

Outer Dowsing Offshore Wind

Environmental Statement

Chapter 20 Onshore Archaeology and Cultural Heritage

Volume 3 Appendices

Appendix 20.1 Onshore Archaeology and Cultural Heritage Desk-Based Assessment

Part 1: DBA

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Volume 3, Appendix 20.1: Archaeological Desk Based Assessment

Outer Dowsing Offshore Wind Environmental Statement

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Acronyms and Abbreviations

Acronym and Abbreviations	Definition
AAI	Area of Archaeological Interest
AD	Anno Domini
AOD	Above Ordnance Datum
AOP	Archaeological Potential
BC	Before Christ
BGL	Below ground level
CIfA	Chartered Institute for Archaeology
DBA	Desk Based Analysis
DMV	Deserted Medieval Village
DTM	Digital Terrain Model
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
GIS	Geographic Information System
GT R4	The Applicant. The special project vehicle created in partnership between Corio Generation (a wholly owned Green Investment Group portfolio company), Gulf Energy Development and TotalEnergies.
HDD	Horizontal Directional Drilling
HER	Historic Environment Record
LHS	Left Hand Side
LIDAR	Light, Detections and Ranging
NGR	National Grid Reference
NHLE	National Heritage List for England
NMP	National Mapping Programme
NPPF	National Planning Policy Framework
NSIP	Nationally Significant Infrastructure Project
ODOW	Outer Dowsing Offshore Wind
OnSS	Onshore Substation
OS	Ordnance Survey
OWSI	Outline Written Scheme of Investigation
PAS	Portable Antiquities Scheme
PPG	Planning Policy Guidance
SI	Site Investigation



Acronym and Abbreviations	Definition
TJB	Transition Join Bay
WSI	Written Scheme of Investigation

Terminology

Term	Definition
400kV cables	High-voltage cables linking the OnSS to the NGSS.
400kV cable corridor	The 400kV cable corridor is the area within which the 400kV cables connecting the onshore substation to the NGSS will be situated.
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation, TotalEnergies and Gulf Energy Development (GULF)), trading as Outer Dowsing Offshore Wind. The Project is being developed by Corio Generation (a wholly owned Green Investment Group portfolio company), TotalEnergies and GULF.
Baseline	The status of the environment at the time of assessment without the development in place.
Connection Area	An indicative search area for the NGSS.
Cumulative impact	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the sensitivity of the receptor, in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	The suite of documents that detail the processes and results of the EIA.
Haul Road	The track within the onshore ECC which the construction traffic would use to facilitate construction.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Joint bays	An excavation formed with a buried concrete slab at sufficient depth to enable the jointing of high voltage power cables.
Landfall	The location at the land-sea interface where the offshore export cables and fibre optic cables will come ashore.
Mitigation	Mitigation measures are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the



Term	Definition
	project design) or secondarily added to reduce impacts in the case of potentially significant effects.
National Grid Substation (NGSS)	The National Grid substation and associated enabling works to be developed by the National Grid Electricity Transmission (NGET) into which the Project's 400kV Cables would connect.
Onshore Export Cable Corridor (ECC)	The Onshore Export Cable Corridor (Onshore ECC) is the area within which the export cables running from the landfall to the onshore substation will be situated.
Onshore Infrastructure	The combined name for all onshore infrastructure associated with the Project from landfall to grid connection.
Onshore substation (OnSS)	The Project's onshore HVAC substation, containing electrical equipment, control buildings, lightning protection masts, communications masts, access, fencing and other associated equipment, structures or buildings; to enable connection to the National Grid
Outer Dowsing Offshore Wind (ODOW)	The Project.
Order Limits	The area subject to the application for development consent, The limits shown on the works plans within which the Project may be carried out.
Preliminary Environmental Information Report (PEIR)	The PEIR was written in the style of a draft Environmental Statement (ES) and provided information to support and inform the statutory consultation process during the pre-application phase.
The Project	Outer Dowsing Offshore Wind, an offshore wind generating station together with associated onshore and offshore infrastructure.
Study Area	Area(s) within which environmental impact may occur – to be defined on a receptor-by-receptor basis by the relevant technical specialist.
Receptor	A distinct part of the environment on which effects could occur and can be the subject of specific assessments. Examples of receptors include species (or groups) of animals or plants, people (often categorised further such as 'residential' or those using areas for amenity or recreation), watercourses etc.
Transition Joint Bay (TJBs)	The offshore and onshore cable circuits are jointed on the landward side of the sea defences/beach in a Transition Joint Bay (TJB). The TJB is an underground chamber constructed of reinforced concrete which provides a secure and stable environment for the cable.
Trenchless technique	Trenchless technology is an underground construction method of installing, repairing and renewing underground pipes, ducts and cables using techniques which minimize or eliminate the need for excavation. Trenchless technologies involve methods of new pipe installation with minimum surface and environmental disruptions. These techniques may include Horizontal Directional Drilling (trenchless), thrust boring, auger boring, and pipe ramming, which allow ducts to be installed under an obstruction without breaking open the ground and digging a trench.



20 Archaeological Desk Based Assessment

20.1 Introduction

1. Outer Dowsing Offshore Wind (ODOW) is a Nationally Significant Infrastructure Project (NSIP). An Environmental Impact Assessment (EIA) has been undertaken, the findings of which are presented within an Environmental Statement (ES), which accompanies a Development Consent Order (DCO) application under the Planning Act, 2008.
2. SLR Consulting was commissioned by GoBe Consultants, whom has been instructed by GT R4 Limited (trading as Outer Dowsing Offshore Wind) (the Applicant), to undertake a study of Archaeology and Cultural Heritage resources of those parts of the site that may be affected by the construction and operation of the onshore aspects of the Project (see Volume 1, Chapter 3: Project Description (document reference 6.1.3) for full details).
3. This Archaeological Desk Based Assessment (DBA) supports the findings of ES Volume 1, Chapter 20: Onshore Archaeology and Cultural Heritage (document reference 6.1.20).
4. The ES references the Project's 'Order Limits'. It reflects an approximate 80m wide corridor around a centre line totalling approximately 70km in length in reference to the footprint of the Onshore Export Cable Corridor (ECC), the 400 kV cable corridor, Onshore substation (OnSS) and the Connection Area¹.
5. The onshore Order Limits has been split into segments as follows.
 - ECC1 - Landfall to A52 – Hogsthorpe;
 - ECC2 - A52 – Hogsthorpe to Marsh Lane;
 - ECC3 - Marsh Lane to A158 - Skegness Road;
 - ECC4 - A158 Skegness Road – Low Road;
 - ECC5 – Low Road to Steeping River;
 - ECC6 – Steeping River to Fodder Dike Bank/Fen Bank;
 - ECC7 – Fodder Dyke Bank to Broadgate;
 - ECC8- Broadgate to Ings Drove;
 - ECC9 – Ings Drove to Church End Lane.
 - ECC10 - Church End Lane to The Haven;

¹ The Connection area is an indicative search area for the National Grid substation and associated enabling works (NGSS) to be developed by the National Grid Electricity Transmission (NGET) into which the Project's 400kV Cables would connect.



- ECC11 - The Haven to Marsh Road;
 - ECC12 - Marsh Road to Fosdyke Bridge;
 - ECC 13 - Fosdyke Bridge to Surfleet Marsh OnSS / Marsh DroveOnSS; and
 - ECC 14 - Surfleet Marsh OnSS / Marsh Drove to the Connection Area.
6. The study area for the Archaeological DBA comprised a buffer of up to 2km from the Order Limits. This parameter was established through consultation with the Lincolnshire Historic Environment Officer through their scoping response. This study area is anticipated to provide a robust baseline in respect to the known archaeological potential of the footprint of the Order Limits where ground disturbance may occur. This comprises the extent of the land for which the archaeological assessments are based upon.
7. Construction compounds in close proximity to the proposed Order Limits are included within the nearest ECC segment referenced above. A detached compound, located off the A16 south of Boston is referenced separately as 'A16 compound'.
8. Other additional areas within the Project footprint include small and detached sections alongside the highway where minor works are proposed. These are anticipated to comprise some vegetation clearance or minimal disturbance to the highway and are therefore not anticipated to disturb horizons of archaeological potential. These areas have not been taken forward for assessment. Also not taken forward for assessment are existing farm tracks (enabling accesses) included in the Order Limits for temporary access as no works are proposed to these tracks. Scope of Report
9. This report presents the results of the Archaeological DBA. It identifies potential heritage assets of an archaeological nature located within the Order Limits and describes their significance, in accordance with the requirement under National Planning Policy Framework (NPPF 2023) paragraph 194. Consideration has been given to heritage assets of an archaeological nature only. Potential direct effects to the archaeological resource are also predicted.

20.2 Standards

10. The assessment has been undertaken in accordance with all relevant legislation, policy and guidance, including the NPPF (2023), the Chartered Institute for Archaeology (CIfA) Standard and Guidance for Historic Environment Desk-based Assessment (2020) and Historic England's Statements of Heritage Significance (2019).



11. The assessment has been undertaken, and the report prepared, by Charlotte Dawson, Principal Archaeology & Heritage Consultant, MCIfA.

20.3 Methodology

20.3.1 Data Procurement

20.3.1.1 Study Area

12. The study area for Historic Environment Record (HER)/Portable Antiquities Scheme (PAS) datasets referenced by this report is a 2km buffer of the Order Limits which comprises the footprint of development and its locality. This is considered sufficient to determine archaeological potential.

20.3.1.2 Sources Consulted

13. The following sources were consulted:
 - Historic England's Geographic Information System (GIS) datasets for all assets of an archaeological nature (Scheduled Monuments) included on the National Heritage List for England (NHLE) (see **Annexes 1-15**);
 - Lincolnshire HER (see **Annexes 1-15**);
 - Historic Landscape Character data;
 - PAS data;
 - Historic cartographic sources at the Lincolnshire Archives and Boston Library;
 - Historic England's Aerial Archaeology Mapping Explorer, for mapped archaeological earthworks and other features identified by the aerial investigation unit;
 - Historic England's Aerial Photo Explorer, for digitised photographs from the Historic England archive;
 - Historic England's collection of aerial photography held at the National Archives (for selected sections of the Order Limits within ECC2).
 - the Environment Agency's library of open access LiDAR data (Digital Surface Model, Digital Terrain Model (DTM) and point cloud) (see **Annex 17**);
 - AOC Archaeology– geoarchaeological deposit model for the Order Limits (see **Annex 18**);
 - Magnitude Surveys - magnetometer geophysical survey (see **Annex 19**) and
 - Magnitude Surveys - electromagnetic geophysical survey (see **Annex 19**).

20.3.1.3 HER Data

14. A proportionate level of HER data, sufficient to inform the assessment of archaeological potential, significance and potential impact presented in this report, was obtained. The HER data was reconciled and analysed within the context of the objectives of the present



assessment and is presented within **Annexes 1-15** and the following **Figures** in this Appendix:

- Figure 20.1.1 – Designated Cultural Heritage Assets
- Figure 20.1.2 – Non Designated Cultural Heritage Assets

15. Whilst all of the HER data received has been reviewed and considered, not all HER records (sites and events) are discussed further within this report, only those that are of relevance to the determination of potential, significance, and potential impact.

20.3.1.4 Site Walkover

16. Due to the intensive arable nature of the Site, a targeted Site walkover was undertaken in February and March 2023. Parts of the Order Limits where data sources indicated the potential presence of remains were visited to assess the presence/absence of earthworks or finds scatters and to review general site conditions. Pertinent observations are set out within **Annex 16** and are cross referenced within this report.

20.3.1.5 LiDAR Assessment and Aerial Photography Review

17. A full LiDAR assessment and aerial photography review included the review of:

- 50cm and 1m LiDAR DTM data:
 - Historic England's Aerial Archaeology Mapping Explorer;
 - Historic England's Aerial Photo Explorer;
 - recent aerial imagery collected by the Project; and
 - GoogleEarth imagery for the entire Project footprint.

18. The results reference the entire Order Limits and are presented in **Annex 17** and cross referenced within this report and referenced on the following **Figures** in this Appendix:

- Figure 20.1.3 – Processed LiDAR Imagery
- Figure 20.1.4 – Ordnance Survey (OS) 25k Basemap with Transcribed Earthworks
- Figure 20.1.5 – Superficial Geology
- Figure 20.1.6 – Elevation Model

Aerial Photography



19. Mapping undertaken by Historic England under the National Mapping Programme was reviewed in the first instance and referenced where appropriate within the desk-based assessment.
20. A full aerial photographic assessment of the Order Limits was not anticipated to be necessary given the historic geography of the Order Limits which has been east of high-water marks for significant periods and subject to the deposition of mudflats, the thickness of which will affect the formation of cropmarks. In these circumstances, the most reliable non-intrusive technique for evaluation was identified as geophysical survey, targeting areas sitting west of high-water marks between the Late Mesolithic and the post medieval periods.
21. However, for selected parts of the Project, a review of historic aerial photography held by Historic England's archive in Swindon was undertaken to validate the absence of wholesale aerial photographic assessment. This was undertaken in consultation with the Historic Environment Officer for Lincolnshire to inform a discussion on the necessity to apply a full historic aerial photographic assessment of the whole Order Limits. Two sample areas were agreed; an area in the northern part of the Order Limits in segment ECC2 in the locality of a Deserted Medieval Village at Slackholme and a larger area in the southern part of the Order Limits including the footprint of segments ECC11-14. These areas are referenced within **Annex 17**.
22. In respect to the necessity for a full historic aerial photography assessment across the entirety of the Order Limits, it is considered that this would not be necessary on the following grounds.
 - The geophysical survey has confirmed activity at the location of five out of seven cropmarks recorded by Historic England's Aerial Archaeology Mapping Explorer within the Order Limits. Of the two cropmarks not verified, one has not been surveyed by geophysical survey at the time of writing and so was not available for comparison. At this location and the other location where geophysical survey has not verified aerial photographic anomalies, the cropmarks relate to medieval or post medieval activity which is either not extensive or indicative of the presence of significant remains. On this basis this demonstrates that aerial photographic analysis would not meaningfully alter the reliable prediction of significant impacts. The comparisons are as follows:
 - ECC1 - Cropmarks at landfall (no HER reference) - ü corresponding anomalies with area identified as area of archaeological interest 1 by the geophysical survey.
 - ECC2 - HER reference MLI98636 – medieval enclosures - ü corresponding anomalies with area identified as area of archaeological interest 4 by the geophysical survey.



- ECC2 - HER reference MLI98639 – medieval earthwork enclosures and field system –? not subject to geophysical survey..
- ECC3- HER reference MLI88895 – medieval earthworks relating to field boundaries, enclosures and ridge and furrow - ü corresponding anomalies recorded within the HER entry with area identified as area of archaeological interest 5 by the geophysical survey.
- ECC3 - HER reference MLI87795 – post medieval earthwork enclosure –no anomalies recorded by the geophysical survey.
- ECC4 - HER reference MLI98096 – medieval ridge and furrow earthworks - corresponding anomalies inferred by agricultural anomalies.
- ECC5 - HER reference MLI98166 - medieval ridge and furrow earthworks - extensive anomalies recorded however not medieval. Area identified as area of archaeological interest 6 by geophysical survey,
- The review of historic mapping undertaken as part of the desk based assessment has confirmed field boundaries at the location of all of the cropmarks shown on oblique photographs held by Historic England’s Aerial Photo Explorer within the Order Limits.
 - Cropmarks in ECC2 confirmed to be historic field boundaries though map regression – Hogsthorpe Enclosure map 1807 (see Plate 15).
 - Cropmarks in ECC11 - confirmed to be field boundaries shown on an 1839 map of the parish of Kirton (see Plate 30).
- The review of aerial photography within the sample areas did not highlight any new areas of archaeological potential not already identified through LiDAR or geophysical survey -
 - ECC2 sample area. The geophysical survey has confirmed activity at the location of all of the cropmarks recorded by the sample assessment of historic aerial photographs held by the Historic England archives. The geophysical survey provided more detailed evidence of activity at the sample location than was visible on the aerial photographs. It was classified as area of archaeological interest 2 within the geophysical survey. In this instance the geophysical survey has demonstrably been more reliable at providing information to identify a potential significant impact.
 - ECC11-14 sample area. All cropmarks observed on the photographs had been previously recorded by other baseline techniques including geophysical survey, and LiDAR assessment. For example, cropmarks visible in ECC12 corresponded with LiDAR anomalies of a sea wall (LiDAR feature 52). Cropmarks in ECC13 and ECC14 were restricted to palaeochannels which were also recorded through geophysical survey and LiDAR.
- Furthermore, the geophysical survey generally is also noted to have recorded more extensive anomalies and anomalies of pre medieval activity not picked up by the Historic England National Mapping Programme.



23. On these grounds it is anticipated that the geophysical survey is a reliable prospection technique for significant or extensive archaeological remains. Aerial photographic assessment is not necessary to supplement the geophysical survey and LiDAR assessment.

20.3.1.6 Field Evaluation

24. NPPF (paragraph 200) and EN-1 (paragraph 5.8.9) reference a potential necessity for evaluation fieldwork. In light of the indicative onshore infrastructure as set out in Figure 3.4 (document reference 6.2.3.4), a commitment that preservation in situ could be accommodated for works along the onshore ECC between the TJB and the OnSS (Schedule of Mitigation – document reference 8.13) and the findings of this DBA and the associated ES chapter (Chapter 20.1), the necessity for further fieldwork to determine the application is considered removed. Rather the necessity for fieldwork is delayed post the consent of the DCO.
25. Nevertheless, fieldwork undertaken has comprised a watching brief of site investigations and a targeted geophysical survey which has included a survey of the TJB location at landfall where preservation in situ would not be possible. Additional information on the targeted geophysical survey, including why it is not considered necessary to assess potential at the OnSS is set out below.

20.3.1.7 Watching Brief of Site Investigations

26. The geoarchaeological deposit model prepared by AOC Archaeology includes the results of a watching brief of Site Investigations undertaken in respect to the Project. This comprised the monitoring of 24 boreholes and 24 test pits. The results were used to update a previous deposit model prepared for the PEIR. The deposit model is presented in full in **Annex 18**. It will be referenced as appropriate throughout this report. It is noted that during the observation of a test pit to the east of ECC9, a gully feature was recorded. This is located outside of the Order Limits, 30m east. No other archaeological features were recorded by the Site Investigations.

20.3.1.8 Geophysical Survey

27. The desk-based assessment benefits from the results of geophysical survey which comprises magnetometer survey and electromagnetism survey. These are presented in **Annex 19** and are referenced throughout this report.
28. The areas selected for geophysical survey referenced the results of the geoarchaeological deposit modelling (**Annex 18**) and the overall assessment of archaeological potential in respect to historic high-water marks. Areas selected for survey are shown on **Figure 20.1.8**.



This figure shows areas which have been surveyed to inform the ES and areas which are scheduled for survey post EIA. It is noted that all areas west of the historic high-water marks that cannot accommodate preservation in situ, specifically the location of the Transition Joint Bay, have been surveyed to inform the ES.

29. In summary, the geophysical survey has targeted or will target the parts of the Order Limits within areas west of historic high-water marks. These areas in the northern and central parts of the Order Limits (ECC1-ECC10) are considered to hold archaeological potential due to their historic location within areas not characterized by permanent inundation or tidal conditions for part of or all of the periods between the Late Mesolithic period and the medieval period. Areas of drier land in these parts of the Order Limits, which may have persisted as habitable or semi-habitable places within areas being affected by the historic fluctuations in high water marks and coastal flooding, have been identified or will be identified by the electromagnetic survey.
30. The southern parts of the Order Limits including the location of the OnSS have not been subject to wholesale geophysical survey (ECC11-ECC14). These are in areas located east of historic high-water marks from the Late Mesolithic onwards and/or areas in the vicinity of these high-water marks identified from deposit modelling to be limited in potential with any saltern remains severely eroded by coastal processes. Nevertheless, some targeted geophysical survey has been undertaken or planned post EIA in the southern parts of the Order Limits as a precaution. These areas have been selected in response to LiDAR anomalies.
31. This work has been planned to highlight where the areas of greatest archaeological potential or risk are present within the Order Limits. The magnetometer survey undertaken in 2023 has recorded eleven main areas of archaeological interest within the Order Limits. These are primarily located in the northern half of the Order Limits and associated with areas of low conductivity (drier areas of sands and gravels) or areas where the dryland inter-faces with potential wetland/tidal creeks as identified by the electromagnetic survey.
32. Due to the weather conditions towards the end of the survey programme, parts of the planned survey areas were unable to be completed for consideration within the body of this report and the ES chapter. In these circumstances, areas where planned survey was not possible are proposed for survey post EIA. This is not considered a limitation to survey and the requirements of policy. This is because at the Transition Joint Bay, the only part of the Order Limits where significant impacts could have been predicted and where preservation in



situ is not possible, the geophysical survey has been undertaken and has not highlighted a potential for significant impacts. At all other locations within the Order Limits where significant impacts could occur (in reference to historic geography and resulting archaeological potential) the indicative onshore infrastructure as set out in Figure 3.4 (document reference 6.2.3.4) and the Schedule of Mitigation (document 8.13) provide for the preservation in situ of remains of national importance should it be required. Against this background, the necessity for further fieldwork to determine the application is considered removed. Rather the necessity for fieldwork is delayed post the consent of the DCO. This is set out within an Outline Written Scheme of Investigation (document reference 8.09).

20.3.1.9 Trial Trenching and Geoarchaeological Boreholes

33. No trial trenching or geoarchaeological-led boreholes have been undertaken to inform this assessment. For the reasons set out above this is not considered a limitation to assessment.

20.3.2 Assessment of Significance

34. The NPPF defines 'significance' as:

'the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic...'

35. It also states that significance can derive from setting. Discussions about setting are discussed under separate cover, see **Volume 2, Appendix 20.2**.

36. The Planning Practice Guidance (PPG) define these interests as follows:

- Archaeological interest: *"there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point."*
- Architectural and artistic interest: *"These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skills, like sculpture."*
- Historic interest: *"An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity."²*

² MHCLG, PPG, paragraph 006, reference ID: 18a-006-20190723.



37. Historic England’s guidance, ‘*Statements of Heritage Significance: Analysing Significance in Heritage Assets, Historic England Advice Note 12*’ (2019),³ concurs with the use of this terminology and methodology, both of which are thus adopted for the purposes of this report.
38. This approach allows for a detailed and justifiable determination of heritage significance and the interests from which that significance derives. In accordance with the NPPF and the PPG, the level of significance attributed to heritage assets is then articulated as follows:
- 1 **Designated heritage assets of the highest significance.** These are identified in paragraph 200 of the NPPF as comprising Grade I and II* Listed buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, World Heritage Sites, Registered Battlefields, and non-designated heritage assets of archaeological interest which are of demonstrably equivalent significance to that of Scheduled Monuments (as identified in footnote 68 of the NPPF);
 - 2 **Designated heritage assets of less than the highest significance.** These are identified in paragraph 200 of the NPPF as comprising Grade II Listed buildings and Grade II Registered Parks and Gardens; and
 - 3 **Non-designated heritage assets.** These are defined within the PPG as “*buildings, monuments, sites, places, areas or landscapes identified by plan-making bodies as having a degree of significance meriting consideration in planning decisions, but which do not meet the criteria for designated heritage assets*”.⁴

20.3.3 Assessment of Effects

39. When discussing **designated heritage assets**, potential development effects are described in terms of harm to significance, in accordance with the NPPF, which references the following levels of harm:

- **‘Substantial harm or total loss’**

Being a level of harm that would “have such a serious impact on the significance of the asset that its significance was either vitiated altogether or very much reduced”,⁵ and

- **‘Less than substantial harm’**

Being any lesser level of harm than that defined above; recent case law ⁶ has confirmed that this includes any level of harm (not considered substantial) regardless

³ Historic England, *Statements of Heritage Significance: Analysing Significance in Heritage Assets, Historic England Advice Note 12* (Swindon, October 2019).

⁴ MHCLG, *PPG*, paragraph 039, reference ID: 18a-039-20190723.

⁵ *Bedford Borough Council v Secretary of State for Communities and Local Government* [2013] EWHC 2847 (Admin), para. 25.

⁶ *R.(James Hall and Company Limited) v City of Bradford Metropolitan District Council and Co-Operative Group Limited* [2019] EWHC 2899 (Admin)



of its quantification, e.g. the finding of a ‘negligible’ level of harm must still be treated as less than substantial harm and be weighed in the balance under paragraph 202.

40. As clarified in the High Court, preservation of a heritage asset does not mean no change; it specifically means no harm.⁷ This is echoed by Historic England in ‘*Managing Significance in Decision-Taking in the Historic Environment*’ (2015) (GPA2), which states that “*Change to heritage assets is inevitable but it is only harmful when significance is damaged*”.⁸
41. With reference to the broad parameters referenced above, the PPG provides that the category of harm identified for any given asset be “*explicitly identified*”, and that the extent of that harm be “*clearly articulated*”.⁹ For purposes of this assessment, this has been done with reference to a ‘scale’, e.g., at the lower/upper end of the scale of less than substantial.
42. In discussing **non-designated heritage assets**, the NPPF does not provide that harm be categorised as either ‘substantial’ or ‘less than substantial’, only that the scale of any harm or loss is articulated. For the purposes of this report, this has been expressed using professional judgment, with reference to the heritage interests defined within the NPPF, PPG and Historic England’s ‘*Statements of Significance*’ (2019).
43. The assessment of anticipated development effects can thus be seen to have been undertaken in accordance with a robust methodology, formulated within the context of current best practice, the relevant policy provisions, and key professional guidance.

20.4 Statute & Policy

20.4.1 Statute

44. Scheduled Monuments are protected from physical development effects under the **Ancient Monuments and Archaeological Areas Act 1979**.

20.4.2 Planning Policy

20.4.2.1 Overarching National Policy Statement for Energy (EN-1) (2023)

45. The Overarching National Policy Statement for Energy (EN-1) sets out the national policy for nationally significant infrastructure projects (NSIPs) in the energy sector. Relevant paragraphs comprise the following.

⁷ *R (Forge Field Society) v Sevenoaks District Council* [2014] EWHC 1895 (Admin).

⁸ Historic England, *GPA 2*, p. 9.

⁹ MHCLG, *PPG*, paragraph 018, reference ID: 18a-018-20190723.



Paragraph 5.9.10

'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 Record235 (or, where the development is in English or Welsh waters, Historic England or Cadw) and assessed the heritage assets themselves using expertise where necessary according to the proposed development's impact.'

Paragraph 5.9.11

'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, accurate representative visualisations may be necessary to explain the impact.'

Paragraph 5.9.12

'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 5.9.33

'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.'

National Planning Policy Framework (Revised 2023)

46. Applicable national policy comprises the National Planning Policy Framework (NPPF 2023), and specifically the following paragraphs:

Paragraph 194, which states that:

'In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets'



importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a Site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.'

Paragraphs 199 and 200, which provide for designated heritage assets, and state respectively that:

'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,' and

'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.'*

Paragraph 201, which relates to instances of 'substantial harm', and states that:

'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.'

Paragraph 202, which relates to instances of 'less than substantial harm', and states that:



‘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.’

Paragraph 203, which relates to non-designated heritage assets, and states that:

‘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 required having regard to the scale of any harm or loss and the significance of the heritage asset.’

20.4.2.2 Local Planning Policy

47. Local planning policy is provided in:

- The East Lindsey Local Plan Core Strategy 2018
 - Strategic Policy 11 – Historic Environment
- South-East Lincolnshire Local Plan 2011-2036
 - Policy 29 The Historic Environment

48. Directly relevant parts of these policies are quoted below, parts of the policy that are not relevant to the archaeology DBA have been omitted:

Strategic Policy 11 – Historic Environment

1. The Council will support proposals that secure the continued protection and enhancement of heritage assets in East Lindsey, contribute to the wider vitality and regeneration of the areas in which they are located and reinforce a strong sense of place.
2. Proposals will be supported where they:
 - Preserve or enhance heritage assets and their setting;
 - Do not harm the site or setting of a Scheduled Monument; any unscheduled nationally important or locally significant archaeological site. Appropriate evaluation, recording or preservation in situ is required and should be undertaken by a suitably qualified party;
 - Preserve or enhance the quality and experience of the historic landscapes and woodland of the District and their setting;
 - Are compatible with the significance of non-designated heritage assets in East Lindsey;
 - Do not have a harmful cumulative impact on heritage assets;
 - Promote a sustainable and viable use which is compatible with the fabric, interior, surroundings and setting of the heritage asset, and;
 - Conserve heritage assets identified as being at risk, ensuring the optimum viable use of an asset is secured where it is consistent with the significance of the heritage asset. This may include redevelopment or enabling development, particularly where a use would benefit the wider. (sic)



Policy 29: The Historic Environment

C. Archaeology and Scheduled Monuments

- 1 Proposals that affect archaeological remains, whether known or potential, designated or non-designated, should take every reasonable step to protect and, where possible, enhance their significance.
- 2 Planning applications for such development should be accompanied by an appropriate and proportionate assessment to understand the potential for and significance of remains, and the impact of development upon them.
- 3 If initial assessment does not provide sufficient information, developers will be required to undertake field evaluation in advance of determination of the application. This may include a range of techniques for both intrusive and non-intrusive evaluation, as appropriate to the site.
- 4 Wherever possible and appropriate, mitigation strategies should ensure the preservation of archaeological remains in-situ. Where this is either not possible or not desirable, provision must be made for preservation by record according to an agreed written scheme of investigation submitted by the developer, undertaken by a suitably qualified person, and approved by the Local Planning Authority.
- 5 Any work undertaken as part of the planning process must be appropriately archived in a way agreed with the Local Planning Authority.

F. Development Proposals

Where a development proposal would affect the significance of a heritage asset (whether designated or non-designated), including any contribution made to its setting, it should be informed by proportionate historic environment assessments and evaluations (such as heritage impact assessments, desk-based appraisals, field evaluation and historic building reports) that:

- 1 identify all heritage assets likely to be affected by the proposal;
- 2 explain the nature and degree of any effect on elements that contribute to their significance and demonstrating how, in order of preference, any harm will be avoided, minimised or mitigated;
- 3 provide a clear explanation and justification for the proposal in order for the harm to be weighed against public benefits.



