MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Environmental Statement

Volume 3, Annex 5.3: Intertidal archaeological survey report

September 2024
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Prepared by:

RPS

Prepared for:

Morgan Offshore Wind Limited, Morecambe Offshore Windfarm Ltd

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Glossary

Term	Meaning
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Ltd (Morecambe OWL).
Development Consent Order	An order made under the Planning Act 2008, granting development consent.
Environmental Statement	The document presenting the results of the Environmental Impact Assessment process.
Estuary	Tidal mouth of a large river, where the tide meets the stream.
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.
Intertidal area	The area between Mean High Water Springs and Mean Low Water Springs.
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 bay inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Morecambe OWL	Morecambe Offshore Windfarm Ltd is a joint venture between Zero-E Offshore Wind S.L.U. (Spain) (a Cobra group company) (Cobra) 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).
Offshore export cables	The cables which would bring electricity from the Generation Assets to landfall.
Onshore export cables	The cables which would bring electricity from landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
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.
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
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above).

Acronyms

Acronym	Meaning
AD	Anno Domini
DCO	Development Consent Order
ES	Environmental Statement
HNDR	Holistic Network Design Review
LCCMS	Lancashire County Council Museum Services
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NGESO	National Grid Electricity System Operator
NGR	National Grid Reference
OA	Oxford Archaeology
OD	Ordnance Datum
OTNR	Offshore Transmission Network Review
WSI	Written Scheme of Investigation

Units

Unit	Description
km^2	Kilometres Squared
km	Kilometres
m	Metre
MW	Megawatt

1 Intertidal archaeological survey report

1.1 Introduction

1.1.1.1 This document forms Volume 3, Annex 5.3 of the Environmental Statement (ES) prepared for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (hereafter referred to as the Transmission Assets). The ES presents the findings of the Environmental Impact Assessment process for the Transmission Assets.

1.1.1.2 This document provides the archaeological and paleoenvironmental intertidal survey (hereafter referred to as the 'intertidal survey') related with the landfall associated with the Transmission Assets.

1.1.2 Intertidal walkover

Scope of work

1.1.2.1 This report, prepared by Oxford Archaeology (OA) on behalf of the Applicants, details the findings of the intertidal survey related with the landfall associated with the Transmission Assets.

1.1.2.2 The findings of the intertidal survey supports Volume 3, Chapter 5: Historic environment of the ES and accompanies an application for a Development Consent Order (DCO).

1.1.2.3 OA were also commissioned to produce a Written Scheme of Investigation (WSI) for the intertidal survey, which details the methodology used to facilitate the intertidal survey related to the landfall area associated with the Transmission Assets. The intertidal survey area was based upon a previous iteration of the red line boundary used for the WSI, produced in April 2023. This can be found within **Appendix A**.

1.1.2.4 The intertidal survey focussed on an area to the north of Lytham St. Annes within the intertidal area of the Transmission Assets, centred on National Grid Reference (NGR) SD30475 30675 as shown in **Figure 1.1** and **Figure 1.2**.

1.1.3 Location, topography and geology

1.1.3.1 The survey area is located on the western coast of the Fylde Peninsula between Blackpool and Lytham St Annes, centred on NGR: SD30475 30675 (**Figure 1.1**). The site comprises the intertidal area to the west of Clifton Drive North, to the west of Blackpool Airport, with Blackpool to the north and St. Annes to the south (**Figure 1.2**).

1.1.3.2 The solid geology of the site is mapped as mudstone of the Singleton Mudstone Member, formed in the Triassic Period (BGS, 2023a). The superficial geology of the site is mapped as clay and silt tidal flat deposits through the majority of the area, however, this becomes gravel storm beach deposits and then blown sand deposits in the very eastern part of the site (*ibid*).

1.1.3.3 The soils of the eastern part of the site are mapped as sand dune soils (Cranfield University, 2023). These sand deposits to the south of the scheme, at Fairhaven Dunes, are known to preserve layers of sediment comprising peat and sand, which record the processes of marine transgression and sea-level changes which occurred during the Holocene Period (Tooley, 1974).

1.1.4 Archaeological and historical background

Overview

1.1.4.1 The findings within this report have been incorporated into Volume 3, Chapter 5: Historic environment of this ES, which accompanies the application for a DCO. However, a brief summary of the archaeological and historical background of the intertidal survey area is provided here (**Figure 1.1**).

Palaeoenvironmental investigation

1.1.4.2 A number of historic boreholes have been sunk in the approximate area of the intertidal survey. These included a study of 25 boreholes, which extend from Mean High Water Springs (MHWS) at Starr Hills, Lytham and run roughly on a south-south west/north-north east alignment to Hey Houses (to the east of the survey area) although the precise location of these boreholes is uncertain (and therefore not shown on **Figure 1.3**). The boreholes study identified a sequence of biogenic (peat and organic clay) deposits between clays, silts and sands of marine and estuarine origin (Tooley, 1974). Other samples were taken across an approximately 22 kilometres squared (km^2) area inland of Lytham St Annes. The data was interpreted as indicative of ten marine transgressive episodes all but one of which was at -4 metre (m) Ordnance Datum (OD) or above, dating from the early Mesolithic to approximately the medieval period (*ibid*).

1.1.4.3 Tooley's work (Tooley, 1974) recorded the deepest peat layer, 0.09 m thick, at -11 m OD and pollen samples from this layer have been interpreted to indicate a wooded palaeoenvironment of pine and birch, with hazel-type, grasses and pollen of the goosefoot family, dated broadly to the early Mesolithic period. Pollen assemblages have been interpreted to suggest saltmarsh or brackish water conditions. Other borehole surveys have also been carried out around the survey area yielding similar results (**Figure 1.3**).

