Hall Farmhouse, Newtown-with-Scales.	Grade II listed building.
1072035	Dixon's Farmhouse, Newtown-with-Scales.	Grade II listed building.
1164146	No. 8 Grange Lane, Newtown-with-Scales.	Grade II listed building.
1164155	Dagger Cottage, Newtown-with-Scales.	Grade II listed building.
1072058	Hall Cross Farmhouse, Freckleton.	Grade II listed building.

5.6.3 Summary of the archaeological and historical baseline environment

5.6.3.1 The study area is located within a landscape that has the potential to contain archaeological sites and features from all periods. A summary of this is included within this chapter. Full details are set out in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES with additional information provided in: Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES; Volume 3, Annex 5.3: Intertidal archaeological survey report of the ES; Volume 3, Annex 5.4: Geoarchaeological desk-based assessment report of the ES and Volume 3, Annex 5.6: Interim trial trenching report of the ES.

5.6.3.2 Consideration of the occupation and use of the land within the 500 m historic environment study area over time is intrinsically linked to an understanding of the physical processes which have led to the development of the current landscape across the south western coastal plain of the Fylde peninsula. Due to the low-lying nature of this landscape, the history of the area throughout the Quaternary period and including the Holocene epoch is a complex one of marine transgressions and regressions as sea levels changed in accordance with the series of glacial episodes and the intervening interstadials.

5.6.3.3 Essentially there is a recurring pattern of change in which periods of lower sea levels resulted in an extensive area of exposed land within what is now Liverpool Bay, with this land being inundated during the warmer interstadial periods as the coastline retreated.

5.6.3.4 Amongst the products of this continuous reworking of the landscape are the substantial sand dunes known as Starr Hills within the landfall area for the

Transmission Assets, which are of relatively recent date. Behind the coastal strip was a series of wetlands, some interconnected and most of which have now been drained. Organic material accumulated over time within these wetlands to create raised bogs, known in the north west region as ‘mosses’. The onshore export cable corridor crosses two named mosses (Lytham Moss and Marton Moss, although these were connected and both names seem to have been used to cover the wider wetland area here) as well as several other areas of former wetland.

5.6.3.5 An extensive survey of the archaeological and geoarchaeological potential of the mosses in the Fylde peninsula was undertaken between 1989 and 1993 as part of the North West Wetlands Survey (NWWS), with the results published in 1995 (The Wetlands of North Lancashire – Middleton et al., 1995). The fieldwork included systematic surface artefact collection (fieldwalking) across arable fields.

5.6.3.6 The locations of non-designated heritage assets with the 500 m historic environment study area are indicated on Figures 5.7 to 5.18. The numbers used on the figures and in the text below with the prefix ‘PRN’ are taken from the Lancashire HER, whilst those with the prefix ‘LA’ are taken from The Wetlands of North Lancashire publication (Middleton et al., 1995). Further information on the HER entries is provided in Appendix C of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

5.6.3.7 No definitive evidence of activity during the Palaeolithic period is recorded within the 500 m historic environment study area, although an elk skeleton of late Upper Palaeolithic date was found within peat deposits at Poulton-le-Fylde, approximately 6.5 km to the north of this study area. Material of Mesolithic date has been found at several locations within the 500 m historic environment study area, principally comprising pieces of worked flint recovered by the NWWS and also a mattock (a tool used for digging) made from a deer antler which was found on the south bank of the River Ribble (PRN13247).

5.6.3.8 Neolithic and Bronze Age activity is also attested by the presence of flint tools including arrowheads. These worked flints are often found in distinct concentrations known as ‘flint scatters’. The NWWS identified a total of 17 flint scatters dating to the Neolithic/early Bronze Age period; and a further 30 sites containing smaller assemblages were identified, located mostly on the northern edge of Lytham Moss close to Peel, with additional sites located towards Higher Ballam (Middleton *et al.,* 1995). Other artefacts of Neolithic or Bronze Age date found within the 500 m historic environment study area include a polished stone axe recovered from a location close to the landfall area (PRN35) and also a stone axe or hammer (PRN30639).

5.6.3.9 Bronze Age artefacts recovered from within the 500 m historic environment study area include bronze and stone axes (PRN41332; PRN775; PRN31946; PRN102; PRN105).

5.6.3.10 No evidence has been recovered to indicate activity during the Iron Age within the 500 m historic environment study area.

5.6.3.11 A Roman fort at Dowbridge (Kirkham) represents the focus for activity of this period within the 500 m historic environment study area. Beyond the fort

evidence for Roman activity is quite sparse, comprising a few metal objects such as coins and brooches along with a possible bath-house near to Freckleton (PRN353).

5.6.3.12 Several settlements within the 500 m historic environment study area have place names that suggest an Early Medieval origin, and a few were almost certainly established during this period as they are named in the Domesday Survey of 1086. These include Freckleton, Newton-with-Scales and Clifton as well as Kirkham. Metalwork potentially of this period has been recovered from a couple of locations.

5.6.3.13 In addition to the documented Medieval settlements within the 500 m historic environment study area, coins and other artefacts have been recovered whilst there is also evidence of field systems and agricultural practices in the form of ridge and furrow earthworks.

5.6.3.14 Post-medieval activity within the 500 m historic environment study area includes the draining of former wetland areas and the establishment of new farmsteads as well as the expansion of existing settlements. Two fish traps recorded on the south bank of the River Ribble may also date from this period (PRN35052; PRN35053).

5.6.3.15 A Quaker burial ground (PRN40284) is recorded *c*. 40 m to the west of the Morecambe onshore substation construction compound and *c*. 70 m to the south of the onshore export cable corridor, at Lower Lane. On the Lancashire HER, the Quaker burial ground is recorded within a small area of woodland known as ‘Quaker’s Wood’. A review of the tithe schedule for the 1838 Freckleton Tithe Map (Appendix G of Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES) shows the plot containing PRN40284, plot 52, is described as a ‘Burying Ground’. Plots 49, 52 and 76, located north west to west of plot 52, are described as ‘Burying Yard’, ‘Lower Burying Yard’ and ‘Higher Burying Yard’ respectively. These recorded uses may indicate that the Quaker burial ground was much more extensive than the small area of woodland, although the subsequent OS mapping of this area makes no mention of potential burials in any area beyond the woodland.

5.6.3.16 The Modern period saw the establishment of Blackpool Airport (from 1907 onwards) and associated defensive structures related to its use by the Royal Air Force during the Second World War. There is also a radar installation nearby, to the east of Blackpool Airport. The Blackpool and Lytham Railway opened in 1863. Other key developments included the substantial expansion of existing settlements, especially at Blackpool, Lytham and St Annes, and the changes to the estuary of the River Ribble such that the river now flows in a single canalised channel.

5.6.3.17 A programme of Historic Landscape Classification (HLC) has been undertaken for this area. HLC is an aspect of more general landscape characterisation that seeks to provide an additional element of ‘time-depth’, allowing the historic evolution of the landscape to be perceived and understood. The broad HLC Types within the study area are set out in Volume 3, Annex 5.1: Historic environment desk-based assessment of the ES.

5.6.3.18 Broad HLC Types at the western end of the onshore export cable corridor include 'Saltmarsh' and 'Modern Communications'. This latter broad HLC Type is used for the airport and the radar station. East of here the onshore export cable corridor largely passes through broad HLC Type 'Post-medieval Enclosure' and a small area of broad HLC Type 'Modern Enclosure'. To the north of Freckleton the onshore export cable corridor passes through areas of Broad HLC Type 'Ancient Enclosure'.

5.6.3.19 The 400 kV grid connection cable corridor includes land assigned to broad HLC Types 'Modern Industry', Saltmarsh', 'Modern Enclosure', 'Post-medieval Enclosure' and 'Ancient Enclosure'.

5.6.4 Site-specific surveys

5.6.4.1 The geophysical survey has covered much of the land within the onshore export cable corridor and the onshore substation sites which is suitable and appropriate for survey and within which access for the survey could be obtained.

5.6.4.2 The results of the geophysical survey work completed thus far are presented in Volume 3, Annex 5.2: Onshore archaeological geophysical survey report of the ES. This shows that geophysical anomalies of potential archaeological interest have been identified in one area within the onshore export cable corridor. These include possible linear and rectilinear features. No potential archaeological sites of clear national importance have been identified to date. In several locations, the geophysical survey identified curvilinear anomalies suggestive of small circular or sub-circular enclosures, or potential ring ditches, although the nature of the signal was such that the surveyors have classed these responses as 'undetermined' rather than clearly archaeological. In areas of former wetlands such as Lytham Moss the geophysical survey has identified the presence of palaeochannels, some of which can also be seen on aerial images.

5.6.4.3 The results of the trial trenching and geoarchaeological investigation completed thus far are presented in Volume 3, Annex 5.6: Interim trial trenching report of the ES. This covers a total of 139 trial trenches across several locations within the onshore export cable corridor. Archaeological features and deposits were identified in 80 of the trial trenches, with a general low density and a reasonable correlation with the anomalies identified by the geophysical survey. Most of the recorded archaeological features were ditches considered likely to represent Post-medieval field boundaries. A concentration of features was recorded at one location and these may be of Prehistoric date, whilst a second concentration of features at another location may also be of Prehistoric date or possibly Roman. A number of former drainage features and palaeochannels were also recorded.

5.6.4.4 The results of the intertidal survey are presented in Volume 3, Annex 5.3: Intertidal archaeological survey report of the ES. No deposits of geoarchaeological or palaeoenvironmental interest (such as peat deposits) were recorded on the surface of the intertidal zone. One timber setting of posts was identified within an old delta channel for the River Ribble, which

may relate to an unlocated wreck site, the remains of a fishing weir or part of a structure related to salt extraction industries.

5.6.5 Future baseline conditions

5.6.5.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 require that '*an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge*' is included within the ES. This section provides an outline of the likely future baseline conditions in the absence of the Transmission Assets.

5.6.5.2 Future changes to the historic environment baseline could include additions to the list of designated heritage assets, e.g., additional designations of Scheduled Monuments, Listed Buildings etc. or amendments to the descriptions of the assets and the area covered by the designation.