20.5 Archaeological Baseline

49. This section sets out the archaeological baseline relative to the Order Limits in order to identify known archaeological heritage assets and to inform an understanding of the Project's broader archaeological effects potential.
50. The resources for assessment include HER & PAS data (**Annexes 1-14**), a targeted site walkover survey (**Annex 16**), a LiDAR assessment and aerial photography review (**Annex 17**), a geoarchaeological deposit model including observations from site investigations (**Annex 18**), a magnetometer geophysical survey (**Annex 19**) and an electromagnetic geophysical survey (**Annex 20**).
51. Alongside secondary and primary material included in this section, these sources are considered to provide an extensive and robust baseline on which to consider archaeological potential/risk.
52. With regards to secondary material, a particular acknowledgement is extended to the work of Dr Caitlin Green which is referenced extensively within the body of this report. Our thanks are extended to Dr Caitlin Green and Historic England for sharing a pre-publication copy of *Land on the Edge the landscape evolution of the Lincolnshire coastline* (Green 2023).

20.6 Designated heritage assets

53. No Scheduled Monuments are located within the Order Limits (Figure 20.1.1). The closest Scheduled Monuments to the Order Limits comprise the following.
 - Abbey Hills moated site (NHLE 1016044) located adjacent to a compound and access road in ECC3.
 - Decoy Wood decoy pond (NHLE 1019098) located 30m west of ECC6.
 - Multon Hall (NHLE 1018584) located 100m west of ECC11.

20.7 Geology & Topography

54. The location of the Order Limits on a coastline which has seen significant periods of marine transgression and regression has resulted in complex and thick sequences of interchanging alluvium and peat, covering deeply buried ancient land surfaces.
55. A geoarchaeological deposit model has been prepared to support this Desk Based Assessment (**Annex 18**). This sets out the geological stratigraphy of the Order Limits and identifies zones of archaeological potential (AOP) which will be referenced throughout this report (illustrated in **Annex 18** Figures 47-49). In respect to the bedrock geology of the



Order Limits, the deposit model identifies two specific AOPs where geologies beneath overlying mudflats may have provided potential for greater drainage of the overlying mudflats resulting in more accessible areas within an otherwise wetland/wet zone. These are recorded as AOP D (glaciofluvial deposits) and AOP E (till). In respect to the other identified AOPs it is noted that the zones do not necessarily reference potential within the impact zone of the Project. This will be highlighted where relevant.

56. Warming and episodes of sea flooding since the end of the Mesolithic into the medieval period have deposited substantial deposits of mud flats across the entirety of the Project footprint (AOP A1 and A2). The first period of mudflat deposition occurred during the prehistoric period (A1) when the high-water mark became established 5-10km east of the current coastline (Green 2023). This coastline moved in and out with further episodes of sea transgression and regression (illustrated in **Annex 18** Figure 3).
57. A notable period of regression occurring in the Roman period when the coastline retracted quite substantially. This placed some of the Order Limits into dry land once more. A later phase of mudflat deposition (A2) was post Roman in date when sea flooding into the Anglo Saxon and medieval periods caused the high-water mark to move west again, pushing the Order Limits into more marginal conditions once more with areas of saltmarsh extending across large parts.
58. These dramatic depositional events from the prehistoric period onwards evened out the land surface across the Order Limits. The mud deposits are noted to include interleaving deposits of peat which formed in periods when the depositional environment was less energetic (AOP B).
59. The location of the Order Limits on a coastline which has seen significant periods of marine transgression and regression has resulted in complex and thick sequences of interchanging alluvium and peat, covering deeply buried prehistoric and later land surfaces. The archaeological baseline presented as part of this assessment will therefore need to carefully address the potential depth of deposits with archaeological potential in relation to the proposed construction depths.

20.8 Project Parameters

60. The geoarchaeological deposit model prepared in support of this assessment will be referenced throughout this section with regard to the depth and thicknesses of various deposits. The maximum construction depths considered are as indicated below. These will be considered in this report as a worst-case scenario, it being anticipated that final



engineering solutions (trenchless techniques) may prevent disturbances to these depths. The depth of trenchless entry and exit pits are particularly noted to be worst case with shallower excavations c.2.5m anticipated for other activities.

- Transition Joint Bay – 6m BGL.
- Trenchless technique exit pits – 5m BGL.
- Trenchless technique entry pits – 6m BGL.
- Open cut installation – 3m BGL.
- Joint Bays- 2.5m BGL.
- Haul Road – 0.4m BGL.
- Compounds – 0.4m BGL.
- OnSS – 1m BGL depth (assuming piled solution).
- Landscaping associated with the OnSS - whips planted no deeper than 0.4-0.5m BGL.

61. Other additional areas within the Order Limits include small and detached sections alongside the highway. These are anticipated to comprise some vegetation clearance or minimal disturbance to the highway and are therefore not anticipated to disturb horizons of archaeological potential. These areas are not taken forward for assessment. Also not taken forward for assessment are existing farm tracks included in the Order Limits for preliminary temporary access as no physical works are proposed to these tracks.

20.9 Previous Fieldwork

62. The most significant programme of fieldwork undertaken in the vicinity of the Order Limits is a scheme of works undertaken in respect to onshore works for the Triton Knoll offshore wind farm. The 60km cable route for Triton Knoll making landfall at Anderby Creek and connecting to an OnSS to the south of Boston was given consent in September 2016. It followed a similar alignment to the proposals, albeit Triton Knoll was to the west of the proposals and are extended around the western side of Boston.
63. The archaeological works undertaken in respect to the Triton Knoll scheme were undertaken post consent. The onshore cable route was subject to a geophysical survey in 2017. Trial trenching was undertaken between July and December 2017. This comprised a total of 353 trial trenches (30-40m long and 1.6-2m wide). Limited evidence for prehistoric remains was recorded. Remains recorded related to Late Iron Age/Roman salterns recorded on the edge of former saltmarsh creeks, Roman settlement, Roman inhumations including a possible funeral pyre and medieval features (Allen Archaeology 2018).



64. Roman settlement was recorded on relatively elevated land (on a roddon or fen island) 960m west of ECC1 (1.6km south-west of landfall). Remains were recorded 1.5m below ground level (bgl). Remains included stakeholes and ditches containing animal bone with butchery marks. Overlying medieval activity referenced by pottery assemblages including Toynton ware and South Lincolnshire ware was also recorded.
65. The possible pyre and Roman inhumations were recorded 290m west of ECC2, 1.5k south-west of Slackholme. These were beneath a marine deposit at 1.15m below ground level.
66. The salterns were recorded to the west of segment ECC 2. The top of the saltern mounds were recorded at 0.76m below ground level 930m west of Slackholme. At the southern end of ECC2 the top of a saltern mound was recorded at 1m below ground level, 500m west of the Order Limits.
67. Excavations of Roman settlements and a barrow were undertaken in 2018 and 2019.
68. Previous fieldwork undertaken in the vicinity of the Order Limits has also included a number of small-scale watching briefs undertaken ahead of small residential developments. Some fieldwalking and watching briefs have been undertaken ahead of infrastructure schemes. Proposed windfarm developments have been subject to geophysical survey and some isolated research led events have occurred. The fieldwork in closest proximity to the Order Limits is referenced below with regard to the closest segments.

20.9.1 ECC1

69. In 2007 a magnetometer geophysical survey undertaken in respect to a proposed wind farm surveyed seven turbine bases within and adjacent to the Order Limits at landfall. No archaeological anomalies were recorded.
70. In 2011, 500m east of ECC1/2 a watching brief was undertaken during a housing development at Hogsthorpe. No archaeological finds or features were recorded.

20.9.2 ECC2

71. To the south of Hogsthorpe 150m north of ECC2, an excavation undertaken in the 1970s recorded an Iron Age saltern. This was recorded as being affected by flooding with later Romano British agricultural activity being apparent.
72. Thirteen testpits were excavated ahead of a proposed new fishing lake in 2020, 170m to the east of ECC2. No archaeological remains were recorded.



73. Fieldwalking was undertaken ahead of the proposed Addelthorpe northern bypass in 1998, 300m east of ECC2. Works also included an earthwork survey of ridge and furrow and an archaeological watching brief during construction. This recorded numerous archaeological remains.
74. An earthwork survey was undertaken on the site of a proposed windfarm 300m west of ECC2/3.

20.9.3 ECC3

75. Medieval occupation remains 400m east of ECC3, affected by the Ingoldwells rising main, were recorded through earthwork survey in 1993.

20.9.4 ECC3/4

76. The proposed route of the Burgh Le Marsh bypass, 500m west of ECC3/4 was subject to fieldwalking in 2003. A number of medieval pottery scatters were recorded.

20.9.5 ECC5

77. Fieldwalking undertaken in 2006 of a field 700m south of ECC5 recorded medieval and post medieval pottery indicative of manuring scatters.

20.9.6 ECC7

78. Trial trenching undertaken in 2021 comprised the excavation of seven trial trenches, 430m south of the ECC. No archaeological remains were recorded.

20.9.7 ECC7/8

79. A watching brief undertaken in 2001, 700m north of the ECC, recorded no archaeological remains.

20.9.8 ECC8

80. Seven trial trenches were excavated in 2002 1.3km south of the ECC. These were excavated over geophysical anomalies and recorded evidence for late Saxon activity. A watching brief was conducted 1.2km north of the ECC in 2014. No archaeological remains were recorded. Archaeological evaluation within Old Leake has recorded remains of Anglo Saxon and medieval date 900m south of the ECC.

20.9.9 ECC9

81. Medieval pottery was recovered through fieldwalking undertaken in 1994 at Buttewick, 600m east of the ECC.



82. Medieval and possible late Saxon features were recorded through a watching brief undertaken 650m west of the ECC in the centre of Freiston.

20.9.10 ECC10

83. A test pit dug at Bank House Farm in 2010, 100m north-west of the ECC, recorded two medieval and four post medieval finds.
84. Excavations undertaken 260m south of the ECC in 1968/70 recorded Roman corn drying kilns.

20.9.11 ECC14

85. Three trial trenches were excavated 1.7km west of ECC14 in 2018. These recorded medieval and post medieval ditches and finds.

20.10 Chronological Background

86. The following provides a summary of the known archaeological potential of the Order Limits as drawn from the sources listed in Section 20.3.1.2.

20.10.1 Prehistoric

87. During the last ice age, c.17,000-years ago, the now eastern coast of Lincolnshire and alignment of the Order Limits was covered by a glacier. As glacial conditions retreated around 12,000-years ago, lower sea levels, 60m below the present Ordnance Datum, meant that Lincolnshire was joined to the continental mass of Europe by a low-lying alluvial plain known as 'Doggerland'. The initial post glacial tundra across Doggerland evolved into pine and birch woodland and later mixed deciduous forest as the climatic conditions warmed.
88. During the early Mesolithic period, Doggerland was subject to seasonal migrations of animal herds potentially pursued by bands of mobile hunter gatherers. These conditions persisted up until the late Mesolithic period, c.7,000 BC. The Order Limits at this time would have been wholly dry with transient or persistent activity of Palaeolithic and Mesolithic date possible across the entire footprint of the Order Limits.
89. Sea level rise from this time saw Doggerland beginning to be inundated and by c.6,200 BC Britain was separated from Europe. The nature of the flooding across the Order Limits is likely to have seen flooding of the southern parts of the boundary earlier than the parts north of Skegness. Flooding around the landfall area of the Order Limits had begun in the Neolithic period, see **Plate 1** (Green 2023: Figure 92).



90. On the areas of lower ground occupied by the majority of the Order Limits the Neolithic and Bronze Age environment was likely characterised by tidal creeks across mudflats and saltmarshes, if not open water. At Chapel St Leonards, Skegness and other elevated areas nearby the northern part of the Order Limits such as at Burgh Le Marsh, dry islands of raised ground may have persisted above the waters and saw the preservation of the woodland and opportunity for Neolithic and Bronze Age exploitation. For example, woodland at Chapel St Leonards appears to have survived flooding until 3,370-3,020 BC. Some Neolithic and Bronze Age potential may therefore exist within elevated areas within the northern part of the Order Limits.
91. Throughout the Neolithic period the flooding continued albeit at a slower pace. Deposits of mud laid down during this period are recorded as the earlier mudflat in the deposit modelling (A1) and could hold potential for archaeological remains attesting to transient activity. By 2,000 BC the high-water mark lay significantly further inland than the current coastline south of ECC2. Some dry islands may have projected above the waters, such as at Fishtoft in the south at ECC10, but the majority of the ES south of Hogsthorpe was likely beyond the eastern edge of the dryland by the Neolithic period with this area characterised as saltmarsh/sand and mudflats (Green. C 2022, pers comm., 18 Nov), see **Plate 2**.
92. During the Bronze Age some marine regression may have taken place and towards the end of the period and during the Iron Age, it is likely that the footprint of the Order Limits, certainly in the northern part, was predominantly dry land again such that occupation sites may be possible, albeit sealed beneath a later phase of mud flat deposition which is likely to be post Roman (deposit A2).
93. From this time, salt making, which may have originated in the Bronze Age, became widespread at tidal creeks. Saltwater was collected in pottery troughs balanced with clay supports and fired over hearths fuelled by brushwood and stoked with peat. As salt crystals formed, they were transferred to dry vessels and parcelled up for use/trade. The process resulted substantial waste comprising broken pottery and baked clay. It is extensive deposits of this 'litter' or briquetage often building up into a low mound which identifies a salt making site.
94. In summary, across the Order Limits, the layers of mud deposited with repeated episodes of marine ingressions eventually deeply buried the Palaeolithic, Mesolithic and Neolithic land surfaces. The majority of the Project parameters would not affect this deeply buried land surface. The overlying mud deposit (deposit A1) may hold some potential for transient



activity within its stratigraphy and on its surface but south of the Hogsthorpe area the Order Limits were some distance east of the Neolithic high-water mark. The top surface of the deposit may also hold some potential for later prehistoric activity of a more permanent nature, possibly Bronze Age but more likely Iron Age. This surface may be present at a relatively shallower depth within some of the Project parameters beneath a post Roman mudflat deposition (deposit A2).

20.10.1.1 ECC1 – Prehistoric

95. In the late Palaeolithic period and through the Mesolithic period, the segment would have been dry. The late Mesolithic coastline thought to have remained to the east of the segment. Due to subsequent inundation events, deposit modelling records that the Pleistocene land surfaces, which could potentially contain Palaeolithic and Mesolithic flint artefacts, would be present in excess of 6m and therefore outside of the project parameters (**Annex 18** Figure 50).
96. In reference to these periods, a possible upper Palaeolithic or Mesolithic worked flint is recorded by the PAS at Chapel St Leonards 2km south of landfall and a lower Palaeolithic blade has been retrieved from Anderby 590m north of landfall (HER reference MLI43430).
97. During the Mesolithic/Neolithic transition the area at landfall is likely to have become tidal and/or part of a saltmarsh which persisted until at least the Late Bronze Age/Early Iron Age (Green 2023: Figure 92), see **Plates 1 and 2**. The geophysical survey shows a palaeochannel crossing the segment at landfall in accordance with a tidal creek at landfall (**Annex 19**, Figure 14). This is likely to relate to a substantial watercourse/tidal creek of this period. Including at landfall, the northern half of the segment was probably subject to some sea flooding from the early Neolithic period onwards and the LiDAR assessment records a general trend for potential palaeochannels in the northern and central parts of the segment in accordance with a potential network of watercourses which may have originated during this period. Tidal areas or areas under salt marsh may have been utilised for salt making activities during this period.
98. The geophysical survey records a series of anomalies to the west of the 'Roman Bank' (a medieval sea wall) at landfall. These may relate to the palaeochannel to their immediate north or to the later sea wall. These are approximately perpendicular to the wall and parallel to the southern bank of the palaeochannel referenced above and extend as a series of small enclosures. If these do relate to activity of this period, they could relate to salt making of possible Iron Age date (**Annex 19**, Figure 14). The geophysical survey has identified these



specific anomalies as area of archaeological interest 1 (**Annex 19** Figure 8). These are located within a primary construction compound and would be crossed by a temporary access track (see **Figure 3.4 (document reference 6.2.3.4).3**).

99. Dryland conditions may have persisted in some higher areas in the southern half of the segment and some Neolithic and Bronze Age activity within the southern half of the segment cannot be discounted before later inundation.
100. A Neolithic flint knife is recorded within the landfall area (PAS), a Neolithic axe 1.2km north (HER reference MLI43464) and an early Neolithic to Late Bronze Age worked flint 710m south (HER reference MLI41613).
101. The marine ingress which occurred from the end of the Neolithic period led to the deposition of tidal mudflats (deposit A1) 2-4m in thickness across the northern two thirds of the segment (**Annex 18** Figure 22). Shallower deposits of 0-2m were deposited across the southern third where Green's mapping indicates that the southern half of the segment may have remained dry into the late Bronze Age, see **Plate 2** (Green 2023: Figure 92). Notably in this potential area of dry land the HER records a Bronze Age axe 1.1km east of the segment (HER reference MLI41964) and a Bronze Age dagger 2km east (HER reference MLI41622). These are in the vicinity of Chapel St Leonards which occupied a more elevated area of raised land during this time and was most likely a focus of activity. The relatively lowland nature of the rest of the segment would indicate a lesser potential for permanent or persistent activity during the Neolithic and Bronze Age periods albeit it cannot be discounted. Transient activity within a wetland zone may be possible.
102. Some sea regression towards the end of the period may have brought the majority of the segment into dry or drier conditions again such that later activity of Iron Age date is possible. Notably an Iron Age ditch (HER reference MLI82497) is recorded 760m south of the southern end of the segment. These remains are anticipated to be covered by a later post Roman flooding phase covering the segment with a mudflat (AOP A2) approximately 0.5-4m thick. The geophysical survey records some other isolated anomalies of possible archaeological or undetermined origin towards the southern end of the segment either side of Lowgate Road and an isolated undetermined anomaly to the north of the A52. These could relate to activity of prehistoric date, but this is uncertain (**Annex 19**, Figure 35).
103. An area of peat is recorded at the southern end of the segment which could hold prehistoric and palaeoenvironmental potential (**Annex 18** Figure 47). No peat was noted at landfall during the monitoring of site investigations, but at the location of the TJB precautionary



modelling indicates that deposits 0-0.5m thick from a depth of 1.5m BGL (**Annex 18** Figures 23 & 24 on the basis that the TJB is at 1.5m aOD)

104. An area of better draining geology is recorded at landfall (AOP D **Annex 18** Figure 47) which may have made it more attractive for activity during the earlier parts of the period prior to inundation. This also concurs with an area of drier land recorded by electromagnetic survey (**Annex 19** Figure 17). However, Palaeolithic/ Mesolithic surfaces would be in excess of 6m BGL, at a depth not achieved by the cable cut, and therefore these would not be exposed. However, elsewhere within the segment the Pleistocene land surface may be shallow enough to be affected. Specifically, this would be within an isolated area of the cable cut around Authorpe Row and trenchless entry and exit pits in the southern and central parts of the segment (**Annex 18** Figure 50). In the south of the segment an AOP E could correlate with these pockets.
105. With regards to the later mudflat AOP A2, the southern half of the ECC may breach the deposit and expose deposits of later prehistoric potential. The joint bays in the southern half of the segment and the segment wide trenchless entry and exit pits would potentially expose later prehistoric activity. This potential also exists at the transition joint bay.

20.10.1.2 ECC2 - Prehistoric

106. In the late Palaeolithic period, the segment would have been dry, and in the late Mesolithic, the high-water mark continued to be east of the segment. Therefore, land surfaces, present at depth, may hold Palaeolithic and Mesolithic potential.
107. However, during the Neolithic period the area was subject to sea flooding with the deposition of c. 2-4m of tidal mudflats (AOP A1) (**Annex 18** Figure 22). The predominantly low-lying nature of the land within the footprint of the segment was likely under tidal or, in periods of regression marshy conditions during the late Neolithic and Bronze Age periods, see **Plates 1 & 2**.
108. In general, the area of the ES south of Hogsthorpe was likely saltmarsh/sand and mudflats for much of the middle and later prehistoric period with archaeological potential limited to possible transient remains of early date beneath AOP A1 and between AOP A1 and A2 and salterns at the base of AOP A2.
109. The HER does not record any assets of prehistoric date within the boundary of the segment. Findspots within the study area include a Neolithic/Bronze Age scraper recorded by the PAS



at Chapel St Leonards and a Bronze Age axe fragment recorded 1km east at Hogsthorpe (MLI41964).

110. Other findspots reference briquetage which attest to possible salterns and whilst two (1km south and 1.7km south-west) have been recorded with broad dates including the Early Bronze Age and Neolithic period, based on overall potential they are most likely to be Iron Age in origin if they do precede the Roman period (MLI41952 & MLI43668). Indeed, Iron Age salterns are recorded on both sides of the study area and include sites 140m east, 590m west and 640m west of the Order Limits (MLI41953, MLI41948 & MLI88786).
111. At the northern end of the segment one particular saltern between the Order Limits and Hogsthorpe, 150m north of the ECC, was subject to excavation in the 1970's. The remains of a hearth at 1.5m BGL were recorded to be 6th century BC in date. This was covered by a spread of briquetage at a depth of 1m BGL. Evidence for flooding was recorded and later evidence for Romano-British agricultural activity (Kirkhan 1981). This is likely to be representative of widespread salt making activity, potentially with a greater focus in the south of the segment in reference to a larger saltmarsh channel crossing this part of the segment (the Schalflet). These remains would be sealed between the tidal mudflat deposits A1 and be beneath deposit A2. Notably, some geophysical anomalies may reference some areas of quarrying or salterns at the southern end of the segment, but these remain undated.
112. Some sea regression towards the end of the period may have brought the segment into dry conditions again such that later activity of Iron Age date is possible over the earlier deposits of mud (A1) but covered by the later post Roman flooding phase (A2). A high density of geophysical anomalies in part of the route south-west and south of Hogsthorpe may relate to activity originating in the later part of this period and reference a multi-phase complex of Iron Age/Roman origin (**Annex 19** Figure 49). Within the geophysical survey this is recorded as area of archaeological interest 2 and includes penannular geophysical anomalies and enclosures indicative of occupation and agricultural activity (**Annex 19** Figure 49) . Possible stone building foundations are recorded and an area of industrial activity (probably salt making) adjacent to a possible palaeochannel inferred from electromagnetic survey. The electromagnetic survey is notable in its correlation of low conductivity (dry conditions) with a significant number of the magnetometer anomalies. The aerial photographic assessment undertaken to validate the results of the geophysical survey also recorded anomalies in this location (**Annex 17**). These anomalies are located within an area which would be affected by open cut or trenchless works, cable installation compounds and a haul road (see **Figure 3.4 (document reference 6.2.3.4)**).



113. Anomalies to the north-west (**Annex 19** Figure 42) and a possible LiDAR anomaly of a semi-oval earthwork (**Annex 17** LiDAR feature 13) may relate, but this is uncertain.
114. The subcircular anomalies recorded either side of Marsh Lane extend and extending into area of archaeological interest 4 of the geophysical survey may reference salterns of late prehistoric date (**Annex 19** Figures 8 and 63). Proposals at this location include open cut or trenchless works (Figure 3.4 (document reference 6.2.3.4).10).
115. Two areas of peat are recorded which may hold particular potential for organic remains relating to this period. These are located at the northern end of the segment at Hogsthorpe where monitoring of site investigations recorded peat to the north of the Willoughby Drain. Clayey amorphous peat was recorded 1.9m BGL. Black fibrous peat with frequent plant remains was recorded 2.9m BGL. Peat is also at the southern end of the segment (**Annex 18** Figure 47). This could be at a depth of 3m. These are thought to have formed in hollows of a wetland/dryland area and sit between two phases of tidal mudflats and so in this area are likely to be no earlier than Neolithic in date. This is likely to represent a mere and may hold a potential for organic remains relating to this period.
116. Whilst the deposit modelling records that glaciofluvial deposits of Palaeolithic/Mesolithic potential could be present within the segment, these would be at a depth not achieved by the cable cut or the joint bays. However, all the trenchless entry pits could expose these layers apart from in the extreme north of the segment. The trenchless exit pits in the central and southern parts of the segment could also expose these layers (see **Annex 18** Figure 50). With regards to later prehistoric deposits, it is likely that these would be limited to the Iron Age date and would be high enough within the stratigraphy to be potentially affected by the project; the segment wide open cut trench, all trenchless entry and exit pits and joint bays (except the joint bays at the northern end of the segment).

20.10.1.3 ECC3 - Prehistoric

117. In the late Palaeolithic period and through the Mesolithic period, the segment would have been dry, with the late Mesolithic coastline to the east of the segment. Therefore, these land surfaces hold Palaeolithic and Mesolithic potential. In reference to this earlier transient activity, findspots within the study area include a Palaeolithic implement recorded 1.8km east of the Order Limits (HER reference MLI41804).
118. During the Neolithic period the area was subject to sea flooding and salt marsh conditions with only the fringes of the segment in proximity to higher ground at Burgh Le Marsh to the west potentially remaining drier with salt marsh conditions dominating elsewhere by the Late



Bronze Age/Early Iron Age (see **Plate 2**). The low-lying nature of the land within the footprint of the Order Limits was likely wholly under salt marsh conditions from the Neolithic and Bronze Age period. These areas may have been exploited on a transient nature or potentially for salt making activity by the Iron Age period. The geophysical survey shows a palaeochannel crossing the segment which may accord with the tidal creek crossing the segment on **Plates 1 & 2**. The LiDAR assessment also records a general trend for potential palaeochannels across the segment in accordance with a potential network of watercourses which may have originated during this period.

119. It is likely that Neolithic and Bronze Age permanent activity was focused elsewhere, for example potentially on higher ground at Burgh-le-Marsh where higher ground provided for favourable conditions. At Burgh le Marsh the HER records evidence for Mesolithic flint knapping (MLI81410 & MLI42931), a possible Upper Palaeolithic lithic (MLI98787), Neolithic pottery (MLI89560) and Early Neolithic to Late Bronze worked flints (MLI81409). The PAS also records part of a Bronze Age axe from the edge of the town and four Iron Age finds including two coins and a brooch.
120. Other finds recorded by the PAS include an Iron Age horse fitting and a possible torc. These are recorded 600m west of the Order Limits to the east of Burgle le Marsh. If these were from the same findspot they may reference a possible burial, but this is uncertain.
121. Other findspots on the HER reference briquetage. This references the anticipated possible salterns which may be evidenced by remains at the basal deposits of A2 which could be within the construction zone of the cable trench in the southern part of the segment. Notably, five undated saltern sites are recorded on the edge of the Order Limits. On the basis of the rest of the baseline these are likely to be of Iron Age date (HER reference MLI41950). A number of Iron Age salterns are recorded predominantly to the east of the Order Limits, but also to the west. These include an Iron Age saltern 215m east, 230m east and 450m east (MLI41694 & MLI42843 & MLI41693). Further potential salterns of possible Iron Age origin are also located further to the east of the study area, 780m -1.9km east of the Order Limits (HER references MLI41803, MLI81286, MLI116157, MLI994488, MLI41802 and MLI41801). This potentially indicates a moving coastline during this period, possibly receding eastwards towards the end of the period. Geophysical survey records possible quarries or salterns in the north of the segment. These are undated but could reference activity of Iron Age date.



122. This sea regression towards the end of the period may have brought the segment into dry conditions again such that later occupation activity of Iron Age date may be present beneath a later post Roman flooding phase (A2).
123. Two areas of near surface peat are recorded which may hold particular potential for organic remains relating to this period. A significant area of peat is recorded across the northern half of the segment (**Annex 18** Figures 47). This may be less than 2m below ground. Observations of the site investigations recorded it as desiccated at 1.9m BGL but damp with shells and vegetation at 2.6m BGL. A further area is located at the southern end of the segment (**Annex 18** Figure 47). These are thought to have formed in hollows of a wetland/dryland area and sit between two phases of tidal mudflats and so in this area are likely to be no earlier than Neolithic in date. This is likely to represent a mere and may hold a potential for organic remains relating to this period.
124. Deposit modelling records that glaciofluvial deposits of Palaeolithic/Mesolithic potential could be present within the Project parameters in the centre of the segment at Nettle Hill. At this location any trenchless entry and exit pits may reach the Pleistocene land surface (**Annex 18** Figure 50). It is noted within the deposit model that a lack of data may under-represent the potential for these deposits elsewhere within the segment and the Project parameters.
125. In respect to later deposits the tidal mudflats (A2) these could be breached by the segment wide cable cut, joint bays and trenchless entry and exit pits (**Annex 18** Figure 53).

20.10.1.4 ECC4 - Prehistoric

126. In the late Palaeolithic period, the segment would have been dry and as such, there is potential for Palaeolithic land surfaces, which could potentially contain Palaeolithic flint artefacts, to be present.
127. The segment transitioned from dry to wet during the Mesolithic/Neolithic period. By the early Neolithic the Order Limits was within the salt marsh, see **Plate 1**. The low-lying nature of the land within the footprint of the Order Limits was likely under tidal or under marshy conditions for much of the time with activity being transient in nature or limited to salt making. The LiDAR assessment confirms the presence of tidal creeks crossing the segment in accordance with Green's mapping and the geophysical survey verifies one of the creeks at the northern end of the segment.
128. Overall, Neolithic and Bronze Age permanent activity was likely focused elsewhere, for example potentially on higher and better draining ground at Burgh-le-Marsh to the west of



the northern end of the segment where elevation rises significantly from that within the segment footprint and where baseline evidence referenced above relates to activity of this period.

129. Some sea regression towards the end of the period may have brought the segment into dry conditions again such that later activity of Iron Age date is possible over the earlier deposits of mud (A1) but covered by a later post Roman flooding phase (A2). Iron Age salterns are recorded 230m east and 460m east of the segment (MLI41694 & MLI41693) and further evidence is possible at the basal layer of deposit A2. The geophysical survey does record some anomalies at the southern end of the segment which may relate to salterns or quarrying activity. These are undated but could reference activity of this date.
130. Evidence for extensive settlement originating in the Iron Age is recorded 1.7km west of the segment (south of Burgh le Marsh) (MLI99129). This has been recorded through archaeological fieldwork on the edge of a localised area of higher ground on the 5m AOD contour. The fieldwork included geophysical (magnetometer) survey which indicated the presence of a series of enclosures. Subsequent trial trenching recorded a significant assemblage of Late Iron Age and Romano-British pottery, a large animal bone assemblage dominated by cattle bone and evidence for a settlement associated with cereal production and industrial activity.
131. A single area of peat is recorded in the extreme northern part of the segment. This is likely to represent a mere and may hold a potential for organic remains relating to this period (**Annex 18** Figure 47).
132. Deposit modelling does not record the presence of glaciofluvial deposits of Palaeolithic/Mesolithic potential that could be present within the Project parameters. It is noted within the deposit model that a lack of data may under-represent the potential for these deposits within the segment and the Project parameters.
133. The relatively shallow thickness of tidal mudflats (A2) recorded in this segment at 1-1.5m, could render deposits of potential exposed by the proposed cable cut (**Annex 18** Figure 53). The joint bays and trenchless entry and exit pits could also breach deposit A2 and potentially disturb deposits with later prehistoric potential.