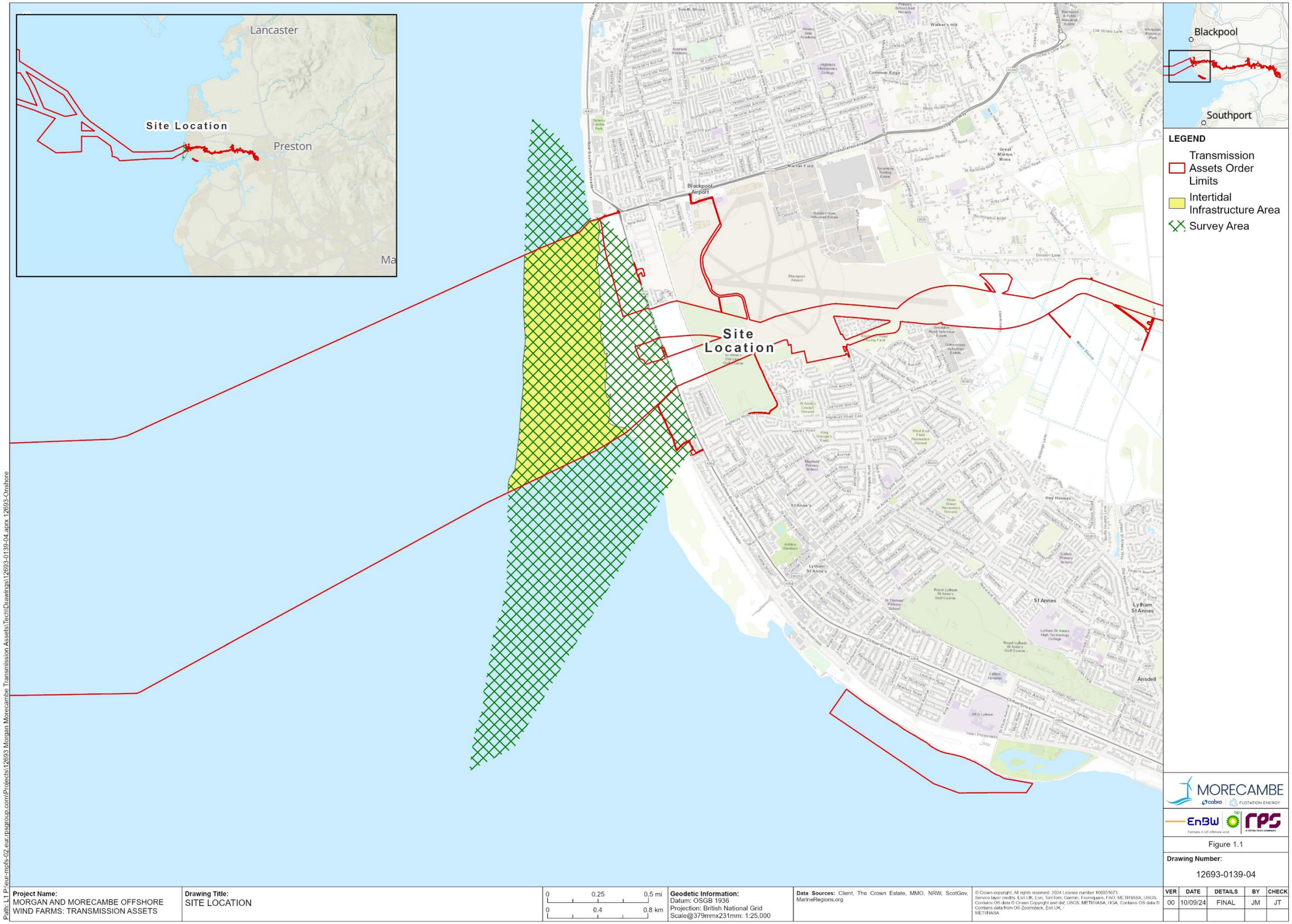

Figure 1.1: Site location

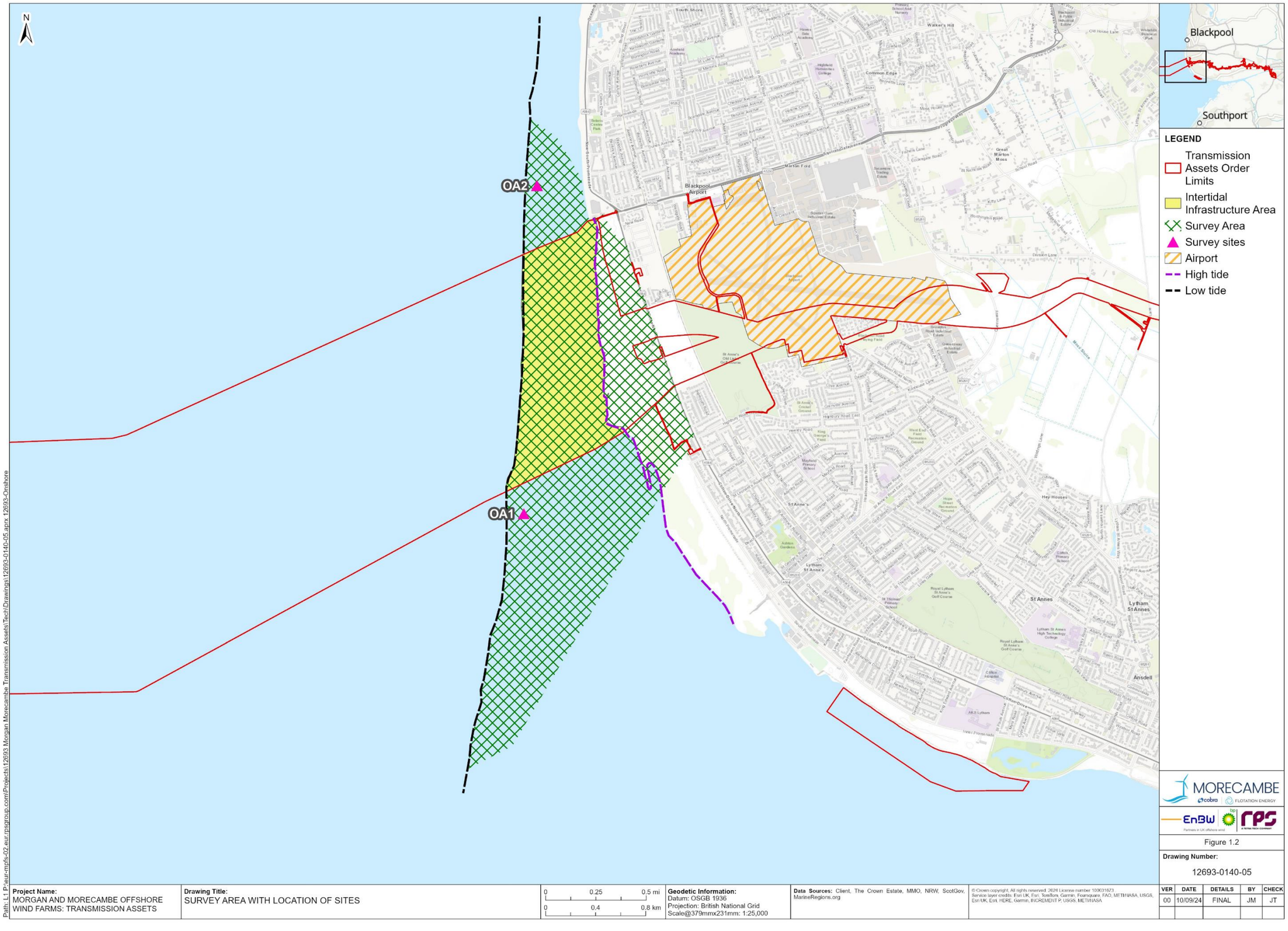

Figure 1.2: Survey area with location of sites

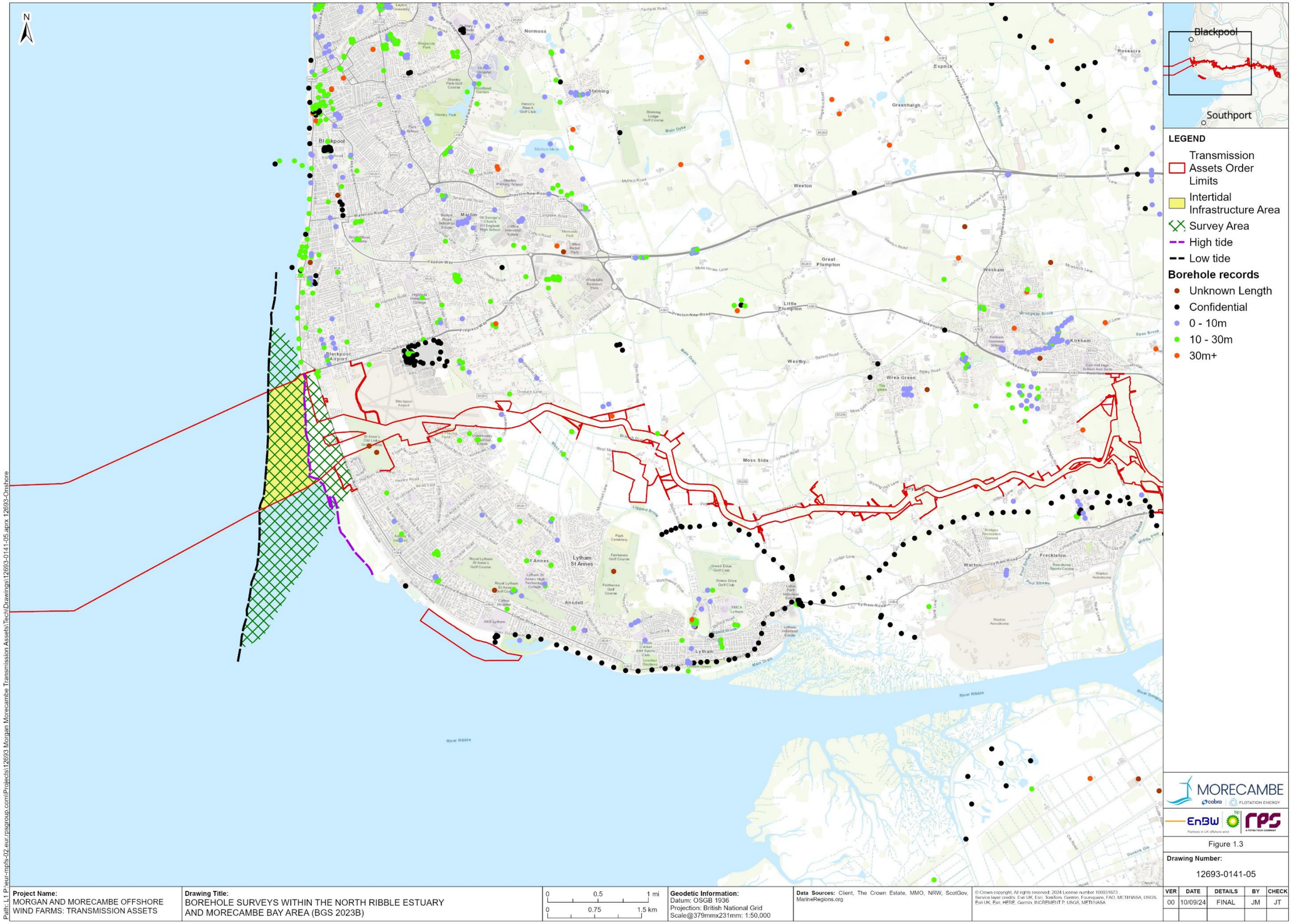

Figure 1.3: Borehole surveys within the North Ribble Estuary and Morecambe Bay area (BGS 2023b)

Morphological change

1.1.4.4 The Ribble Estuary has affected the nature of the archaeological remains encountered during the walkover survey. The Ribble Estuary between 1737 and 1967 AD changed considerably. Until 