5.6.5.3 Other changes could occur as a result of further information being discovered regarding archaeological sites, possibly through programmes of intrusive or non-intrusive fieldwork. As described above, a programme of archaeological trial trenching and geoarchaeological investigation has been undertaken within the Onshore Order Limits and Intertidal Infrastructure Area to inform the ES. Further investigation of the archaeological and geoarchaeological potential of land within the Onshore Order Limits and Intertidal Infrastructure Area is planned to take place ahead the commencement of construction, as set out in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9).

5.6.5.4 No changes in statutory legislation on historic environment topics are currently anticipated. Additional guidance may be issued by national statutory advisors or others, including guidance on the assessment process.

5.6.5.5 No significant change to the historic environment baseline in this area is anticipated to occur as a result of climate change. Drier weather in the summer months may lead to the discovery of as yet unknown archaeological sites that become visible as cropmarks or parchmarks. However, this could also lead to some drying out of deposits (within palaeochannels) which are currently waterlogged or damp. This may result in some loss of heritage significance of these deposits in terms of palaeoenvironmental potential. Climate change could also lead to new farming regimes as farmers respond to variations in temperature and rainfall by introducing new crops or by switching from livestock to arable farming which could impact on buried archaeological remains. There could also be increased flooding in low-lying coastal areas associated with a rise in sea levels and a possible increase in severe storm events; this could affect historic buildings and areas as well as buried archaeological remains.

5.6.6 Key receptors

5.6.6.1 **Table 5.8** identifies the receptors taken forward into the assessment. These receptors have been agreed with stakeholders, principally through scoping.

Table 5.8: Key receptors taken forward to assessment

Receptor	Description
Buried archaeological remains	Archaeological sites and features of any period.
Deposits of geoarchaeological and palaeoenvironmental interest	Could include organic deposits such as peat which may be waterlogged.
Above ground designated heritage assets	Listed buildings (Grade I, II* and II), Registered Historic Parks and Gardens (Grade II), Conservation Areas.
Historic Landscape Character	Several Broad HLC Types.

5.7 Scope of the assessment

5.7.1.1 The scope of the ES has been developed in consultation with relevant statutory and non-statutory consultees as detailed in **Table 5.4.**

5.7.1.2 The historic environment baseline has been established through a review of available information acquired from appropriate sources including the NHLE, the Lancashire HER and the Lancashire Archives. The study areas for the acquisition of baseline information extends beyond the land required for the construction, operation and maintenance and decommissioning of the onshore elements of the Transmission Assets as set out below. These study areas have been agreed with stakeholders via the Scoping Report and the Scoping Opinion as well as through subsequent consultation (see **Table 5.4**).

5.7.1.3 The acquisition of available baseline information has been supplemented by field surveys, as set out above. The scope and extent of these field surveys has been developed with, and approved by, the appropriate stakeholders.

5.7.1.4 Taking into account the scoping and consultation process, **Table 5.9** summarises the potential effects considered as part of this assessment.

Table 5.9: Impacts considered within this assessment

Activity	Impacts scoped into the assessment
Construction phase	
Construction within the intertidal area and at landfall, onshore export cable corridor, onshore substation sites and 400 kV grid connection cable corridor.	Effects arising from damage to or permanent loss of buried archaeological and geoarchaeological resources.
	Effects arising from changes within the settings of designated heritage assets.
	Effects arising from changes to the character of the overall historic landscape.
Operation and maintenance phase	
Operation and maintenance of the onshore substations.	Effects arising from changes within the settings of designated heritage assets.
	Effects arising from changes to the character of the historic landscape.
Operation and maintenance, including vegetation clearance and planting restrictions imposed by any cabling easements.	Effects arising from changes within the settings of designated heritage assets.
Operation and maintenance of buried cables.	Effects arising from damage to or permanent loss of buried archaeological and geoarchaeological resources as a result of heat generated by cables.
Decommissioning	
Decommissioning within the intertidal area and at landfall, onshore export cable corridor, onshore substation sites and 400 kV grid connection cable corridor.	Effects arising from changes within the settings of designated heritage assets.
	Effects arising from changes to the character of the historic landscape.

5.7.1.5 Impacts that are not likely to result in significant effects have been scoped out of the assessment. A summary of the impacts scoped out, together with justification for scoping them out and whether the approach has been agreed with key stakeholders through either scoping or consultation, is presented in **Table 5.8**.

Table 5.8: Impacts scoped out of the assessment

Impact	Justification
Effects arising from changes to the character of the historic landscape during operation and maintenance of the onshore elements of the Transmission Assets, other than the onshore substations.	Activities associated with the operation and maintenance of the onshore export cables, 400 kV grid connection cables, landfall and associated infrastructure are unlikely to represent a significant change to the character of the historic landscape. This was agreed by the Planning Inspectorate in the Scoping Opinion (refer to **Table 5.4** of this ES chapter).
Effects arising from impacts on buried archaeological and geoarchaeological resources during operation and maintenance and decommissioning.	Activities associated with the operation and maintenance and decommissioning of the onshore elements of the Transmission Assets will not require additional land take and are unlikely to damage or result in the permanent loss of buried archaeological and geoarchaeological resources. This was agreed by the Planning Inspectorate in the Scoping Opinion other than a requirement to consider the potential for changes to groundwater levels and/or heat output from buried cables in respect of the deterioration of buried archaeological assets. This is addressed in **section 5.11.2** of this ES chapter.
Effects arising from changes within the settings of designated heritage assets during operation and maintenance of the onshore elements of the Transmission Assets, other than the onshore substations.	Activities associated with the operation and maintenance of the onshore export cables/landfall and associated infrastructure are unlikely to represent a significant change within the settings of designated heritage assets. This was agreed by the Planning Inspectorate in the Scoping Opinion, although the Planning Inspectorate advised that the Applicants should consider the potential for operation and maintenance phase effects on the setting of above ground heritage assets as a result of vegetation clearance and planting restrictions imposed by any cabling easements. This is addressed in **section 5.11.3** of this ES chapter.

5.8 Measures adopted as part of the Transmission Assets (Commitments)

5.8.1.1 For the purposes of the EIA process, the term ‘Measures adopted as part of the Transmission Assets’ is used to include the following types of mitigation measures (adapted from IEMA, 2016). These measures are set out Volume 1, Annex 5.3: Commitments Register of the ES.

- Embedded mitigation. This includes the following.
  - Primary (inherent) mitigation - measures included as part of the project design. IEMA describes these as ‘modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project and do not require additional action to be taken’. This includes modifications arising through the iterative design process. These measures will be secured through the consent itself through the description of the project and the parameters secured in the DCO and/or marine licences. For example, a reduction in footprint or height.
  - Tertiary (inexorable) mitigation. IEMA describes these as ‘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 practices used to manage commonly occurring environmental effects'. It may be helpful to secure such measures through a Code of Construction Practice or similar.

- Secondary (foreseeable) mitigation. IEMA describes these as '*actions that will require further activity in order to achieve the anticipated outcome*'. These include measures required to reduce the significance of environmental effects (such as lighting limits) and may be secured through environmental management plans.

5.8.1.2 Such measures are clearly identified within Volume 1, Annex 5.3: Commitments Register of the ES. The measures relevant to this chapter are summarised in **Table 5.9**.

5.8.1.3 Embedded measures that will form part of the final design (and/or are established legislative requirements/good practice) have been taken into account as part of the initial assessment presented in **section 5.9** (i.e., the initial determination of impact magnitude and significance of effects assumes implementation of these measures). This ensures that the measures to which the Applicants are committed are taken into account in the assessment of effects.

5.8.1.4 Where an assessment identifies likely significant adverse effects, further or secondary mitigation measures may be applied. These are measures that could further prevent, reduce and, where possible, offset these effects. They are defined by IEMA as actions that will require further activity in order to achieve the anticipated outcome and may be imposed as part of the planning consent, or through inclusion in the ES (referred to as secondary mitigation measures in IEMA, 2016). For further or secondary measures, both pre-mitigation and residual effects are presented.

Table 5.9: Measures (commitments) adopted as part of the Transmission Assets

Commitment number	Measure adopted	How the measure will be secured
Embedded measures		
CoT03	A range of sensitive historical, cultural and ecological conservation areas (including statutory and non-statutory designations) have been directly avoided where practicable during the site selection process for Morgan and Morecambe Offshore Wind Farms: Transmission Assets footprint. The Works Plans identify the areas where different works are currently proposed. These include, but are not restricted to: • Listed Buildings • Scheduled Monuments • Registered Parks and Gardens • Onshore Conservation Areas • Onshore National Site Network • Offshore National Site Network • Sites of Special Scientific Interest (Onshore only) • Local Nature Reserves • Local Wildlife sites • Lancashire Wildlife Trust Reserves • Royal Society for the Protection of Birds (RSPB) Reserves • National Trust land; • Ancient Woodland sites and known Tree Preservation Orders (TPOs); & • non-designated built heritage assets. Where possible, unprotected areas of woodland, mature and protected trees (i.e. veteran trees) have and will also be avoided, including the veteran tree located to the north east of National Grid Penwortham substation.	DCO Article 3(1); Works Plans - Onshore and Intertidal
CoT06	The construction area associated with onshore export cable corridor will be 100 m working width and the 400kv grid connection cable corridor will be working width 76 m to minimise the	DCO Schedules 2A & 2B, Requirement 5 (Detailed design parameters onshore); Works Plans - Onshore and Intertidal