20.10.1.5 ECC5 - Prehistoric

134. In the late Palaeolithic period, the segment would have been dry and as such, there is potential for Palaeolithic land surfaces, which could potentially contain Palaeolithic flint artefacts, to be present at depth.
135. The segment transitioned from dry land to saltmarsh conditions during the Mesolithic/Neolithic period, see **Plate 1**. Some early Neolithic potential may have existed on an area to the south of the segment, in the general vicinity of Wainfleet All Saints, see **Plate 1**. In general, however the area was likely under tidal creeks or to the east of the high-water mark. Any permanent activity of Neolithic or Bronze Age date was likely focused on the higher ground particularly at Burgh Le Marsh, north of the northern end of the segment which has been discussed above. At this location, elevation rises significantly from that within the segment footprint.
136. The geophysical survey and LiDAR assessment show a number of palaeochannels crossing the segment which are likely to accord with watercourses which may have originated during this period, although a later date relating to a post Roman phase may also be possible.
137. Some sea regression during the Bronze Age may have allowed more stable conditions and the accumulation of peat towards the end of the period. During the Iron Age, drier or semi dry conditions may have returned as the coastline continued to recede east. Geophysical anomalies to the east of the Order Limits, surveyed according to a previous iteration of the Project boundary, may evidence activity which could relate to late settlement and farming activity of this period (**Annex 19** Figures 105 & 112). These are located 60-200m east of the Order Limits.
138. Other anomalies which could reference agricultural or occupation activity of late prehistoric date are located within the Order Limits near to Croft (**Annex 19** Figure 119). This is recorded as part of area of archaeological interest 6 (**Annex 19** Figure 9). This is noted to be within an area of trenchless works (Figure 3.4 (document reference 6.2.3.4).17). To the western end of the segment enclosures of uncertain date are recorded to the northern bank of the Wainfleet Haven (**Annex 19** Figure 133). These are recorded as part of area of archaeological interest 8 which extends into segment ECC6. These are also located within an area of trenchless works (Figure 3.4 (document reference 6.2.3.4).19).
139. Further geophysical anomalies possibly relating to probable salterns are located in the northern and central parts of the segment within areas of archaeological interest 6 and 7 (**Annex 19** Figures 9, 98 & 126). Again, these are undated but could be of later prehistoric



date. These would be affected by open cut or trenchless works and a haul road (Figures 4.7.16 and 4.7.18).

140. As discussed above, evidence for extensive settlement originating in the Iron Age is recorded just north of the 2km study area (south of Burgh le Marsh) (MLI99129). This has been recorded through archaeological fieldwork on the edge of a localised area of higher ground on the 5m AOD contour.
141. A single area of peat is recorded at the southern end of the segment. This may hold a potential for organic remains relating to this period (**Annex 18** Figure 48). Monitoring of site investigations at this locality recorded pseudo fibrous peat with occasional woody remains at 1.75m BGL and damp peat with clumps of vegetation at 1.9m BGL.
142. Deposit modelling records that glaciofluvial deposits of Mesolithic/Palaeolithic potential could be exposed within the Project parameters, specifically trenchless entry pits across the segment apart from its extreme western end and all trenchless exit pits except at the eastern and western ends of the segment. These interventions may reach the Pleistocene land surface (**Annex 18** Figure 50).
143. The potential late prehistoric land surface is covered by 0-3m of mud (A2) across the segment. Works associated with the cable open and all joint bays and trenchless entry and exit pits could expose deposits of Roman date.

20.10.1.6 ECC6 – Prehistoric

144. In the late Palaeolithic period, the segment would have been dry. Deposit modelling records that glaciofluvial deposits of Palaeolithic/Mesolithic potential could be present within the western third of the segment at depth (**Annex 18** Figure 51).
145. The segment transitioned from dry land to salt marsh during the Mesolithic/Neolithic period. By the early Bronze Age, the segment lying at below c.2.5m AOD was likely within the extensive salt marsh. Indeed, the majority of the footprint of the segment was likely within the waters of a wide tidal creek 1.5km wide, see **Plate 3** (Green 2023: Figure 81). The geophysical survey records a number of palaeochannels within the footprint of the roddon recorded by Green as does the LiDAR assessment. The geophysical survey also records enclosures of a possible field system of unknown date at the northern end of the segment. This is recorded as area of archaeological interest 8 which extends to the north into segment ECC5 (**Annex 19** Figures 9, 133 & 140).



146. Reference to Neolithic hand axes 1.7km north and 1.6km west, and Bronze Age axes further inland 1.8km north-west, may indicate some early clearance before inundation or persistence on isolated areas of higher ground (MLI42256, 41782 & 42251). The regression of the sea during the Bronze Age and the deposition of peat by the Iron Age, potentially brought the segment into habitable or transient conditions once more – Iron Age salterns are known some distance to the east indicating potential dry land conditions in this area at the end of the period.
147. The thickness of tidal mudflats (deposit A2) recorded in this segment at 2-4m (**Annex 18** Figure 54). The open cut trench, joint bays and trenchless entry and exit pits would have the potential to breach the deposit and expose later prehistoric activity. Within the western third of the segment, the trenchless entry and exit pits may also reach the Pleistocene land surface (**Annex 18** Figure 51).

20.10.1.7 ECC7 - Prehistoric

148. In the late Palaeolithic period, the segment would have been dry. Deposit modelling records that glaciofluvial deposits of Mesolithic/Palaeolithic potential could be present within the Project parameters (see **Annex 18** Figure 51).
149. The segment transitioned from dry land to salt marsh during the Mesolithic/Neolithic period. By the early Bronze Age, the segment, lying at below c.2.5m AOD, was likely within the extensive salt marsh. Indeed, tributaries from a wide Neolithic/Early Bronze Age tidal creek are recorded as extending along the segment, see **Plate 3** (Green 2023: Figure 81). Further prehistoric systems are recorded by Green. These are verified by a large number of palaeochannels recorded by the LiDAR survey and examples also recorded in the geophysical survey.
150. Activity within the vicinity of the segment during this period appears to have been focused on islands of higher ground including a foci at Wrangle (1.5km south) where Neolithic and Bronze Age worked flint has been recovered (MLI13169, 12816, 13252, 13198 & 81217).
151. Some marine regression is known to have allowed the formation of peat within a more stable zone during the Bronze Age and pottery sherds of Bronze Age date have also been recorded 860m north of the segment (MLI13192 & 13196). Some occupation in the former wetland zone as conditions became more hospitable towards the Bronze Age/Iron Age cannot be wholly ruled out.



152. By the Iron Age another system of salt marsh creeks had extended across the southern half of the segment (**Plate 4**) (Green 2003: Figure 82) and a large number of Iron Age salt making sites are recorded either side of the segment footprint. These include one to the immediate east of the segment referenced as revealing evidence of salt making during deep ploughing (MLI12805). Other salterns within the study area have recorded evidence for associated settlement. These are recorded 370m south and 1.5km west of the segment (MLI13257 & MLI13155).
153. A single area of peat is recorded in the central part of the segment. This may hold a potential for organic remains relating to this period (**Annex 18** Figure 48). The monitoring of site investigations in this vicinity recorded desiccated peat with occasional bark and leaves at 1.3m BGL, peaty pockets at 1.5m BGL and pockets of peat with rare to occasional plant remains at 2m BGL.
154. The A2 deposits which represent mudflats which seal the later prehistoric activity, would be breached by the cable cut, the joint bays and the trenchless launch and receive pits. With regards to earlier prehistoric land surfaces sealed by A1 deposits, these may be exposed by joint bays and the cable cut to the north of Friskney and all trenchless entry and exit pits across the segment.

20.10.1.8 ECC8 - Prehistoric

155. In the late Palaeolithic period, the segment would have been dry. Deposit modelling records that glaciofluvial deposits of Mesolithic/Palaeolithic potential could be present within the Project parameters (see **Annex 18** Figure 51).
156. By the early Bronze Age, the area was under salt marsh which had been created by marine flooding which began around 4,000 BC.
157. Only raised islands in the marsh were permanently habitable. This included Wrangle to the east of the segment where findspots of prehistoric worked flint are recorded on the HER. Some marine regression, known from the formation of peat during the Bronze Age may have facilitated an extension of activity into the marshes particularly in a possible raised area of ground across the centre of the segment where the deposit model records an area of glaciofluvial deposits (AOP D), recorded at a depth of in excess of 2m BGL. Bronze Age hammers recorded 160m north of the segment and 560m east may attest to some activity associated with activity within the peatland zone (MLI12813 & MLI12814).



158. By the Iron Age another system of salt marsh creeks had extended across the segment, see **Plate 4** (Green 2023: Figure 82). A number of palaeochannels recorded by the LiDAR survey and examples also recorded in the geophysical survey are likely to reference the watercourses of this period. A large number of Iron Age salt making sites are recorded either side of the segment footprint. These include one within the footprint of the segment referenced as revealing evidence of salt making through the retrieval of briquetage from red soil (MLI13158).
159. The Project parameters have the potential to impact upon glaciofluvial deposits of Mesolithic/Palaeolithic potential, specifically joint bays and cable cut in the eastern half of the segment and all trenchless entry and exit pits. The glaciofluvial deposit recorded (AOP D) within this segment may reference an area of better draining geology which may have been more attractive for activity relative to adjacent areas.
160. The overlying tidal deposits (deposit A2) could reveal later prehistoric remains. These could be exposed by the cable cut, the joint bays and the trenchless entry and exit pits.

20.10.1.9 ECC9 - Prehistoric

161. The footprint of this segment was predominantly within the huge prehistoric course of the River Witham and its large tributary creeks (Green 2023: Figure 82), see **Plate 4**. Borehole surveys have recorded the depth of the roddon at 18m (Green 2023).
162. The HER does not record any evidence for prehistoric activity, likely due to its prehistoric geography which saw the Neolithic coastline much further in land but the deposit model indicates that the Pleistocene land surface (potentially predating the river) may be shallow enough at discrete locations in the extreme north of the segment and in the south around the area of Freiston, such that the trenchless launch and receive pits could expose surfaces of early prehistoric potential.
163. Potential for activity dating to the Neolithic and subsequent parts of the prehistoric period is anticipated to be severely restricted due to inundation but some potential may exist at riverside locations in the extreme north and south of the segment for transient evidence such as fishtraps. These could be exposed by the trenchless launch and receive pits in the north and south of the segment. The monitoring of site investigations recorded damp pockets of peat 2.5m BGL at the northern extremity of the segment. The later prehistoric land surface could be exposed by the cable cut (apart from an area in the north around Ings Road), the joint bays and the trenchless entry and exit pits.



164. The LiDAR assessment verifies the presence of a large number of palaeochannels in the northern half of the segment which may relate to systems of this date. Geophysical survey has also recorded evidence for palaeochannels in the northern part of the segment.

20.10.1.10 ECC10 - Prehistoric

165. The footprint of this segment was to the south of the huge prehistoric course of the River Witham (Green 2023: Figure 82), see **Plate 4**.
166. The higher parts of the late Pleistocene land surface at c.10,000 BC mapped in the deposit model (**Annex 18** Figures 38 and 52) shows the southern half of the segment in-particular rising in elevation above the River Witham. This illustrates that the southern part of the segment occupied an area of relatively higher ground above the wide prehistoric course of the River Witham to the north. This land surface is anticipated to be in excess of 2.5m BGL.
167. By the end of or during the Neolithic period, the footprint of the segment area was likely inundated and 2-4m of tidal mudflats were deposited across the segment (deposit A1) (**Annex 18** Figure 42). This is reflected by all the HER entries referencing activity to the west of the Order Limits, inferring that by this period, this part of the Order Limits was probably tidal or under saltmarsh conditions. The LiDAR assessment references some potential palaeochannels but these are much sparser than in segments to the north. Activity on these mudflats may include salterns and remains associated with transient activity such as flints or organic remains such as fishtraps.
168. A number of lithics attesting to prehistoric activity are recorded at Fishtoft towards the western boundary of the study area. These include a small Mesolithic assemblage 640m west of the Order Limits (MLI12736) and a Mesolithic/Neolithic worked flint 1.2km west (MLI97622). Neolithic flint implements are recorded 650-820m west (MLI12731, MLI12738 & MLI90671). Neolithic/Bronze Age flints are recorded 790m-1km west (MLI12732, MLI97624 & MLI97625). Middle to Late Bronze Age artefacts are recorded 540m, 570m & 950m west (MLI12741, MLI12759 & MLI84622) and a Bronze Age/Iron Age whetstone is recorded 1km west (MLI12740). The PAS does not record any evidence for prehistoric activity within the study area.
169. Lenses of peat are possible, and a particular area of potential is present at the southern end of the segment (**Annex 18** Figure 49). Due to the date of deposition this may hold potential for deposits of prehistoric potential as well as being of paleoenvironmental interest. The monitoring of site investigations in this locality recorded peaty pockets with the occasional presence of plant remains 6m BGL.



170. The Project parameters have the potential to impact upon glaciofluvial deposits of Mesolithic/Palaeolithic potential. Specifically, trenchless entry pits in the southern and central parts of the segment, the cable cut in the central part of the segment and trenchless exit pits in the southern half of the segment. The later deposits of mud (deposit A2) may be thin enough to be breached by the cable cut, the joint bays and the trenchless entry and exit pits.

20.10.1.11 ECC11 - Prehistoric

171. In the late Palaeolithic period, the segment would have been dry. Deposit modelling records that glaciofluvial deposits of Mesolithic/Palaeolithic potential could be present (see **Annex 18** Figure 52). The Pleistocene land surface which could hold potential for worked flint of Mesolithic or Neolithic date as well as salterns and organic remains such as fishtraps, is at least 3m below ground level underneath tidal mudflats which extend to thickness of 3-18m (deposit A1) (**Annex 18** Figures 42 and 55).
172. The late Mesolithic and Neolithic high-water levels are thought to have been to the west of all but the very northern part of the segment. During the Neolithic period the whole segment likely became tidal or within the saltmarsh (**Annex 18** Figure 6) and it is probable that the area remained tidal or marginal for the entirety of this period. A large number of palaeochannels recorded by the LiDAR assessment may reference watercourses of this period or a later period, potentially post Roman.
173. Potential recorded evidence for prehistoric activity is limited to a mound 1km west of the southern end of the Order Limits. This may reference a Bronze Age barrow, but this is uncertain and may be a natural or later feature (MLI13041).
174. An area of peat (AOP B) at the very northern part of the segment is recorded within the mudflat deposit and may hold prehistoric potential. The monitoring of site investigations at this location recorded amorphous peat with occasional small plant remains at 7.32m BGL (**Annex 18** Figure 49).
175. The Pleistocene land surface (underlying A1) may be exposed by the Project parameters, specifically all joint bays and trenchless entry and exit pits in the northern and southern half of the segment. The later mud deposits could be breached all cable cut works, all joint bays and all trenchless entry and exit pits.



20.10.1.12 ECC12 - Prehistoric

176. In the late Palaeolithic period, the segment would have been dry. Deposit modelling records that glaciofluvial deposits of Mesolithic/Palaeolithic potential would not be present within the Project parameters (see **Annex 18** Figure 52).
177. The late Mesolithic high-water mark is thought to have sat to the west of the Order Limits (**Annex 18** Figure 6). By the end of or during the Neolithic period, the area likely became permanently wet, although an area of glaciofluvial deposits across the southern part of the segment would have been better draining and may therefore have held some potential for semi-permanent activity associated with the exploitation of the adjacent saltmarsh before inundation. However, this is beneath 6-8m of mud flats and so beyond the depth of disturbance to be caused by the works (deposit A1) (**Annex 18** Figure 49). A large number of palaeochannels recorded by the LiDAR assessment is testament to the former presence of marshland and may relate to watercourses of this period.
178. The area likely remains under tidal or under inundated conditions for the rest of the period but there is a potential for the cable cut to breach deposits underneath deposit A2 except in the western extremity of the segment. These may include salterns and remains associated with later prehistoric transient activity such as flints or organic remains such as fishtraps. This potential extends to all joint bays and trenchless entry and exit pits. An area of AOP D across the southern end of the segment is notable in that it may reference a better draining nature to the southern part of the segment. However, the tidal nature of this part of the Order Limits from the prehistoric period onwards is likely to negate this as an indicator for archaeological potential.

20.10.1.13 ECC13 - Prehistoric

179. In the late Palaeolithic period, the segment would have been dry but rising sea levels meant that by the late Mesolithic period, the area was to the east of the high-water mark (**Annex 18** Figure 3). By the end of or during the Neolithic period, the area was likely wholly inundated or under continued tidal conditions and it is likely that these conditions persisted for the remainder of the period. At least 6-12m of prehistoric tidal mudflats are recorded across the footprint of the segment (deposit A1); 8-12m across the footprint of the OnSS (**Annex 18** Figure 42). These are further illustrated by transect H in the deposit modelling which shows a significant depth of the early tidal mudflat at the location of the OnSS (WMN-BH01) (**Annex 18** Figure 17).



180. There is no evidence recorded within the HER for prehistoric activity within the study area. This likely reflects the lack of potential due to inhospitable or highly marginal conditions. It is likely that remains, if present, would be limited to later prehistoric fishtraps which could have been left within the inter-tidal zone. These would be within the upper layers or on top of the earlier mudflat, beneath the later mudflat (A2) which is present to a depth of 0-6.5m BGL (**Annex 18** Figure 55). A potential for late prehistoric salterns within upper deposits may also exist but these would be highly eroded. This potential extends to all joint bays between the OnSS and the River Welland as well as joint bays to the immediate east of the OnSS. The potential also extends to the majority of trenchless entry and exit pits and any piled foundation solution associated with the OnSS. The latter may also affect deeper deposits of Mesolithic date which could hold a potential for other wetland activity.
181. A deposit of peat across the central part of the segment may hold particular palaeoenvironmental potential (see Annex 18 Figure 49). This deposit is interleaved between the earlier and later mud flats and may represent a slower depositional environment at the end of the prehistoric period. . Site investigations at the eastern end of the segment recorded an additional area of peat. This was recorded as pockets of degraded peat at 3.3m BGL and pseudo fibrous at 3.8m BGL (Annex 18 - test pit and borehole A17). At the location of the OnSS deposit modelling predicts an anticipated 0-0.5m of peat at a depth of up to 2.2m BGL (Annex 18 Figures 43 & 44 on the basis that the OnSS is at 3.2-4m aOD).

20.10.1.14 ECC14 - Prehistoric

182. In the late Palaeolithic period, the segment would have been dry. Deposit modelling records that glaciofluvial deposits of Mesolithic/Palaeolithic potential could be present at a single discrete location within the segment (see **Annex 18** Figure 52). Any trenchless entry and exit pits at this location could reach this deposit.
183. The area was to the east of the late Mesolithic high tide line (**Annex 18** Figure 3). By the end of or during the Neolithic period, the area was likely wholly inundated or under continued tidal conditions and it is likely that these conditions persisted for the remainder of the period. At least 4-10m of tidal mudflats are recorded across the footprint of the segment (deposit A1) (**Annex 18** Figure 42).
184. There is no evidence recorded within the HER for prehistoric activity within the study area. It is likely that remains, if present, would be limited to fishtraps which could have been left within the inter-tidal zone. These would be within or on top of the earlier mudflat and beneath



the later mudflat (A2) which is present to a depth of 0-7.5m BGL (**Annex 18** Figure 55). A potential for salterns may also exist but these would be highly eroded. The deposits with this limited potential would be reached by open cut works and joint bays within thinner deposits of AOP A2 in the northern half of the segment. This potential extends to the majority of trenchless entry and exit pits.

185. With regard to deposits of peat, site investigations in the centre of the segment recorded peat. . This was recorded as peaty pockets at 2.7-3m BGL and firm and black with frequent wood and plant at 13.7m BGL (**Annex 18** - WMS-BH01).

20.10.1.15 A16 Compound - Prehistoric

186. In the late Palaeolithic period, the area would have been dry. The late Mesolithic coastline is thought to have been to the east of the compound footprint (**Annex 18** Figure 5). From this time, however, the rising sea levels would have likely brought the area into tidal conditions if not total inundation during the Bronze Age period. There is no evidence for prehistoric activity within the study area.

187. The late Prehistoric land surface is covered by 0.5-1m of mud at this location such that the Proposals which would be restricted to minimal stripping for a compound would not be anticipated to affect deposits of prehistoric potential.

20.10.1.16 ES Summary Potential – Prehistoric

188. The potential provided below is in reference to the depth of the footprint of disturbance.

Table 20.1: Prehistoric Potential

Segment	Activity	Potential	Description
ECC1	Permanent/ persistent	Low to medium	Some later prehistoric activity may be present beneath the later tidal mudflat which could be breached by the southern half of the ECC. The joint bays in the southern half of the segment and the segment wide trenchless entry and exit pits would potentially expose later prehistoric activity.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached - possible within the trenchless entry/exit pits in the central and southern parts of the route and a discrete location of the ECC at Authorpe Row where the cable cut could breach the base of the earlier mudflat. Underlying deposits of AOP A1 have a potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties



Segment	Activity	Potential	Description
			and trackways - possible within the cable cut and joint bays in the southern half of the segment. Otherwise, the TJB and segment wide trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible across the segment. A particular potential area of impact is identified at the southern end of the segment.
	Palaeochannels	Low to high	The geophysical survey records an example at landfall which is likely to be prehistoric in date. LiDAR assessment has also recorded a trend for palaeochannels in the central and northern parts of the segment.
	Salterns	Low to medium	Possible beneath the later tidal mudflat which could be breached by the southern half of the ECC. The joint bays in the southern half of the segment and the segment wide trenchless entry and exit pits would potentially expose later prehistoric activity. This potential also exists at the transition joint bay.
ECC2	Permanent/persistent	Low to medium	Some later prehistoric activity may be present beneath a later tidal mudflat which could be breached by the open cut trench, the joint bays in the central and southern part of the segment and segment wide trenchless entry and exit pits. Evidence through geophysical survey records significant anomalies south of Hogsthorpe – area of archaeological interest 2.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by works - possible all trenchless entry pits except at the northern extremity and trenchless exit pits in the central and southern sections. Potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways - possible within the open cut trench, joint bays in the central and southern parts of the segment, all trenchless entry and exit pits where later mud deposits may be shallow enough to reveal underlying deposits of AOP A1.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with particular potential areas of impact identified at the northern and southern end of the segments.
	Palaeochannels	Low to high	Possible. The geophysical survey records an example in the northern part of the segment which is likely to be prehistoric in date.



Segment	Activity	Potential	Description
	Salterns	Low to medium	Possible within the open cut trench, all trenchless entry and exit pits and joint bays (except the joint bays at the northern end of the segment) where works may reveal underlying deposits of AOP A1.
ECC3	Permanent/persistent	Low to medium	Some later prehistoric activity may be present beneath a later tidal mudflat which could be breached by segment wide cable cut, joint bays and trenchless entry and exit pits.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by works to 6m BGL - possible within trenchless entry and exit pits at Nettle Hill. A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways – segment wide cable cut, joint bays and trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with particular potential areas of impact identified in the northern half and at the southern end of the segment.
	Palaeochannels	Low to high	Possible. The geophysical survey records an example in the northern half of the segment which is likely to be prehistoric in date. LiDAR assessment has also recorded a trend for palaeochannels across the segment.
	Salterns	Low to medium	The cable cut, joint bays and trenchless entry and exit pits across the segment may reveal underlying saltern deposits.
ECC4	Permanent/persistent	Low to medium	Some Iron Age activity may be present beneath a later tidal mudflat which could be breached by the segment wide cable cut, joint bays and trenchless entry and exit pits.
	Transient	Low to medium	Joint bays and trenchless entry and exit pits across the segment may reveal underlying deposits with a potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with a particular potential area of impact identified in the northern extremity of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.



Segment	Activity	Potential	Description
	Salterns	Nil	Segment side cable cut, joint bays and trenchless entry and exit pits may reveal underlying saltern deposits.
ECC5	Permanent/persistent	Low to medium	Later prehistoric activity may be exposed beneath the thinner mudflat deposits at the base of the open cable cut, all joint bays and all trenchless entry and exit pits.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by all trenchless entry pits except of western part of section and all trenchless exit pits except the eastern and western ends of the segment. Potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways - all the open cut, all joint bays and all trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with a particular potential area of impact identified at the western end of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	Thinner deposits of AOP A2 in all but the extreme western part of the open cut works. This potential extends to all joint bays and all trenchless entry and exit pits. Also, the haul road east of Wainfleet Road.
ECC6	Permanent/persistent	Low to medium	Later prehistoric activity may be exposed within the open cut trench, the joint bays and trenchless entry and exit pits.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by trenchless entry and exit pits in the western third of the segment. A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways – the open cut trench, the joint bays and the trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment in accordance with a wide palaeochannel recorded by Green.



Segment	Activity	Potential	Description
	Salterns	Low to medium	The open cut trench, the joint bays and trenchless entry and exit pits.
ECC7	Permanent/persistent	Nil	The area was likely under saltmarsh with activity focused on drier land.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by all trenchless entry and exit pits and by joint bays and the cable cut to the north of Friskney. Deposits of AOP A2 which may reveal underlying deposits with a potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways may be breached by the cable cut, the joint bays and the trenchless launch and receive pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with a particular potential area of impact identified in the central part of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	Deposits of AOP A2 breached by the cable cut, the joint bays and the trenchless launch and receive pits may reveal remains of salterns.
ECC8	Permanent/persistent	Nil	The area was likely under saltmarsh with activity focused on drier land.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by all trenchless entry and exit pits and the joint bays and cable cut in the eastern half of the segment. Deposits of AOP A2 may reveal underlying deposits with a potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways – the cable cut, the joint bays and the trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	Deposits of AOP A2 breached by the cable cut, the joint bays and the trenchless entry and exit pits.



Segment	Activity	Potential	Description
ECC9	Permanent/ persistent	Nil	The area was predominantly under saltmarsh/tidal/riverine with activity focused on drier land.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by trenchless entry and exit pits in the extreme north of the segment. trenchless entry pits at the southern end of the segment near Freiston and trenchless exit pits to the east of Freiston. A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways - all trenchless entry and exit pits, joint bays and the cable cut (except the cable cut around Ings Road).
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. SI recorded a deposit at the northern extremity of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	All trenchless entry and exit pits, joint bays and the cable cut (except the cable cut around Ings Road).
ECC10	Permanent/ persistent	Low to medium	The area was likely under saltmarsh/tidal with activity focused on drier land.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by trenchless entry pits in the southern and central parts of the segment, trenchless exit pits in the southern half of the segment and the cable cut in the central part of the segment. A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways – the cable cut, the joint bays and the trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with a particular potential area of impact identified at the southern end of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	The base of later deposits of AOP A2 may reveal remains of salterns. This potential extends to the



Segment	Activity	Potential	Description
			cable cut, the joint bays and the trenchless entry and exit pits.
ECC11	Permanent/persistent	Nil	The area was likely tidal.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached by trenchless entry and exit pits in the northern and southern half of the segment. A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways - all open cut works, all joint bays and all trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with a particular potential area of impact identified at the northern part of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	This potential extends all open cut works, all joint bays and all trenchless entry and exit pits.
ECC12	Permanent/persistent	Nil	The area was likely tidal.
	Transient	Low to medium	A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways - all open cut works except in the western extremity of the segment. This potential extends to all joint bays and all trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	This potential extends to all open cut works except in the western extremity of the segment. This potential extends to all joint bays and all trenchless entry and exit pits.
ECC13	Permanent/persistent	Low to medium	The area was likely tidal or inundated.
	Transient	Low to medium	A potential for later prehistoric flint and other short lived features as well as remains of fishtraps, jetties and trackways. - open cut works



Segment	Activity	Potential	Description
			within thinner deposits of AOP A2 in the western half of the segment. This potential extends to all joint bays in the western part of the OnSS to the River Welland and a section of the ECC to the immediate east of the OnSS. Also, the majority of trenchless entry and exit pits.
	Peat	Low to high	Deposit modelling indicates that deposits could be present within 1.5m BGL. Possible with a particular potential area of impact in the central part of the segment. Additional area identified by SI at the eastern extremity of the segment.
	Palaeochannels	Low to high	Possible. The LiDAR assessment and the geophysical survey record examples crossing the segment.
	Salterns	Low to medium	Thinner deposits of AOP A2 in the western half of the segment may reveal remains of salterns. This potential extends to all joint bays in the western part of the OnSS to the River Welland. Also, the majority of trenchless entry and exit pits.
ECC14	Permanent/persistent	Low to medium	The area was likely tidal or innudated.
	Transient	Low to medium	Pleistocene surfaces with potential for Palaeolithic and Mesolithic flint may be breached at a discrete location within the segment. A potential for later prehistoric flint and other short-lived features as well as remains of fishtraps, jetties and trackways - open cut works within thinner deposits of AOP A2. Possible within the ECC and joint bays in the northern half of the segment. The majority of trenchless pits.
	Peat	Low to high	Possible and recorded by site investigations.
	Palaeochannels	Low to high	Possible.
	Salterns	Low to medium	Thinner deposits of AOP A2 in the western part of the open cut works may reveal remains of salterns. This potential extends to the ECC and joint bays in the northern half of the segment. The majority of trenchless pits.
A16 Compound	Permanent/persistent	Nil	There is no evidence for activity within the area which is thought to have been low lying saltmarsh or under tidal conditions.
	Transient	Nil	Any possible fishtraps, jetties and trackways would be in mudflat layers which will not be affected by these works.



Segment	Activity	Potential	Description
			Otherwise, the mud is too thick to be breached by the ECC.
	Peat	Nil	Any possible peat would be at a depth not breached by the proposed works.
	Salterns	Nil	Any possible salterns would be at a depth not breached by the proposed works.

20.10.2 Roman

189. Later marine regression at Wolla Bank (landfall) has been dated to the Iron Age (c.450 BC) (Derrett & Selby 2020). This reflects the wider marine regression known to have occurred by the early Roman period (Green 2023). By the start of this period the coastal zone had moved eastwards, and a marshy zone was protected by offshore banks and shoals.
190. The Order Limits north of Boston is anticipated to have been dry or on the edge of the coastline during the Roman period. South of Boston the Order Limits are anticipated to have been tidal.
191. However, sea levels began to rise again from the second century (Robinson 1994). This second sea level rise led to the deposition of significant levels of silt across the Order Limits. It is anticipated that this relates to the later tidal mudflat deposit referenced as deposit A2 in the deposit model and that this layer could seal Iron Age/Roman land surfaces (see **Annex 18** Figures 53-55).