1850 AD the channels of the Ribble Estuary flowed freely across the estuary. From 1890 AD onwards the estuary became dominated by a single main channel which was developed by training walls that were built (Van Der Wal *et al*., 2002). The former northern and southern channels and other channels were further infilled with sediment accumulation (**Diagram 1.1**).

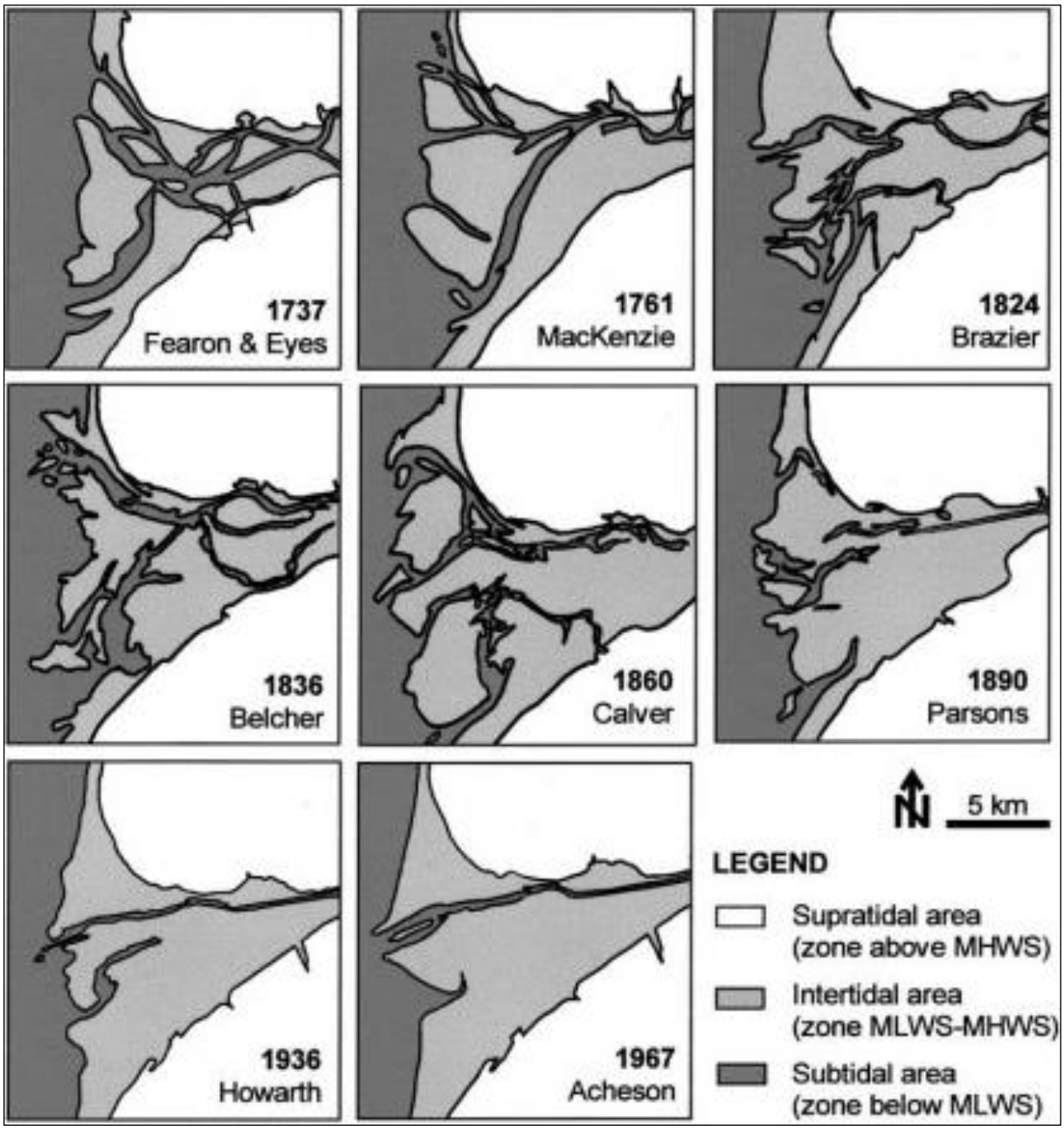

Diagram 1.1: Morphological change to the Ribble Estuary (Van Der Wal *et al*., 2002)