Commitment number	Measure adopted	How the measure will be secured
	construction footprint, except at complex trenchless technique crossings, including, but not limited to: • Network Railway Crossings; • A, B and Classified unnumbered roads (known as C roads), including B5261 (Queensway); • the approach to landfall; • river and water course crossings; and • sensitive utility assets (e.g. high pressure gas pipelines). The widths of both the onshore export cable corridor and 400kv grid connection cable corridor also increases up to 270 m in width, on the access and egress to the onshore substations, to facilitate consideration of trenchless crossings as well as being subject to detailed design. These increased widths and crossing methodologies are set out in the Onshore Crossing Schedule and Works Plans-Onshore and Intertidal.	
CoT08	Post-construction, the working area will be reinstated to pre-existing condition as far as reasonably practical in line with the DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (PB13298), Institute of Quarrying (IQ) Good Practice Guide for Handling Soils in Mineral Workings (IQ, 2021) and British Society of Soil Science (BSSS) Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction (BSSS, 2022).	DCO Schedules 2A & 2B, Requirement 18 (Restoration of land temporarily used for construction); DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)
CoT13	Where hedgerows and/or trees require removal, this will be undertaken prior to topsoil removal. Sections of hedgerows and trees which are removed will be replaced using like for like hedgerow species, subject to landowner agreement.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice); and Requirement 12 (Ecological Management Plan)
CoT18	Core working hours for the construction of the intertidal and onshore works will be as follows: • Monday to Saturday: 07:00 - 19:00 hours; and • up to one hour before and after core working hours for mobilisation (“mobilisation period”) i.e. 06:00 to 20:00. Activities carried out during the mobilisation period will not generate significant noise levels (such as piling, or other such noisy activities). In circumstances outside of core working practices, specific works may have to be undertaken outside the core working hours. This will include, but is not limited to, works being undertaken	DCO Schedules 2A & 2B, Requirement 14 (Construction hours)

Commitment number	Measure adopted	How the measure will be secured
	within and/or adjacent to Blackpool Airport and cable installation at landfall and at the River Ribble. Advance notice of such works will be given to the relevant planning authority.	
CoT27	All temporary compounds will be removed and sites will be reinstated when construction has been completed.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice) DCO Schedules 2A & 2B, Requirement 16 (Restoration of land used temporarily for construction)"
CoT28	Construction site lighting will only operate when required and will be positioned and directed to avoid unnecessary illumination to residential properties, sensitive ecological receptors and footpath users, and minimise glare to users of adjoining public highways. Construction site lighting will be designed in accordance with latest relevant available guidance and legislation and the details of the location, height, design and luminance of lighting to be used will be detailed within the Outline Construction Artificial Light Emissions Management Plan, as part of the Outline CoCP. The design of construction site lighting will accord with the details provided in the Outline Code of Construction Practice (CoT35) and Outline Ecological Management Plan (CoT76).	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice) DCO Schedules 2A & 2B, Requirement 12 (Ecological management plan)
CoT35	An Outline Code of Construction Practice (CoCP) has been prepared and submitted with the application for development consent. Detailed CoCP(s) will be developed in accordance with the Outline CoCP. The Outline CoCP includes measures to maintain and address: • flood protection and control measures; • water environment and drainage; • pollution prevention; • geology and ground conditions; • ecology and nature conservation (including protected species and invasive species); • historic environment; • soil management; • traffic and transport; • noise management measures; • air quality and dust management;	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)

Commitment number	Measure adopted	How the measure will be secured
	• landscape and visual; • recreation; and • bentonite breakout.	
CoT36	Onshore Decommissioning Plan(s) will be developed prior to decommissioning. The Onshore Decommissioning Plan(s) will include provisions for the removal of all onshore above ground infrastructure and the decommissioning of below ground infrastructure (if and where relevant and practicable), and details relevant to flood risk, pollution prevention and avoidance of ground disturbance. The Onshore Decommissioning Plan(s) will be in line with the latest relevant available guidance.	DCO Schedules 2A & 2B, Requirement 22 (Onshore decommissioning)
CoT38	An Outline Construction Traffic Management Plan (CTMP) has been prepared and submitted with the application for development consent. CTMP(s) will be developed in accordance with the outline CTMP prior to construction. The detailed CTMP(s) will set out measures to include: 1. managing the numbers and routing of HGVs during the construction phase; 2. managing the movement of construction worker traffic during the construction phase; 3. details of measures to manage the safe passage of HGV traffic via the local highway network; and 4. details of localised road improvements if and where these may be necessary to facilitate safe use of the existing road network.	DCO Schedules 2A & 2B, Requirement 9 (Traffic and Transport)
CoT40	An Onshore and Intertidal Written Scheme of Investigation(s) (WSI) will be developed in line with the Outline Onshore and Intertidal WSI. The Onshore and Intertidal WSI(s) will provide details on the surveys and archaeological mitigation in advance for each stage of the Project any ground breaking works and during construction.	DCO Schedules 2A & 2B, Requirement 11 (Onshore archaeology)
CoT79	An Outline Construction Noise and Vibration Management Plan has been prepared as part of the Outline CoCP submitted as part of the application for development consent. It includes measures to mitigate noise from construction activities associated with the Transmission Assets. Detailed Construction Noise and Vibration Management Plan(s) will be developed in accordance with Detailed CoCPs. Bespoke method statement(s) will be developed to ensure suitable noise limits can be met on specific sensitive noise receptors.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)

Commitment number	Measure adopted	How the measure will be secured
CoT80	Operational Noise Management Plan(s) for the onshore substations will be prepared and submitted for approval prior to the commencement of operations. The Plan(s) will identify the noise limits for the operation of the onshore substations and the measures for how these limits would be monitored.	DCO Schedules 2A & 2B, Requirement 18 (Control of noise during operational stage)
Secondary measures		
CoT15	Detailed Landscape Management Plan(s) will be developed in accordance with the Outline Landscape Management Plan. Detailed Landscape Management Plan(s) will include details of mitigation planting at the onshore substation sites, including the number, location, species and details of management and maintenance of planting. Where practicable, landscape mitigation planting will be established as early as reasonably practicable in the construction phase.	DCO Schedules 2A & 2B, Requirement 6 (Provision of landscaping)
CoT19	All trenchless crossings will be undertaken by non-impact methods such as HDD (or other trenchless techniques including micro tunnelling and direct pipe), excluding preparatory works, in order to minimise construction noise and vibration beyond the immediate location of works.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)

5.9 Key parameters for assessment

5.9.1 Maximum design scenario

5.9.1.1 The maximum design scenarios identified in **Table 5.10** have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the Project Design Envelope provided in Volume 1, Chapter 3: Project description of the ES. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g., different infrastructure layout), to that assessed here be taken forward in the final design.

Table 5.10: Maximum design scenario considered for the assessment of impacts

Impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest	✓	✓	×	**Construction phase: landfall** • Open cut trenching in the intertidal zone from MLWS to the direct pipe exit pits. The maximum number of trenches will be six. The maximum width of the stepped trench is 10 m at the top and 3 m at the bottom and are each 3 m deep. The maximum length per trench is 300 m with a maximum working area each side of the trench of 25 m. Area of disturbance of 11,700 square metres (m^2) with the volume of material excavated being 35,100 cubic metres (m^3). Duration of open cut trenching up to 36 weeks (sequential or concurrent scenarios). • Direct pipe installation between the transition joint bays and exits on the beach. The maximum number of cables and transition joint bays will be six, with a maximum direct pipe length of 1,500 m. The maximum number of direct pipe entry pits will be six, each with a maximum area of 450 m^2 and a maximum depth of 6 m. The maximum number of direct pipe exit pits will be six, each with a maximum area of 875 m^2 and a maximum depth of 3 m. • There will be up to four compounds required west of the transition joint bays to MLWS: – Compound 1 (welfare): 300 m2 to be active for 36 weeks; – Compound 2: 2,500 m2 to be active for 48 weeks; – Compound 3: 510 m2 to be active for 48 weeks; and – Compound 4: 600 m2 to be active for 36 months (in a sequential construction scenario). • Maximum number of transition joint bays will be six, with a total maximum permanent area of 1600 m^2 and a maximum depth of 4 m. There will be two transition joint bay compounds (10,000 m^2 for Morgan and 10,000 m^2 for Morecambe) within Blackpool Airport to facilitate construction works, to be active for up to 29 months over a 45 month period (assuming sequential construction). • Maximum working area of the transition joint bay: 4,900 m^2 for Morgan and 2,800 m^2 for Morecambe	**Construction phase** Open cut trenching in the intertidal zone from MLWS to the direct pipe exit pits would result in the largest total area of disturbance and, therefore, the greatest potential for impacts on buried archaeological remains and deposits of geoarchaeological interest, the setting of heritage assets and on the character of the historic landscape. The maximum area and depth of the direct pipe entry and exit pits would result in the largest total area of disturbance and, therefore, the greatest potential for impacts on buried archaeological remains and deposits of geoarchaeological interest, the setting of heritage assets and on the character of the historic landscape. The concurrent scenario for the construction of the onshore export cables represents the greatest area of disturbance and, therefore, the greatest potential for impacts on buried archaeological remains
The impact of the Transmission Assets (other than the onshore substations) on designated heritage assets as a result of change within their setting	✓	✓	✓		
The impact of construction and decommissioning of the onshore elements of the Transmission Assets on the character of the historic landscape.	✓	✓	✓		

Impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
				Construction phase: onshore export cable corridor • The maximum number of trenches will be six, with a target trench depth of 1.8 m. Typical trench width at surface of 4 m and 1.5 m at the base. • Construction corridor width 100 m, with a length of up to 17 km. Width will include two haul roads. There will be a total of 110 joint bays and 110 link boxes, with 1,000 m^3 and 8 m^3 of material excavated for each joint bay and link box respectively. • There will be up to ten construction compounds along the onshore export cable corridor. During a sequential construction, compounds will be present for 66 months with the following attributes: – 2 type A compounds, a maximum total area of 26,500 m^2; – 6 type B compounds a maximum total area of 79,500 m^2; and – 2 type C compounds a maximum total area of 17,500 m^2. • The maximum number of HDD locations is 120. Each major HDD location will have a compound, measuring up to 100 m x 50 m. Drilling mud will be stored and used at these compounds. • The duration of the main HDD works will be 66 months (sequential construction scenario). **Construction phase: onshore substations** • Maximum footprint of the onshore substations 223,500m^2, including landscape planting, access, drainage and attenuation. • Maximum number of main buildings will be eight, with a maximum length of 140 m, maximum width of 80 m and maximum height of 15 m. The maximum height of lightning protection will be 30 m. • Two temporary access roads at 20 m width (each, including passing bays). • The area of temporary compounds (combined) includes working and laydown areas (excludes permanent substation footprint) is 122,500 m^2 (additional to permanent footprint). Duration: enabling works 12 months, main construction 54 months, testing/commissioning 21 months (sequential construction scenario).	and deposits of geoarchaeological interest. The sequential scenario for the construction of the onshore export cables represents the greatest duration and, therefore, the greatest potential for impacts on the setting of heritage assets and on the character of the historic landscape. The largest footprint and greatest number of buildings at the onshore substations represents the greatest potential for impacts on buried archaeological remains and deposits of geoarchaeological interest, the setting of heritage assets and on the on the character of the historic landscape. The concurrent scenario for the construction of the 400 kV grid connection cables represents the greatest area of disturbance and, therefore, the greatest potential for impacts on buried archaeological remains and deposits of geoarchaeological interest. The sequential scenario for the construction of the 400 kV grid

Impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
				Construction phase: 400 kV grid connection cable corridor • Open cut trenching: The maximum number of trenches will be four, with a target trench depth of 1.8 m. The width of the permanent cable corridor is 50 m There will be a maximum of 60 joint bays and 60 link boxes. • The working area will include a maximum construction corridor width of 76 m, with a length of up to 13 km. Width includes two haul roads. • There will be up to eight construction compounds along the 400 kV grid connection cable corridor. During a sequential construction compounds will be present for 66 months with the following attributes: – 2 type A compounds. One of the compounds is 150 m x 100 m and one is 115 m x 100 m. This will be a maximum total area of 26,270 m^2; – 4 type B compounds. Two of the compounds will be 150 m x 100 m and two will be 115 m x 100 m. This will be a maximum total area of 52,540 m^2; and – 2 type C compounds. One of the compounds is 100 m x 100 m and one is 100 m x 75 m. This will be a maximum total area of 17,500 m^2. • Duration of installation is up to 66 months (sequential construction scenario). **Construction phase: River Ribble crossing (direct pipe option)** • Maximum four start pit/shafts and four finish shaft/pits. • Maximum area each start pit/shaft will be 450 m^2. • Maximum area each finish shaft/pit will be 750 m^2. • Maximum depth each start pit/shaft and finish shaft/pit will be 6 m. • Maximum area of launch compound will be 60,000 m^2. • Maximum area of reception compound will be 7,500 m^2. **Decommissioning phase** Decommissioning is likely to operate within the parameters identified for construction (i.e., any activities are likely to occur within construction working areas and to require no greater amount or duration of activity than assessed for construction).	connection cables represents the greatest duration and, therefore, the greatest potential for impacts on the setting of heritage assets and on the character of the historic landscape. The direct pipe option for the River Ribble crossing represents the greatest area of disturbance and, therefore, the greatest potential for impacts on buried archaeological remains and deposits of geoarchaeological interest. **Decommissioning phase** Decommissioning is likely to operate within the parameters identified for construction.

Impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
The impact of operation and maintenance of the onshore elements of the Transmission Assets on designated heritage assets as a result of change within their setting.	×	✓	×	**Operation and maintenance phase: onshore substations** • Maximum footprint of the onshore substations 219,000 m^2, including landscape planting and drainage. • Maximum number of main buildings will be eight, with a maximum length of 140 m, maximum width of 80 m and maximum height of 15 m. The maximum height of lightning protection will be 30 m. • The onshore substations will be monitored remotely but will involve regular visits. Lighting will comprise security lighting around the perimeter fence and standard lighting, with task-related lighting where necessary.	**Operation and maintenance phase** The largest footprint and greatest number and height of buildings at the onshore substation represents the greatest potential impact on above ground heritage assets as a result of change within their setting and on the character of the historic landscape.
The impact of operation and maintenance of the onshore elements of the Transmission Assets on the character of the historic landscape.	×	✓	×		

[a] C=construction, O=operation and maintenance, D=decommissioning

5.10 Assessment methodology

5.10.1 Overview

5.10.1.1 The approach to determining the significance of effects is a two-stage process that involves defining the magnitude of the impact and the sensitivity of the receptor. This section describes the criteria applied in this chapter to assign values to the magnitude of impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on relevant guidance, including the current and former editions of the Design Manual for Roads and Bridges (DMRB) methodology (Highways England *et al.,* 2020) where appropriate as described in further detail in Volume 1, Chapter 5: EIA methodology of the ES.

5.10.2 Receptor sensitivity/value

5.10.2.1 The criteria for defining sensitivity in this chapter are outlined in **Table 5.11** below.

Table 5.11: Sensitivity criteria

Sensitivity	Definition/examples
Very High	Heritage assets of international importance. World Heritage Sites and the individual attributes that convey their Outstanding Universal Value. Areas associated with intangible heritage and areas with associations with particular innovations, scientific developments, movements or individuals of global importance. Assets that can contribute significantly to acknowledged international research objectives.
High	Scheduled Monuments, Listed Buildings (Grade I, II*), Registered Historic Parks and Gardens (Grade I, II*), Registered Battlefields, Protected Wrecks, Protected Military Remains. Other listed buildings that can be shown to have exceptional qualities in their fabric or historical association not adequately reflected in the listing grade. Unscheduled sites and monuments of schedulable quality and/or importance including those discovered through the course of evaluation or mitigation. Archaeological assets that can contribute significantly to acknowledged national research objectives. Conservation Areas containing very important buildings (Grade I and II* Listed Buildings). Non-designated structures of clear national importance. Palaeogeographic features with a demonstrable high potential to include artefactual and/or palaeoenvironmental material, possibly as part of a prehistoric site or landscape. Non-designated sites of wrecked ships and aircraft that are demonstrably of equivalent archaeological importance to those already designated.
Medium	Conservation Areas, Grade II Listed Buildings and Grade II Registered Historic Parks and Gardens. Non-designated archaeological assets that can contribute to regional research objectives. Historic townscapes and landscapes with reasonable coherence, time depth and other critical factor(s). Unlisted assets that can be shown to have exceptional qualities or historic association.

Sensitivity	Definition/examples
	Non-designated historic landscapes that would justify special historic landscape designation, landscapes of regional value. Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factors. Prehistoric deposits with moderate potential to contribute to an understanding of the palaeoenvironment. Non-designated wrecks of ships or aircraft that have moderate potential based on a formal assessment of their importance in terms of build, use, loss, survival and investigation.
Low	Heritage assets with importance to local interest groups or that contribute to local research objectives. Locally Listed Buildings and Sites of Importance within a district level. Non-designated archaeological assets compromised by poor preservation and/or poor contextual associations. Non-designated historic landscapes with importance to local interest groups. Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations. Prehistoric deposits with low potential to contribute to an understanding of the palaeoenvironment. Non-designated wrecks of ships or aircraft that have low potential based on a formal assessment of their importance in terms of build, use, loss, survival and investigation.
Negligible	Assets with little or no archaeological or historical interest due to poor preservation or survival. Buildings of little or no architectural or historic note; buildings of an intrusive character. Landscapes with little or no significant historical interest.
Unknown	The importance of the heritage asset cannot be ascertained from available evidence.

5.10.3 Magnitude of impact

5.10.3.1 The criteria for defining magnitude in this chapter are outlined in **Table 5.12** below.

Table 5.12: Magnitude of impact criteria

Magnitude of impact		Definition
High	Adverse	Change to most or all key elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is lost or substantially harmed.
	Beneficial	Change to most or all key elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is substantially enhanced.
Medium	Adverse	Change to elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is clearly harmed.
	Beneficial	Change to elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is clearly enhanced.

Magnitude of impact		Definition
Low	Adverse	Change to elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is slightly harmed.
	Beneficial	Change to elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is slightly enhanced.
Negligible	Adverse	Change to elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is barely affected.
	Beneficial	Change to elements of the heritage asset, or changes within the setting of the asset, such that the heritage significance of the asset is barely affected.
No change		No changes to elements of the heritage asset, or within the setting of the asset.

5.10.4 Significance of effect

5.10.4.1 The significance of the effect upon a heritage asset has been determined by taking into account the sensitivity of the receptor and the magnitude of the impact. The method employed for this assessment is presented in **Table 5.13**. Where a range of significance levels is presented, the final assessment for each effect is based upon expert judgement.

5.10.4.2 In all cases, the evaluation of receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgement and is underpinned by narrative to explain the conclusions reached.

5.10.4.3 For the purpose of this assessment, any effects with a significance level of minor or less are not considered to be significant in terms of the EIA Regulations.

Table 5.13: Assessment matrix

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major
Very High	Minor or Moderate	Moderate or Major	Major	Major

5.10.4.4 Where the magnitude of impact is ‘no change’, no effect would arise.

5.10.4.5 The definitions for significance of effect levels are described as follows.

- Major: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional

importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category. Effects upon human receptors may also be attributed this level of significance.

- Moderate: These beneficial or adverse effects have the potential to be important and may influence the key decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor.
- Minor: These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
- Negligible: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

5.10.5 Assumptions and limitations of the assessment

5.10.5.1 All readily available data required for the assessment have been acquired, collated and critically examined.

5.10.5.2 One key limitation is with regard to the presence, absence, extent, nature and heritage significance of buried archaeological remains within the Onshore Order Limits and Intertidal Infrastructure Area. A number of non-intrusive and intrusive methodologies have been utilised in order to gain as much information as possible, including geophysical surveys and trial trenching. The information currently collated is sufficient for a robust assessment, however therefore there is the potential for as-yet unknown archaeological sites and features to be identified within the Onshore Order Limits and Intertidal Infrastructure Area.

5.10.5.3 On this basis, no significant assumptions or limitations have therefore been identified in the preparation of this chapter with regard to historic environment that would prevent an assessment of the likely effects being made, other than with regard to buried archaeological remains. For the latter, a worst case assessment has been made, assuming that buried archaeological remains (potentially including remains of high sensitivity or value) are present at some locations, although no remains of this level of sensitivity or value have been identified so far.

5.11 Assessment of effects

5.11.1 Introduction

5.11.1.1 The impacts arising from the construction, operation and maintenance, and decommissioning phases of the Transmission Assets have been assessed. The impacts arising from the construction, operation and maintenance and decommissioning phases of the Transmission Assets are listed in **Table**

5.17, along with the maximum design scenario against which each impact has been assessed.

5.11.1.2 A description of the likely effect on historic environment receptors caused by each identified impact is given below.

5.11.2 Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest

5.11.2.1 The construction of the landfall, the onshore export cable corridor, the 400kV grid connection cable corridor and the onshore substations may lead to direct physical impacts on buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest.