20.10.2.1 ECC1 – Romano-British

192. Marine regression at Wolla Bank has been dated to the Iron Age (c.450 BC) (Derrett & Selby 2020) which suggests that this part of the Order Limits was moving into drier conditions by the Roman period, albeit this could still have been a marginal area with settlement focused to the west of the Order Limits, with salterns more likely within the project parameters.
193. For example, the fieldwork undertaken for Triton Knoll recorded evidence for settlement to the west of the Order Limits. This included ditches and stake holes of Roman date 960m west of the segment, 1.6k south-west of landfall. Slightly further afield, a settlement site with potential associated industrial activity is recorded 1.6km north-west of the Order Limits (HER reference MLI82496). Findspots in the study area include some pottery at Hogsthorpe and Chapel St Leonards which were on higher ground than the majority of this segment of the ES.



194. The HER records a possible saltern recorded 575m west of the Order Limits (HER reference MLI41954). This is located at the southern end of the segment and indicates that the coastline was within the vicinity of or to the west of the southern end of the segment during part of this period at least.
195. A small finds assemblage is recorded. The HER references a third century Roman pot sherd at landfall (HER reference MLI41607). The PAS assemblage includes a mount from a box 240m east of the segment where other finds in close vicinity include two brooches and two coins. It is possible that these are the result of later manuring scatters associated with post medieval farmstead activity, but this is uncertain.
196. The geophysical survey records some isolated anomalies of possible archaeological or indeterminate origin towards the southern end of the route either side of Lowgate Road and an undetermined isolated anomaly to the north of the A52 (**Annex 19** Figure 35). These possible archaeological anomalies could relate to activity of this date, but this is uncertain.
197. More certain archaeological anomalies present alongside a former palaeochannel at landfall. These may relate to salt making activity on a dryland/wetland interface (**Annex 19** Figure 18). The geophysical survey has identified these specific anomalies as area of archaeological interest 1 (**Annex 19** Figure 8). These would be crossed by a temporary access track (see Figure 3.4 (document reference 6.2.3.4).3).
198. It is likely that the Roman land surface is covered by 2.5-4m of a later mud flat at landfall and between 0-4m across the ECC. Roman potential is possible in the base of the cable cut in the southern half of the segment. The joint bays in the southern half of the segment and the segment wide trenchless entry and exit pits would also potentially expose Roman activity. This potential also exists at the transition joint bay.

20.10.2.2 ECC2 – Romano-British

199. The preceding evidence for salterns within the vicinity of the southern part of the Order Limits extends into the Romano-British period with sites of Roman date being recorded in the southern part of the study area, 290m south, 340m east and 450m east of the Order Limits (MLI41951, MLI41803 and MLI41802). The Triton Knoll fieldwork is also notable in that it has recorded evidence for a number of salterns to the west of the Order Limits in this segment. This has included a saltern mound 500m west of the southern end of the segment at 1m below ground level.



200. Also recorded by the Triton Knoll works were two Roman inhumations and a possible funeral pyre 290m west of the southern end of the segment. These were recorded c.1.15m below ground level.
201. Notably, other evidence for Roman activity includes some evidence for cereal processing and domestic occupation referenced 240m east of the Order Limits at its southern end suggesting agricultural activity and therefore some dry land in this vicinity (MLI90289). The potential for this activity to have extended across possible dry land into the central part of the Order Limits may be referenced by a small assemblage of finds recorded by the PAS. These relate to six coins, six brooches, two razor handles and an escutcheon from a vessel or piece of furniture.
202. Two areas of peat are recorded which may hold particular potential for organic remains relating to this period. These are located at the northern end of the segment at Hogsthorpe and at the southern end of the segment (**Annex 18** Figure 47).
203. It is noted that geophysical anomalies in part of the route south-west and south of Hogsthorpe may relate to activity originating in this period. These reference a multi-phase complex of possible Iron Age/Roman origin (**Annex 19** Figure 49). This area also corresponds with some cropmarks recorded by the aerial photographic review (**Annex 17**). Within the geophysical survey this is recorded as area of archaeological interest 2 and includes penannular geophysical anomalies and enclosures indicative of occupation and agricultural activity. The anomalies include penannular anomalies and enclosures and a large rectilinear enclosure 1 ha in size. Notably, this large enclosure with anomalies typical of 'habitation' is located within an area of low conductivity. This infers dry land as opposed to wetter areas which peripheral enclosures extend in to. Possible areas of industrial activity (probably salt making) are adjacent to a possible palaeochannel inferred from electromagnetic survey. The electromagnetic survey is notable in its correlation of dry conditions with the magnetometer anomalies referencing occupation/habitation. The aerial photographic assessment undertaken to validate the results of the geophysical survey also recorded anomalies in this location (**Annex 17**). These anomalies are located within an area which would be affected by open cut or trenchless works, cable installation compounds and a haul road (see **Figure 3.4 (document reference 6.2.3.4)**).
204. Some limited anomalies to the north-west, indicative of enclosures, (**Annex 19** Figures 42) may relate but this is uncertain.



205. The possible saltern within area of archaeological interest 2 is interesting alongside other geophysical anomalies further south within the segment. The subcircular anomalies recorded either side of Marsh Lane extend into area of archaeological interest 4 of the geophysical survey (**Annex 19** Figures 8 and 63). Proposals at this location include open cut or trenchless works (Figure 3.4 (document reference 6.2.3.4).10).
206. It is likely that the Roman land surface is covered by 0-2.5m of a later mud flat across the ECC. The open cut trench could expose this land surface. Trenchless entry and exit pits along the whole length of the segment could expose deposits of Roman potential. The joint bays in the central and southern parts of the segment could also expose deposits of Roman potential.

20.10.2.3 ECC3 – Romano-British

207. Salterns of Roman date are recorded on the HER in the east of the study area. These include salterns 780m -1.9km east of the Order Limits which may have originated in the Iron Age period (HER references MLI41803, MLI81286, MLI116157, MLI994488, MLI41802 and MLI41801).
208. With reference to likely saltmarsh conditions, the geophysical survey has recorded anomalies at the northern end of the segment which may refer to possible salterns within the footprint of the Order Limits (**Annex 19** Figure 70).
209. A buckle and a coin are recorded by the PAS within the Order Limits and 600m to the east respectively, but these are singular finds and may reference later manuring activity. Notably Skegness has a Roman origin c.5km east of the southern end of this segment.
210. Two areas of peat are recorded which may hold particular potential for organic remains relating to this period. A significant area of peat is recorded across the northern half of the segment. A further area is located at the southern end of the segment (**Annex 18** Figure 47).
211. It is likely that the Roman land surface is covered by 1-2m of a later mud flat across the ECC. The open cut trench works could expose deposits of Roman potential. All joint bays and trenchless entry and exit points could also breach the later mud deposit.

20.10.2.4 ECC4 – Romano-British

212. The Iron Age settlement recorded 1.6km to the west of the segment continued in use into the Roman period (MLI99129) and Roman occupation at Burgh le Marsh to the west of the northern end of the segment is evidenced by finds recorded by the PAS and the HER.



Indeed, Burgh Le Marsh is recorded within the HER as being a settlement of Roman origin, located at the terminus of the road from Lincoln. A possible Roman farmstead is also recorded at Burgh le Marsh 1.9km west of the segment (MLI40583). Certainly, Skegness, c.5km east of the segment, is known to have been a significant Roman settlement on a tidal creek. Elevation at Skegness was possibly at 5-10m AOD. Therefore, the ES was located between at least two known areas of Roman occupation but within a potentially marginal area within some salt marsh due to a lower elevation. The saltern recorded 230m east of the Order Limits may have also functioned into the Romano-British period. The geophysical survey does record some anomalies at the southern end of the segment which may relate to salterns or quarrying activity. These are undated but could reference activity of this date.

213. A single area of peat is recorded in the extreme northern part of the segment. This may hold particular potential for organic remains relating to this period (Annex 18 Figure 47).
214. It is likely that the Roman land surface is covered by 1-1.5m of a later mud flat across the ECC. Segment wide open cut trench works could expose deposits of Roman potential. Joint bays and trenchless entry and exit pits may also breach the later mudflat.

20.10.2.5 ECC5 – Romano-British

215. Roman occupation at Burgh le Marsh to the north of the segment is evidenced through finds recorded by the PAS and the HER. Indeed, Burgh Le Marsh is recorded within the HER as being a settlement of Roman origin, located at the terminus of the road from Lincoln. Wainfleet All Saints, 960m south of the southern end of the route, may also of Roman origin (MLI41912). Certainly, Skegness, c.5km east of the segment, is known to have been a significant Roman settlement on a tidal creek. Elevation at Skegness was possibly at 5-10m AOD. Therefore, this segment was located in the hinterland of at least two known areas of Roman occupation. Evidence within the immediate vicinity of the segment comprises a single coin recorded by the PAS 150m west of the western end of the segment.
216. Geophysical anomalies at the eastern end of the segment include evidence for activity which could relate to activity of this period. At the time of survey, the survey footprint extended to the east of the Order Limits. This was in reference to a previous iteration of the Project footprint. To the east of the Order Limits the survey recorded probable settlements of probable Iron Age/Roman date located 60-200m east of the Order Limits (**Annex 19** Figures 105 and 112). The electromagnetic survey indicates that this settlement was focused on freely draining sand and gravel deposits. An associated field system was also recorded to the north but outside of the Order Limits.



217. These anomalies are recorded as being within area of interest 6 (**Annex 19** Figure 9). This area of interest extends within the Order Limits, other anomalies potentially indicative of occupation or agricultural activity and for which an Iron Age/Roman date cannot be ruled out are located west of Church Lane and at the western end of the segment. These are all located within areas of trenchless works. West of Church Lane these include an area of anomalies which could reference a smaller settlement or farmstead with associated anomalies extending west again (**Annex 19** Figure 119). The electromagnetic survey at this location references low conductivity inferring dry better draining land within the footprint of the enclosure. To the western end of the segment enclosures of uncertain date are recorded to the northern bank of the Wainfleet Haven (**Annex 19** Figure 133). These are also located on an area of low conductivity, potentially on the interface with a wetland environment. These are recorded as part of area of archaeological interest 8 which extends into segment ECC6.
218. Associated anomalies within the Order limits include possible salterns. These include saltern anomalies within area of archaeological interest 6 (**Annex 19** Figures 9, 98 and 112). These would be affected by open cut or trenchless works and a haul road (Figure 3.4 (document reference 6.2.3.4).16). Further saltern anomalies in this segment are recorded in area of archaeological interest 7 (**Annex 19** Figures 9 and 126). In area of archaeological interest 7, the rectilinear morphology to some of the palaeochannels may infer an anthropological modification associated with salt making (**Annex 19** Figure 126). These would be affected by open cut or trenchless works and a haul road (Figure 3.4 (document reference 6.2.3.4).18).
219. A single area of peat is recorded at the western end of the segment. This may hold a potential for organic remains relating to this period (**Annex 18** Figure 48).
220. It is likely that the Roman land surface is covered by 0-3m of a later mud flat across the ECC. Segment wide open trench works all joint bays and all trenchless entry and exit pits could expose deposits of Roman date.

20.10.2.6 ECC6 – Romano-British

221. The continuation of habitable conditions facilitated Roman occupation at Burgh le Marsh to the north of the segment. This is evidenced through finds recorded by the PAS and the HER. Indeed, Burgh Le Marsh is recorded within the HER as being a settlement of Roman origin, located at the terminus of the road from Lincoln. Wainfleet All Saints, 960m south of the southern end of the route, may also be Roman origin (MLI41912). Certainly, Skegness,



c.5km east of the segment, is known to have been a significant Roman settlement on a tidal creek. Elevation at Skegness was possibly at 5-10m AOD. Therefore, this segment was located in the hinterland of at least two known areas of Roman occupation.

222. The geophysical survey records enclosures of a possible field system of unknown date at the northern end of the segment. This is recorded as area of archaeological interest 8 which extends to the north into segment ECC5 (**Annex 19** Figures 9, 133 & 140). A Roman date cannot be ruled out at this stage. These anomalies extend across areas of low and high conductivity and may infer agricultural activity within a semi-dry area. The proposals here comprise trenchless or open cut works, cable installation compounds and a haul road (Figure 3.4 (document reference 6.2.3.4).19).
223. The Roman land surface is covered by 2-3m of mud across the ECC. Potential to expose deposits of Roman potential exists within the cable cut, any joint bays and trenchless entry and exit pits (**Annex 18** Figure 54).

20.10.2.7 ECC7 – Romano-British

224. Extensive evidence for a continuation of salt making activity into this period is recorded by the HER. Associated settlement is also recorded within the study area including at Wrangle where high ground would have continued to be a foci for settlement activity within the wider marsh. Possible settlement in closest vicinity to the segment footprint is recorded 560m north (MLI13182). This is evidenced by findspots associated with a saltern.
225. A single area of peat is recorded in the central part of the segment. This may hold a potential for organic remains relating to this period (Annex 18 Figure 48).
226. It is likely that the Roman land surface is covered by 0-2m of a later mud flat across the ECC. The cable cut, the joint bays and the trenchless launch and receive pits could expose deposits of Roman potential.

20.10.2.8 ECC8 – Romano-British

227. Extensive evidence for the persistence of salt marsh into this period is recorded by the HER which references a number of salterns across the study area. Associated settlement is also recorded within the study area including at Wrangle located to the east, where high ground would have continued to be a foci for settlement activity within the wider marsh. Possible settlement in closer vicinity to the segment footprint is recorded 500m north and 560m north, albeit the former may be a saltern site only and the latter is attested to by pottery only



(MLI12806 & 13148). Potentially more indicative of settlement, is a possible pottery kiln site at Kings Hill 600m north of the ECC segment (MLI12809).

228. Geophysical anomalies of enclosures towards the western end of the segment may date to the period and relate to some agricultural activity although this is uncertain. These are recorded as area of archaeological interest 12 (**Annex 19** Figures 10 & 217). Proposals at this location comprise open cut or trenchless works and a cable installation compound (Figure 3.4 (document reference 6.2.3.4.30)).
229. It is likely that the Roman land surface is covered by 0-2m of mud across the ECC. These deposits may be breached by the cable cut, the joint bays and the trenchless entry and exit pits.

20.10.2.9 ECC9 – Romano-British

230. The prehistoric river this segment is predominantly within, is thought to have silted by the Romano-British period, with the southern part of the segment (approximately south of the A52) characterised by creeks (Green 2023: Figure 84), see Plate 6.
231. Evidence recorded by the HER is limited to findspots only, including pottery 20m west, 330m west and 490m west of the segment (MLI12784, 12721, 13398). The PAS also records two coins within the segment, one coin in the north and one in the south. It also records a brooch 20m west of the northern part of the segment.
232. It is likely that the Roman land surface is covered by 0-4m of a later mud flat across the ECC. Taking into account the depths of topsoils, open trench works within large parts of the segment could expose deposits of Roman potential. Salterns are considered to be most likely. Exceptions where mud and topsoils are too deep to be penetrated by the open cut trench are within the northern 1km of the segment. Potential also extends to joint bays and trenchless entry and exit pits.

20.10.2.10 ECC10 – Romano-British

233. By the start of the Roman period, sea levels are likely to have dropped and the high-water mark is likely to have receded towards the eastern part of the study area. Evidence of this activity is referenced at Freiston to the north of the segment. Notably further south the remains of circular and rectangular huts and a corn drying kiln were excavated c.290m east of the central part of the Order Limits in the 1960s (MLI12728). This infers that the segment may have had some dry land and indicates an arable landscape across some of the ES footprint or its close vicinity. Notably no salterns are recorded within this segment of the ES.



234. A number of pottery scatters are located in the vicinity of Freiston (where the PAS also records seven coins and a hairpin) and Fishtoft 550-880m west of the Order Limits (MLI12730, MLI12768, MLI13398, MLI97626, MLI97628). Another pottery scatter is recorded 220m west of the ES (MLI12729).
235. Geophysical survey has recorded anomalies at the eastern end of the segment that may reference agricultural activity of this date albeit this is uncertain.
236. It is likely that the Roman land surface is covered by the later mud flat across the ECC. Works associated with the cable cut, all joint bays and all trenchless entry and exit pits could expose the Roman surface.

20.10.2.11 ECC11 – Romano-British

237. Dropping sea levels may have led to a recession of the coastline and the Roman coastline may have been within close vicinity to the Order Limits (**Annex 18** Figure 6). An undated HER entry recording 'considerable' cropmarks 1.2km west of the central segment of the ECC may reference activity of this period. Whilst these remain undated the linear nature of marks visible in Google Earth imagery may relate to a field system of this date in the western part of the study area (MLI12619). However, a small scatter of Romano-British pottery scatter in their vicinity is the only finds evidence for activity of this date in their vicinity (MLI12617). Another small scatter of pottery is recorded 1km north of the segment (MLI12743). The PAS also references a spindle whorl c.1km west of the southern end of the segment. It is highly likely that the area of the ES footprint was marginal during this period. Salterns may be possible.
238. It is likely that the Roman land surface is covered by 0.5-1.5m of a later mud flat across the ECC. Taking into account the depths of topsoils this could be exposed by all open cut works, all joint bays and all trenchless entry and exit pits. Salterns are considered to be most likely.

20.10.2.12 ECC12 – Romano-British

239. Dropping sea levels may have led to a recession of the coastline and the coastline is thought to have extended to within the vicinity of the Order Limits at this time (**Annex 18** Figure 6). It is highly likely that the area of the ES footprint was tidal or marshy during this period. There is no evidence for Romano-British activity within the study area recorded on the HER. The PAS records a spindle whorl 1km west of the northern part of the segment. Activity is anticipated to have been limited to salterns.



240. It is likely that the Roman land surface is covered by 0.5-3m of a later mud flat across the ECC. Taking into account the depths of topsoils, open trench works except in the western extremity of the segment could expose deposits of Roman potential. Salterns are considered to be most likely. This potential extends to all joint bays and all trenchless entry and exit pits.

20.10.2.13 ECC13 – Romano-British

241. There is no evidence recorded within the HER for Romano-British activity within the study area. Dropping sea levels may have led to a recession of the coastline and the Roman coastline is thought to have been within a kilometre of the eastern end of the segment (**Annex 18** Figure 6). During this period the land within the Order Limits would have been predominantly tidal or marshy, potentially under permanent water particularly in the central parts of the segment. Salterns cannot be discounted.
242. It is likely that the Roman land surface is covered by 0-6.5m of mud across the ECC. Taking into account the depths of topsoils, open trench works in the western half of the segment could affect deposits of Roman potential. This would extend to the joint bays in this location as well as the joint bays to the immediate east of the OnSS. This potential would also extend to the majority of the trenchless pits. Any piling works within the footprint of the OnSS could also expose deposits. Salterns are considered to be most likely.

20.10.2.14 ECC14 – Romano-British

243. There is no evidence recorded within the HER for Romano-British activity within the study area. Dropping sea levels may have led to a recession of the coastline and the Roman coastline is thought to have been alongside the southern end of the segment (**Annex 18** Figure 6). During this period the land within the Order Limits would have been predominantly tidal or marshy, potentially under permanent water. Salterns cannot be discounted.
244. It is likely that the Roman land surface is covered by 0-7.5m of mud across the ECC. Taking into account the depths of topsoils, open trench works in the northern part of the segment could affect deposits of Roman potential. This would extend to the joint bays in this location as well. This potential would also extend to the majority of the trenchless pits. Salterns are considered to be most likely.

20.10.2.15 A16 Compound – Romano-British

245. Dropping sea levels led to the eastwards retreat of the sea and the Roman coastline is likely to have been to the east of the Order Limits (**Annex 18** Figure 6). The HER records evidence for a Romano-British farmstead 2km north of the compound (HER reference MLI88847). Evidence comprised pits, ditch, gullies and cereal production. Elsewhere in the



study area, findspots are recorded 680m north-east at Wyberton (MLI12631), 680m-1km south-east at Frampton (MLI91509 & MLI12617), 1.2km north (MLI83569) and 1.6km south at Kirton (MLI13031). The PAS does not add to this baseline.

246. It is likely that the Roman land surface is covered by 0.5-1m of a later mud flat at this location such that the works associated with the compound would not be anticipated to affect deposits of Roman potential.

20.10.2.16 ES Summary Potential – Roman

Table 20.2: Roman Potential

Segment	Potential for Roman Remains	Notes
ECC1	Low to medium	Roman archaeology possible within the southern half of the segment where the cable cut and the joint bays may breach deposits. Also segment wide trenchless entry and exit pits. Roman occupation, agricultural activity or salterns may be exposed, albeit at landfall any archaeology is likely to be restricted to salterns.
ECC2	Low to medium	The open cut trench and segment wide trenchless entry and exit pits could expose layers of potential. The joint bays in the central and southern parts of the segment could also expose Roman deposits. Roman occupation, agricultural activity or salterns may be exposed. Area of archaeological interest 2 may be Roman in date.
ECC3	Low to medium	Roman occupation, agricultural activity or salterns may be exposed beneath the thinner mudflat deposits. This potential applies to the segment wide cable cut, segment wide joint bays, trenchless entry and exit pits.
ECC4	Low to medium	Roman occupation, agricultural activity or salterns may be affected by works associated with the cable cut, joint bays, trenchless entry and exit pits.
ECC5	Low to medium	Roman occupation, agricultural activity or salterns may be exposed beneath the thinner mudflat deposits at the base of the open cut trench. This potential extends all joint bays and all trenchless entry and exit pits. Areas of archaeological interest 6 and 7 have saltern anomalies of potential Roman date.
ECC6	Low to medium	Roman occupation, agricultural activity or salterns may be exposed within the cable cut and at joint bays and trenchless entry and exit pits. Area of archaeological interest 8 may reference agricultural remains of this date.
ECC7	Low to medium	Roman occupation, agricultural activity or salterns may be exposed beneath the later mudflat deposits affected by the cable cut, the joint bays and the trenchless entry and exit pits.
ECC8	Low to medium	Roman occupation, agricultural activity or salterns may be exposed beneath the later mudflat deposits breached by the



Segment	Potential for Roman Remains	Notes
		cable cut, joint bays and trenchless entry and exit pits. Geophysical anomalies in the west of the segment may reference enclosures of this date (AAI 12).
ECC9	Low to medium	Roman occupation, agricultural activity or salterns may be exposed beneath the later mudflat deposits at the base of the open cut trench across the segment bar an area in the north of the segment around Ings Road. This potential also applies to any joint bays and trenchless entry and exit pits.
ECC10	Low to medium	Evidence for occupation, agricultural activity or salterns. This potential applies to the cable cut, joint bays and trenchless entry and exit pits.
ECC11	Low to medium	Activity would be limited to salterns where the base of the cable trench breaches the later mudflat. This potential also applies to any joint bays and trenchless entry and exit pits.
ECC12	Low to medium	Activity would be limited to salterns where the base of the ECC breaches the later mudflat. This potential extends to all joint bays and all trenchless entry and exit pits as well as the cable trench (except in the western extremity of the segment).
ECC13	Low to medium	Activity would be limited to salterns where works may breach the later mudflat. This potential extends to the ECC and joint bays in the western half of the segment and the majority of trenchless pits.
ECC14	Low to medium	Activity would be limited to salterns where works may breach the later mudflat. This potential extends to the cable cut and joint bays in the northern part of the segment. Also, to the majority of trenchless pits.
A16 Compound	Nil	Due to the depth of overlying deposits of mud.

20.10.3 Anglo Saxon

247. As discussed above, sea inundation began in the late second century and continued during this period. The footprint of dry land within the Order Limits reduced. The majority of the Order Limits would have been within saltmarsh/mudflats once more, at least until the latter centuries of this period. Occupation activity in the first half of this period would have been attracted to areas west of the Order Limits, where higher ground was present. In reference to the deposit modelling, Anglo Saxon remains could be anticipated to be within or cut into the later mudflat deposit which is anticipated to be post Roman in date.
248. In reference to this inundation, it is known that the Romano-British salterns at Ingoldmells (2km east of the Order Limits – ECC2/3) are under 2-3m of silt as a consequence of this transgression. The alignment of the majority of northern and southern parts of the Order Limits at this time were most likely within wetlands and saltmarsh, at least during the first half of this period.



249. A sketch of the Saxon shoreline by Robinson illustrates the topography of coastal zone that the Order Limits would have been located in at this time, see **Plate 5** (Robinson 1981:17). According to this, only parts of ECC2 would have remained dry throughout this period. Green's mapping of the late Roman/post Roman creeks provides a little more detail of the nature of the marshland for the central section of the Project, see **Plate 6** (Green 2003 Figure 84).
250. It is noted that at the end of the period, a later eighth and ninth colonisation is recorded. At this time the creation of villages is referenced by placenames ending in 'by' and the creation of farmsteads is indicated in placenames ending in 'thorpe' (Robinson 1981).

20.10.3.1 ECC1 – Anglo Saxon

251. There is no recorded evidence for Anglo Saxon activity within the segment. Within the wider study area, Mumby, 1.3km to the north-west, has Anglo Saxon origins (HER reference ML182080) and activity is known at Cumberworth 2.5km west. The footprint of the ES falls outside of the areas of localised high ground within the study area where the PAS finds includes pins, strap ends, coins and brooches. This includes a small assemblage comprising of a penny, a brooch and a pin in the vicinity of the Order Limits on localised high ground to the east of Chestnut Farm (Quaker Hill).
252. Overall, Mumby and Cumberworth to the west of the northern end of the segment were the likely foci of activity during this period with the footprint of the ES likely under saltmarsh conditions. Hogsthorpe to the southern end of the study area may also hold later Anglo Saxon origins, inferred through placename evidence. Notably Robinson's sketch infers that the very southern end of the segment at the location of Hogsthorpe may have been west of high tide.
253. Palaeochannels recorded by the geophysical survey in the southern and central parts of the segment may relate to salt marsh creeks of this period, given that they are in a location thought to have been dry prior to this period. The electromagnetic survey indicates that a roddon may have formed at the southern example to the south of Lowgate Road. This silting may have occurred towards the end of this period but this is uncertain.

20.10.3.2 ECC2 – Anglo Saxon

254. The HER does not record any evidence for Anglo Saxon activity within the segment but a late Saxon stirrup and a coin are referenced within the footprint of the segment by the PAS. The stirrup from the location of a later deserted medieval village (DMV) (Slackholme) and the latter in fields to the south of the segment. These could relate to some agricultural



activity in the central and southern parts of the segment but this is uncertain and instead could relate to later episodes of manuring.

255. Within the wider study area, Hogsthorpe and Addlethorpe may be of Anglo Saxon origin. Both these villages are located in an area indicated by Robinson as being dry during this period, an area which extend across the northern part of the segment. Mumby, 1.8km to the north-west, has Anglo Saxon origins (HER reference MLI82080). Mumby, Hogsthorpe and Addlethorpe in the vicinity of the segment were the likely foci of activity during this period but other settlement cannot be ruled out.

20.10.3.3 ECC3 – Anglo Saxon

256. There are no recorded settlements of Anglo Saxon origin within the vicinity of the segment, although notably a Saxon burial mound is recorded within Burgh le Marsh 2.3km west. Evidence within the 2km study area is limited to eight findspots on the HER or the PAS variously referencing brooches, coins, a hasp, a stirrup and pottery. These could relate to later episodes of manuring. However, the pottery which is of late tenth century date potentially attests to a late Saxon origin to medieval settlement c.600m east of the northern end of the segment (HER reference MLI43672).
257. Robinson's map indicates the segment was located within saltmarsh during this period (**Figure 5**) and there remains a potential for salterns.

20.10.3.4 ECC4 – Anglo Saxon

258. Burgh le Marsh, present to the northwest of the study area, was likely to have seen continued settlement into the Anglo Saxon period. Indeed, the HER records some finds of this date within the town and the PAS records a single entry, a stirrup. Otherwise, there is no other evidence for Anglo Saxon activity within the study area.
259. Robinson shows this segment as being saltmarsh (**Plate 5**) and there is no evidence for activity towards the end of the period when conditions may have improved. Remains, if present are most likely to relate to salterns.

20.10.3.5 ECC5 – Anglo Saxon

260. Green's map of creeks by the Anglo Saxon period which extends from ECC5-ECC10 verifies Robinson's sketch and illustrates the presence of tidal creeks which would have characterised the area as salt marsh (Green 2023: Figure 84), see **Plates 5 and 6**. The geophysical survey and LiDAR assessment show number of palaeochannels crossing the



segment which are likely to accord with watercourses which may have originated during this period, although an earlier date may also be possible.

261. As referenced above, Burgh le Marsh present to the north of the study area was likely to have seen continued settlement into the Anglo Saxon period. Some activity may also have persisted to the east of the segment at Wainfleet All Saints, as evidenced by some pottery sherds (MLI41930), however as shown by Robinson, the segment footprint was likely under saltmarsh and tidal creeks during most of this period. Confirming this geography, a number of salt marsh creeks of late or post Roman date are recorded by Green to cross the segment. The viability of the land across the segment for habitation therefore is likely to have reduced in this period and any settlement activity would likely have retreated west. Salterns are the most likely archaeology within the footprint of the segment.

20.10.3.6 ECC6 – Anglo Saxon

262. The segment was located on the boundary between the east fenland and the townlands. In the east fens there was little or no settlement whereas in the townlands, some settlements were established during this period associated with salt making (Lord and MacIntosh 2011). The segment though was predominantly within the salt marsh see **Plates 5& 6** (Robinson 1981:17 & Green 2023: Figure 84). A number of salt marsh creeks of late or post Roman date are shown by Green as extending into the eastern parts of the segment. The viability of the land remains the segment for habitation is likely to have reduced in this period however Robinson does indicate that some saltmarsh islands may have been present which could have been utilised for some activity. These appear to correlate with the townlands and Friskney to the south of the segment, indicating that the footprint of the segment was probably away from the higher ground.

20.10.3.7 ECC7 – Anglo Saxon

263. The segment was located on the eastern fringes of the east fenland where there was little or no settlement during this period (Lord and MacIntosh 2011) although Green shows some late Saxon settlement on a roddon 1km west of the segment (**Plate 10B**). To the east of the segment an area known as the townlands was present where salt making activity was prevalent. In the townlands, both Robinson (1981) and Green (2023) provide illustrations which infer some raised ground within the saltmarsh at this segment (Robinson 1981:17) (Green 2023: Figure 84). Robinson's sketch of islands relates to Friskney and Wrangle to the east and south of the segment respectively. Wrangle is thought to have Scandinavian origins meaning 'Crooked Creek' (Lane 1993). The possible Saxon settlement at Wolmersty



to the east of the segment is also located in the vicinity of the islands on a low mound (Lane 1993) (MLI81190).