1.1.4.5 The north and south channels were around 13 m in depth prior to morphological changes. Sand banks such as Salter's Bank and Horse Bank

which dominated the outer estuary were crossed by a series of smaller, less permanent channels. The north channel ran through the southern area of the survey area (**Figure 1.4**).

1.1.4.6 By 1904, the navigation channel forced through the sand banks in the outer estuary, and training walls were constructed along 20 kilometres (km) of the channel. This caused the northern and southern channels to infill due to these changes to local erosion and deposition of the intertidal sand bank. By 1951, further dredging of the navigation channel caused the north channel to be almost completely infilled through further movement of the sand banks, contributing to the current morphology of the Ribble Estuary (Van Der Wal *et al*., 2002).

Project aims and objectives

1.1.5 General

1.1.5.1 The principal objective of the intertidal survey was to establish whether any archaeological or palaeoenvironmental features or deposits are likely to survive within the intertidal survey area, situated between MHWS and Mean Low Water Springs (MLWS) as shown in **Figure 1.4**, at surface level. The intertidal survey also aimed to:

- determine or confirm the general nature of any remains identified;
- determine or confirm the location, form, extent, date, character, condition, significance and quality of any remains of archaeological or palaeoenvironmental interest present;
- record the nature and extent of any identified existing disturbance or intrusions that may have affected the potential for buried remains to have survived;
- adhere to and fulfil the agreed programme of works associated with the archaeological and palaeoenvironmental potential of the site to inform the requirement of additional archaeological or palaeoenvironmental mitigation; and
- compile a professional archival record of any archaeological or palaeoenvironmental features identified of interest within the survey area.

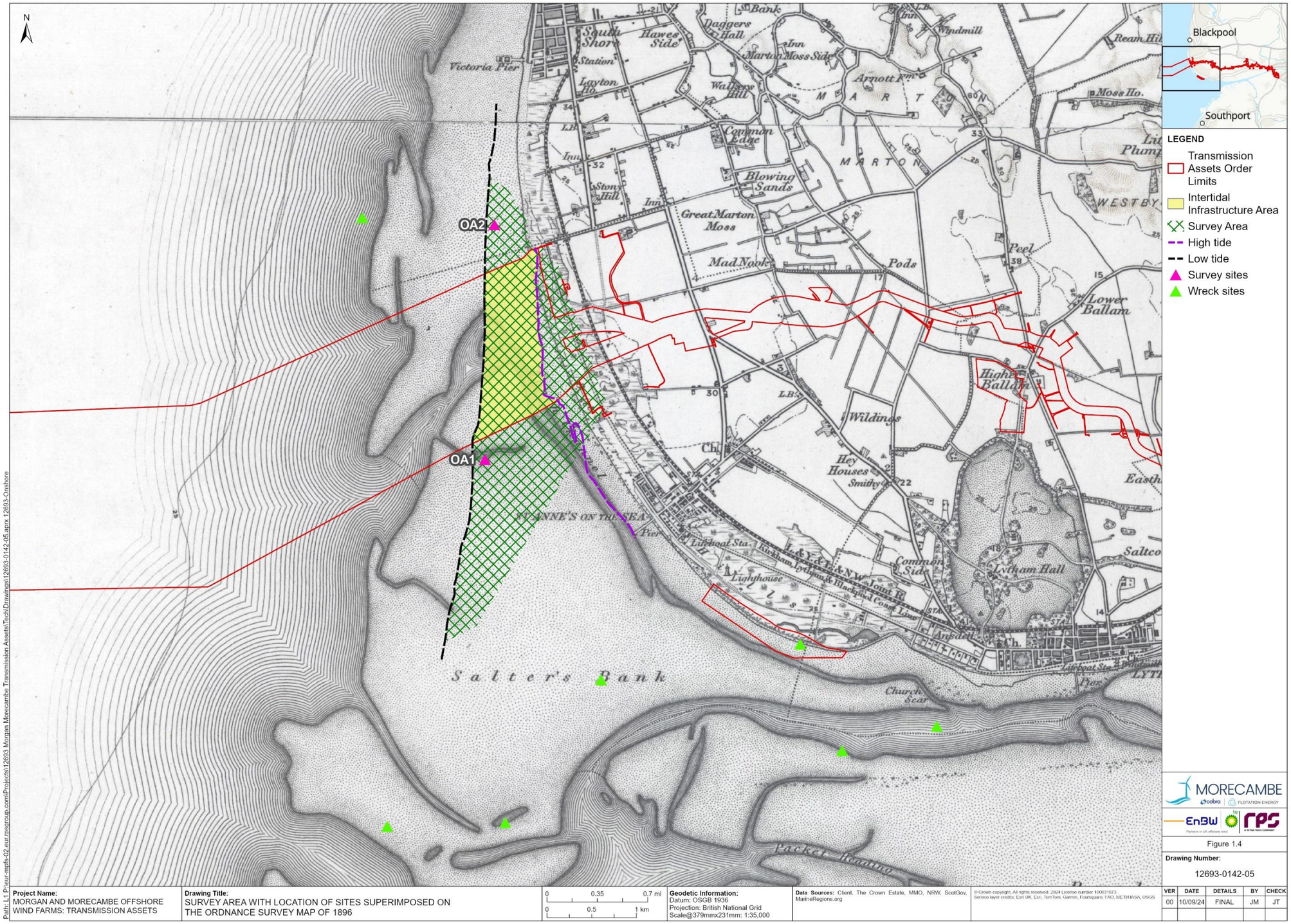

Figure 1.4: Survey area with location of sites superimposed on the Ordnance Survey map of 1896

1.1.6 Methodology

1.1.6.1 The full methodology is outlined in the WSI (**Appendix A**) which was adhered to in full and was fully compliant with prevailing guidelines and established industry best practice (CIfA, 2020; 2022; Historic England, 2015; 2017). A programme of field observation accurately recorded the form and character of all features of archaeological interest.