5.11.2.2 The maximum design scenario is summarised in **Table 5.10** and includes open cut trenching in the intertidal area, onshore export cable corridor up to 17 km long and 100 m wide, 400 kV grid connection cable corridor up to 13 km long and 76 m wide, and onshore substation construction footprints measuring up to 346,000 m^2 in total (substations and temporary substation compound).

5.11.2.3 These direct impacts could occur through the removal of overlying topsoil and subsoil, through excavation of trenches for cables, or through bulk excavation for deeper works such as launch and reception pits where trenchless installation is required.

5.11.2.4 The landscape traversed by the Transmission Assets is generally low-lying and has been subject to numerous phases of inundation throughout the Quaternary period. Until very recently, this landscape was one of numerous and extensive inland raised bogs and tidal mudflats and salt marshes, with adjacent areas subject to episodes of flooding. It is only really within the last 400 years that this situation has gradually changed as a result of drainage of the raised bogs combined with the establishment of effective sea walls and the 'canalisation' of the River Ribble throughout much of its estuary.

5.11.2.5 Areas representing the transition from the former wetlands and tidal mudflats and salt marshes to more permanently dry land are often referred to as 'ecotonal zones' and have enhanced potential for the presence of archaeological sites and features dating from the Mesolithic period to the Bronze Age. Examination of appropriate sources, including the NWWS, has identified that ecotonal zones with this type of the greatest potential are present in locations around the edge of the former Lytham Moss wetland which are traversed by the onshore export cable route corridor. Similar ecotonal zones are also present on either side of the River Ribble within the 400 kV grid connection cable corridor.

5.11.2.6 The potential for archaeological sites and deposits of Iron Age or Roman date to be present within any part of the Onshore Order Limits and Intertidal Infrastructure Area is seen as very low, although if such sites and deposits are identified ahead of or during construction their importance would be enhanced due to their rarity in this landscape. The onshore substation sites have a higher potential for sites of Roman date as a result of the presence of the Roman fort at Dowbridge (Kirkham).

5.11.2.7 There is also enhanced potential for sites or features of Early Medieval to Medieval date within the onshore export cable route corridor in the vicinity of Bryning and Kellamergh, and within the 400 kV grid connection cable corridor in the vicinity of the National Grid Penwortham substation, as a result of documented settlements of those periods at these locations.

Construction phase

Sensitivity of the receptor

5.11.2.8 The sensitivity of buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest depends on the nature of the buried remains and deposits and the extent of their survival. No archaeological remains of clear national importance have been identified within the Onshore Infrastructure Area, however the presence of such remains cannot be ruled out. On a precautionary basis the overall sensitivity of the receptor is therefore considered to be up to **high**.

Magnitude of impact

5.11.2.9 There is potential for buried archaeological remains to be present in all parts of the Onshore Infrastructure Area, and potential for deposits of geoarchaeological and palaeoenvironmental interest to be present at several locations within the Onshore Infrastructure Area. The programme of archaeological surveys is aimed at identifying such remains and deposits wherever possible.

5.11.2.10 A range of sensitive historical sites or areas have been avoided where practicable during the site selection process and subsequent refinement of scheme design (CoT03 as set out in **Table 5.9**). One example of this is the potential for the recorded Quaker burial ground adjacent to Lower Lane (at the eastern end of the onshore export cable corridor) to be much more extensive than the small area of woodland known as Quaker's Wood, as suggested by the field names recorded on the Freckleton Tithe Map of 1838. The component elements of the onshore export cable corridor in this area have been designed such that there would be no physical impacts on the potential extent of the expanded burial ground as shown on the Tithe Map. However, further archaeological investigation will be required here in advance of construction to examine the land outside the recorded extent of the expanded burial ground but within the onshore export cable corridor.

5.11.2.11 The programme of archaeological surveys may lead to additional mitigation in the form of avoidance or minimisation of physical impacts where this is possible within the Onshore Order Limits and Intertidal Infrastructure Area.

5.11.2.12 Impacts on buried archaeological remains and/or deposits of geoarchaeological and palaeoenvironmental interest would usually be direct and permanent. Such impacts would occur due to the physical removal of all or part of the features or deposits of interest. In most cases, deposits of geoarchaeological and palaeoenvironmental interest would be relatively extensive and only part of such deposits would be directly physically impacted during construction.

5.11.2.13 In some situations, impacts on deposits of geoarchaeological and palaeoenvironmental interest (and possibly on buried archaeological remains) will be indirect and potentially permanent. These impacts occur when construction activities affect the environmental properties of deposits of geoarchaeological and palaeoenvironmental interest adjacent to the areas of direct physical removal.

5.11.2.14 As set out in in the Outline Onshore and Intertidal Written Scheme of Investigation (document reference J9, CoT40), further programmes of archaeological and geoarchaeological investigation will be undertaken post-consent, ahead of and possibly during construction, leading to analysis, reporting of results and archiving of data. These further investigations will not reduce the overall impacts or effects but will serve to offset such impacts and effects. Also a CoCP will be prepared and include measures for the historic environment (CoT35 as set out in **Table 5.9**). An Outline CoCP has been developed and submitted as part of the application for development consent (document reference J1).

5.11.2.15 The impact is predicted to be of up to local spatial extent, permanent duration, and irreversible. It is predicted that the impact will almost exclusively affect the receptor directly. The heritage significance of any buried archaeological remains and/or deposits of geoarchaeological and palaeoenvironmental interest would only be slightly affected as a result of the limited spatial extent of the impact. The magnitude is therefore **low adverse**.

Significance of the effect

5.11.2.16 Overall, the sensitivity of the receptor is up to **high** and the magnitude of the impact is **low adverse**. The effect will, therefore, be of up to **moderate adverse** significance. As discussed above, this level of uncertainty will be addressed through a programme of mitigation as set out in the Outline Onshore and Intertidal WSI (document reference J9, CoT40).

Further (secondary) mitigation and residual effect

5.11.2.17 Appropriate mitigation has been included within the embedded measures taken into account above. No further mitigation is proposed. The residual effect will therefore remain unchanged.

Operation and maintenance phase

Sensitivity of receptor

5.11.2.18 The sensitivity of buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest depends on the nature of buried deposits and the extent of their survival. As survey work is ongoing, the potential discovery of features or deposits of national importance during construction cannot be entirely ruled out. At this stage when surveys are yet to be completed, on a precautionary basis the overall sensitivity of the receptor is therefore considered to be up to **high**.

Magnitude of impact

5.11.2.19 During transmission of power, buried cables generate heat which dissipates to the surrounding ground. The heat loss from electrical cables has the potential to alter the environment and therefore, damage any waterlogged archaeological remains. Until the final engineering design and soil structure are known, it is not possible to determine the maximum heat loss and subsequent dissipation of heat. Regardless, any heat dissipation will be confined to the areas immediately surrounding the onshore cables and ducts. These same areas, including any sub-surface archaeological/ geoarchaeological remains, will have been disturbed during the installation of the onshore export cables and the 400 kV grid connection cables during the construction phase. Said remains, if present, will have been considered during the construction phase and effects mitigated where possible.

5.11.2.20 Changes to groundwater flow has the potential to result in dewatering of organic deposits with subsequent deterioration and loss of heritage assets within such deposits. The cable trench would be backfilled with suitable material that would not affect the current permeability of the subsurface deposit sequence, thus there would be no dewatering of organic deposits.

5.11.2.21 The impact is predicted to be of up to local spatial extent, permanent duration, and irreversible. It is predicted that the impact will almost exclusively affect the receptor directly. The heritage significance of deposits of geoarchaeological and palaeoenvironmental interest would be barely affected due to the very limited spatial extent of the impact. The magnitude is therefore **negligible adverse**.

Significance of effect

5.11.2.22 Overall, the magnitude of the impact is deemed to be **negligible adverse** and the sensitivity of the receptor is considered to be up to **high unknown**. The predicted effect is currently, therefore, of up to **minor adverse** significance.

Further (secondary) mitigation and residual effect

5.11.2.23 No further mitigation is proposed. The residual effect will therefore remain unchanged.

5.11.3 The impact of the Transmission Assets onshore works (other than the onshore substations) on designated heritage assets as a result of change within their setting

5.11.3.1 Activities associated with the Transmission Assets onshore works (other than the onshore substations) will take place within the settings of designated heritage assets. These activities could harm the heritage significance of such assets, principally through changes in visual aspects of the setting but also through changes to the noise and dust environment.

5.11.3.2 The detailed assessment of impacts and effects arising from changes within the settings of designated heritage assets is presented in Volume 3, Annex 5.5: Settings assessment of the ES.

Construction phase

5.11.3.3 The visual impacts during construction would result from the presence of construction equipment and the establishment of a construction easement measuring up to 100 m in width for the onshore export cable corridor and up to 76 m in width for the 400 kV grid connection corridor. In some locations there would also be construction compounds and HDD compounds. The maximum design scenario is summarised in **Table 5.10**. Noise and dust impacts would also result from the use of construction equipment and traffic.

5.11.3.4 Once construction work has been completed, there would be no impacts (visual or noise/dust) in respect of the settings of designated heritage assets. The land within the construction easement and the compounds would be reinstated to its former use and all equipment removed, leaving no noticeable trace above ground. Accesses required for transition joint bays and link boxes would be flush with the existing surface at each location. Any hedgerows that needed to be removed for construction would be replanted.

5.11.3.5 Impacts on designated heritage assets as a result of change within their settings during construction would be indirect (non-physical) and short term. Mitigation measures include those associated with control of construction activities and are set out in **Table 5.9** (CoT28, CoT35, and CoT38).

5.11.3.6 The impacts and effects would be of up to local spatial extent, short term duration, and fully reversible.

Operation and maintenance phase

5.11.3.7 No impacts are anticipated during this phase. The easements established for construction of the cable routes will be reinstated and the land returned to its former use. Where possible, unprotected areas of woodland, mature and protected trees (i.e., veteran trees) have and will be avoided during construction and any hedgerows removed during construction would be replanted. No further loss of hedgerows or woodland during operation is likely. Mitigation measures include those associated with reinstatement and are set out in **Table 5.9** (CoT08, CoT13, CoT27).