264. A number of salt marsh creeks of late or post Roman date are recorded extending into the northern part of the segment around Friskney Haven (**Plate 6**). The haven at Friskney east of the northern end of the segment may have attracted activity of this date, albeit evidence of this period is recorded through findspots primarily in the vicinity of Wrangle where a haven was also located 1.8km south of the segment. Salterns and perhaps some agricultural activity are most likely in this segment.

20.10.3.8 ECC8 – Anglo Saxon

265. On the boundary of the townlands and the eastern fens a salt making potential extends into this segment. A salt marsh character is referenced by creeks extending across the northern part of the segment and the immediate vicinity of the segment elsewhere (Green 2023: Figure 84) (**Plate 6**). This concurs with Robinson's sketch of the area (**Plate 5**). Wrangle's higher elevation appears to have facilitated continued activity of this date in its vicinity and evidence for late Saxon activity has been recorded through fieldwork undertaken within the village (Allen 2002). Away from Wrangle a single pot sherd has been recorded at King's Hill 600m north but this is likely residual and associated with later activity (MLI13199), and in the vicinity of this, a glass bead (MLI12828).
266. More notably, as referenced for the segment to the north, a possible Anglo-Saxon enclosure and meeting place may have been located midway between Wrangle Haven and Friskney Haven at Wolmersty (MLI81190), located 1.8km east of this segment. Also, settlement of this date was established at Old Leake, 1km south of the segment, where a haven may have been located (MLI88741). Salterns and perhaps some agricultural activity are most likely in this segment.

20.10.3.9 ECC9 – Anglo Saxon

267. The northern part of the segment located in the eastern fens saw little or no settlement during this period (Lord and MacIntosh 2011). The southern part of this segment located within the townlands passes between Freiston and Butterwick where deep tidal creeks are known to have extended during this period but where raised islands within the saltmarsh may have been present, see **Plate 7**. Evidence for Anglo Saxon remains including the remains of a firepit and fence are recorded 570m west of the segment at Freiston (MLI13427). Freiston is thought to derive from Fristune meaning place of the Frisians (Dymond 1992). At Freiston, the PAS records a brooch, a weight and tweezers of this



period, 650-920m west of the segment. The deep creeks extended to Leverton to the east of the segment, further north. The settlement at Leverton may have Anglo Saxon origins (MLI13273).

268. Aswell as settlement at Freiston, the main foci of activity during this period was to the south-west of the study area towards Fishtoft and Boston. At Fishtoft an island is thought to have been the location of an Anglo-Saxon coastal look-out (Green 2023). With regard to the footprint of the Order Limits, salterns and perhaps some agricultural activity are considered to be the most likely activity in this segment.

20.10.3.10 ECC10 – Anglo Saxon

269. Post Roman tidal creeks are recorded by Green extending across the northern half of the segment during this period (Green 2023: Figure 84), see **Plate 6**. Green also depicts the extent of a till island (in orange) across the central part of the segment, see **Plate 7**. A saltern labelled by Green accords with Robinson's references to saltmarsh, Plate (Robinson 1981) and the location of the segment within the townlands where salt making activity is recorded.
270. Evidence for Anglo Saxon occupation is recorded in the west at Fishtoft 560m-1km west of the central segment of the Order Limits (MLI13362, MLI13427, MLI84623, MLI97632 & MLI89073). The PAS also references a small assemblage at Freiston to the north of the segment. This includes two pins, two brooches, a weight and a hooked tag. To the west of Fishtoft, 'Toot Hill', 2km west of the segment, is thought to reference an Anglo Saxon look out point.
271. A singular Anglo Saxon find is recorded to the east of the study area, at Shore Road, 1.5km east of the Order Limits. This comprises a stirrup strap mount. This may infer a level of activity to the east of the ES footprint, potentially with 'Shore Road' holding reference to a former late Saxon shoreline at this location.
272. Whilst activity undoubtedly continued to be present at Fishtoft to the west of the segment, the majority, if not all of the ES footprint was most likely under salt marsh conditions at this time. Salterns are most likely as shown by Green.

20.10.3.11 ECC11 – Anglo Saxon

273. Robinson shows the segment as sands and silts (Robinson 1981) and the segment was highly marginal for most of this period, **Plate 5**. This is attested to by a very quiet baseline. Salterns cannot be entirely ruled out.



20.10.3.12 ECC12 – Anglo Saxon

274. Robinson shows the segment as sands and silts (Robinson 1981) and the segment was likely subject to inundation for most of this period, **Plate 5**. This is attested to by a very quiet baseline. Salterns cannot be entirely ruled out.

20.10.3.13 ECC13 – Anglo Saxon

275. Robinson shows the segment as sands and silts (Robinson 1981) and the segment was likely subject to inundation for most of this period (**Plate 5**). The marginality of the area is attested to by a very quiet baseline. Salterns cannot be entirely ruled out.

20.10.3.14 ECC14 – Anglo Saxon

276. Robinson shows the segment as sands and silts (Robinson 1981) and the segment was likely subject to inundation for most of this period (**Plate 5**). The marginality of the area is attested to by a very quiet baseline. Salterns cannot be entirely ruled out.

20.10.3.15 A16 Compound – Anglo Saxon

277. Sea levels may have risen during this period, with settlement of this date, most likely centred on dry ground around an early church, as is recorded at Kirton 1.5-1.9km south of the compound (MLI81656, MLI86230 & MLI91754). The Site, on a similar topography as Kirton, may well have remained dry during this period and may have come into agricultural use at this time.

20.10.3.16 ES Summary Potential – Anglo Saxon

Table 20.3: Anglo Saxon Potential

Segment	Potential for Anglo Saxon Remains	Notes
ECC1	Low	Apart from the extremely localised elevated areas at Quakers Hill, the general area including the footprint of the segment was likely marshy or inundated with activity located to the west on drier ground. Salterns possible. The geophysical survey records palaeochannels in the southern part of the segment which are likely to have formed during this period.
ECC2	Low	The area may have been relatively dry during this period with a potential for settlement and agricultural activity.
ECC3	Negligible to Low	The area was likely under saltmarsh with activity focused on drier land to the west. Palaeochannels recorded by geophysical and LiDAR may reference tidal creeks of this period.



Segment	Potential for Anglo Saxon Remains	Notes
ECC4	Negligible	The area was likely under marsh or marginal conditions with activity focused on drier land to the west. Palaeochannels recorded by geophysical and LiDAR may reference tidal creeks of this period.
ECC5	Negligible	The area was likely under salt marsh or tidal conditions with activity focused on drier land to the west. Palaeochannels recorded by geophysical and LiDAR may reference tidal creeks of this period.
ECC6	Low	The area was likely under salt marsh with tidal creeks. Salterns possible. Some raised islands may have provided for some activity in the vicinity of Friskney. The elevation of the segment was likely not as attractive for occupation. Palaeochannels recorded by geophysical, and LiDAR may reference tidal creeks of this period.
ECC7	Low	The area was likely under salt marsh with tidal creeks. Salterns possible. Some raised islands may have provided for some activity in the vicinity of Friskney and Wrangle. The elevation of the segment was likely not as attractive for occupation, but some agricultural activity may have occurred.
ECC8	Low	The area was likely under salt marsh with tidal creeks. Salterns possible. Some raised islands may have provided for some activity in the vicinity of Wrangle. The elevation of the segment was likely not as attractive for occupation, but some agricultural activity may have occurred.
ECC9	Low	The area was likely under salt marsh with tidal creeks. Evidence is still limited and activity for settlement in closest vicinity is focused at Fishtoft and Freiston at the southern end of the segment. Salterns most likely alongside some agricultural activity.
ECC10	Low	Salt marsh conditions are predicted for the majority of the period. Salterns possible.
ECC11	Low	Rising sea levels would likely have caused further or continued inundation but salterns not ruled out.
ECC12	Low	Rising sea levels would likely have caused further or continued inundation but salterns not ruled out.
ECC13	Low	Rising sea levels would likely have caused further or continued inundation but salterns not ruled out.
ECC14	Low	Rising sea levels would likely have caused further or continued inundation but salterns not ruled out.



Segment	Potential for Anglo Saxon Remains	Notes
A16 Compound	Low	Activity of this date is not entirely ruled out due to the proximity of known settlement at Kirton. It is probable that the area of the compound was dry during this period. Agricultural remains are possible.

20.10.4 Medieval

278. Subsequent to the post Roman flooding, the coastline during this period initially moved eastwards through a combination of marine regression and the deposition of material on the coastline from erosion occurring elsewhere (either from offshore shoals or the Yorkshire coastline) (Robinson 1981).
279. A review of Robinson’s mapping indicates that twelfth to thirteenth century coastline is anticipated to have been east of the Order Limits between ECC1 and the northern half of ECC11 (see **Plate 8**). This was due to the natural changes to topography but also as a consequence of the construction of defensive sea walls during this period. These segments were therefore likely to be dry, but some areas of wetter ground would have persisted as referenced in the relevant segments below.
280. The southern end of the Order Limits, Segments ECC13 (west) – ECC14 were probably still within saltmarsh or tidal during this period.
281. In reference to the deposit modelling, medieval remains could be anticipated to be within or cut into the later mudflat deposit.

20.10.4.1 ECC1 – Medieval

282. A medieval sea wall is recorded as being aligned through the northern part of the segment roughly parallel with the modern coastline (HER reference MLI88782). According with a feature known as the ‘Roman Bank’ this is of medieval date and is referenced as a surviving earthwork within the LiDAR assessment (**Annex 17**, Lidar Feature 3). Storm beach deposits are recorded to the east of this feature which may have resulted from the thirteenth century destruction of coastal islands (**Annex 18** Figure 47) These features were observed during the walkover undertaken as part of this assessment and also picked up on the LiDAR assessment (LiDAR Feature 4).



283. The sea wall would have facilitated a 'drier' character to much of the area and during this period the segment was located on the edge of an area known as the 'outmarsh' with the 'middle marsh' in close proximity to the west. Nucleated settlement was established in the middle marsh (Macintosh and Partington 2013). For example, settlement continued at Mumby located within the middle marsh 1.7km to the north-west of the segment throughout the medieval period (HER reference MLI82080).
284. The segment lay across four parishes which included a very small section of the Mumby parish at the southern end of the segment. Larger parts of the parishes of Anderby, Chapel St Leonards and Hogsthorpe cross the segment.
285. The outmarsh is thought to have been an area of grazing land and salt making. The grazing land was utilised for the fattening of large numbers of cattle and sheep.
286. Some isolated villages became established in the outmarsh at this time along drove roads (Macintosh and Partington 2013). These are likely to have included the consolidation of an earlier settlement at Hogsthorpe c.500m east of the segment where relatively higher ground was present (MLI82079).
287. To the north of Hogsthorpe an area ridge and furrow and other earthworks are recorded to the east of the segment (MLI88777 & MLI88769). This accords with an area of former strip fields shown on later mapping.
288. Earthwork enclosures of possible medieval date are recorded by the National Mapping Programme (NMP) 110m and 120m east of the segment (MLI88777 & MLI88775). Notably the LiDAR assessment notes earthworks potentially associated with HER reference MLI88777 but notes that these could be modern (LiDAR feature 5).
289. Another area of higher ground is present at Quakers Hill c.200m east of the segment. Later mapping may infer that some strip fields associated with this mound of higher ground may have crossed the segment.
290. Another NMP record is located at landfall. The date of this feature is unknown but could relate to medieval activity. Activity at this location is also recorded by the geophysical survey confirming a possible small enclosure.
291. The geophysical survey also records a series of anomalies which may relate to the sea wall. These are approximately perpendicular to the wall and extend as a series of small enclosures (**Annex 19**, Figure 14). These may be medieval in date although this is



uncertain. The geophysical survey has identified these specific anomalies as area of archaeological interest 1 (**Annex 19** Figure 8). These straddle areas of low and high conductivity and may therefore reference activity which represents exploitation of wetland margins. These would be crossed by a temporary access track (see Figure 20.1.10).

292. The geophysical survey also records some isolated anomalies of possible archaeological or undetermined origin towards the southern end of the route, either side of Lowgate Road and an isolated undetermined anomaly to the north of the A52 (**Annex 19** Figure 32). The anomalies either side of Lowgate Road are present within areas recorded as 'Old Inclosures' on an 1807 map of Hogshorpe. These could relate to activity of this date, but this is uncertain.

20.10.4.2 ECC2 – Medieval

293. The segment is also located within the area known as the 'outmarsh' used for grazing during this period. It lay across three parishes; Mumby, Hogshorpe and Addlethorpe.
294. The sea wall known to the north of the area likely continued to the east of the segment and provided for relatively dry conditions during this period although it is noted that the segment falls across a zone thought to have been relatively wet at least until the later part of the period see **Plate 9** (Green 2023: Figure 26) with place names inferring a wetter character.
295. The village of Mumby lay some distance to the north-west. Hogshorpe was relatively closer, 260m east of the northern end of the segment (MLI82079). Addlethorpe lay c.1km east of the southern end of the segment alongside an associated area of ridge and furrow.
296. Between Hogshorpe and Addlethorpe, an area of deserted medieval settlement is recorded within the central part of the segment. This is recorded as Slackholme (HER reference MLI99418). It is tangible through earthworks which were verified through the walkover survey (see **Annex 16**) and the LiDAR assessment (**Annex 17** LiDAR Feature 12). Below ground remains are also recorded by the geophysical survey which was extended beyond the Order Limits to cover the footprint of the HER entry at this location. The geophysical survey and LiDAR assessment undertaken thus far appear to indicate that the medieval settlement occupation area was west of the Order Limits (**Annex 19** Figure 57). The Order Limits within the footprint of the HER entry appear to occupy part of the associated field system which may extend to the immediate north where geophysical anomalies may reference an associated field system. This area of Slackholme is referenced as area of archaeological interest 3 within the geophysical report (**Annex 19** Figure 8).



297. An aerial photographic review undertaken to accompany the LiDAR assessment also verified the former presence of ridge and furrow earthworks within the segment footprint at this location and two potential holloways were recorded exterior to the segment which may be contemporary with the medieval phase (**Annex 17**).
298. The Project proposes to avoid the earthworks associated with Slackholme through the use of trenchless works (see Figure 3.4 (document reference 6.2.3.4).8 and the Schedule of Mitigation – document reference 8.13). This will avoid the cutting of an open trench through the earthworks and will preserve the integrity of the wider monument.
299. As referenced for previous period summaries, the geophysical also records a complex of anomalies to the north of Slackholme (**Annex 19** Figure 49). This is recorded as area of archaeological interest 2 (**Annex 19** Figure 8). Located c.300m north of the recorded footprint of the DMV, some anomalies may reference a medieval phase. Whilst this is uncertain post medieval mapping of this area with reference to ‘Sleckham Fields’ may support a medieval origin to some anomalies (**Plate 15**). These anomalies are located within an area which would be affected by open cut or trenchless works, cable installation compounds and a haul road (see **Figure 3.4 (document reference 6.2.3.4)**).
300. The placename ‘Slackholme’ is thought to reference very wet conditions (‘muddy island’ (Green 2023:Figure 26)), see **Plate 9**. This indicates that the conditions for settlement were still poor in places and as referenced above, it is surmised that apart from Slackholme, this segment was relatively ‘empty’ of settlement at least in the early to middle parts of this period in comparison to areas fringing the study area to the east and west (Green 2023: Figure 26). This may have been due to late dewatering of a sea inlet to the Wainfleet area.
301. However, the geophysical survey does record another area of anomalies at the southern end of the segment which accord with a HER reference for medieval enclosures (HER reference MLI98636) and a cluster of finds referenced by the PAS of medieval date. The geophysical survey records these anomalies as area of archaeological interest 4 (**Annex 19** Figures 8 and 63). The anomalies indicate a possible settlement or farmstead which may relate to activity of this period. Electromagnetic survey infers this may extended across low and high conductivity areas. This may infer activity on a dry land/wetland interface. These anomalies have also been verified by some differential growth noted by the walkover survey (**Annex 16**) and by cropmarks shown on oblique photographs held by Historic England’s Aerial Photo Explorer and data shown in the Aerial Photo Mapper which also shows anomalies indicting enclosures to the north (HER references MLI98636 & MLI98639). The



LiDAR assessment and verified anomalies within the footprint of HER reference MLI98639 (**Annex 17** LiDAR feature 15).

302. Further geophysical anomalies within the footprint of area of archaeological interest 4 include a possible trackway north of Marsh Lane (**Annex 19** Figure 63). The interpretation of this feature has been assisted by the electromagnetic survey which indicates a possible gravel bank.
303. Area of archaeological interest 4 would be affected by open cut or trenchless works, cable installation compounds and a haul road (Figure 3.4 (document reference 6.2.3.4).10).
304. Some geophysical anomalies may also reference some areas or quarrying or salterns at the southern end of the route. These are undated but could reference activity of this date. It is noted (from Green's mapping) that this area at the southern end of the segment may have been located on the edge of a tidal creek during this period which could indicate the presence of salterns.

20.10.4.3 ECC3 – Medieval

305. This segment as ECC2, is located within the area thought to have been relatively wet until the latter part of the period, see **Plate 9**.
306. It is located within the area known as the 'outmarsh' used predominantly for grazing during this period and it lay across three parishes; Burgh le Marsh, Ingoldwells and Orby in the Marsh. The villages associated with these parishes were at some distance from the segment, at least 2km in all cases. This concurs with the theory that the main areas of settlement skirted this wetter area.
307. Nevertheless, an area of medieval settlement is recorded within the central part of the segment (MLI88895). This is shown on **Plate 9** as 'Muddy/Slugdy Place'. It was first recorded through aerial photographic analysis undertaken by Historic England. This recorded earthwork enclosures and ridge and furrow prior to arable use which has removed the earthworks. These former earthworks are recorded on Historic England's Mapper showing NMP data. Finds recorded from the PAS within the footprint are limited to a medieval buckle and a vessel handle. The walkover survey confirmed the removal of the earthworks, although the LiDAR assessment infers some potential field system remains which could relate to this period (**Annex 17** LiDAR feature 18). Geophysical survey at this location extended beyond the Order Limits to capture the HER entry footprint. It confirmed some possible anomalies referencing potential enclosures to the west of the Order Limits



(**Annex 19** Figures 8 and 70). This is recorded as area of archaeological interest 5 in the geophysical survey.

308. Historic England's map explorer also shows the presence of another anomaly potentially referencing a medieval earthwork enclosure within the southern end of the segment (HER reference MLI87795). Geophysical survey did not record any remains at this location.
309. Furthermore, a LiDAR anomaly of a possible mound potentially concurring with an undetermined geophysical anomaly is referenced at the southern end of the segment (LiDAR feature 19). This may reference a feature of medieval date, but this is uncertain.
310. Geophysical survey records possible quarries or salterns in the north of the segment. These are undated but could reference activity of this date. It is noted (from Green's mapping) that this area at the northern end of the segment may have been located on the edge of a tidal creek during this period which could indicate the presence of salterns.

20.10.4.4 ECC4 – Medieval

311. As above, this segment is also located within the area thought to have been relatively wet until the latter part of the period, see **Plate 9**. The southern end of the segment would have been located in close vicinity to the coastline of this period (which is shown in yellow on **Plate 9**).
312. It is located within the area known as the 'outmarsh' used predominantly for grazing during this period and it lay across two parishes; Burgh le Marsh and Croft/Bamburgh. The villages associated with these parishes are located on higher, drier ground, concurring with the theory that the main areas of settlement skirted this wetter area.
313. Medieval settlement continued at Burgh le Marsh 1.5km west of the northern part of the Order Limits (MLI80563). A relatively large number of HER and PAS entries reference finds of this date within the town and also at nearby Croft c.1km west of the Order Limits and Wainfleet just beyond the study area to the south-west.
314. Reference to activity within the segment boundary includes evidence for the extension of open fields within the footprint of the segment. This is illustrated by the former presence of ridge and furrow earthworks recorded by the National Mapping Programme and shown on Historic England's Map Explorer at the northern end of the segment (MLI98096). These are recorded as agricultural anomalies by the geophysical survey. Other earthworks are recorded in the vicinity of the segment in the north (MLI98097).



315. These assets relate to agricultural activity which may indicate some drier areas within the grazing marsh, or areas drained for arable purposes. A lack of evidence for occupation is perhaps due to the marginality of the footprint of the segment which was within the comparatively 'empty zone' in comparison with areas fringing the study area to the east and west (Green 2023: Figure 25 & 26).
316. The geophysical survey does record some anomalies at the southern end of the segment which may relate to salterns or quarrying activity.

20.10.4.5 ECC5 – Medieval

317. The majority of the segment is located within the marshes used for grazing during this period and is shown on mapping by Green to be crossed by a number of creeks, see **Plates 9 and 10** (Green 2023 Figure 90), the larger creek according with the modern course of the Lymn. Settlement on the edge of this part of the marsh was potentially facilitated by the protection against flooding which was provided by banks of made ground established by salt making. This is evidenced in the vicinity of this segment at Wainfleet St Mary approximately 1km east of the southern end of the segment. This settlement was established in the twelfth century on waste mounds from salt making. In closer proximity to the segment, the villages of Croft and Thorpe St Peter were located at the eastern and western ends of segment respectively.
318. The village of Croft was located c.500 north/800m west of the eastern end of the segment (MLI41724 & MLI90833). Ridge and furrow within drained enclosures associated with Croft is recorded in the vicinity of the village (MLI97716). Additional historic areas of ridge and furrow are recorded in the proposed compound at the eastern end of the segment, shown on Historic England's Aerial Mapping Explorer (MLI98166). These have since been subject to the plough and are no longer extant as earthworks.
319. It is noted that a further area of ridge and furrow is located within the segment footprint south of Croft which is not recorded in the HER or the NMP. Eroded earthworks were recorded by the LiDAR assessment and verified by the walkover survey (LiDAR feature 25). These would be avoided through trenchless techniques.
320. Thorpe St Peter was present at the 300m west of the western end of the segment (MLI90855). An area of drained enclosures with ridge and furrow is recorded in the immediate vicinity of the route here (MLI125705).
321. Multiple references to ridge and furrow elsewhere within the study area attest to agricultural activity of this period associated with the villages. The PAS records a number of finds within



a field 150-230m west of the western end of the Site. These include medieval buckles, tokens, coins, buttons and clasps.

322. Geophysical anomalies at the northern and the central parts of the segment include evidence for salterns which are probably earlier but could relate to this period (**Annex 19** Figures 9, 98 & 126). These are recorded within areas of archaeological interest 6 and 7. In area of archaeological interest 7, the rectilinear morphology to some of the palaeochannels may infer an anthropological modification associated with salt making (**Annex 19** Figure 126). The salterns would be affected by open cut or trenchless works and a haul road (Figures 4.7.16 & 4.7.18).
323. Also recorded in area of archaeological interest 6 are anomalies in the vicinity of Croft which, whilst afforded an Iron Age/Roman date by the geophysical survey, could also reference activity of this date (**Annex 19** Figure 119). These are notable in their location on an area of low conductivity which infers drier better draining land. These are located within an area of trenchless works (Figure 3.4 (document reference 6.2.3.4).17). Other undated anomalies which may be medieval in date are recorded in area of archaeological interest 8 at the western end of the segment on the banks of the Wainfleet Haven (**Annex 19** Figure 9 and 133). These are located within an area of trenchless works (Figure 3.4 (document reference 6.2.3.4).19).

20.10.4.6 ECC6 – Medieval

324. This segment was located to the south of Wainfleet Haven within the parishes of Wainfleet St Mary and Friskney (see **Plate 10**). In general, it is within the lowlands within an area known as the townlands, where the historic villages extant today were established by the eleventh century (Lord & Macintosh 2011) . These would have included Friskney to the south of the area.
325. The geophysical survey records enclosures of a possible field system of unknown date at the northern end of the segment. This is recorded as area of archaeological interest 8 which extends to the north into segment ECC5 (**Annex 19** Figures 9, 133 & 140). These would be affected by trenchless or open cut works, cable installation compounds and a haul road (Figure 3.4 (document reference 6.2.3.4).19). A medieval date cannot be ruled out at this stage albeit an agricultural spread associated with a former farm building may reference a later date. These anomalies extend across areas of low and high conductivity and may infer agricultural activity within a semi-dry area.



326. Further south, possible settlement remains of medieval date extend into the central footprint of the segment; evidenced historically by cropmarks, earthworks and findspots (MLI90648). Area of archaeological interest 10 referenced within the geophysical survey verifies anomalies here which could relate to activity of this period (**Annex 19** Figures 9 & 147). These roughly concur with anomalies recorded by the LiDAR assessment also (**Annex 17** LiDAR feature 26) and are located within an area of low conductivity within the electromagnetic survey; inferring settlement on drier better draining land. Proposals here include open cut or trenchless works and a haul road (Figure 3.4 (document reference 6.2.3.4).21).
327. A possible drove road (Hallgate Road) associated with this settlement is recorded as crossing the segment footprint (MLI90647). A trackway according with this feature was noted on the walkover survey (see **Annex 16**). This would probably have extended into the marshland footprint of the segment and beyond towards Wainfleet. It is noted that later mapping of this vicinity does infer the presence of some potential strip fields crossed by the segment at this location and the HER references medieval pottery within these fields (MLI141754). The LiDAR assessment also records potential ridge and furrow at this location (LiDAR feature 28).
328. Settlement elsewhere in the study area is attested to by moated sites including Thorpe Hall moated site (MLI42252) 1.5km north and scheduled examples 1km south and 2.2km south (NHLE 1011453 & 1016044). The PAS records a stirrup west of the segment (within MLI90648) and a coin east. The PAS also records a number of finds within a field 300m north of the segment. These include medieval buckles, tokens, coins, buttons and clasps.

20.10.4.7 ECC7 – Medieval

329. The segment is in the lowlands on the boundary of the townlands and the eastern fens (**see Plate 10** (Green 203: Figure 88)). Located across the parishes of Friskney and Wrangle, the villages of which are located to the east and south of the segment. These represent settlement in the townlands area by the start of this period, on raised areas within the marsh. The western edge of the tofts, thought to represent the early to mid-medieval coastline, formed when the Friskney haven silted up, present 1.6km east of the segment (MLI82744). The salterns choking Friskney Haven which is crossed by the segment are shown in **Plate 10**.
330. Settlement at Friskney during this period is evidenced by the earthworks of crofts and tofts which are recorded as extending to the east of the segment but are likely to be in closer



vicinity to Friskney (MLI125410). Two moated sites in the vicinity of the village are also recorded immediately adjacent to the segment (MLI41791 and Abbey Hills – NHLE 1016044). Other scheduled moated sites are recorded 550m east & 1.3km west (NHLE 1011453 & 1018398). The possible marginality of at least some parts of the area is referenced by these moated sites. The Abbey Hills monument comprises a sub-rectangular moated site thought to be the remains of a medieval house, farm and associated structures and ponds. It may have belonged to the Benedictine abbey of St Oswald, Bardney, but this is uncertain. Notably, the scheduling description references a paved causeway which may have connected the moated site to Friskney. If this existed it would have crossed the Order Limits, specifically a proposed access road.

331. The geophysical survey records anomalies to the immediate north and north-west of the monument; area of archaeological interest 9 (**Annex 19** Figures 10 & 175). It is noted that the survey extended to a former iteration of the Project footprint and that the majority of the anomalies are located outside of the Order Limits. The anomaly appears to indicate the presence of an enclosure which could reference associated activity. The correlation of this enclosure with areas of low conductivity on the electromagnetic survey is notable.
332. The Order Limits correspond with the southern arm of the enclosure and its north-western corner. The southern arm extends into the northern part of a secondary construction compound (see **Figure 20.1.9** and **Figure 3.4 (document reference 6.2.3.4).24**). The north-western corner clips the cable corridor. A proposed temporary access road crosses some undetermined anomalies within the interior of the enclosure which interface with areas of higher conductivity.
333. Settlement activity continued further afield at Wrangle (MLI13137). To the north of Wrangle, 1km west of the segment, a possible medieval castle is recorded at Kings Hill (MLI10036) and also in the vicinity of Wrangle, 690m south of the segment a DMV is recorded (MLI13123), known as Wolmersty. The segment therefore has a potential for associated activity of at least an agricultural nature.
334. The location of a possible mill mound and pond is also recorded in the section (HER MLI41778). This is undated but could be medieval or post medieval in date. The walkover survey verified potential remains of a pond crossed by the segment.
335. It is notable that later mapping infers the possible presence of medieval strip fields to the eastern and western sections of the segment, away from the tidal creeks crossing the central section.



20.10.4.8 ECC8 – Medieval

336. The segment is in the lowlands on the boundary of the townlands and the eastern fens. It extends across the parishes of Wrangle and Old Leake. The village cores are located 1.4km and 600m south of the segment respectively. Both settlements were established on tidal creeks. The network of creeks would have extended across the segment until they became silted during this period. The silting could have been related to salt making and in reference to this, a medieval saltern is recorded 400m north of the segment (MLI13191). This references a potential still for salt marsh.
337. Observation of post medieval mapping indicates the potential presence of strip fields in the eastern and western parts of the segment. These are located either side of a central area thought to have been affected by tidal creeks at this time, and not suitable for arable activity. These strips in the east and west of the segment could relate to medieval enclosures associated with Leake and Wrangle. Geophysical anomalies of enclosures towards the western end of the segment may date to the period, although this is uncertain. These are recorded as area of archaeological interest 12 (**Annex 19** Figures 10, 217 & 224). Proposals here comprise a cable installation compound and trenchless works (Figure 3.4 (document reference 6.2.3.4). The HER records a post medieval farmstead at this location (MLI124524). This could infer a medieval pre-cursor is possible.
338. A motte and bailey castle of eleventh century origin is recorded at Kings Hill 400m north of the segment (NHLE reference 1018398). This is thought to be associated with coastal defence and is unusual in its associated pottery complex of thirteenth to fourteenth date which includes non-local wares (Lane 1993). A further moated site is recorded 1.8km east (MLI12815).

20.10.4.9 ECC9 – Medieval

339. The segment, in the lowlands, extends across the eastern fens in the north and the area known as the townlands in its central and southern sections. Settlement in the eastern fens was rare by the start of this period (Lord and MacIntosh 2011).
340. A sea bank to the south-east of the segment likely afforded the area known as the townlands in the south from inundation during this period (MLI12783 & MLI12777). At the southern end of the segment, the settlement of the townlands area by the start of this period is evidenced by the presence of Freiston c.400m west of the southern part of the segment (MLI13399) and Butterwick 550m east (MLI13317). These are likely to have been established on tidal



creeks. Salterns on these creeks may be present. Also notable at Freiston was the establishment of the priory of St James by 1114 (MLI12764).