1.1.6.2 The walkover survey consisted of close field walking, on individual parallel transects based at 50 m intervals between MLWS and MHWS. This was dependent on visibility and safety considerations. If any features or deposits of archaeological interest were identified they were to be recorded both photographically and described on conventional *pro forma* sheets.

1.1.6.3 The conditions were suitable during the survey, the light and weather conditions were adequate during the hours the survey area could be accessed, with archaeological features being easily identified where present. The survey was completed in two days between 23rd and 24th May 2023.

1.1.6.4 The photographic archive was generated through landscape and detailed photography. Detailed photographs were taken of all sites using a scale bar, with all photographs.

1.1.6.5 A full professional archive was compiled in accordance with the WSI (**Appendix A**), and in accordance with current professional guidelines (CIfA, 2020b; Historic England, 2015). The archive will be deposited with the Archaeology Data Service as per the Lancashire County Council Museum Services (LCCMS) guidance for projects where no finds are encountered (LCCMS, 2020).

1.2 Results

1.2.1.1 There was no evidence of any peat or organic deposits identified during the survey. The survey identified no significant archaeological remains within the survey area.

1.2.1.2 A series of wooden posts connected by timber slats were identified within a historic channel of Salter's Bank (Site OA1, **Plate 1**).

1.2.1.3 In addition, a bent iron beam, OA2, was observed at the northern end of the survey area on Crusader Bank (**Appendix B** and **Figure 1.2**). All features were probably of late nineteenth or early twentieth century date.

Plate 1: Site OA1 looking south east with 1 m scale

1.3 Conclusions

1.3.1 Discussion

1.3.1.1 The survey identified no significant archaeological remains or peat deposits within the survey area at the time of the survey. However, the presence of a setting of timber posts (OA1) within a small, infilled channel of the Ribble Estuary is significant in the sense that this could relate to several different estuarine industries or even relate to maritime activities (**Figure 1.4**).

1.3.1.2 There was not enough of site OA1 visible to determine what the structure's function originally was, but it could relate to evidence of a number of different site types. One possible site type is the remains of a fishing weir (**Plate 2** and **Plate 3**).

Plate 2: Remains of a medieval fishing weir at Bunratty 6, on the Shannon Estuary, Republic of Ireland (O'Sullivan 2003, 60)

Plate 3: Reconstruction painting of medieval fishing weir at Bunratty 6 by Simon Dick (O'Sullivan 2003, 61)

1.3.1.3 One further possible type of site that OA1 relates to is a series of Oyster bed pits. Remains of pits have been recovered next to Emsworth channel, on the River Ems, Hampshire (Satchell, 2011). These were located near to a small channel which met the main Emsworth channel. Given where the site OA1 is located (**Plate 2** and **Plate 3, Figure 1.4**) could have also been a likely use of site OA1.

1.3.1.4 Although there were no significant archaeological remains or deposits identified within the survey area, the presence of a timber structure suggests the potential of archaeological remains to survive within the survey area. Borehole data suggests the presence of peat deposits at approximately 11 m below the intertidal zone surface.

1.3.2 References

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O'Sullivan, 2003 Place, memory and identity among estuarine fishing communities: interpreting the archaeology of early medieval fish weirs in World Archaeology, 35:3, pp 449-468.

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Tooley, M, J., 1985 Seal-level changes and coastal morphology in North-West England in Johnson, R, H. (ed) The geomorphology of North-West England, Manchester, 94-121.

Van der Wal, D., Pye, K., and Neal, A., 2002 Long-term morphological change in the Ribble Estuary, Northwest England in Marine Geology, 189: 3-4, pp 249-266.

Appendix A: Written Scheme of Investigation

MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Written Scheme of Investigation

Archaeological and paleoenvironmental intertidal walkover survey

May 2023
Rev01

Contents

Figures

Glossary

Term	Meaning
Applicants	Morgan Offshore Wind Limited (Morgan OWL) and Morecambe Offshore Windfarm Limited (Morecambe OWL).
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Environmental Statement	The document presenting the results of the Environmental Impact Assessment (EIA) process.
Intertidal area	The area between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS).
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 between Mean Low Water Spring (MLWS) tide and the transition joint bay inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Local Planning Authority	The local government body (e.g., Borough Council, District Council, etc.) responsible for determining planning applications within a specific area.
Morecambe OWL	Morecambe Offshore Windfarm Limited is a joint venture between Cobra Instalaciones y Servicios, S.A. (Cobra) and Flotation Energy Ltd.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the offshore substation platforms (OSPs), interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV 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).
Offshore export cables	The cables which would bring electricity from the offshore substation platform to the landfall.
Offshore Wind Leasing Round 4	The Crown Estate auction process which allocated developers preferred bidder status on areas of the seabed within Welsh and English waters and ends when the Agreements for Lease are signed.
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.

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.
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above).
Transmission Assets Red Line Boundary	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).

Acronyms

Acronym	Meaning
CIfA	Chartered Institute for Archaeologists
DCO	Development Consent Order
EnBW	Energie Baden-Württemberg AG
HE	Historic England
HNDR	Holistic Network Design Review
IOSH	Institution of Occupational Safety and Health
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NGESO	National Grid Electricity System Operator
NGR	National Grid Reference
OA North	Oxford Archaeology North
OD	Ordnance Datum
OTNR	Offshore Transmission Network Review
UK	United Kingdom
WSI	Written Scheme of Investigation

Units

Unit	Description
GW	Gigawatts
km^2	Square kilometres
m	Metres
MW	Megawatts

1 Introduction

1.1 Project details

1.1.1 The Morgan and Morecambe offshore wind farms

1.1.1.1 Morgan Offshore Wind Limited (Morgan OWL), a joint venture between bp Alternative Energy Investments Ltd. (hereafter referred to as bp) and Energie Baden-Württemberg AG (EnBW), is developing the Morgan Offshore Wind Project. The Morgan Offshore Wind Project is a proposed wind farm in the east Irish Sea, with an anticipated capacity of 1,500 megawatts (MW).

1.1.1.2 Morecambe Offshore Windfarm Limited (Morecambe OWL), a joint venture between Cobra Instalaciones y Servicios, S.A. (Cobra) and Flotation Energy Ltd., is developing the Morecambe Offshore Windfarm. The Morecambe Offshore Windfarm is also located in the east Irish Sea, with an anticipated capacity of 480 MW.

1.1.1.3 Both the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm have been awarded licences during the Crown Estate's Offshore Wind Leasing Round 4 process.

1.1.2 The Transmission Assets

1.1.2.1 Both the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm were scoped into the 'Pathways to 2030' workstream under the Offshore Transmission Network Review (OTNR). The OTNR aims to consider, simplify, and wherever possible facilitate a collaborative approach to offshore wind projects connecting to the National Grid.

1.1.2.2 Under the OTNR, the National Grid Electricity System Operator (NGESO) is responsible for assessing options to improve the coordination of offshore wind generation connections and transmission networks and has undertaken a Holistic Network Design Review (HNDR). In 2022, the UK Government published the 'Pathway to 2030 Holistic Network Design' documents, which set out the approach to connecting 50 GW of offshore wind to the National Grid (NGESO, 2022). The output of the HNDR process has concluded that the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm should work collaboratively in connecting the wind farms to the National Grid at Penwortham in Lancashire.