Decommissioning phase

5.11.3.8 Decommissioning work along the onshore export cable corridor and the 400 kV grid connection corridor would comprise the removal of the cables, but all structures such as the link boxes and joint bays would remain intact.

5.11.3.9 Some visual and noise/dust impacts within the settings of above ground heritage assets may also occur during decommissioning, but these would be at a much lower level than as for construction as the decommissioning would not require the same easement, compounds etc.

5.11.3.10 No impacts are predicted during decommissioning of the onshore export cable corridor and the 400 kV grid connection corridor.

Assessment

5.11.3.11 The detailed assessment of impacts and effects arising from changes within the settings of designated heritage assets is presented in Volume 3, Annex 5.5: Settings assessment of the ES.

5.11.3.12 **Table 5.14** presents the results of that detailed assessment in summary form.

Table 5.14: Impact of the Transmission Assets onshore works (other than the onshore substations) on designated heritage assets

Asset name	NHLE number	Asset type	Sensitivity	Magnitude of impact (construction only)	Significance of effect (construction only
Hall Cross Farmhouse, Freckleton	1072058	Grade II listed building	Medium	Low adverse	Minor adverse
Dixon's Farmhouse, Newton-with-Scales	1072035	Grade II listed building	Medium	Negligible adverse	Negligible adverse
Dagger Cottage, Newton-with-Scales	1164155	Grade II listed building	Medium	Negligible adverse	Negligible adverse
Old Lea Farmhouse, Lea	1361663	Grade I listed building	High	Low adverse	Minor adverse
Stable block *c*. 50 m south of Old Lea Farmhouse	1073511	Grade II listed building	Medium	Low adverse	Minor adverse
Barn *c*. 120 m south of Old Lea Farmhouse	1317447	Grade II listed building	Medium	Low adverse	Minor adverse

5.11.4 The impact of the Transmission Assets onshore works on the character of the historic landscape

5.11.4.1 Construction, operation and maintenance, and decommissioning activities could change the character of the historic landscape within the study area. These activities could harm the heritage significance of the historic landscape, principally through changes in visual aspects such as the construction and operation of the onshore substations which represent the introduction of very modern elements, but also through temporary or permanent loss of elements of the historic landscape such as field boundaries. Some of these field boundaries are 'Important hedgerows' as defined by the criteria identified in the Hedgerows Regulations 1997 (refer to ES Volume 3, Annex 3.3: Phase 1 habitat, national vegetation classification and hedgerow survey technical report). The maximum design scenario is summarised in **Table 5.10**.

Construction phase

Sensitivity of the receptor

5.11.4.2 There are no well-preserved historic landscapes within the study area. The sensitivity of the receptor is therefore considered to be **low**.

Magnitude of impact

5.11.4.3 Impacts on the character of the historic landscape during construction would be direct (physical) and indirect (non-physical) and short term. The Transmission Assets design has sought to minimise any loss of elements of the historic landscape, and field boundaries that are fully or partially removed during construction would be replaced. The exception to this would be within the onshore substation sites, where it may not be possible to replace any field boundaries removed during construction.

5.11.4.4 The impact is predicted to be of up to local spatial extent, short term duration, and generally reversible. It is predicted that the impact will affect the receptor directly and indirectly. The heritage significance of the overall historic landscape would be slightly harmed due to the limited loss of individual elements such as field boundaries. The magnitude is therefore, considered to be **low**.

Significance of the effect

5.11.4.5 Overall, the sensitivity of the receptor is **low** and the magnitude of the impact is **low**. The effect will, therefore, be of **negligible** or **minor adverse** significance, which is not significant.

Further (secondary) mitigation and residual effect

5.11.4.6 Further mitigation comprises the preparation of an Outline Landscape Management Plan (CoT15 in **Table 5.9**). Implementation of this Plan may

further reduce the overall impact and effect. However, the residual effect will remain unchanged.

Operation and maintenance phase

5.11.4.7 The operation and maintenance of the onshore substations would change the character of the historic landscape within that part of the study area. This could harm the heritage significance of the historic landscape, principally through changes in visual aspects but potentially also changes to the noise environment. The maximum design scenario is summarised in **Table 5.10**.

5.11.4.8 Elsewhere within the Onshore Order Limits and Intertidal Infrastructure Area, temporary construction compounds will be removed, land will be reinstated to its former use and hedgerows that have been removed will be replanted (CoT08 and CoT27 in **Table 5.9**).

Sensitivity of the receptor

5.11.4.9 There are no well-preserved historic landscapes within the study area. The sensitivity of the receptor is therefore considered to be **low**.

Magnitude of impact

5.11.4.10 The impact with regard to the onshore substations is predicted to be of up to local spatial extent, long-term duration, and generally reversible. It is predicted that the impact will affect the receptor indirectly (non-physically). The heritage significance of the overall historic landscape in this area would be slightly harmed due to the visible presence of the onshore substations. The magnitude is therefore, considered to be **low**. The impact with regard to the rest of the land within the Onshore Order Limits and Intertidal Infrastructure Area is considered to be **negligible** (beneficial) as a result of the removal of the temporary construction compounds, reinstatement of land use and replanting of hedgerows.

Significance of the effect

5.11.4.11 Overall, the sensitivity of the receptor is **low**. In the vicinity of the onshore substations the magnitude of the impact is up to **low**. The effect will, therefore, be of **negligible** or **minor** adverse significance, which is not significant.

5.11.4.12 The effect would be long-term and would be fully reversible.

5.11.4.13 With regard to the rest of the land within the Onshore Order Limits and Intertidal Infrastructure Area the impact is negligible beneficial. The effect will, therefore, be of **negligible** or **minor** beneficial significance, which is not significant.

5.11.4.14 The effect would be permanent.

Further (secondary) mitigation and residual effect

5.11.4.15 Further mitigation comprises the preparation of an Outline Landscape Management Plan (CoT15 in **Table 5.9**). Implementation of this Plan will

further reduce the overall impact and effect, however the residual effect will remain unchanged.

Decommissioning phase

5.11.4.16 The decommissioning of the Transmission Assets could change the character of the historic landscape. Decommissioning work along the onshore export cable corridor and the 400 kV grid connection corridor would comprise the removal of the cables, but all structures such as the link boxes and joint bays would remain intact.

5.11.4.17 Some visual and noise/dust impacts may also occur during decommissioning, but these would be at a much lower level than as for construction as the decommissioning would not require the same easement, compounds etc.

5.11.4.18 No impacts are predicted during decommissioning of the onshore export cable corridor and the 400 kV grid connection corridor.

5.11.4.19 The decommissioning of the onshore substations could harm the heritage significance of the historic landscape, principally through changes in visual aspects (views of cranes and other plant and equipment but potentially also changes to the noise environment. The maximum design scenario is summarised in **Table 5.10**.

Sensitivity of the receptor

5.11.4.20 There are no well-preserved historic landscapes within the study area. The sensitivity of the receptor is therefore considered to be **low**.

Magnitude of impact

5.11.4.21 Impacts on the character of the historic landscape in the vicinity of the onshore substations during decommissioning would be direct (physical) and indirect (non-physical) and short term.

5.11.4.22 The impact is predicted to be of up to local spatial extent, short term duration, and generally reversible. It is predicted that the impact will affect the receptor directly and indirectly. The heritage significance of the overall historic landscape in the vicinity of the onshore substations would be slightly harmed visible nature of the equipment and potential for noise. The magnitude is therefore, considered to be **low**.

Significance of the effect

5.11.4.23 Overall, the sensitivity of the receptor is **low** and the magnitude of the impact is **low**. The effect will, therefore, be of **negligible** or **minor adverse** significance, which is not significant.

5.11.5 The impact of the onshore substations on designated heritage assets as a result of change within their setting

5.11.5.1 The onshore substations are located within the settings of designated assets. The introduction of these facilities within these settings could harm the heritage significance of such assets, principally through changes in visual aspects of the setting.

5.11.5.2 The visual impacts would result from the presence of the substation buildings and associated infrastructure within the setting of the designated heritage assets. There would be additional impacts during construction as a result of the presence of construction equipment and compounds, and possibly also some limited noise impacts. The maximum design scenario is summarised in **Table 5.10**. Overall, it is considered that impacts during construction and decommissioning would not be significantly greater than those occurring during operation and maintenance, thus the assessment is focused on that phase of the project. Any effects during construction or decommissioning would be no greater than those identified for the operation and maintenance phase.

5.11.5.3 The detailed assessment of impacts and effects arising from changes within the settings of designated heritage assets is presented in Volume 3, Annex 5.5: Settings assessment of the ES.

Operation and maintenance phase

Sensitivity of the receptor

5.11.5.4 Designated heritage assets whose setting could be changed during operation and maintenance of the onshore substations comprise one Grade II listed building (Hall Cross Farmhouse, Freckleton). The collective sensitivity of the receptor is therefore considered to be **medium**.

Magnitude of impact

5.11.5.5 Impacts on designated heritage assets as a result of change within their settings during operation and maintenance would be indirect (non-physical) and long term, but potentially fully reversible. The magnitude of impact would depend largely on the level of intervisibility between the designated asset and the onshore substations along with the contribution that the setting of the asset makes to its heritage significance, although it may be necessary to also assess the potential changes to the noise environment. An Operational Noise Management Plan(s) for the onshore substations will be prepared (CoT80 as set out in **Table 5.9**).

5.11.5.6 The impact is predicted to be of up to local spatial extent, long term duration, and generally reversible. It is predicted that the impact will affect the receptor indirectly. The magnitude is therefore considered to be **negligible adverse**.

Significance of the effect

5.11.5.7 Overall, the sensitivity of the receptor is **medium** and the magnitude of the impact is **negligible adverse**. The effect will, therefore, be of up to **minor adverse** significance, which is not significant.

5.11.5.8 The effect would be long-term and reversible.

Further (secondary) mitigation and residual effect

5.11.5.9 Further mitigation comprises the preparation of an Outline Landscape Management Plan (CoT15 in **Table 5.9**). Implementation of the measures set out in this plan will further reduce the overall impact and effect. However, the residual effect will remain unchanged.