341. The medieval road between Boston and Wainfleet, aligned along the modern A52, crosses the segment (MLI13280) to the north of Freiston and Butterwick. It is possible that the land between this road and the villages, crossed by the southern part of the segment, was utilised for arable activity during this period. Certainly, evidence for strip fields is shown on later mapping crossing the majority of the segment. A small area of ridge and furrow is recorded by LiDAR (**Annex 17** feature 38) and the geophysical survey records ridge and furrow trends (**Annex 19** Figure 259). The geophysical survey also records anomalies which may reference enclosures of an agricultural nature to the east of Freiston. This is recorded as area of archaeological interest 11 (Annex 19 Figures 11& 259) These anomalies extend across areas of low and high conductivity and may infer agricultural activity within a semi-dry area. Proposals here comprise open cut or trenchless works, cable installation compounds and a haul road (Figure 3.4 (document reference 6.2.3.4).35).
342. The PAS also records a large number of finds in a field to the west of Freiston c.700m west of the southern part of the segment. A notable number of finds are also recorded at Sibsey, c.2.7km west of the northern end of the route.

20.10.4.10 ECC10 – Medieval

343. The medieval road between Boston and Wainfleet is recorded as being aligned along the modern A52, approximately 2km north of the Order Limits at its closest point (MLI13280). At this location, this road skirted to the north of an area of large tidal creeks and inlets which characterised the footprint of this segment at the start of this period (Plate7). The energetic tidal creeks may have precluded early settlement during this period with Fishtoft being the early exception occupying an anomalous area of high ground.
344. As the period progressed, a sea wall known as the 'Roman Bank' was established c.1.7km east of the Order Limits (MLI12777). The silting up of the tidal creeks from salt making and the presence of the sea wall probably combined to facilitate grazing and some settlement. Potentially, field boundaries shown on later mapping may infer a potential medieval origin through their comparatively irregular morphology but this uncertain as they could also reference early post medieval drainage before later reorganisation.
345. The settlement of Freiston became established and the continued settlement of Fishtoft was facilitated (north and west of the Order Limits). The segment falls within the parishes associated with Fishtoft and Freiston. The geophysical survey records anomalies at the



northern extremity of the segment which may relate to activity at Freiston which included the Priory of St James by 1114. These are recorded as enclosures with possible evidence for burning which could indicate salt making. The electromagnetic survey records that these are located on the interface of areas of low and high conductivity areas which could indicate an environment where salt making would be possible. This is recorded within the geophysical survey as part of area of archaeological interest 11 (Annex 19 Figure 266). Proposals here comprise open cut or trenchless works, cable installation compounds and a haul road (Figure 3.4 (document reference 6.2.3.4).35).

346. A brooch and a pendant are recorded by the PAS between the Order Limits and Fishtoft. Other settlement of medieval date is recorded at Peachey Hall 400m east of the northern part of the segment (MLI12769). This may infer some potential for moated sites within the grazing land outside of the more nucleated settlements of Freiston and Fishtoft although the geophysical survey does not record any evidence of these within the Order Limits. The PAS records a brooch, a thimble and a ring in the vicinity of Peachy Hall.

20.10.4.11 ECC11 – Medieval

347. Located within the townlands area, a sea defence is recorded crossing the Order Limits at its northern end (MLI97710), which was verified by the walkover survey. This sea wall would not be breached by the proposals (trenchless). The HER doesn't verify its extension from here, but it is noted that later Ordnance Survey mapping and (in part) the LiDAR assessment both reference this sea wall (the 'Roman Bank') as extending along the coastline to the east of the segment. At one point its alignment sits to the immediate west of the segment again, south of Multon Hall scheduled monument. Seawall earthworks at this location were verified by the walkover survey. These would not be breached by the proposals.
348. The sea wall in the north may have prevented sea flooding southwards from a tidal creek and the sea wall in the east, inundation from the sea. However, the segment footprint is still likely to have been marginal in respect to settlement as nucleated village settlement is not present in the vicinity of the segment; Frampton/Coupledyeke (MLI86290/ MLI12618) and Wyberton being some distance to the west. The segment falls within the associated parishes and also the parish of Kirton.
349. Notably later mapping (the 1888 Ordnance Survey) infers the potential presence of fields across the segment which could have originated during this period, with irregular boundaries. Robinson's map of the coastline at 1300 certainly infers that the twelfth to thirteenth century coastline was to the east of the northern and southern parts of the



segment so a medieval origin to fields to fields in these areas cannot be discounted. Field boundaries were visible within the southern extremity of the segment on aerial photographs held at the Swindon archive (see **Annex 17**).

350. In reference to other isolated occupation of a landscape to the landward side of the sea defence, a large moated site is present 100m west of the segment (NHLE 1018584). The PAS records a number of finds within the vicinity of this moated site. Within the segment or its vicinity at this location these include 10 coins, five buckles, two harness pendants, four harness mounts, a brooch and a badge.
351. Another moated site is located 1.7km east of the Order Limits (MLI13338). The scattered nature of the moated sites may reflect a still marshy character across the majority of the ES at this time despite the sea defences.

20.10.4.12 ECC12 – Medieval

352. The segment is predominantly recorded as being located within the reclaimed coastal fringe which prior to post medieval reclamation was likely under coastal marshland (Lord & MacIntosh 2011).
353. The LiDAR assessment records earthworks of a potential sea wall to the eastern side of the Order Limits (LiDAR Feature 52). These concur with the mapping of the coastline as referenced by Robinson, see **Plate 5**. Potential parish boundaries extending across this area would have been associated with Kirton and Fosdyke.
354. Other potential sea walls of medieval date are recorded by the LiDAR assessment as crossing the segment. In the north of the segment this accords with a large drain which doesn't expressly relate to the 'Roman Bank' but could be medieval in date (the Kirton Drain). Earthworks were noted here during the walkover assessment (**Annex 16**). The proposals would not breach this asset. It is noted that to the north of this, later mapping indicates the survival of strip fields in the late nineteenth century which could reference an area of strip fields at this location.
355. In the south, the LiDAR anomaly interpreted as a sea wall and crossing the segment does accord with the later depiction of the 'Roman Bank' on mapping. This also accords with the recorded edge of the townlands character area which falls across the very southern part of the segment. The walkover assessment verified the presence of a sea wall at this location (**Annex 16**). This feature would be drilled under by the proposals.



356. Fosdyke, located c.700m from the segment on the landward side of this sea wall may have origins within this period; the churchyard at Fosdyke, has a medieval standing cross (NHLE reference 1010678) and may reference an earlier precursor to the post medieval church. The PAS records a single medieval coin at Fosdyke. The fields to the landward side of the 'Roman Bank' at the southern end of the segment may be of medieval origin as they are sinuous in nature but these could also be later.
357. In summary, apart from isolated sections at the northern and southern ends of the segment where some medieval fields may have been present, the majority of this segment did not benefit from a well-maintained sea wall defence and was more marginal than other segments during this period. Salterns cannot be discounted due to the conditions of this area and other LiDAR anomalies in proximity to the sea wall at the southern end of the segment may relate to such features (LiDAR Features 57 and 60).

20.10.4.13 ECC13 – Medieval

358. The segment is predominantly located within the Bicker Haven which during this period was a tidal estuary providing navigable access to the village of Bicker located 8km north of the segment (Lord & MacIntosh 2011). The Bicker Haven, including the footprint of the OnSS was marine in character at this time.
359. The 'Roman Bank', known to be a defence of medieval date, was in close vicinity to the north of the segment, potentially clipping the eastern part of the segment at one location and some salterns cannot be ruled out in the eastern half of the segment. This sea bank clipping the eastern end of the segment is shown on later mapping and an earthwork of a sea wall at this location was verified by the walkover survey which also verified three mounds recorded through LiDAR which may reference salterns (see Annex 17).

20.10.4.14 ECC14 – Medieval

360. The segment is predominantly located within the reclaimed wash farmlands which would have been tidal during this period.
361. A medieval sea bank was present 300m to the south of the segment (MLI98445). The PAS records a number of finds around and to the south of the sea bank. These comprise 4 coins, a ring, a weight and a mount. The sea bank likely protected new settlements and land to the south such as Moulton to the south of the study area. Present between Moulton and the seabank was a monastic grange located 1.4km south of the Order Limits (NHLE 1019096). This was associated with Spalding to the south-west and was located purposefully within an isolated area.



362. The Order Limit boundary would be anticipated to have been located across salt marsh or of tidal character.

20.10.4.15 A16 Compound – Medieval

363. Located within the townlands area and within the parish of Frampton, the compound is located 600m north-west of Frampton settlement (MLI86290). Ridge and furrow associated with Frampton or Kirton is recorded 940m south of the compound (MLI25562). The geophysical survey indicates that ridge and furrow also extended across the footprint of the compound.

20.10.4.16 ES Summary Potential – Medieval

Table 20.4: Medieval Potential

Segment	Potential for Medieval Remains	Notes
ECC1	Medium to high	The area includes the medieval sea wall at its eastern end (HER references MLI88781/2). The land within the Order Limits is likely to contain features relating to the agricultural use of the land although salterns cannot be discounted at landfall. Anomalies at area of archaeological interest 1 may relate. Some medieval boundaries are possible to the west of Quakers Hill where the LiDAR assessment has recorded a possible earthwork (LiDAR feature 5). Below ground remains of parish boundaries may also be present.
ECC2	Low to High	Dry land was facilitated by a sea wall during this period and the segment crosses the footprint of a DMV (Stackholme – MLI99418) which is verified by geophysical survey and referenced on later mapping with Sleekham Field to the north. Another settlement is recorded at the southern end of the segment – through geophysical anomalies concurring with PAS medieval finds and a HER reference for a medieval enclosure (MLI98636). Anomalies in area of archaeological interest 4 relate. Other settlement remains are unlikely due to the marginality of the area characterised by wetter ground but agricultural activity in general could also be present within the segment. Below ground remains of parish boundaries may also be present.
ECC3	Low to High	The segment crosses the footprint of possible medieval settlement attested to by earthworks visible on historic aerial photographs (HER reference MLI88895). No earthworks were observed on a walkover. Other settlement remains are unlikely due to the marginality of the area characterised by wetter ground but agricultural activity in general could also be present within the segment. An earthwork enclosure crossed by the southern part of the segment may relate to this (HER MLI87795). Below ground remains of parish boundaries may also be present. Possible mound recorded by LiDAR (feature 19). Potential for salterns.
ECC4	Low to High	The area was still likely to have been relatively wet during this period with established settlement located to the fringes of the study area to the east and west. However, ridge and furrow is



Segment	Potential for Medieval Remains	Notes
		recorded which evidences a potential for agricultural remains within drained enclosures in the central part of the segment. Below ground remains of parish boundaries may also be present. The geophysical survey has recorded some possible salterns at the southern end.
ECC5	High	Evidence is anticipated to be related to agricultural remains particularly in the area of Croft. Possible remains associated with salterns on the inland creeks – saltern anomalies in areas of interest 6 and 7 relate. Below ground remains of parish boundaries may also be present.
ECC6	High	Evidence is anticipated to be related to possible early salt making on inland creeks or agricultural activity including a drove road the presence of which was confirmed by the walkover (HER MLI90647). Possible but limited medieval field boundaries in the northern (area of archaeological interest 8) and central sections. Some settlement cannot be ruled out where LiDAR and geophysical anomalies (area of archaeological interest 10) reference an enclosure in accordance with a HER entry (MLI190648).
ECC7	High	Possible remains associated with Abbey Hills moated site may extend into the ECC at area of archaeological interest 9. Otherwise, settlement anticipated to be limited due to marshland nature. Some salterns on inland creeks cannot be ruled out in the centre of the segment. A possible paved causeway may extend between the known Abbey Hills moated site and Friskney and could therefore cross a proposed access road. A possible mill site is also recorded (MLI41778) although this could be post medieval. Below ground remains of parish boundaries may also be present. Potential remains of strip fields of medieval date in the eastern and western parts of the segment.
ECC8	High	Potential for medieval enclosures across the eastern and western parts of the segment. Geophysical anomalies at the western end of the segment may relate to this (AAI 12). Possible salterns in the central part of the segment. Below ground remains of parish boundaries may also be present.
ECC9	Low to High	Evidence is anticipated to be related to possible salterns in the south of the segment and medieval enclosures around the A52 and across much of the segment where strip fields may have been present. This includes area of archaeological interest 11. The A52 is recorded as a medieval road (MLI13317). Below ground remains of parish boundaries may also be present.
ECC10	Low to High	Salt making along tidal creeks is possible. Potential agricultural activity associated with grazing. Medieval field boundaries possible. Geophysical anomalies in area of archaeological interest 11 may relate and also reference possible salt making. Below ground remains of parish boundaries may also be present.
ECC11	Low to High	A sea wall verified by site observations crosses the northern part of the segment (MLI197710) and also abutting the central part of the segment south of the Multon Hall scheduled monument. This is of medieval date and may have brought parts of the segment into marginal use. Settlement foci is anticipated away to the west



Segment	Potential for Medieval Remains	Notes
		outside the segment footprint but the presence of field systems cannot be discounted. Salterns are possible. Below ground remains of parish boundaries may also be present.
ECC12	Low to High	Likely predominantly marginal grazing areas with a potential for salterns. Upstanding sea wall remains in the north and the south according with the Roman Bank. Below ground remains of other sea walls (LiDAR feature 52) and parish boundaries may also be present. An upstanding segment of the Roman Bank is possible in the southern part of the segment and also in the north. Some potential for medieval field boundaries in the extreme north and south.
ECC13	Negligible – High	The segment was predominantly within the Bicker Haven and marshland. A section of sea wall, probably the Roman Bank, clips the eastern end of the segment. Salterns cannot be entirely ruled out.
ECC14	Negligible – High	The segment was likely tidal. Salterns cannot be entirely ruled out.
A16 Compound	High	The compound may have been part of a wider open field system associated with Frampton. The geophysical survey records below ground remains of ridge and furrow.

20.10.5 Post Medieval

364. During the post medieval period, the Order Limits was subject to wholesale drainage and enclosure. For the first time since potentially the Palaeolithic period, the whole of the Order Limits became dry. The 1888 Ordnance Survey map, see **Figure 20.7**, confirms that where areas were once marginal, enclosure and drainage has brought the whole Order Limits into productive land suitable for widespread arable use. The 1888 map is referenced throughout the following section, with earlier maps referenced to further illustrate the nature of enclosure. In reference to the deposit modelling, post medieval remains could be anticipated to be cut into the later mudflat deposit.

20.10.5.1 ECC1 – Post Medieval

365. Historic Landscape characterisation records the segment within the ‘grazing marshes’ subject to large scale drainage and enclosure in the eighteenth and nineteenth centuries (Lord & MacIntosh 2011). The earliest maps studied as part of this assessment comprise the Anderby 1805 Enclosure Map and the Hogsthorpe 1807 Enclosure Map. The enclosure would have been made possible by the cutting of channels known as the Four Hundred Acre Drain, the Willoughby High Drain and the North Drain.



366. The Anderby map, see **Plate 12**, illustrates some strip fields to the south of landfall which could reference some earlier enclosure, potentially medieval. These east-west strips concur with old field boundaries recorded by the LiDAR assessment at this location.
367. The Hogsthorpe map, see **Plate 13**, appears to confirm an antiquity here, showing 'old enclosures' to the immediate south of the parish boundary with Anderby. The Hogsthorpe map also shows 'Old Inclosures' across numerous other segments of the Order Limits which concur with some LiDAR anomalies referencing potential strip fields (LiDAR feature 7).
368. Ordnance Survey mapping dating to 1888 verifies that the segment including all of the 'old inclosures' had undergone further enclosure in its entirety by the end of the nineteenth century. Since the production of the 1888 map, fields have been consolidated. This was likely undertaken once the fields became drier and able to be ploughed.
369. In reference to the continued arable use of the land within the vicinity of the Order Limits, a large number of dispersed farmsteads attests to an intensely settled landscape under arable or other agricultural use during this period. These include Cowslip Cottage at the northern end of the segment (MLI18799). This was not shown on the 1805 Anderby Enclosure, see **Plate 12**. Proposals here comprise a temporary laydown area.
370. The maps verify the presence of the 'Roman Bank' at landfall. Two maps of 1855 and 1869, specifically produced to show sea walls, were also studied as part of this assessment. The 1855 map is produced, **Plate 14**. This shows the Roman Bank annotated as the 'Old Bank'.
371. The geophysical survey records a series of anomalies to the west of the 'Roman Bank' which may relate to the sea wall. These are approximately perpendicular to the wall and extend as a series of small enclosures. These may be post-medieval in date although this is uncertain. The geophysical survey references this as area of archaeological interest 1 (**Annex 19** Figure 14). These are located within a construction compound and temporary access road area (**Figure 20.1.10**).
372. The geophysical survey also records some linear anomalies towards the southern end of the route which are present within an area recorded as 'Old Inclosures' on an 1807 map of Hogsthorpe. This could relate to activity of this date, but this is uncertain.

20.10.5.2 ECC2 – Post Medieval

373. The 1807 Enclosure map of Hogsthorpe (**Plate 15**) continues south to show segment ECC2 extending across a number of 'Old Inclosures' 'Broad Common' and notably 'Sleckham



Fields' and 'Sleckham Common' which were likely associated with a former settlement in this vicinity, Slackholme (MLI99418).

374. The LiDAR assessment records a former field system within the 'Old Inclosures' between Sleckham Common and Sleckham Fields (LiDAR feature 10). The parcels shown within 'Sleckham Fields' accord with cropmarks shown on an oblique photograph held by the Historic England Mapping Explorer.
375. To the south of 'Sleckham Common' a slightly later map dated 1811 shows the enclosure of fields (**Plate 16**). This illustrates the presence of irregular shaped fields to the south of the common at the location of Slackholme DMV and, to the south of these, strip fields which are likely to be medieval in date. The strip fields have since been agglomerated. The irregular fields south of the common remain extant with minor field boundary loss.
376. The 1888 Ordnance Survey map shows the retention of the field boundaries within the area shown as Sleckham Fields on the 1807 map. In the areas of other common and old inclosures shown on the 1807 map the Ordnance Survey verifies enclosure by the end of the nineteenth century.

20.10.5.3 ECC3 – Post Medieval

377. The Burgh le Marsh Enclosure map shows a windmill in the northern part of the parish crossed by the segment and strip fields extending from the village across the centre of the segment, see **Plate 17**. These may reference earlier enclosure. To the north and south of these potentially early strips, more geometric fields are present. These include a field to the west of the former Marsh Farm (HER reference MLI19883) where a field system is recorded by LiDAR inferring that these larger more rectilinear fields were also once subject to earlier enclosure and had by this date been agglomerated (LiDAR feature 18). Geophysical survey records some isolated anomalies to the west of the Order Limits at Marsh Farm which could be post medieval in date.
378. The strip fields have since been agglomerated somewhat into the post medieval landscape which depicts wholesale drainage for arable use during this period, typical of the character of the wider area in the vicinity of the segment. A number of scattered farmsteads accompanied the drainage of the area albeit apart from the windmill referenced above none are shown on the HER or historic maps. A LiDAR anomaly at the northern end of the segment may reference a former farmstead (LiDAR feature 16 – Annex 17).



379. A LiDAR anomaly of a possible mound potentially concurring with an undetermined geophysical anomaly is referenced at the southern end of the segment (LiDAR feature 19). This may reference a feature of post medieval date but this is uncertain.

20.10.5.4 ECC4 – Post Medieval

380. The Burgh le Marsh parish extends into this segment which includes a mix of field morphologies illustrating enclosure during this period which would have been made possible by the cutting of drainage channels including the Wedlands Drain and the Cathwater Drain (**Plate 18**).
381. The southern part of the segment crossed the parish of Croft, see **Plate 19**. Some consolidation into larger fields has taken place in parts of the segment. Generally, this illustrates the post medieval expansion of arable farming across the segment, albeit no farmsteads are shown within the Order Limits on the historic mapping.

20.10.5.5 ECC5 – Post Medieval

382. The majority of the segment on the 1888 Ordnance Survey displays field boundaries which reference enclosure of the eighteenth and nineteenth centuries with fields being geometric or relatively regular in plan. This reflects the former presence of tidal creeks across much of the segment which may have prevented enclosure until the organised and largescale drainage of the area during this period. This drainage was facilitated by channels such as the Weir Dike which crosses the western end of the segment (LiDAR assessment feature 24).
383. The eastern end of the segment in the vicinity of Croft displays a slightly different field morphology with fields of irregular shape drained by natural sinuous streams. This may infer a relatively earlier date of enclosure in the eastern part of the segment. These are to the north of Croft Bank which is recorded by the LiDAR assessment to the south of this part of the segment.
384. A number of scattered farmsteads accompanied the drainage of the area. This includes a farmstead within the eastern part of the segment which is visible on the 1809 map of Croft (MLI120254), see **Plate 20**. This is in an area which could have been protected by the Croft Bank. Proposals here are for open cut or trenchless works.
385. The LiDAR assessment also references potential evidence for post medieval marling in the western end of the segment (LiDAR feature 22).



20.10.5.6 ECC6 – Post Medieval

386. The 1888 map references 'low grounds' in the eastern half of the segment. This area generally accords with an area of tidal creeks known from earlier periods on Green's mapping. This area may therefore have been relatively wet until widespread drainage and enclosure during this period but some limited evidence for some earlier strip fields in this part of the segment is inferred from the 1888 map. These small areas are in the extreme northern part of the segment and in a section in the centre of the segment where the HER records evidence for medieval activity.
387. At the northern end of the segment the geophysical survey records anomalies which could relate to medieval or post medieval activity, although this is uncertain. This is recorded as area of archaeological interest 8 which extends to the north into segment ECC5 (**Annex 19** Figures 9, 133 & 140). Their location accords with an area of strip fields shown on 1888 Ordnance Survey mapping and associated with a farmstead (HER reference 124352). Agricultural spreads associated with the former farm buildings are also shown on the geophysical. These anomalies would be effected by trenchless or open cut works, cable installation compounds and a haul road (Figure 3.4 (document reference 6.2.3.4).19)
388. Otherwise, the field boundaries shown on the 1888 mapping are likely to reference post medieval enclosure, albeit enclosure relatively early on in the period when enclosure utilised the natural drainage of the area. This enclosure has undergone little change since, albeit it is notable that fields to the east of the Scheduled Monument (a duck decoy) in this segment have undergone some straightening of boundaries when compared with the Friskney enclosure map of 1847 (**Plate 21**) which otherwise confirms enclosure in accordance with the 1888 Ordnance Survey in the western part of the segment.
389. A Duck Decoy is a feature utilized for fowling, specifically the capture of ducks and other water fowl. This method of hunting waterfowl not only allows the capture of multiple birds, but also increases the quality of the meat, which otherwise would have contained shot through the more traditional method of fowling by the use of guns. Decoys essentially comprise a central large body of water which branches into several tapered ditches. Each ditch comprises several net-covered hoops which reduce in size as the tapering of the ditches decreases. This combination of netting and hoops is collectively known as a *pipe*.
390. The method of capture is simple, once enough birds have entered the central pool, they are encouraged/channeled along the pipes. Two methods were commonly used to channel the ducks, either by the use of dogs or temptation by feeding. The design of incorporating



several branches of pipes relates to the changing wind conditions, where feeders and capturers would remain downwind of the ducks, often hidden behind parallel screens. The prime harvest months were between October and March, leaving the other months for maintenance. During the harvesting months, Decoymen were constantly on the lookout concealed in hidden shelters or structures.

391. The origins of Decoying lie as far back as the 17th century, its etymology deriving from the dutch word *koye* meaning cage. Decoying originated in Holland and given the large dutch presence in relation to the post-medieval draining from the Lincolnshire fenland it is no surprise as to the doption of decoying the East of England. The East of England, particularly Lincolnshire and Essex, was the most prevalent spot for Duck Decoying although examples have been identified in Yorkshire and Cambridgeshire. Payne-Gallway (1886) states that the 'Stronghold of Decoys was at and near Holland Fen, Spalding, Crowland, and Lincoln, and more than anywhere else between Wainfleet and Boston, some of the best being at Friskney', Friskney the home of the notable Skelton Family, famous for their knowledge and prevalence within the industry.
392. The fenland conditions were an extremely isolated and therefore an attractive location for fowl to reside. 31,000 ducks were allegedly caught in one season at ten Decoys within the Wainfleet area (Payne-Gallway 1886), giving weight to the sheer amount of fowling that occurred in the county. There was no law in respect to Decoys and their usage was varied, supporting the livelihoods of poorer individuals or for trade by wealthier landowners. A number of scattered farmsteads became established across the area during this period with one within the footprint of the segment at the northern end (MLI124352). This is referenced as being demolished. Four other buildings are also recorded on historic mapping within the footprint of the segment.
393. In summary the enclosure of the area for arable farming was completed during this period, with some limited areas retaining field boundaries associated with earlier strip farming.

20.10.5.7 ECC7 – Post Medieval

394. The fieldscape shown on the 1888 Ordnance Survey map shows the presence of former strip fields in the eastern and western parts of the segment. These are verified by their depiction on earlier maps of Wrangle (1807) in the west, see **Plate 22**, and Friskney in the east (1847), see **Plate 23**. These may be medieval in origin, the western area potentially assisted by the Gold Fen Dyke (LiDAR feature 31).



395. The central section of the segment is characterised by fields of a different character, see **Plate 24**.
396. These are within an area labelled as 'Friskney low grounds' on the Ordnance Survey and an area where mapping by Green references the former presence of tidal creeks within Friskney Haven. The mixed curvilinear and sometimes more uniform morphology of the fields in this section of the segment is thought to represent post medieval enclosure through drainage utilising the natural drains where possible.
397. Some later re-organisation has seen the removal of some field boundaries.
398. A number of scattered farmsteads became established across the area during this period but none are shown within the segment footprint. The location of a possible mill mound and pond is also recorded in the segment (HER MLI41778). This is undated but could be medieval or post medieval in date. The walkover survey verified potential remains of a pond crossed by the segment.
399. In summary the enclosure or the area for arable farming was completed during this period, with some areas retaining field boundaries associated with earlier strip farming.

20.10.5.8 ECC8 – Post Medieval

400. The fieldscape shown on the 1888 Ordnance Survey map shows two distinctive field patterns. In the east and west this references the probable presence of earlier strip fields. In the east of the segment between Common Road Drain and Segment ECC7, these are also shown on the 1807 Enclosure map for Wrangle, see **Plate 25**.
401. A similar pattern is shown in the western part of the segment where strip fields formerly associated with Old Leake may have been present (**Plate 26**).
402. A different field pattern is shown in the centre of the segment where comparatively irregular boundaries may indicate some early post medieval drainage where tidal creeks were present in earlier periods. The post medieval drainage of this area would have utilised the natural drainage channels where possible.
403. Some later reorganisation has taken place in the central area and has extended across the earlier strip fields in the east and the west. This reflects late post medieval drainage and reorganisation to facilitate arable farming.



404. A number of scattered farmsteads became established across the area during this period including two within the Old Leake area crossed by the segment and which have since been demolished (MLI124524 & MLI124527). The latter may be affected by the proposed haul road whilst the former is within an area of trenchless works.
405. In the vicinity of HER reference MLI124524, geophysical anomalies of enclosures may date to the period, although this is uncertain. These are recorded as area of archaeological interest 12 (**Annex 19** Figures 10, 217 & 224). Proposals here comprise a cable installation compound and trenchless works (Figure 3.4 (document reference 6.2.3.4)).
406. In summary the enclosure or the area for arable farming was completed during this period, with some areas retaining field boundaries associated with earlier strip farming.

20.10.5.9 ECC9 – Post Medieval

407. An 1820 enclosure map of the parish of Freiston, referencing enclosure after the embankment of saltmarshes, shows organised enclosure where the segment loops around the village, see **Plate 27**. To the south of Freiston, these are thought to reference new enclosure of land previously under grazing made possible by the Hobhole drain. To the north of the village, between Freiston and the route of A52, which is thought to be a road of medieval date, the enclosures bordering the A52 may reference fields of earlier medieval date which were associated with drier land to the north of the village.
408. The arrangement of the fields around Freiston in 1820 are verified by the 1888 Ordnance Survey map. This also maps the parts of the segment to the north of the A52 and appears to indicate the presence of further former strip fields across much of the segment which could reference a medieval origin to the fieldscape. Predominantly these have been amalgamated through improvements post 1888 but some boundaries of earlier date will remain.
409. Also shown on the 1888 map are the large number of scattered farmsteads that became established during this period. This includes one demolished nineteenth century farmstead on the boundary of the segment in the central section (MLI124196). This area would be affected by open cut or trenchless works. LiDAR assessment also identifies another possible site of a building at the northern end of the segment (LiDAR feature 35) and possible earthworks associated within another post medieval building at the southern end of the segment (LiDAR feature 37). These would be effected by by open cut or trenchless works.



410. In summary embankment and the Hobhole drain facilitated major landscape change and facilitated the creation of large numbers of fields across the segment.

20.10.5.10 ECC10 – Post Medieval

411. The land to the seaward side of Fishtoft and Freiston, crossed by the segment, is likely to have been under grazing at the start of this period, with the sea wall to the east providing for some shelter from inundation. Some early post medieval enclosure may have been undertaken but significant change was brought about at the turn of the eighteenth/nineteenth century. The Hobhole drain which crosses the southern half of the segment was constructed in the early eighteenth century. This drained the east fen to the north of the segment but also facilitated drainage across the area crossed by the segment.
412. Shortly after the construction of this drain the enclosure of land around Freiston was shown on an 1820 map, **Plate 28**. This corresponds with the depiction of the northern two thirds of the segment on the slightly later 1888 Ordnance Survey which shows enclosed fields across the northern half of the segment. These have since seen further improvements to drainage and amalgamation.
413. The parish of Fishtoft across the southern part of the segment was also similarly affected by drainage during this period with the Fishtoft Enclosure Map depicting the enclosure of the majority of the segment, with only the southern extremity still under marshland but with a new cut for The Haven, see **Plate 29**. A farmstead at the end of Sea Bank road is visible on this map (LiDAR feature 45).
414. The 1888 map verifies enclosed fields across the segment at this time and the creation of the new cut for The Haven with final enclosure for this part of the segment. The fields across the segment have since seen some reorganisation through subsequent amalgamation.
415. In summary the segment was drained and enclosed during the latter part of this period. A number of scattered farmhouses became established across the area. Structures included some buildings at both extremities of the segment. The buildings at the northern end of the segment are referenced as Caythorpe House, a demolished nineteenth century farmstead (MLI124228) (LiDAR feature 39). This would be affected by the proposed haul road. This is shown on the 1820 Freiston Map. The buildings at the southern end are shown on the 1844 Fishtoft Map on the edge of marshland. These are within an area of trenchless works.