1.1.2.3 Morgan OWL and Morecambe OWL (the Applicants) are therefore seeking consent for transmission assets comprising shared offshore export cable corridors to landfall and shared onshore export cable corridors to onshore substation(s), and onward connection to the National Grid at Penwortham, Lancashire. This is known as the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (referred to hereafter as 'the Transmission Assets').

1.1.3 Intertidal walkover

1.1.3.1 This Written Scheme of Investigation (WSI) has been prepared by Oxford Archaeology North (OA North) on behalf of the Applicants. The WSI details the methodology that will be used in order to facilitate an archaeological and paleoenvironmental intertidal survey (hereafter referred to as the 'intertidal survey') related with the landfall area associated with the Transmission Assets project.

1.1.3.2 The intertidal survey will focus on an area to the north of Lytham St. Annes within the intertidal area of the Transmission Assets Indicative Red Line Boundary, centred on National Grid Reference (NGR) SD30475 30675 as shown in **Figure 1** and **Figure 2**.

1.1.3.3 The work is being undertaken to inform stakeholders (including Lancashire County Council and Historic England) of the methods reporting of the intertidal survey. It is intended that the intertidal survey will initially be used to support the Preliminary Environmental Information Report consultation process. It will subsequently become an appendix to the historic environment chapter within an Environmental Statement which will accompany an application for a Development Consent Order (DCO).

1.1.3.4 All work will be undertaken in accordance with the Chartered Institute for Archaeologists' (CIfA) *Code of Conduct: Professional ethics in archaeology* (CIfA 2022) and *Standards and guidance for the creation, compilation, transfer and deposition of archaeological archives* (CIfA 2020), Historic England's (HE) *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (HE 2015) and *Understanding the archaeology of landscapes: a guide to good recording practice* (HE 2017) and local and national planning policies.

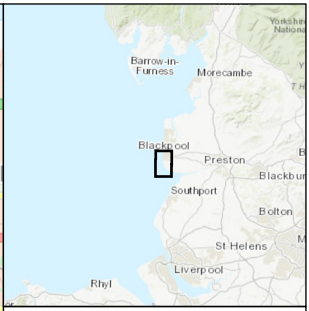
1.1.4 Location, topography and geology

1.1.4.1 The survey area is located on the western coast of the Fylde Peninsula between Blackpool and Lytham St Annes, centred on NGR: SD30475 30675 (**Figure 1**). The survey area comprises the intertidal zone to the west of Clifton Drive North, to the west of Blackpool Airport, with Blackpool to the north and St Annes to the south (**Figure 2**).

1.1.4.2 The solid geology of the site is mapped as mudstone of the Singleton Mudstone Member, formed in the Triassic Period (British Geological Society, 2023). The superficial geology of the site is mapped as clay and silt tidal flat deposits through the majority of the area, however, this becomes gravel storm beach deposits and then blown sand dunes in the very eastern part of the site (British Geological Society, 2023).

1.1.4.3 The soils of the eastern part of the site are mapped as sand dune soils (Cranfield Soil and Agrifood Institute, 2023). These sand deposits to the south of the scheme, at Fairhaven Dunes, are known to preserve layers of sediment comprising peat and sand, which record the processes of marine transgression and sea-level changes which occurred during the Holocene Period (Tooley, 1974).

Figure 1



LEGEND

Transmission Assets Indicative Red Line Boundary

MORECAMBE

Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
GB Cartographic: Contains OS data © Crown Copyright and database right 2022
Contains data from OS Zoomstack

Data Sources: Client, The Crown Estate, Marine Management Organisation, Marine Scotland, Natural Resources Wales