5.12 Cumulative effect assessment methodology

5.12.1 Introduction

5.12.1.1 The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Transmission Assets together with other projects and plans. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 1, Annex 5.5: Cumulative screening matrix and location plan of the ES). Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

5.12.1.2 For the onshore and intertidal historic environment, no cumulative effects are predicted with regard to Morecambe Offshore Windfarm: Generation Assets or Morgan Offshore Wind Project: Generation Assets. These developments are too far from the onshore elements of the Transmission Assets for any cumulative effects to occur.

5.12.1.3 The CEA takes into account a 5 km buffer from the onshore substations and 1 km from the onshore export cable corridor and the 400kV grid connection cable corridor. The buffers are considered appropriate for data collection taking into account the likely zone of influence of other proposed developments to historic environment receptors. They match the extent of the study areas established for the assessment of likely impacts and effects arising from the Transmission Assets on historic environment receptors.

5.12.1.4 The historic environment CEA methodology has followed the methodology set out in Volume 1, Chapter 5: Environmental assessment methodology of the ES. As part of the assessment, all projects and plans considered alongside the Transmission Assets have been allocated into 'tiers' reflecting their current stage within the planning and development process.

- Tier 1.
  - Under construction.
  - Permitted application.
  - Submitted application.

  - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact.
- Tier 2.
  - Scoping report has been submitted.
- Tier 3.
  - Scoping report has not been submitted.
  - Identified in the relevant Development Plan.
  - Identified in other plans and programmes.

5.12.1.5 This tiered approach is adopted to provide a clear assessment of the Transmission Assets alongside other projects, plans and activities.

5.12.1.6 A total of 185 Tier 1 projects have been reviewed which are located within the aforementioned buffers and are shown on Appendix B of Volume 1, Annex 5.5: Cumulative effects screening matrix and location plan of the ES.

5.12.1.7 Out of the 185 within the shortlist, professional judgement has been used to assess whether there is any spatial overlap with the Transmission Assets, as these aspects can potentially give rise to the most cumulative effects with regards to the historic environment.

5.12.1.8 The specific projects, plans and activities scoped into the CEA are outlined in **Table 5.16**.

Table 5.15: List of other projects, plans and activities considered within the CEA

Project/Plan	Status	Distance from the Transmission Assets (nearest point, km)	Description of project/plan	Dates of construction (if applicable)	Dates of operation (if applicable)	Overlap with the Transmission Assets
Tier 1						
Lawns Farm solar farm, east of Peel Road (21/0904)	Permitted February 2023	0.15 km from onshore export cable corridor	25 MW solar farm with associated infrastructure	Not known	Not known	No
Tier 2						
Newton Grange Farm solar farm (22/0204)	EIA screening opinion issued April 2022	0.0 km from onshore substation site	25 MW solar farm, battery storage and associated development	Not known	Not known	No
Clifton Marsh Farm solar farm (23/0739)	EIA screening opinion issued December 2023	0.05 km from 400 kV grid connection cable corridor	49,9 MW solar farm with associated infrastructure	Not known	Not known	No

5.12.2 Maximum design scenario – cumulative effects assessment

5.12.2.1 The maximum design scenarios identified in **Table 5.16** have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the Project Design Envelope provided in Volume 1, Chapter 3: Project description of the ES as well as the information available on other projects and plans, in order to inform a 'maximum design scenario'. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g., different foundation type or substation layout), to that assessed here, be taken forward in the final design scheme.

5.12.3 Scope of cumulative effects assessment

5.12.3.1 The impacts identified in **Table 5.16** have been selected as those having the potential to result in the greatest cumulative effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been based on the Project Design Envelope set out in Volume 1, Chapter 3: Project description of the ES as well as the publicly available information available on other projects and plans.

Table 5.16: Scope of assessment of cumulative effects

Cumulative effect	Phase[a]			Project(s) considered	Justification
	C	O	D		
Effects arising from damage to or permanent loss of buried archaeological and geoarchaeological resources.	✓	✓	×	Maximum design scenario as described for the Transmission Assets (**Table 5.10**) assessed cumulatively with the following other projects/plans: • Tier 1 projects and plans within the Onshore Order Limits and Intertidal Infrastructure Area; • Tier 2 projects and plans within the Onshore Order Limits and Intertidal Infrastructure Area; and • Tier 3 projects and plans within the Onshore Order Limits and Intertidal Infrastructure Area.	The other schemes may result in additional harm to buried archaeological and geoarchaeological resources.
Effects arising from changes within the settings of designated assets.	✓	✓	✓	Maximum design scenario as described for the Transmission Assets (**Table 5.10**) assessed cumulatively with the following other projects/plans: • Tier 1 projects and plans within the 1 km settings study area and the 5 km substation settings study area; • Tier 2 projects and plans within the 1 km settings study area and the 5 km substation settings study area; and • Tier 3 projects and plans within the 1 km settings study area and the 5 km substation settings study area.	The other schemes may lead to additional changes within the settings of above ground designated heritage assets. Outcome of the CEA will be greatest when the greatest number of other schemes are considered.
Effects arising from changes to the character of the historic landscape.	✓	✓	✓	Maximum design scenario as described for the Transmission Assets (**Table 5.10**) assessed cumulatively with the following other projects/plans: • Tier 1 projects and plans within the 1 km settings study area and the 5 km substation settings study area; • Tier 2 projects and plans within the 1 km settings study area and the 5 km substation settings study area; and • Tier 3 projects and plans within the 1 km settings study area and the 5 km substation settings study area.	The other schemes may lead to additional changes to the character of the historic landscape. Outcome of the CEA will be greatest when the greatest number of other schemes are considered.

[a] C=construction, O=operation and maintenance, D=decommissioning

5.13 Cumulative effects assessment

5.13.1 Introduction

5.13.1.1 A description of the significance of cumulative effects upon historic environment receptors arising from each identified impact is given below.

5.13.2 Cumulative impacts on buried archaeological and geoarchaeological resources

5.13.2.1 None of the screened Tier 1 and Tier 2 projects and plans identified in **Table** 5.15 are within the Transmission Assets Order Limits, therefore there is no potential for cumulative impacts on buried archaeological and geoarchaeological resources.

5.13.3 Cumulative impacts on the heritage significance of designated heritage assets as a result of change within their setting

5.13.3.1 Only one of the screened Tier 1 and Tier 2 projects and plans identified in **Table 5.15** could result in cumulative impacts on the heritage significance of designated heritage assets as a result of change within their setting. This is the Newton Grange Farm solar farm which is located immediately to the east of the onshore substation site.

5.13.3.2 The construction and decommissioning of the Transmission Assets onshore substations would result in a **minor adverse** effect as a result of change within the setting of the Grade II listed Hall Cross Farmhouse, whilst the operation and maintenance of the Transmission Assets onshore substations would result in a **negligible adverse** effect as a result of change within the setting of the same Grade II listed building. These effects arise from the visible nature of the onshore substations and the equipment used during construction and decommissioning.

5.13.3.3 No part of the proposed Newton Grange Farm solar farm would be visible in views from, across or towards the Grade II listed Hall Cross Farmhouse, therefore there is no potential for cumulative effects.

5.13.3.4 The construction of the Transmission Assets 400 kV grid connection cable corridor would result in **negligible adverse** effects as a result of change within the setting of two Grade II listed buildings at Newton-with-Scales (Dixon's Farmhouse and Dagger Cottage). The effects arise from the visible nature of construction activities but could also include impacts from increased noise and dust.

5.13.3.5 If any part of the construction or operation and maintenance of the Newton Grange Farm solar farm overlaps with the construction of the Transmission Assets 400 kV grid connection cable corridor this could result in cumulative impacts on the heritage significance of these two Grade II listed buildings at Newton-with-Scales. However, there are no views towards the proposed solar farm site from the listed buildings and effective methods to reduce noise and dust during construction should limit any impacts such that the

cumulative effect is no greater than the effect of the Transmission Assets alone.

5.13.4 Cumulative impacts on the character of the historic landscape

5.13.4.1 All three of the screened Tier 1 and Tier 2 projects and plans identified in **Table 5.15** could result in cumulative impacts on the character of the historic landscape during construction of the Transmission Assets. The effect of the construction of the Transmission Assets on the character of the historic landscape has been assessed as **negligible** or **minor adverse**, and results from the visible nature of the construction and the temporary removal of some field boundaries.

5.13.4.2 If any part of the construction or operation and maintenance of any of these three proposed solar farms overlaps with the construction of the Transmission Assets, this could result in cumulative impacts on the character of the historic landscape. However, any such impacts would be limited to the historic landscape in the immediate vicinity of the solar farm and not to any wider area. As such the cumulative effect is likely to be no greater than the effect of the Transmission Assets alone.

5.13.4.3 The proximity of the proposed Newton Grange Farm to the Transmission Assets onshore substations means that there is also potential for cumulative impacts on the character of the historic landscape in this area during operation and maintenance of the onshore substations.

5.13.4.4 The effect of the operation and maintenance of the Transmission Assets onshore substations on the character of the historic landscape has been assessed as **negligible** or **minor adverse**, and results from the visible nature of the onshore substations and the loss of some field boundaries.

5.13.4.5 If any part of the construction or operation and maintenance of the proposed Newton Grange Farm overlaps with the operation and maintenance of the Transmission Assets onshore substations, this could result in cumulative impacts on the character of the historic landscape. However, any such impacts would be limited to the historic landscape in the immediate vicinity of the solar farm the substations and not to any wider area. As such the cumulative effect is likely to be no greater than the effect of Transmission Assets alone.

5.14 Transboundary effects

5.14.1.1 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to the historic environment from the Transmission Assets upon the interests of other states (refer to Volume 1, Annex 5.4: Transboundary screening of the ES).

5.15 Inter-related effects

5.15.1.1 Inter-relationships are the impacts and associated effects of different aspects of the Transmission Assets on the same receptor. These are as follows.

- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the Transmission Assets (construction, operation and maintenance, and decommissioning), to interact to potentially create a more significant effect on a receptor group than if just one phase were assessed in isolation.
- Receptor led effects: Assessment of the scope for all relevant effects across multiple topics to interact, spatially and temporally, to create inter-related effects on a receptor.

5.15.1.2 A description of the likely interactive effects arising from the Transmission Assets on the historic environment is provided in Volume 4, Chapter 3: Inter-relationships of the ES. No changes resulting from the inter-related assessment are identified from those identified individually.