20.10.5.11 ECC11 – Post Medieval

416. An 1839 map of the parish of Kirton shows the southern end of the segment (see **Plate 30**) which is likely to have been to the west of the 1300 coastline. The strip fields or more rectilinear fields crossed by the Order Limits to the edge of more sinuous areas could represent relatively early enclosure in this period.
417. The 1888 map shows the whole segment and verifies the presence of the Roman Bank crossing the northern part of the segment and extending to the east of the segment, between the segment and the coastline. The fieldscape to the landward side of this sea wall and across the majority of the segment is shown in 1888 as being characterised by irregular shaped fields with sinuous boundaries common. This may reference medieval enclosure of meadowland or relatively early enclosure during this period utilising the naturally formed drainage channels within the former grazing land as it became drier. These have all since been amalgamated by more organised later enclosure and drainage of this period.
418. A photograph held by Historic England's Aerial Photo Explorer shows possible meandering boundaries of former drainage ditches as crop marks at the southern end of this section. These are likely to reference drainage of this period.
419. To the north of the Roman Bank, the Hobhole drain represents a major early nineteenth century drainage feature. This facilitated the drainage of the fens and the extreme northern part of this segment previously not protected by the old Roman Bank. At this location the 1888 map shows geometric land parcels of recently drained land.
420. In summary the segment was subject to drainage and re-enclosure during this period with earlier field boundaries which may been an earlier phase of post medieval enclosure amalgamated. A number of scattered farmhouses became established but there is no evidence for the presence of farmhouses within the footprint of the segment.

20.10.5.12 ECC12 – Post Medieval

421. The 1888 map shows that all but the extreme northern and southern parts of the segment were within an area between a 'new sea bank' in the east and the 'Roman Bank' in the west. This confirms that the area was provided with a greater level of sea defences during this period. Certainly, by the date of the 1888 map the whole of the segment was within an area which was enclosed and suitable for arable farming. The fieldscape of the majority of the segment generally reflects post medieval enclosure with geometric fields.



422. A different field pattern is discernible to the northern and southern ends of the segment, the isolated parts of the segment which fall to the landward side of the 'Roman Bank' (a medieval sea bank) and which may therefore have a greater landscape depth through earlier protection from the sea.
423. The fields in the south of the segment, potentially associated with earlier enclosure associated with Fosdyke, are irregular in shape with sinuous boundaries reflecting the use of naturally formed drains for enclosure. It is noted that the alignment of the 'Roman Bank' at this location is erroneously straight and that this may reflect a post medieval alteration. The fields at this location may therefore be of post medieval date with the irregular morphology utilising naturally formed drainage with some later reorganisation coming when the land had dried out.
424. The fields shown on the 1888 map in the northern part of the segment may also reflect the presence of former older enclosures showing at this date as long sinuous enclosures which may reflect former strip fields. However, these have since been amalgamated.
425. In summary during this period the area was enclosed and protected in its entirety from the sea. Scattered farmsteads were able to become established in an area which was previously predominantly marginal. Including two nineteenth century farmstead within the footprint of the segment. This comprised Fosdyke Cottage at the southern end of the segment which would be affected by the proposed haul road (ML123126) and another farmstead at the northern end of the segment (LiDAR feature 51) which would be located within an area of trenchless works. No other farmsteads are recorded within the footprint of the segment.

20.10.5.13 ECC13 – Post Medieval

426. The falling sea levels of the sixteenth and seventeenth centuries saw the Bicker Haven and coastal marshes, which the segment was previously located across, dry/warm up. The evolving land surface in the wider area was drained and enclosed from this time. This was done in an organised pattern with rectilinear and straight field boundaries evident. The only sinuous boundaries are those that reflect the naturally formed drainage channels which were utilised as part of the man-made network of drainage channels as part of the wider reclamation process.
427. By 1660 Bicker Haven had been cut off from the sea (Robinson 1994). Reflecting this, one of the earliest farmsteads in proximity to the segment includes The Gables located 600m west of the proposed OnSS (NHLE reference 1146546). This is dated at 1692 and represents the earliest occupation of a reclaimed landscape at this location.



428. Works to create a new cut for the River Welland in this area were undertaken around 1838. This would have caused significant landscape change across or within the vicinity of the segment. Another nearby farmstead, Wraggmarsh farmhouse of c.1800 date may be contemporary with these works (NHLE 1147603).
429. The 1888 Ordnance Survey map shows the 'Roman Bank' (the old medieval sea wall) to the north of the segment but clipping it at one location. Bicker Creek is shown crossing the segment. This reflects the presence of the former Bicker Haven and represents the naturally silted up channel which was incorporated into the post medieval drainage of this area.
430. The map also verifies the presence of the new cut for the Welland which is present to the south of the segment. The aforementioned farmsteads, The Gables and Wraggmarsh, are shown and known to be extant. Two more farmsteads are shown in close vicinity to the segment; Poorland Farm and School Farm (MLI122571 & MLI122914). These are recorded as nineteenth century in date. Both have been demolished.
431. Also shown adjacent to the segment boundary is an area of uncertain earthworks (LiDAR Feature 56). Geophysical survey of this area did not record archaeological anomalies.
432. In summary the segment was reclaimed, drained and enclosed during this period. A number of scattered farmhouses became established but there is no evidence for the presence of farmhouses within the footprint of the segment.

20.10.5.14 ECC14 – Post Medieval

433. The falling sea levels of the sixteenth and seventeenth centuries saw the Bicker Haven and coastal marshes, which the segment was previously located across, dry/warm up. The evolving land surface in the wider area was drained and enclosed from this time. This was done in an organised pattern with rectilinear and straight field boundaries evident. The only sinuous boundaries are those that reflect the naturally formed drainage channels which were utilised as part of the man-made network of drainage channels as part of the wider reclamation process.
434. By 1660 Bicker Haven had been cut off from the sea (Robinson 1994). Works to create a new cut for the River Welland in this area were undertaken around 1838. This would have caused significant landscape change across or within the vicinity of the segment.
435. The 1888 Ordnance Survey map shows the 'Roman Bank' (the old medieval sea wall) to the south of the segment. The map also verifies the presence of the new cut for the Welland



which is crossed by the segment. A farmstead, Bottom Farmhouse (MLI122915) which is still extant adjacent to the Order Limits was established during this period. The LiDAR records an outlying building within the Order Limits which could relate to Bottom Farmhouse (LiDAR feature 60).

436. In summary the segment was reclaimed, drained and enclosed during this period. A number of scattered farmhouses became established but there is no evidence for the presence of farmhouses within the footprint of the segment. There is, however, some evidence for the presence of a tramway which was constructed in the first half of the twentieth century (MLI22401 & LiDAR feature 59). The purpose of the tramway is uncertain.

20.10.5.15 A16 Compound – Post Medieval

437. The alignment of the A16 present to the west of the compound occupies the footprint of the Lancashire Loop railway line. This was constructed for the Great Northern railway. A railway cottage was built to the immediate west of the proposed compound in 1848 (MLI3446). It was associated with facilitating the crossing of this line by Millfield Lane which bounds the southern boundary of the Site. The remainder of the HER entries are dominated by post medieval assets, including numerous farmsteads as the area came under intensive arable/agricultural use through extensive drainage from the mid sixteenth century onwards. None are located within the footprint of the compound.

20.10.5.16 ES Summary Potential – Post Medieval

Table 20.5: Post Medieval Summary Potential

Segment	Potential for Post Medieval Remains	Notes
ECC1	High	Field boundaries of post medieval date. Nineteenth century farmstead at the northern end of the segment (MLI118799).
ECC2	High	Field boundaries of post medieval date.
ECC3	High	Field boundaries of post medieval date. Possible mound recorded by LiDAR (feature 19). Possible farmstead (LiDAR feature 16) and possible windmill.
ECC4	High	Field boundaries of post medieval date.
ECC5	High	Field boundaries of post medieval date. Demolished remains of a nineteenth century buildings at the northern end of the segment (MLI120254).
ECC6	High	Field boundaries of post medieval date potentially including anomalies in area of archaeological interest 8. Demolished remains of a nineteenth century buildings at the northern end



Segment	Potential for Post Medieval Remains	Notes
		of the segment (MLI124352). Four other buildings elsewhere within the segment are shown on historic Ordnance Survey.
ECC7	High	Field boundaries of post medieval date. Potential pond associated with a mill which could be post medieval in date (MLI41778).
ECC8	High	Field boundaries of post medieval date. Demolished remains of a nineteenth century building (MLI124527) plus an isolated nineteenth century agricultural building at the western end of the segment. Area of archaeological interest 12 may relate to post medieval activity.
ECC9	High	Field boundaries of post medieval date. Demolished remains of nineteenth century farmstead at one location in the central section of the route (MLI124196). Another possible location of a former building shown by LiDAR at the northern end of the segment and at the southern end (LiDAR feature 35 and 37).
ECC10	High	Field boundaries of post medieval date. Demolished remains of nineteenth century buildings at the northern extremity (MLI124228/LiDAR 39) and southern extremities. Post medieval drainage features (principally the Hobhole Drain).
ECC11	High	Field boundaries are anticipated to be predominantly post medieval in date.
ECC12	High	Field boundaries are anticipated to be predominantly post medieval in date. Potential remains of two nineteenth century farmsteads (MLI123126) (LiDAR feature 51).
ECC13	High	Field boundaries are anticipated to be post medieval in date. Defensive earthworks along the Bicker Creek are post medieval in date. Defensive earthworks along the Bicker Creek are post medieval in date.
ECC14	High	Field boundaries are anticipated to be post medieval in date. Possible remains of an outbuilding to Bottom Farm (LiDAR feature 60) and possible remains of a post medieval tramway (LiDAR feature 59).
A16 Compound	High	Field boundaries are anticipated to be post medieval in date.

20.10.6 Summary

438. The location of the Order Limits on a coastline which has seen significant periods of marine transgression and regression has resulted in complex and thick sequences of interchanging alluvium and peat, covering deeply buried prehistoric and later land surfaces.
439. Episodes of sea flooding since the end of the Mesolithic into the medieval period have deposited substantial deposits of mud flats across the entirety of the Order Limits. The first period of mudflat deposition occurred during the prehistoric period when the high-water mark became established 5-10km west of the current coastline (Green 2023). This coastline subsequently moved in and out with further episodes of sea transgression and regression



which are anticipated to have affected all of the Order Limits at some point, with the southern part of the Order Limits under water or tidal from the late Mesolithic onwards.

440. A notable period of regression occurred in the Iron Age/Roman period when the high-water mark is known to have moved eastwards, placing some of the Order Limits which had been marshland or tidal since the Neolithic period, into dry land once more. However, the southern end of the Order Limits remained tidal or under water. A later phase of mud deposition, likely post Roman in date, is anticipated to have occurred when sea flooding into the Anglo Saxon and medieval periods caused the high-water mark to move west again.
441. These sequences of dramatic depositional events have buried earlier archaeology at some significant depth across much of the Order Limits footprint with some areas, such as the southern end of the Order Limits being under water or tidal conditions from the Mesolithic to the Post Medieval period.
442. Medieval activity was made possible through the construction of sea walls with extant earthworks or below ground potential for seawalls identified in segments ECC1 & ECC11-13. None would be breached by the proposals. These would have contributed to bringing the whole of the Order Limits into possible agricultural or pastoral activity apart from the southern extremity which was likely within the footprint of the Bicker Haven – ECC13/14. Settlement is known to have become established at extant historic villages within the vicinity of the Order Limits at this time and evidence for some deserted settlement extending within the Order Limits is known at ECCC2, ECC3 and ECC6. Evidence for significant moated sites is provided by two scheduled examples comprising Abbey Hills moated site (NHLE 1016044) adjacent to ECC7 and Multon Halll moated site (NHLE 1018584) located 100m west of ECC11.
443. Post medieval activity references land reclamation and agricultural activity across the entirety of the Order Limits. This includes some potential for remains of demolished farmsteads and other agricultural buildings. This period likely saw the first occupation of the southern parts of the route, specifically ECC13/14,
444. Table 6: Overall Archaeological Potential presented below. This presents a simplified illustration of archaeological potential with due regard to the outline construction proposals presented in Figure 3.4 (document reference 6.2.3.4). This draws on Tables 1-5 in this report which reference the segment specific discussions of baseline presented within the body of this report. Please note that confirmed trenchless techniques are reflected in this table, for example area of archaeological interest 3 is omitted as shown on Figure 3.4



(document reference 6.2.3.4).8 which confirms the avoidance of the deserted medieval village at Slackholme. Whilst a potential for more extensive trenchless techniques is possible with reference to Figure 3.4 (document reference 6.2.3.4), a worst-case scenario is presented below.

20.10.6.1 Prehistoric (up to 750BC)

445. Only at isolated and specific locations within the Order Limits would the Proposals have the potential to disturb stratigraphy of possible early prehistoric date. At these discrete locations worked flint of Palaeolithic and Mesolithic and possible short term features date may be present. These areas are at locations where the proposals have the potential to breach the base of the earliest mud flat deposit. This may occur at the following locations and assumes project parameters as set out above.

- trenchless entry and exit pits in
 - ECC1 (part of)
 - ECC2
 - ECC3 (part of)
 - ECC5 (part of)
 - ECC6 (part of)
 - ECC7
 - ECC8
 - ECC9 (part of)
 - ECC10 (part of)
 - ECC11 (part of)
 - ECC13 (part of)
 - ECC14 (part of)
- Joint bays
 - ECC7 (part of)
 - ECC8 (part of)
- Open cut trench
 - ECC7 (part of)
 - ECC8 (part of)
 - ECC10 (part of)
- OnSS - piled foundations in excess of 10.5 BGL

446. Later prehistoric worked flint and wooden artefacts such as fishtraps and jetties may survive within the waterlogged stratigraphy of the earlier mudflat. These artefacts would represent episodes of transient activity from the Mesolithic period onwards. These may be present



where the works could breach the later mud deposit and potentially affect stratigraphy of the earlier mud flat deposit. This may occur at the following locations and assumes project parameters as set out in section 20.8.

- TJB in ECC1.
- OnSS in ECC13.
- Open cut trench in –
 - parts of ECC1, 9, 12, 13.
 - all of ECC2, 3, 4, 5, 6, 7, 8, 10, 11
- Joint bays in –
 - parts of ECC1, 2, 9, 13, 14
 - all of ECC3, 4, 5, 6, 7, 8, 10, 11, 12.
- Trenchless entry and exit pits in –
 - parts of ECC9, 13, 14
 - all of ECC1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12.

20.10.6.2 Iron Age to Roman (750BC to c.AD 410)

447. Iron Age occupation/agricultural activity may be present sealed by the later mudflat and could be exposed where the works may breach the base of the later mudflat deposit. Based on the results of baseline assessment including the results of geophysical survey and the variable location of the Order Limits in relation to the high-water mark at this time, it is anticipated that Iron Age occupation or agricultural activity could be present where the later mudflat could be breached by the following works in AOP A2 of the deposit modelling.

- Open cut trench in –
 - parts of ECC1
 - all of ECC2, 3, 4, 5, 6
 - this includes area of archaeological interest 2 in ECC2.
- Joint bays in –
 - parts of ECC1, 2
 - this includes area of archaeological interest 2 in ECC2.
 - all of ECC 3, 4, 5, 6
- trenchless entry and exit pits in –
 - all of ECC1, 2, 3, 4, 5, 6
 - this includes area of archaeological interest 2 in ECC2.

448. Potential Roman occupation and agricultural activity may extend into the footprint of the Order Limits in segments ECC1-ECC10 reflecting marine regression which pushed the high-



water mark east in the northern and central parts of the Order Limits. On the premise that these are covered by the later mudflats, these would be affected where the works could breach the later mudflat in areas where the Roman high-water mark is anticipated to the east of the Order Limits. With regard to baseline assessment including the results of the geophysical survey this would potentially be restricted to works within the footprint of the following.

- Open cut trench in –
 - parts of ECC1, 9.
 - all of ECC2, 3, 4, 5, 6, 7, 8, 10
 - this includes area of archaeological interest 2 in ECC2 & area of archaeological interest 8 in ECC6.
- Joint bays in –
 - parts of ECC1, 2, 9.
 - this includes area of archaeological interest 2 in ECC2.
 - all of ECC3, 4, 5, 6, 7, 8, 10.
 - This includes area of archaeological interest 8 in ECC6.
- trenchless entry and exit pits in –
 - all of ECC1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
 - this includes area of archaeological interest 2 in ECC2, area of archaeological interest 8 in ECC6 and area of archaeological interest 12 in ECC8.

449. Iron Age/Roman salterns could be possible within the footprint of the order Limits in segments ECC1-14. On the premise that these are covered by the later mudflats these would be within deposits breached by the following Project parameters. This includes AOP A1 of the deposit modelling plus areas north of this where the early tidal mud flat may be breached. With regards to the results of baseline assessment including the results of geophysical survey, salterns could be present at the following locations:

- TJB in ECC1
- OnSS in ECC13.
- Open cut trench in –
 - parts of ECC1, 9, 12, 13, 14.
 - all of ECC2, 3, 4, 5, 6, 7, 8, 10, 11.
 - this includes areas of archaeological interest 2 & 4 in ECC2, areas of archaeological interest 6 & 7 in ECC5 and other specific anomalies in ECC3.
- Joint bays in –



- parts of ECC1, 9, 13, 14.
- all of ECC2, 3, 4, 5, 6, 7, 8, 10, 11, 12.
 - this includes area of archaeological interest 2 in ECC2 and areas of archaeological interest 6 & 7 in ECC5 and other specific anomalies in ECC3.
- trenchless entry and exit pits in –
 - parts of ECC9, 13, 14.
 - all of ECC1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12.
 - this includes area of archaeological interest 2 in ECC2 and areas of archaeological interest 6 & 7 in ECC5 and other specific anomalies in ECC3.

20.10.6.3 Anglo Saxon (c.AD 410-1066)

450. A wetter character to the central and northern parts of the route is likely to have returned during the Anglo-Saxon period when the sea levels encroached once more. This likely rendered the majority of the Order Limits marginal with settlement favouring slightly elevated land which does not appear to have extended into the Order Limits. Some potential for agricultural/pastoral activity may extend to segments ECC2, 7, 8 & 9. Salterns may be present in segments ECC1-14.

20.10.6.4 Medieval (1066-1485)

451. Areas identified through geophysical survey which could include medieval activity comprise areas of archaeological interest 1 (ECC1), 2 (ECC2), 3 (ECC2), 4 (ECC2), 5 (ECC3), 6 (ECC5), 8 (ECC5/6), 9 (ECC7), 10 (ECC6) 11 (ECC9/10) and potentially 12 (ECC8). Conditions would have allowed the continued presence of salterns along tidal creeks in most of the Order Limits except potentially segments ECC2-4. Saltern geophysical anomalies which could be of medieval date are located in areas of archaeological interest 6 (ECC5) & 7 (ECC5). Other geophysical anomalies in area of archaeological interest 1 1 (ECC10) could reference salt making of this date.

20.10.6.5 Post medieval (1485- modern)

452. Post medieval activity references land reclamation and agricultural activity across the entirety of the Order Limits. This includes some potential for remains of demolished farmsteads and other agricultural buildings as referenced by HER entires and LiDAR features. This period likely saw the first occupation of the southern parts of the route, specifically ECC13/14. Areas identified through geophysical survey which could include post medieval remains comprise areas of archaeological interest 1 (ECC1), 8 (ECC6) and 12 (ECC8).



20.10.6.6 Peat and Palaeochannels

453. Also, of note, are the potential deposits of peat which could be present between the tidal mudflats or interleaved within them. Peat deposits could potentially be present within the Project parameters bar the haul roads and the compounds across the Order Limits. The deposit modelling identifies particularly thick areas of peat deposits (**Annex 18** Figure 47-49). The thickness of these deposits likely infers where the most stable wetland habitats were located. These areas are where the potential for organic preservation may be greater. Thinner deposits located elsewhere may infer less stable areas or areas where erosion caused by inter-tidal process has affected the accumulation and survival of peat. The electromagnetic geophysical survey may be useful in indicating areas where the preservation of organic material in areas of peat is most likely. These are high conductivity areas shown in blue on the geophysical figures (**Annex 19**).
454. The peat has the potential to hold the same artefacts discussed for the waterlogged deposits of mud, namely fishtraps, jetties and trackways but also (alongside the waterlogged deposits in general) deposits with paleoenvironmental potential which could inform on past landscapes and environments. The thicker areas of peat referencing more stable areas of wetland not affected by more energetic tidal or fluvial processes would hold a greater potential. The deposits associated with the palaeochannels across the Order Limits could also inform on landscape change over time and depositional sequences from the prehistoric period onwards.



Table 6: Overall Archaeological Potential

Project Parameter	Prehistoric Potential*	Roman Potential*	Anglo Saxon Potential*	Medieval Potential*	Post Medieval Potential*	Peat & Palaeochannels
ECC1						
TJB	✓ T/S	✓ S	S	A (AAI 1?) S (AAI 1?) SW	A PMF (MLI118799)	✓
Trenchless exit	✓ P/A/T/S	✓ P/A/S				
Trenchless entry	✓ P/A/T/S	✓ P/A/S				
Open Cut	✓ p/a/t/s	✓ p/a/s				
JB	✓ p/a/t/s	✓ p/a/s				
HR	X	X				
Compounds	X	X				
ECC2						
Trenchless exit	✓ P/A/T/S (AAI 2)	✓ P/A/S (AAI 2)	S A P	A P (AAI 4)	A	✓
Trenchless entry	✓ P/A/T/S (AAI 2)	✓ P/A/S (AAI 2)				
Open Cut	✓ P/A/T/S (AAI 2)	✓ P/A/S (AAI 2)				
JB	✓ p/a/t/s (AAI 2)	✓ p/a/s (AAI 2)				
HR	X	X				
Compounds	X	X				
ECC3						
Trenchless exit	✓ P/A/T/S	✓ P/A/S	S	A P	A PMF (LiDAR 16) and windmill M	✓
Trenchless entry	✓ P/A/T/S	✓ P/A/S				
Open Cut	✓ P/A/T/S	✓ P/A/S				
JB	✓ P/A/T/S	✓ P/A/S				
HR	X	X				



Project Parameter	Prehistoric Potential*	Roman Potential*	Anglo Saxon Potential*	Medieval Potential*	Post Medieval Potential*	Peat & Palaeochannels
Compounds	X	X				
ECC4						
Trenchless exit	✓ P/A/T/S	✓ P/A/S	S	A S	A	✓
Trenchless entry	✓ P/A/T/S	✓ P/A/S				
Open Cut	✓ P/A/T/S	✓ P/A/S				
JB	✓ P/A/T/S	✓ P/A/S				
HR	X	X				
Compounds	X	X				
ECC5						
Trenchless exit	✓ P/A/T/S (AAI 6?&7?)	✓ P/A/S (AAI 6?&7?)	S	A S (AAI 6?&7?)	A PMF (MLI120254)	✓
Trenchless entry	✓ P/A/T/S (AAI 6?&7?)	✓ P/A/S (AAI 6?&7?)				
Open Cut	✓ P/T/S (AAI 6?&7?)	✓ P/A/S (AAI 6?&7?)				
JB	✓ P/T/S (AAI 6?&7?)	✓ P/A/S (AAI 6?&7?)				
HR	X	X				
Compounds	X	X				
ECC6						
Trenchless exit	✓ P/A/T/S	✓ P/A/S (AAI 8?)	S	A (AAI 8?) S P (10)	A (AAI 8?)	✓
Trenchless entry	✓ P/A/T/S	✓ P/A/S (AAI 8?)				
Open Cut	✓ P/A/T/S	✓ P/A/S (AAI 8?)				



Project Parameter	Prehistoric Potential*	Roman Potential*	Anglo Saxon Potential*	Medieval Potential*	Post Medieval Potential*	Peat & Palaeochannels
JB	✓ P/A/T/S	✓ P/A/S (AAI 8?)			PMF (MLI124352) (LiDAR 35 and 37)	
HR	X	X				
Compounds	X	X				
ECC7						
Trenchless exit	✓ T/S	✓ P/A/S	S A	A S P (AAI 9?) M	A	✓
Trenchless entry	✓ T/S	✓ P/A/S				
Open Cut	✓ T/S	✓ P/A/S				
JB	✓ T/S	✓ P/A/S				
HR	X	X				
Compounds	X	X				
ECC8						
Trenchless exit	✓ T/S	✓ P/A/S (AAI12?)	S A	A (AAI12?) S	A PMF (MLI124527) (AA12?)	✓
Trenchless entry	✓ T/S	✓ P/A/S (AAI12?)				
Open Cut	✓ T/S	✓ P/A/S				
JB	✓ T/S	✓ P/A/S				
HR	X	X				
Compounds	X	X				
ECC9						
Trenchless exit	t/s	✓ P/A/S	S A	A (AAI 11?) S	A PMF (MLI124196)	✓
Trenchless entry	t/s	✓ P/A/S				
Open Cut	t/s	✓ p/a/s				
JB	t/s	✓ p/a/s				



Project Parameter	Prehistoric Potential*	Roman Potential*	Anglo Saxon Potential*	Medieval Potential*	Post Medieval Potential*	Peat & Palaeochannels
HR	X	X				
Compounds	X	X				
ECC10						
Trenchless exit	✓ T/S	✓ P/A/S	S	A (AAI 11?) S (AAI 11?)	A PMF (MLI124228/LiDA R 39)	✓
Trenchless entry	✓ T/S	✓ P/A/S				
Open Cut	✓ T/S	✓ P/A/S				
JB	✓ T/S	✓ P/A/S				
HR	X	X				
Compounds	X	X				
ECC11						
Trenchless exit	✓ T/S	✓ S	S	SW S A	A	✓
Trenchless entry	✓ T/S	✓ S				
Open Cut	✓ T/S	✓ S				
JB	✓ T/S	✓ S				
HR	X	X				
Compounds	X	X				
ECC12						
Trenchless exit	✓ T/S	✓ S	S	SW S A	A PMF (MLI123126)	✓
Trenchless entry	✓ T/S	✓ S				
Open Cut	✓ t/s	✓ s				
JB	✓ T/S	✓ S				
HR	X	X				



Project Parameter	Prehistoric Potential*	Roman Potential*	Anglo Saxon Potential*	Medieval Potential*	Post Medieval Potential*	Peat & Palaeochannels
Compounds	X	X				
ECC13						
OnSS	✓ T/S	✓ S	S	SW S	A	✓
Trenchless exit	✓ t/s	✓ s				
Trenchless entry	✓ t/s	✓ s				
Open Cut	✓ t/s	✓ s				
JB	✓ t/s	✓ s				
HR	X	X				
Compounds	X	X				
ECC14						
Trenchless exit	✓ t/s	✓ s	S	SW S	A TW (MLI22401/LiDAR 59) PMF LiDAR 60	✓
Trenchless entry	✓ t/s	✓ s				
Open Cut	✓ t/s	✓ s				
JB	✓ t/s	✓ s				
HR	X	X				
Compounds	X	X				
A16						
Compound	X	X	A	A	A	X
	P = permanent activity A = agricultural/pastoral activity T = transient activity S = salterns PL = palaeochannel		P = permanent activity (occupation) A = agricultural/pastoral activity S = salterns PL = palaeochannel			



Project Parameter	Prehistoric Potential*	Roman Potential*	Anglo Saxon Potential*	Medieval Potential*	Post Medieval Potential*	Peat & Palaeochannels
	PT = peat X = no potential *capital letters reference general segment wide potential for specified project parameter. Lowercase letters represent restricted potential due to depths of later mudflats.		PT = peat SW = sea walls PMF = post medieval farmstead M = mill TW = tramway X = no potential LiDAR = LiDAR feature – Annex 17 MLI = HER reference *capital letters reference general segment wide potential.			
Bold text references identified sites (geophysical AAI and/or HER entries). This does not include all geophysical anomalies unless morphology is clear and anomalies concur with other baseline data, however (numbers in brackets) do reference the areas of archaeological interest with a '?' if dating is uncertain.						



20.11 Archaeology: Statement of Significance & Effects

20.11.1 Statements of Significance

20.11.1.1 Transient Prehistoric

455. These include potential archaeological remains on the surface of the Pleistocene land surface which is below the earlier tidal mudflat (AOP A1). These would only be reached in discrete areas of the project as set out in Section 20.10.6. Potential remains would comprise Palaeolithic/Mesolithic worked flints or short lived early prehistoric features such as pits and hearths on the late Pleistocene land surface. Such remains would be of archaeological interest in their contribution towards an understanding of seasonal early hunter gatherer communities living on the edge of Doggerland when it was dry. However, their eroded or ex-situ nature would reduce their level of importance.
456. This category also includes potential archaeological remains on the surface of or within the earlier mudflat. The Project parameters that may affect layers with the potential for these remains are set out in Section 20.10.6. These remains could comprise later (Neolithic onwards) worked flint and remains of fish traps, jetties and trackways. These would be of archaeological interest in their contribution towards an understanding of hunting activity or movement across marshy landscapes. These activities may have been undertaken on the edge of or within wetland habitats which emerged and re-emerged during various periods of inundation and regression. Due to the nature of the depositional environment involving estuarine tidal processes, it is anticipated that any remains would be eroded and ex-situ apart from in areas where peat may have preserved remains within areas of slower depositional processes.
457. Remains would be of archaeological interest. In general, they would not be regarded as being of the highest archaeological importance. Exceptions to this in the category in general may be significant structures such as trackways and jetties which could have been constructed within marshland habitats to facilitate hunting. However, in the footprint of the proposals the repeated estuarine tidal processes which have driven periods of inundation are anticipated to have caused disturbance such that features within and beneath the mudflats would be anticipated to be eroded and ex-situ in most instances. The exception may be within deposits holding thicker peat deposits which may be indicative of the more stable wetlands. These may be less affected by erosion.



20.11.1.2 Palaeoenvironmental/geoenvironmental

458. These include deposits with organic potential which comprise peat but also waterlogged clays. These would be within and between the later and earlier tidal mudflats. Due to their antiquity, the deposits within the earlier mudflat would probably be of greater interest. Thicker deposits of peat would also hold a relatively higher level of interest.
459. Plant remains, molluscs and pollen could inform on previous climate, hydrology and ecology and assist in reconstructing past landscapes at the local and regional scale. The dating of palaeochannels and the recording of sequences of deposition within them could assist in the understanding of periods of marine ingressions and regression.
460. Deposits of palaeoenvironmental potential and geoarchaeological potential would therefore be of archaeological interest. The greater interest may lay within deposits held within the earlier mudflat deposit. They would not, however be regarded as being of the highest archaeological importance.