EnBW bp RPS A TETRA TECH COMPANY
Partners in UK offshore wind

Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

0 0.25 0.5 nm
0 0.5 1 km

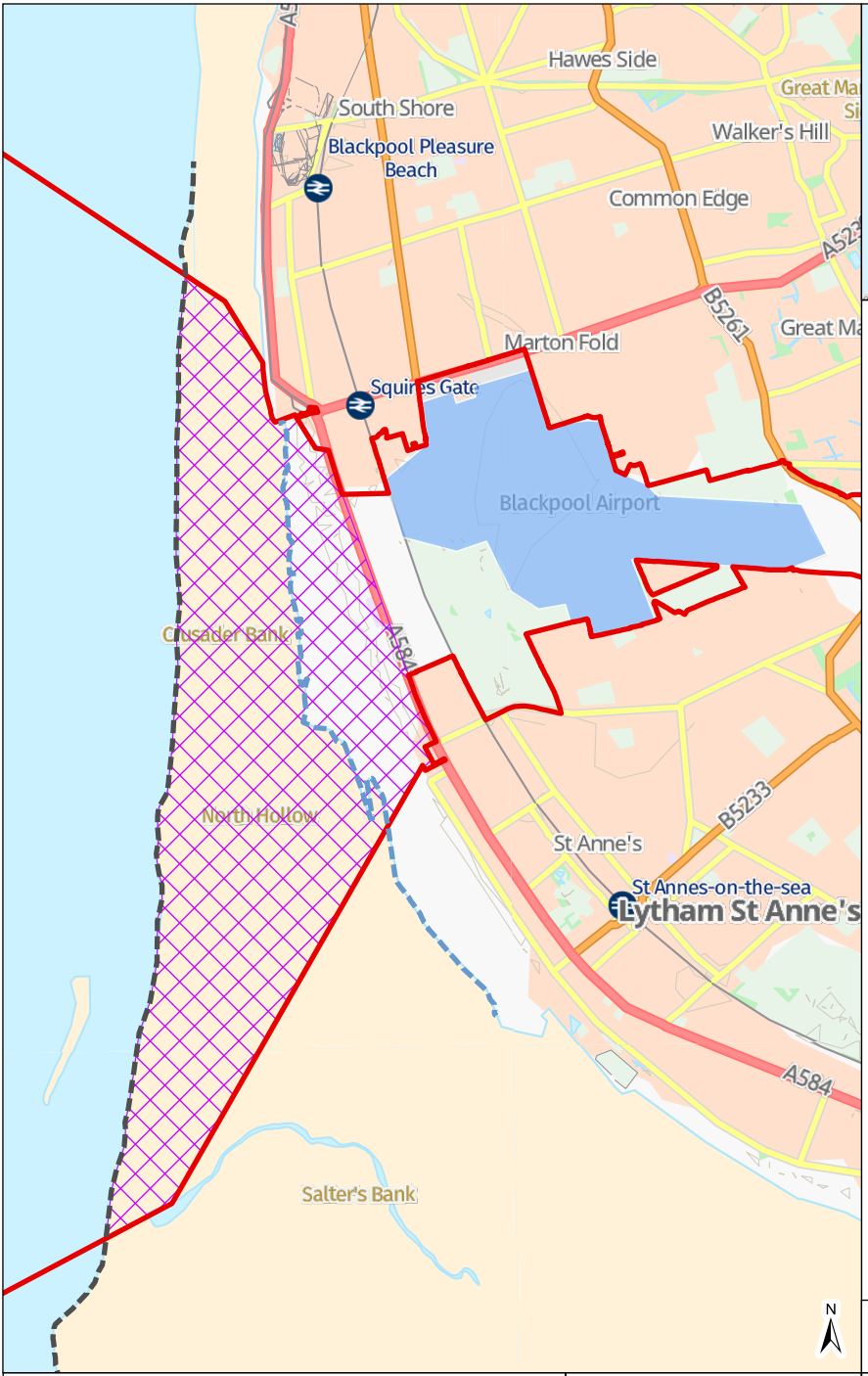
Drawing Number:
12693-0046-01

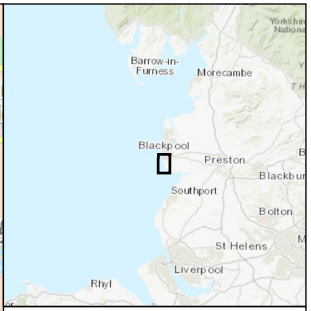
Drawing Title:
FIGURE 1: SITE LOCATION PLAN

Geodetic Information:
Datum: ETRS 1989
Projection: ETRS 1989 UTM Zone 30N
Scale@220mmx160mm: 1:55,000

VER	DATE	DETAILS	BY	CHECK
01	02/05/23	First Issue	JP	TM

Figure 2





LEGEND

- Transmission Assets
- Indicative Red Line Boundary
- Airport Area
- Survey Area
- Mean Low Water Springs
- Mean High Water Springs

MORECAMBE

Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
GB Cartographic: Contains OS data © Crown Copyright and database right 2022
Contains data from OS Zoomstack

Data Sources: Client, The Crown Estate, Marine Management Organisation, Marine Scotland, Natural Resources Wales

EnBW bp RPS — Partners in UK offshore wind — A TETRA TECH COMPANY

Project Name:
MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

0 0.25 0.5 nm
0 0.5 1 km

Drawing Number:
12693-0047-01

Drawing Title:
FIGURE 2: SURVEY LOCATION PLAN

Geodetic Information:
Datum: ETRS 1989
Projection: ETRS 1989 UTM Zone 30N
Scale@220mmx160mm: 1:40,000

VER	DATE	DETAILS	BY	CHECK
01	02/05/23	First Issue	JP	TM

1.2 Archaeological and historical background and potential

1.2.1 Archaeological and historical background

1.2.1.1 A number of historic boreholes have been sunk in the approximate area of the proposed intertidal walkover survey. These include a study of 25 boreholes, which extend from the high-water mark at Starr Hills, Lytham and run roughly on a south-south-west/north-north-east-alignment to Hey Houses (to the east of the Transmission Assets Indicative Red Line Boundary), which identified a sequence of biogenic (peat and organic clay) deposits between clays, silts and sands of marine and estuarine origin (Tooley, 1974).

1.2.1.2 Other samples were taken across an area of approximately 22 km^2, located inland of Lytham St Annes, where the data was interpreted as indicative of ten marine transgressive episodes, all but one of which was at -4 m Ordnance Datum (OD) or above, dating from the early Mesolithic to approximately the medieval period (Tooley, 1974).

1.2.1.3 Tooley's work (1974) recorded the deepest peat layer, 0.09 m thick, at -11 m OD (borehole LC14a) and pollen samples from this layer have been interpreted to indicate a wooded palaeoenvironment of pine and birch, with hazel-type, grasses and pollen of the goosefoot family, dated broadly to the early Mesolithic period. Pollen assemblages have been interpreted to suggest saltmarsh or brackish water conditions.

1.3 Project aims and objectives

1.3.1 General

1.3.1.1 The principal objective of the intertidal survey is to establish whether any archaeological or palaeoenvironmental features or deposits are likely to survive within the survey intertidal area, the area situated between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS) as shown in **Figure 2**, at surface level. The intertidal survey will also aim to achieve the following:

- to determine or confirm the general nature of any remains identified;
- to determine or confirm the location, form, extent, date, character, condition, significance and quality of any remains of archaeological or palaeoenvironmental interest present;
- to record the nature and extent of any identified existing disturbance or intrusions that may have affected the potential for buried remains to have survived;
- to adhere to and fulfil the agreed programme of works associated with the archaeological and palaeoenvironmental potential of the site to inform the requirement of additional archaeological or palaeoenvironmental mitigation; and
- to compile a professional archival record of any archaeological or palaeoenvironmental features identified of interest within the survey area.

1.3.2 Research frameworks

1.3.2.1 The programme of intertidal survey is focussed on the investigation of the potential survival of below ground peat deposits. The results of the intertidal walkover survey have the potential to contribute to research priorities identified in the regional research framework, *North West Regional Research Framework* (Research Frameworks, 2023). In particular, the results may contribute to the following.

- PH04: How can we enhance existing datasets for Prehistory in the region.
- PH18: What can palaeoenvironmental analysis of buried soils tell us about prehistoric environments.
- PH19: How can we best capture data for the palaeoenvironment in Prehistory.

1.4 Project specific excavation and recording methodology

1.4.1 Scope of works

1.4.1.1 The scope of the works is to undertake a walkover survey of the indicative intertidal area where the proposed offshore export cables make landfall and within the transitional area between the offshore export cable and onshore export cable of the Transmission Assets. The intertidal survey area is shown in **Figure 2**.

1.4.1.2 The principal aim of the intertidal survey is to identify whether there is any evidence for peat outcroppings or any archaeological features present in the intertidal area. As such, the intertidal area will be systematically walked and any features of interest will be recorded.

1.4.2 Programme

1.4.2.1 It is anticipated that the fieldwork will take two days to complete, by a team consisting of a Project Officer, Andy Phelps, directing up to one Project Archaeologist, under the management of Paul Dunn, Senior Project Manager. All fieldwork undertaken by OA North is overseen by the Operations Manager, Alan Lupton MCIfA.

1.4.3 Site specific methodology

1.4.3.1 The intertidal survey will be undertaken at a suitable time with appropriate environmental conditions. As such, the tide times will be consulted for the proposed days for the survey, with the most favourable tide times being selected where possible. A systematic walkover survey, to Historic England Level 2 standards (HE, 2017), will be undertaken of the whole intertidal area in transects.

1.4.3.2 Two qualified landscape survey archaeologists will record the location, extent and condition of any features of interest across the site. A survey grade real-time kinematic global navigation satellite system will be utilised to map the

location of any features of interest, specifically any evidence of peat outcroppings. A digital photographic archive will also be generated, which will record the features of interest, as well as aspects of the general landscape.

1.4.3.3 The features identified through the survey will be allocated numbers, and will be recorded within a gazetteer and Geographic Information Systems, incorporating site descriptions (cross-referenced with any depictions on historic mapping), NGRs, photographs and brief condition assessments.