5.16 Summary of impacts, mitigation measures and monitoring

5.16.1.1 Information on the historic environment within the study area was collected through the desk-based reviews of available data, along with a site visit and an ongoing programme of archaeological fieldwork. Consultation was undertaken with relevant stakeholders to ensure that the data sources examined thus far were the appropriate ones and that the archaeological fieldwork is being undertaken in accordance with best practice.

5.16.1.2 **Table 5.17** presents a summary of the impacts, measures adopted as part of the Transmission Assets and residual effects in respect of the historic environment. The impacts assessed include the following.

- Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest during construction.
- Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest during operation and maintenance.
- The impact of construction and decommissioning of the Transmission Assets onshore works (other than the onshore substations) on designated heritage assets as a result of change within their setting.
- The impact of construction and decommissioning of the Transmission Assets onshore works on the character of the historic landscape.
- The impact of operation and maintenance of the onshore substations on designated heritage assets as a result of change within their setting.

5.16.1.3 Overall, it is concluded that the only potential significant effects on the historic environment arising from the Transmission Assets during the construction, operation and maintenance or decommissioning phases would arise from loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest during construction. This assessment is based on the information currently available regarding the nature and extent of such remains and deposits.

5.16.1.4 The role of EIA is to identify likely significant effects, which can arise from low, medium or high magnitude impacts, and depend on the value/

importance of a heritage asset. NPS EN-1 (Department for Energy Security & Net Zero, 2023a, paragraphs 5.9.28 – 5.9.33) requires consideration of the harm to, or loss of, the heritage significance of an asset, asking (in the case of designated heritage assets) if the harm is substantial, or less than substantial, and sets up tests depending on the value/importance of the asset. This follows the tests established within the NPPF (Ministry of Housing, Communities and Local Government, 2023). There is no direct correlation between the results and terminology of the NPPF process and those of the EIA process, and no current published guidance on this matter.

5.16.1.5 All of the impacts on designated heritage assets identified with regard to the Transmission Assets represent less than substantial harm to the significance of those assets. None of the identified impacts would represent substantial harm as this is a particularly high test as explained in the NPPG (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government, 2023).

5.16.1.6 **Table 5.18** presents a summary of the cumulative effects. Overall, it is concluded that any cumulative effects from the Transmission Assets alongside other projects/plans will be no greater than for Transmission Assets alone.

5.16.1.7 No potential transboundary impacts have been identified with regard to effects of the Transmission Assets.

Table 5.17: Summary of environmental effects, mitigation and monitoring

Description of impact	Phase[a]			Commitment number	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Loss of, or harm to, buried archaeological remains and deposits of geoarchaeological and palaeoenvironmental interest.	✓	✓	×	CoT03, CoT06, CoT35, CoT40	C: Low O: Negligible	C: Up to High O: Up to High	C: Up to Moderate adverse O: Up to Minor adverse	None proposed beyond existing commitments	C: Up to Moderate adverse O: Up to Minor adverse	C: None O: None
The impact of the Transmission Assets onshore works (other than the onshore substations) on the Grade II listed Hall Cross Farmhouse (Freckleton) as a result of change within its setting.	✓	×	×	CoT08, CoT13, CoT27, CoT28, CoT35, CoT38.	C: Low	C: Medium	C: Minor adverse	None proposed beyond existing commitments	C: Minor adverse	C: None
The impact of the Transmission Assets onshore on the Grade II listed Dixon's Cottage and Dagger Cottage (Newton-with-Scales) as a result of change within its setting.	✓	×	×	CoT08, CoT13, CoT27, CoT28, CoT35, CoT38.	C: Low	C: Medium	C: Negligible adverse	None proposed beyond existing commitments	C: Negligible adverse	C: None
The impact of the Transmission Assets onshore on the Grade I listed Old Lea Farmhouse	✓	×	×	CoT08, CoT13, CoT27, CoT28, CoT35, CoT38.	C: Low	C: High	C: Minor adverse	None proposed beyond existing commitments	C: Minor adverse	C: None

Description of impact	Phase[a]			Commitment number	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
(Lea) as a result of change within its setting.										
The impact of the Transmission Assets onshore on the Grade II listed stable block c. 50 m south of Old Lea Farmhouse (Lea) as a result of change within its setting.	✓	×	×	CoT08, CoT13, CoT27, CoT28, CoT35, CoT38.	C: Low	C: Medium	C: Minor adverse	None proposed beyond existing commitments	C: Minor adverse	C: None
The impact of the Transmission Assets onshore on the Grade II listed barn c. 120 m south of Old Lea Farmhouse (Lea) as a result of change within its setting.	✓	×	×	CoT08, CoT13, CoT27, CoT28, CoT35, CoT38.	C: Low	C: Medium	C: Minor adverse	None proposed beyond existing commitments	C: Minor adverse	C: None
The impact of the Transmission Assets onshore works on the character of the historic landscape.	✓	✓	✓	CoT08, CoT27.	C. Low O: Low D: Low	C: Low O: Low D: Low	C: Negligible or Minor adverse O: Negligible or Minor adverse D: Negligible or Minor adverse	C: CoT15 O: CoT15 D: None proposed beyond existing commitments	C: Negligible or Minor adverse O: Negligible or Minor adverse D: Negligible or Minor adverse	C: None O: None D: None

Description of impact	Phase[a]			Commitment number	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
The impact of the onshore substations on the Grade II listed Hall Cross Farmhouse as a result of change within its setting.	✓	✓	✓	CoT80.	O: Negligible	O: Medium	O: Up to Minor adverse	O: CoT15	O: Up to Minor adverse	O: None

[a] C=construction, O=operation and maintenance, D=decommissioning

Table 5.18: Summary of cumulative environmental effects, mitigation and monitoring

Description of effect	Phase[a]			Commitment number	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Tier 1										
Cumulative impacts on buried archaeological and geo-archaeological resources.	✓	×	×	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative impacts on the heritage significance of designated heritage assets as a result of change within their setting.	✓	✓	✓	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative impacts on the character of the historic landscape.	✓	×	×	CoT08, CoT27.	C: Low	C: Low	C: Negligible or minor adverse	CoT15	C: Negligible or minor adverse	None
Tier 2										
Cumulative impacts on buried archaeological and geo-archaeological resources.	✓	×	×	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cumulative impacts on the heritage significance of designated heritage assets as a result of change within their setting.	✓	✓	✓	CoT08, CoT13, CoT27, CoT28, CoT35, CoT38.	C: Low O: Negligible D: Low	C: Medium O: Medium D: Medium	C: Minor adverse O: Negligible adverse D: Minor adverse	None proposed beyond existing commitments	C: Minor adverse O: Negligible adverse D: Minor adverse	None

Description of effect	Phase[a]			Commitment number	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Cumulative impacts on the character of the historic landscape.	✓	✓	×	CoT08, CoT27.	C: Low O: Low	C: Low O: Low	C: Negligible or minor adverse O: Negligible or minor adverse	CoT15	C: Negligible or minor adverse O: Negligible or minor adverse	None

[a] C=construction, O=operation and maintenance, D=decommissioning

5.17 References

Archaeological Data Service (2023). [redacted] (Accessed February 2024).

British Geological Survey (2023). Geology Viewer [Online]. Available at: [redacted](Accessed: June 2023).

CIfA (2020a) Standard and guidance for historic environment desk-based assessment. Available at: [redacted] (Accessed February 2023).

CIfA (2020b) Standard and guidance for archaeological geophysical survey. Available at: [redacted]Accessed February 2024).

CIfA (2023) Universal guidance for archaeological field evaluation. Available at: [redacted](Accessed February 2024)

Department for Energy Security & Net Zero (DESNZ) (2023a) Overarching National Policy Statement for Energy (EN-1). Available at: https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf (Accessed September 2024).

Department for Energy Security & Net Zero (DESNZ) (2023b) National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf (Accessed February 2024).

Department for Energy Security & Net Zero (DESNZ) (2023c) National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf (Accessed September 2024).

Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019) Planning Practice Guidance. Historic environment - GOV.UK (www.gov.uk) (Accessed September 2024).

Eadie, G. (2017). North West Rapid Coastal Zone Assessment. Available: [redacted]Accessed: February 2024).

English Heritage (2008) Conservation Principles, Policies and Guidance for the sustainable management of the historic environment. Available at: h[redacted]b/ (Accessed February 2024).

Highways England, Transport Scotland, Welsh Government, Department for Infrastructure (2020) Design Manual for Roads and Bridges (DMRB) LA 104, Environmental assessment and monitoring, Revision 1. Available at: [redacted] (Accessed September 2024).

Historic England (2015) Historic Environment Good Practice Advice in Planning: 2 Managing Significance in Decision-Taking in the Historic Environment. Available at: [redacted] Accessed February 2024).

Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition). Available at: [redacted] Accessed May 2024).

Historic England (2019) Advice Note 12, Statements of Heritage Significance: Analysing Significance in Heritage Assets. [redacted] May 2023).

Historic England (2023a). The National Heritage List for England (NHLE) [Online]. Available at: [redacted] (Accessed May 2024).

Historic England (2023b). Aerial Photographs Online. Available at: [redacted]/ (Accessed: May 2024).

Historic England (2023c). Historic England's Intertidal and Coastal Peat Database. Available: [redacted] (Accessed: May 2024).

IEMA (2016) Environmental Impact Assessment. Guide to Delivering Quality Development. Available at: [redacted] Accessed: October 2022).

IEMA, Institute of Historic Building Conservation and CIfA (2021) Principles of Cultural Heritage Impact Assessment in the UK. Available at [redacted] Accessed May 2024).

Middleton, R., Wells, C.E. and Huckerby, E. (1995). The Wetlands of North Lancashire. Lancaster. Lancaster University Archaeological Unit.

Ministry of Housing, Communities & Local Government (2023) National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf (Accessed September 2024).

Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework: Consultation Draft. Available at: Proposed reforms to the National Planning Policy Framework and other changes to the planning system - GOV.UK (www.gov.uk) Accessed September 2024.

Museum of London Archaeology (2023). CITiZAN – the Coastal and Intertidal Zone Archaeological Network. Coastal Map [Online]. Available at: [redacted] T (Accessed: August 2023).

Portable Antiquities Scheme. [redacted]