1.5 Project specific reporting and archive methodology

1.5.1 Programme

1.5.1.1 The report will be completed within approximately four weeks of the completion of the fieldwork.

1.5.1.2 A draft copy of the report will be provided to Doug Moir, the Planning Officer (Archaeology) of Lancashire County Council Historic Environment Team and Historic England, for comment and to afford these to be suitably addressed within the final report. Paper copies can also be provided on request.

1.5.2 Content

1.5.2.1 The report will include:

- a title page detailing site address, NGR, author/originating body, the Applicants' name and address, and the project name;
- full contents listing;
- a non-technical summary of the findings of the fieldwork;
- a description of the archaeological background;
- a description of the topography and geology of the site;
- a description of the methodologies used during the fieldwork;
- a description of the findings of the fieldwork;
- detailed plans of the survey area, showing features of interest;
- interpretation of the archaeological or palaeoenvironmental features identified and their context within the surrounding environment;
- appropriate photographs of archaeological or palaeoenvironmental features identified;
- a consideration of the importance of the archaeological or palaeoenvironmental features, placing the site in local, regional and national terms;
- a complete bibliography of sources consulted;
- appendices to include a gazetteer of archaeological or palaeoenvironmental features identified; and

- illustrative material will include a location map, site map, site plans and pertinent photographs.

1.5.3 Archive

1.5.3.1 As the archive will only comprise documentary and digital material it will be deposited digitally with the Archaeological Data Service following completion of the project, as per Lancashire County Council Museums Service (LCCMS) guidance (LCCMS, 2022).

1.5.3.2 An online access to index of archaeological investigations record will be established at the beginning of the project and finalised upon completion of the project, with a digital copy of the final report being uploaded.

1.6 Health and safety

1.6.1 Roles and responsibilities

1.6.1.1 The Senior Project Manager, Paul Dunn, has responsibility for ensuring that safe systems of work are adhered to on site. Elements of this responsibility will be delegated to the Project Officer, Andy Phelps, who implements these on a day-to-day basis.

1.6.1.2 The Director with responsibility for health and safety at OA North is Dan Poore Tech IOSH (Chief Business Officer).

1.6.2 Standard methodology

1.6.2.1 All work will be undertaken in accordance with the current OA North Health and Safety Policy, the OA North Site Safety Procedures Manual, a site-specific risk assessment and, if required, safety plan or method statement.

1.6.2.2 Copies of the site-specific documents will be submitted to the Applicants for approval prior to mobilisation, and all relevant health and safety documentation will be available on site at all times. The health and safety documentation will be read in conjunction with the project WSI.

1.6.2.3 A risk assessment has also been undertaken and approved and will be kept on site, along with OA North's standard health and safety file, which will contain all relevant health and safety documentation.

1.6.2.4 The health and safety file will be available to view at any time. All work will be carried out according to the requirements of all relevant legislation and guidance, including, but not exclusively, the following:

1. The Health and Safety at Work Act (1974);
2. Management of Health and Safety at Work Regulations (1999);
3. Manual Handling Operations Regulations 1992 (as amended);
4. The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (2013);
5. The Construction (Design and Management) Regulations (2015);

6. relevant OA manual and other supporting documentation;
7. the OA Health and Safety Policy;
8. the OA Site Safety Procedures Manual; and
9. the OA Risk Assessment and Method Statement template.

1.6.3 Monitoring of works

1.6.3.1 Notice of the commencement of the survey fieldwork will be given to Doug Moir, Planning Officer (Archaeology) for Lancashire County Council Historic Environment Team. The Planning Officer (Archaeology) will have free access to the site (subject to health and safety considerations) and all records to ensure the works are being carried out in accordance with this WSI and all other relevant standards.

1.7 References

British Geological Survey (2023) *Geology viewer* [Online] available at: [redacted]accessed 5 April 2023)

CIfA (2020) *Standards and guidance for the creation, compilation, transfer and deposition of archaeological archives*. Reading.

CIfA (2022) *Code of conduct: professional ethics in archaeology*. Reading.

Cranfield Soil and Agrifood Institute, 2023 *Soilscapes of Britain map* [Online] available at: [redacted]accessed 5 April 2023)

HE (2015) *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (re-issue), London

HE (2017) *Understanding the archaeology of landscapes: a guide to good recording practice*, 2nd edn, Swindon

LCCMS (2022) *Guidance for the deposition of archaeological archives* [Online] available at: https://www.lancashire.gov.uk/media/930034/guidance-for-the-deposition-of-archaeological-archives.pdf (accessed 5 April 2023)

NGESO (2022) The Pathway to 2030 Holist Network Design.

Research Frameworks (2023) *North West regional research framework* [Online], available at:[redacted] (accessed 5 April 2023)

Tooley, M J, 1974 Sea-level changes during the last 9000 years in North-West England, *The Geographical Journal*, **140**, 18-42

Appendix B: Site gazzetter

Site Number	OA1
Site Name	Timber post setting, Blackpool intertidal zone
NGR	SD 29916 29333
HER No	
Monument Type	Timber post setting
Period	Unknown
Site Description	Setting or line of 10 timber posts, with timber slats visible measuring 9 m in length. Posts measure on average 100 mm in diameter. Possible Iron capping heavily corroded the top to two of the posts. Photograph shot facing south-east.
Condition	Poor
Threats	Saltwater ingress/weathering
Photo Reference	9373-9378

Site Number	OA2
Site Name	Metal post, Blackpool intertidal zone
NGR	SD 30023 31940
HER No	
Monument Type	Metal post
Period	Unknown
Site Description	Possible Iron post, two 'I' beams bent towards east. Measures 0.5 m in height. Photo shot facing south.
Condition	Poor
Threats	Saltwater corrosion
Photo Reference	9379

Appendix C: Site summary details

Site name:	Morgan and Morecambe Offshore Wind Farms: Transmission Assets, Blackpool, Lancashire
Grid Reference	SD 30475 30675
Type:	Archaeological and Palaeoenvironmental Intertidal Walkover Survey
Date and duration:	23 and 24 May 2023; 2 days
Location of archive:	The archive is currently held at OA, Mill 3, Moor Lane Mills, Moor Lane, Lancaster, LA1 1QD, and will be deposited with the Archaeology Data Service in due course.
Summary of Results:	The survey area was fully walked over on foot during the two day survey, revealing no evidence of significant archaeological remains or deposits on the surface of the intertidal zone. One timber setting of posts were identified within an old delta channel for the River Ribble. The presence of a timber setting of posts may relate to an unlocated wreck site, the remains of a fishing weir or possible oyster bed pits. Historic borehole survey data in the vicinity of the survey area highlighted the possibility for survival of paleoenvironmental remains and the walkover survey highlighted the potential for archaeological remains. Further paleoenvironmental investigation, in the form of a borehole transect, would be beneficial to identify if any peat deposits survived within this area of the intertidal zone of the Ribble Estuary.