20.11.1.3 Permanent Occupation and Agriculture

461. Permanent remains associated with occupation or agriculture would most likely be present on the surface of, within or beneath the later mudflat (AOP 02). The Project parameters where potential remains of this nature may be anticipated are set out within Section 20.10.6.
462. If remains are present it is anticipated that they would most likely be of Iron Age/Romano-British, medieval or post medieval in date.
463. Remains associated with Iron Age/Roman settlements would illustrate occupation and agricultural expansion into a late/post prehistoric landscape emerged from the marginal conditions of earlier periods through dropping sea levels. Any remains could inform on the construction of roundhouses and farmsteads and illustrate methods of enclosure, farming and small-scale industrial activity such as the making of pottery. Occupation remains would be anticipated to contribute to an understanding of regional patterns and would be of medium archaeological importance. Associated field systems would be of relatively less importance.
464. Much is left to be understood about medieval settlements, including defining settlement types and their relationships, such as towns and other large settlements, particularly in Lincolnshire and the Fenland ridge. Settlement remains dating to the medieval period would have the potential for archaeological remains which would contribute to our understanding of medieval settlement development, growth, level of planning, building types and construction



materials, and domestic, agricultural and industrial remains. In general, they would be anticipated to contribute towards a regional understanding of medieval archaeology and be of medium importance but at isolated examples, where relatively large areas of activity are expected and where truncation has been minimal remains could be of higher importance. For example, the remains in ECC2 at Slackholme deserted medieval village may be of high importance due to the level of preservation inferred by earthworks (HER MLI99418). Remains of associated field systems of Anglo Saxon or medieval date would be regarded as being of relatively lesser importance apart from field systems with good surviving earthworks. Medieval roads could inform on communication routes between settlements and areas of other activity and would be anticipated to be of low to medium importance.

465. Post medieval farmsteads and other post medieval buildings, which could inform on the continuation of activity from the preceding medieval period and post medieval expansion of farming and occupation across reclaimed land, would be of low to medium archaeological importance. Other identified remains of post medieval date which could relate to post medieval agriculture are tramways at the southern end of the Order Limits. Any remains would be of negligible to low importance.
466. Post medieval field systems would inform on the post medieval agglomeration of earlier field systems and the enclosure of new areas of land. These would be anticipated to be of negligible to low archaeological interest.
467. Medieval/post medieval drainage ditches which would inform on the management of water for the purposes of drainage/land reclamation in making land suitable for occupation and agriculture. These would be anticipated to range in the region of negligible to medium importance, the larger ditches such as the Hob Hole Drain being of relatively higher interest due to the level of engineering and the impact that its construction had on regional land improvements.

20.11.1.4 Salterns

468. The remains of salterns may be present as low mounds made up of pottery waste and fragments of burnt clay which could have accumulated over many episodes of the heating of brine water and the collection of salt crystals. Saltern remains would be present between the earlier and the later mudflat deposit within the Project parameters as set out in Section 20.10.6. These are most likely to date to the Iron Age/Roman to medieval periods.
469. These assets would be considered of low importance in the circumstances of the Order Limits where repeated estuarine tidal processes which have driven periods of inundation are



anticipated to have caused disturbance such that features within and beneath the mudflats would be anticipated to be eroded. Later arable intensification in the area would also have affected later examples such that all earthworks in general are eroded.

20.11.1.5 Sea walls

470. The waste products from salt making were responsible for the accumulation of debris which in places accumulated to such a height it acted as a sea wall. These accumulations are not anticipated within the Order Limits, with sea wall remains of this type being specifically recorded outside of the Order Limits.
471. Purpose-built defences of likely medieval date are recorded within close vicinity to or extending into the Order Limits as referenced in Section 20.10.6. Depending on their level of preservation these assets would be considered of low to medium importance, illustrating a concerted effort in the medieval period to defend areas of land from inundation most likely for the purposes of grazing and agricultural expansion, albeit an association with defended settlement cannot be ruled out. Sea walls with extant earthworks would be considered to be of medium importance due to the visual appreciation of their function and the preservation of their structures informing on medieval methods of sea defence construction.

20.11.1.6 Summary

472. It is anticipated that archaeological remains would be predominantly gauged at no greater than low or medium importance. Exceptions to this are the medieval remains associated with Slackholme deserted medieval village. These could be well preserved and be of medium to high importance.

20.11.2 Development Effects

473. In the worst case, development effects are anticipated from the following activities . The maximum depths of disturbance are referenced below.
- Soil stripping of the easement, the footprint of any compounds or laydown areas and the OnSS -
 - not anticipated to exceed 0.4m.
 - The excavation of the open cut trench -
 - 3m BGL.
 - The excavation of entry pits for directional drilling –
 - 6m BGL.
 - The excavation of exit pits for directional drilling –
 - 5m BGL.



- The excavation of joint bays –
 - 2.5m BGL.
- The excavation of foundations associated with the OnSS-
 - 1m BGL (assuming piled solution – piled foundations (if required may extend to 14m BGL)).
- The excavation of the haul road and compounds –
 - 0.4m BGL.
- Landscaping associated with the OnSS.
 - Whips planted no deeper than 0.4-0.5m BGL.

474. In addition to the direct disturbance to deposits which the above parameters would cause, other types of impact to consider include effects through changes to groundwater which could affect archaeological remains preserved through anaerobic conditions.
475. Measures to avoid pollution to ground water are set out within Chapter 24 Onshore Hydrology, Hydrogeology and Flood Risk.
476. With regard to effects on ground water levels, Appendix 27.1 to Chapter 24 sets out that the majority of the construction parameters would affect deposits of low permeability. Only at deeper parameters associated with the trenchless entry and exit pits and works at the TJB would proposals have the potential to affect existing groundwater flows.
477. At the trenchless entry and exit pits the volume of water encountered is anticipated to be small and negligible in relation to the overall size of the aquifer and at the TJB a low likelihood of impact on the groundwater flow has been identified. The magnitude of effect that ground disturbance and dewatering could have to the potential archaeological remains set out above is expressed accordingly on a scale of minor to major within the ES chapter.
478. The overall significance of effect to each type of asset which is calculated by cross referencing the importance of the asset with the magnitude of effect is expressed within Chapter 20 (document reference 6.1.20). This is referenced in the worst-case and best-case scenario, the latter referencing a potential for preservation in situ which is secured by Figure 3.4 (document reference 6.2.3.4) and the Schedule of Mitigation (document reference 8.13). It is noted that Figure 3.4 (document reference 6.2.3.4) and the Schedule for Mitigation reference a potential for trenchless installation of the cable between the Transition Joint Bay (TJB) and the Onshore Substation (OnSS). This, alongside the potential for the micro-siting of entry and exit pits and no-dig methods for compounds and haul roads, would allow for the preservation in situ of archaeological remains across the majority of the Order Limits. In this



scenario there could be no direct impact to archaeological remains along the onshore ECC between the TJB and the OnSS.

479. The implementation of preservation in situ would be confirmed through detailed design prepared post consent of the DCO order and informed by archaeological fieldwork. This fieldwork includes ongoing fieldwork comprising geophysical survey, geoarchaeological boreholes and trial trenching which is being undertaken post EIA and other fieldwork set out within an Outline Written Scheme of Investigation (document reference 8.9).
480. Other additional areas within the Order Limits include small and detached sections alongside the highway. Works are anticipated to comprise some vegetation clearance or minimal disturbance to the highway and are therefore not anticipated to disturb horizons of archaeological potential. No effects are predicted. Also proposed within the Order Limits is the use of existing farm tracks. These are included within the Order Limits for preliminary temporary access. No physical works are proposed to these tracks. No effects are predicted.
481. With due regard to the outline infrastructure and the best-case scenario on impacts that they offer, as set out within the Chapter 20 (document reference 6.1.20) no significant impacts are predicted where preservation in situ is not possible, namely the location of the OnSS and the location of the TJB at landfall. In all instances where significant impacts are possible along the onshore ECC, the implementation of design measures at the detailed design stage to reference trenchless techniques, micro-siting and no-dig measures would remove significant impacts. On this basis there would be no residual significant impacts.



20.12 Further Archaeological Fieldwork

482. The baseline presented within this report has included geotechnical investigation monitoring and deposit modelling (**Annex 18**), LiDAR and aerial photographic assessment (**Annex 17**) and geophysical survey (**Annex 19**).
483. Further archaeological works are presented in recognition that preservation in situ could be achieved through the implementation of construction techniques which could be applied across the Order Limits between the TJBs and the OnSS and the OnSS and the Connection Area. These comprise the micro-siting of launch and receive pits, trenchless construction techniques for cable installation and no-dig methods at compounds and haul roads. In these circumstances the footprint of impact caused by the development could avoid archaeological remains of national importance through preservation in situ.
484. The option for preservation in situ is secured by the submission documents which reference flexible construction methods along the onshore ECC and 400kV cable corridor. These are referenced on submission document Volume 2, Figure 3.4 (document reference 6.2.3.4 and in the Schedule of Mitigation (document reference 8.13). The detailed design referencing trenchless and no dig methods where necessary would be prepared post DCO consent and would acknowledge the results of preceding fieldwork.
485. The geophysical survey undertaken at EIA, included the assessment of the area of the Order Limits which had the potential for significant impacts to occur and where preservation in situ would not be possible; this was defined as the area which will be subject to the Transition Joint Bay works.
486. Further geophysical survey will be undertaken post EIA along parts of the ECC where preservation in situ could be accommodated in respect to any remains of national importance should they be present. This is in order that early feedback can be provided in respect to detailed design only.
487. Other fieldwork will also be undertaken post EIA for the purposes of early feedback in respect to detailed design only. This will include targeted trial trenching where baseline indicates a greater potential for significant impacts and a greater potential for a preservation in situ requirement.



488. Aside the post EIA fieldwork, an Outline Written Scheme of Investigation (OWSI) for Archaeological Works required post consent is presented with the Submission. The OWSI sets out a framework for mitigation requirements (document reference 8.9).

20.13 Conclusions

489. Episodes of sea flooding since the end of the Mesolithic into the medieval period have deposited substantial deposits of mud flats across the entirety of the Order Limits. The first period of mudflat deposition occurred during the prehistoric period when the high-water mark became established 5-10km west of the current coastline. This coastline subsequently moved in and out with further episodes of sea transgression and regression which are anticipated to have affected all of the Order Limits at some point, with the southern part of the Order Limits under water or tidal from the late Mesolithic onwards. These sequences of dramatic depositional events have buried earlier archaeology at some significant depth across much of the Order Limits footprint.
490. A notable period of regression occurred in the Iron Age/Roman period when the high-water mark is known to have moved eastwards. This placed some of the Order Limits, which had been marshland or tidal since the Neolithic period, into dry land once more. Iron Age occupation/agricultural activity may therefore be present in the northern half of the Order Limits and Roman occupation and agricultural activity may have extended into segments ECC1-ECC10. Any areas of activity are sealed by a post Roman mudflat. Evidence for Iron Age/Roman salterns may also be present; a potential which may also extend further south although the southern end of the Order Limits remained tidal or under water for the Iron Age/Roman period.
491. The sea flooding into the Anglo Saxon and medieval periods caused the high-water mark to move west again. During the Anglo-Saxon period the majority of the Order Limits were marginal with settlement favouring slightly elevated land which does not appear to have extended into the Order Limits. Some potential for agricultural/pastoral activity may extend into the Order Limits, in the hinterland of settlements on saltmarsh islands in segments ECC2, 7, 8 & 9. Salterns may be present in segments ECC1-14.
492. Medieval activity was made possible through the construction of sea walls with extant earthworks or below ground potential for seawalls identified in segments ECC1 & ECC11-13. These would have contributed to bringing the whole of the Order Limits into possible agricultural or pastoral activity apart from the southern extremity which was likely within the



footprint of the Bicker Haven – ECC13/14. Settlement is known to have become established at extant historic villages within the vicinity of the Order Limits at this time and evidence for some deserted settlement extending within the Order Limits is known at ECC2, ECC3 and ECC6. Evidence for significant moated sites is provided by two scheduled examples comprising Abbey Hills moated site (NHLE 1016044) adjacent to ECC7 and Multon Hall moated site (NHLE 1018584) located 100m west of ECC11.

493. Post medieval activity references land reclamation and agricultural activity across the entirety of the Order Limits. This includes some potential for remains of demolished farmsteads and other agricultural buildings. This period likely saw the first occupation of the southern parts of the route, specifically ECC13/14.
494. This assessment has identified known and anticipated archaeological remains (heritage assets) within the Order Limits and has discussed their significance in accordance with the NPPF (2023) paragraph 200 and EN-1 (paragraph 5.9.10). Field evaluation comprising a watching brief of site investigations, magnetometer geophysical survey and electromagnetic geophysical survey has been undertaken in accordance with the NPPF (paragraph 200) and EN-1 (2023 paragraph 5.9.11)). Although these surveys have not extended to the entire footprint of the Order Limits and in the case of geophysical survey will continue post EIA it is considered that the baseline presented has allowed an adequate understanding of the potential for significant impacts of the proposed development upon archaeological remains where preservation in situ cannot be accommodated, specifically the location of the Transition Joint Bays. This is in light of the variable historic geography of the Order Limits and the resulting predicted significance of archaeological remains alongside the indicative onshore infrastructure (Figure 3.4 (document reference 6.2.3.4)) which provides for flexibility around preservation in situ along the entire onshore ECC. The necessity for further fieldwork to determine the application is considered removed. Rather the necessity for fieldwork is delayed post the consent of the DCO.
495. No significant direct impacts to non-designated archaeological remains are predicted where preservation in situ is not possible, namely the location of the OnSS and the location of the TJBs at landfall. In all instances where significant impacts to non-designated remains are possible along the onshore ECC, the implementation of design measures at the detailed design stage to reference trenchless techniques, micro-siting and no-dig measures would remove significant impacts. On this basis there would be no residual significant impacts to non-designated archaeological remains.



496. No designated archaeological remains would be physically affected by the Project, this being secured by the Schedule of Mitigation in respect to the Abbey Hills moated site monument (NHLE reference 1016044)
497. Other potential remains of national (high) importance which could be present in association with Slackholme deserted medieval village (HER MLI99418) would be avoided through the use of trenchless techniques, as per the submitted indicative infrastructure plans (Figure 3.4 (document reference 6.2.3.4)) and the Schedule of Mitigation (document 8.13).
498. In the worst case, the Project proposals affect archaeological remains through removal and/or truncation. Any residual insignificant adverse effects should be weighed in the planning balance consistent with paragraph 209 (NPPF). Public benefits around a secure electricity supply and the release of heritage capital through any archaeological fieldwork would be appropriate considerations within this balance.
499. The baseline provided by the ES indicates that the Project would be considered to be consistent with the NPPF (2023) and EN-1.



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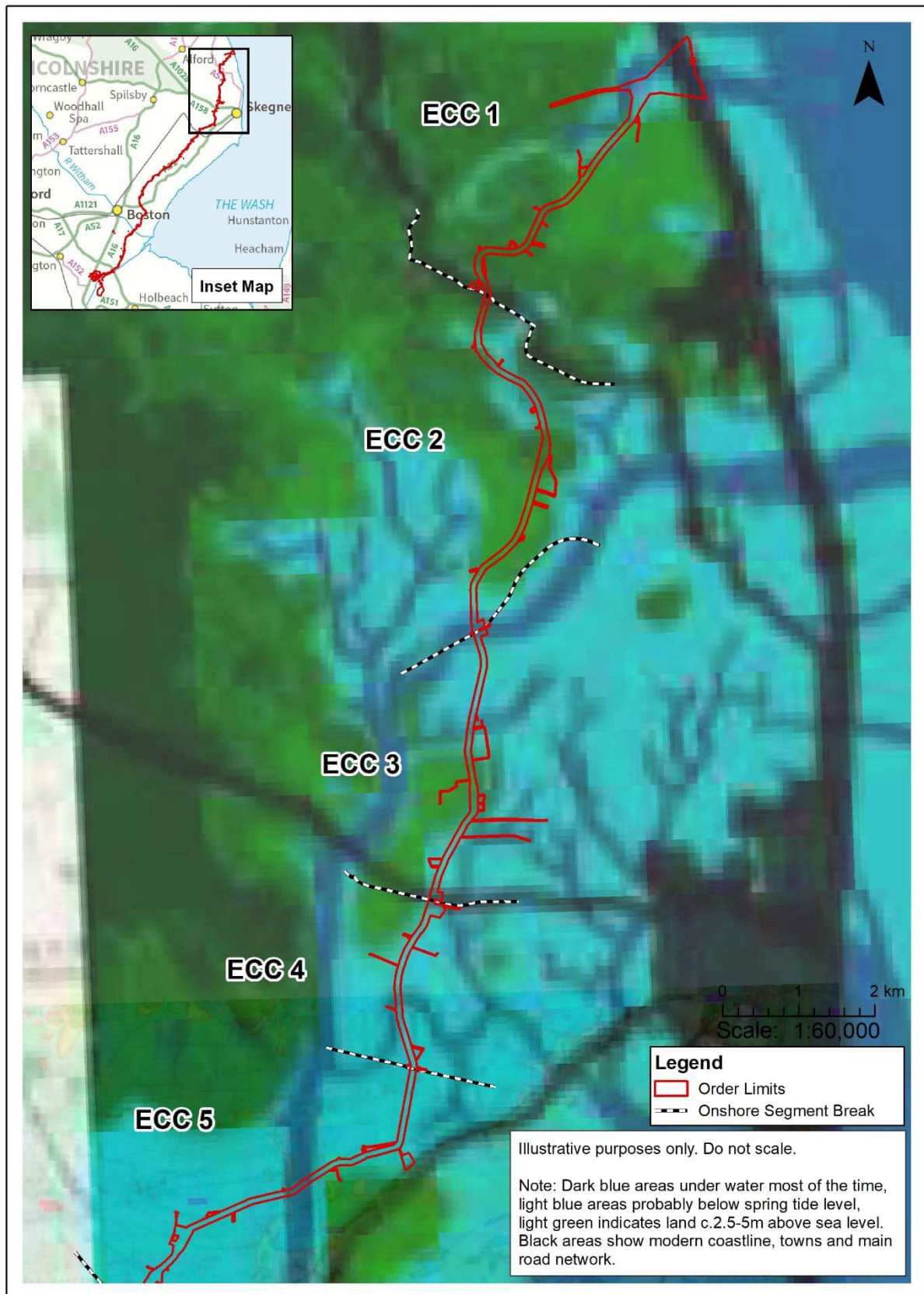


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- Plate 29 Fishtoft 1844 Enclosure Map
- Plate 30 Kirton Map 1839



Plate 1: Early Neolithic Flooding, 3,500 BC (Green 2023: Figure 92)

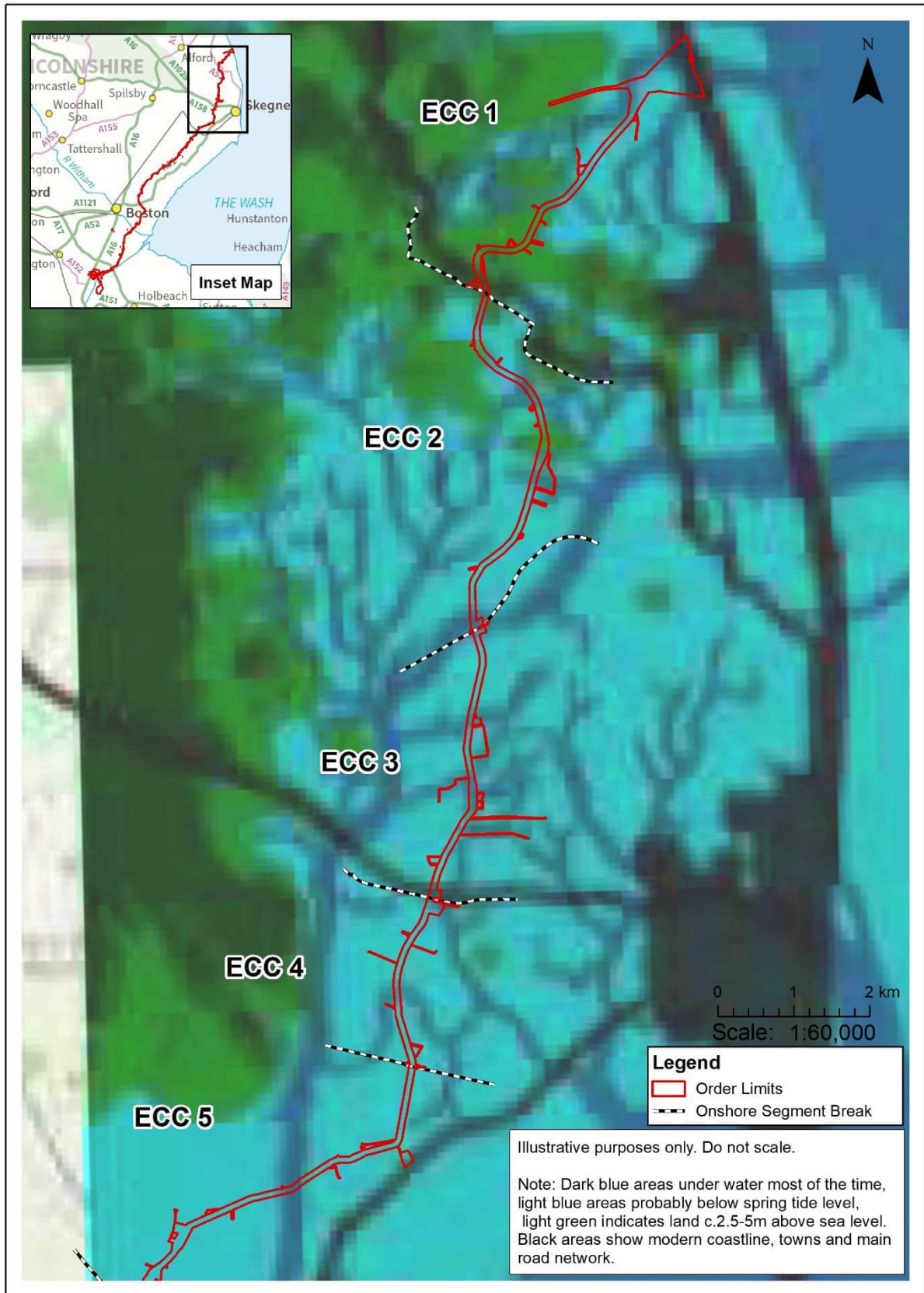


Coordinate System: British National Grid
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See Heritage Desk Based Assessment for source of historical mapping.



Plate 2 Late Bronze Age Flooding, 1,000 BC (Green 2023: Figure 92)



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See Heritage Desk Based Assessment for source of historical mapping.



Plate 3 Neolithic/Early Bronze Age Palaeochannel (Green 2023: Figure 81)

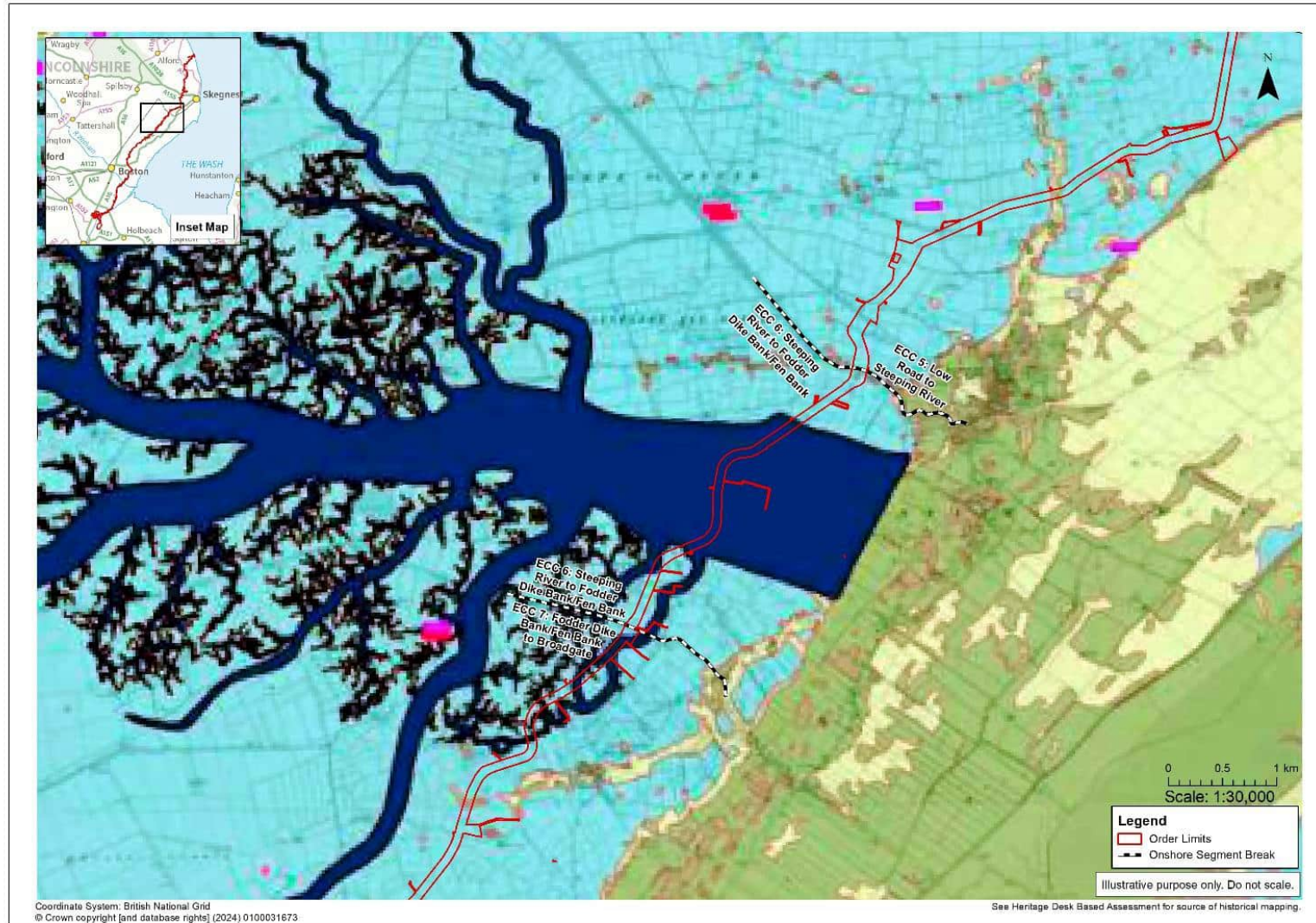
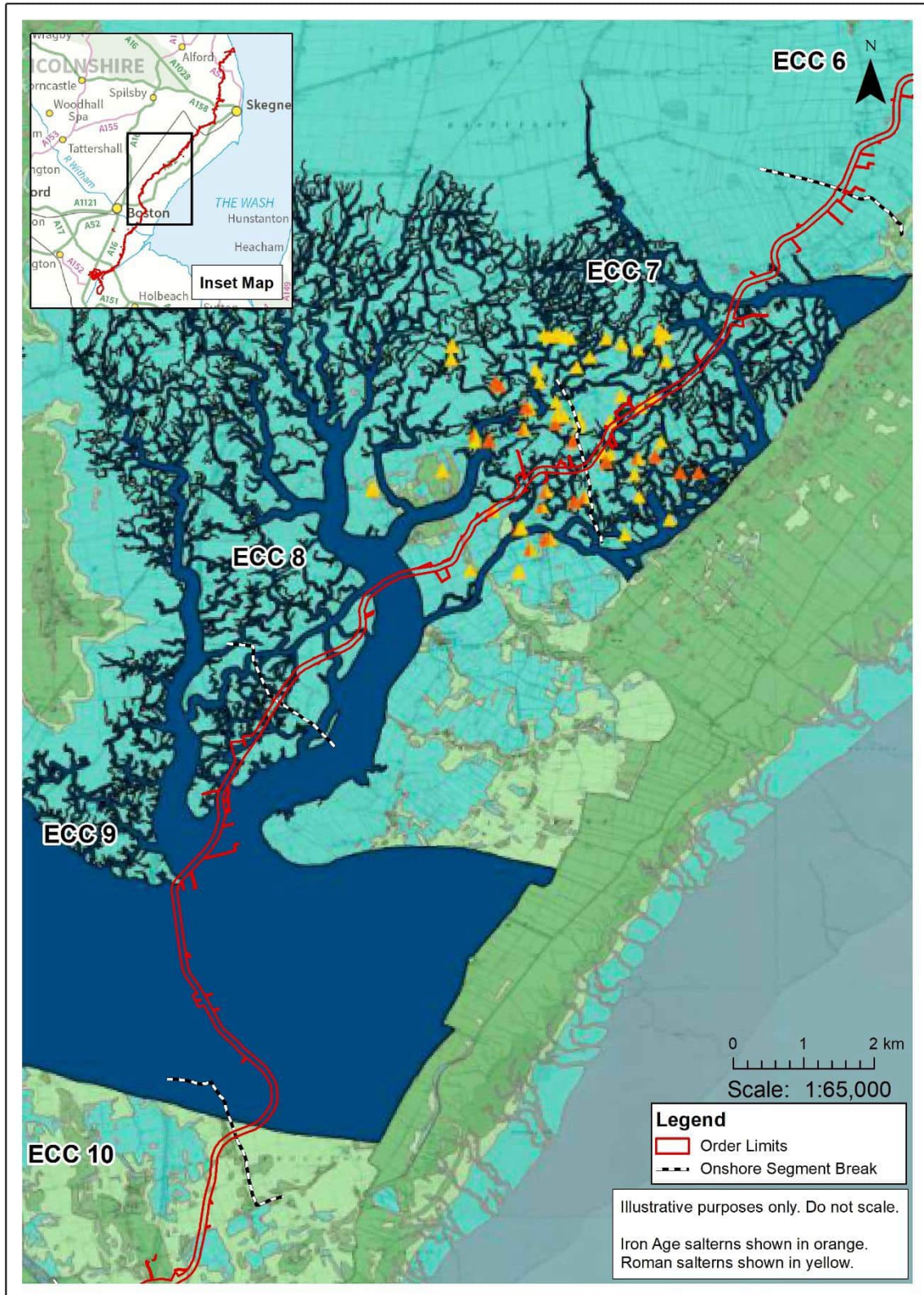


Plate 4 The prehistoric course of the River Witham with a system of palaeochannels (Green 2023: Figure 82)



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Plate 5 The Saxon shoreline (Robinson 1981:17)

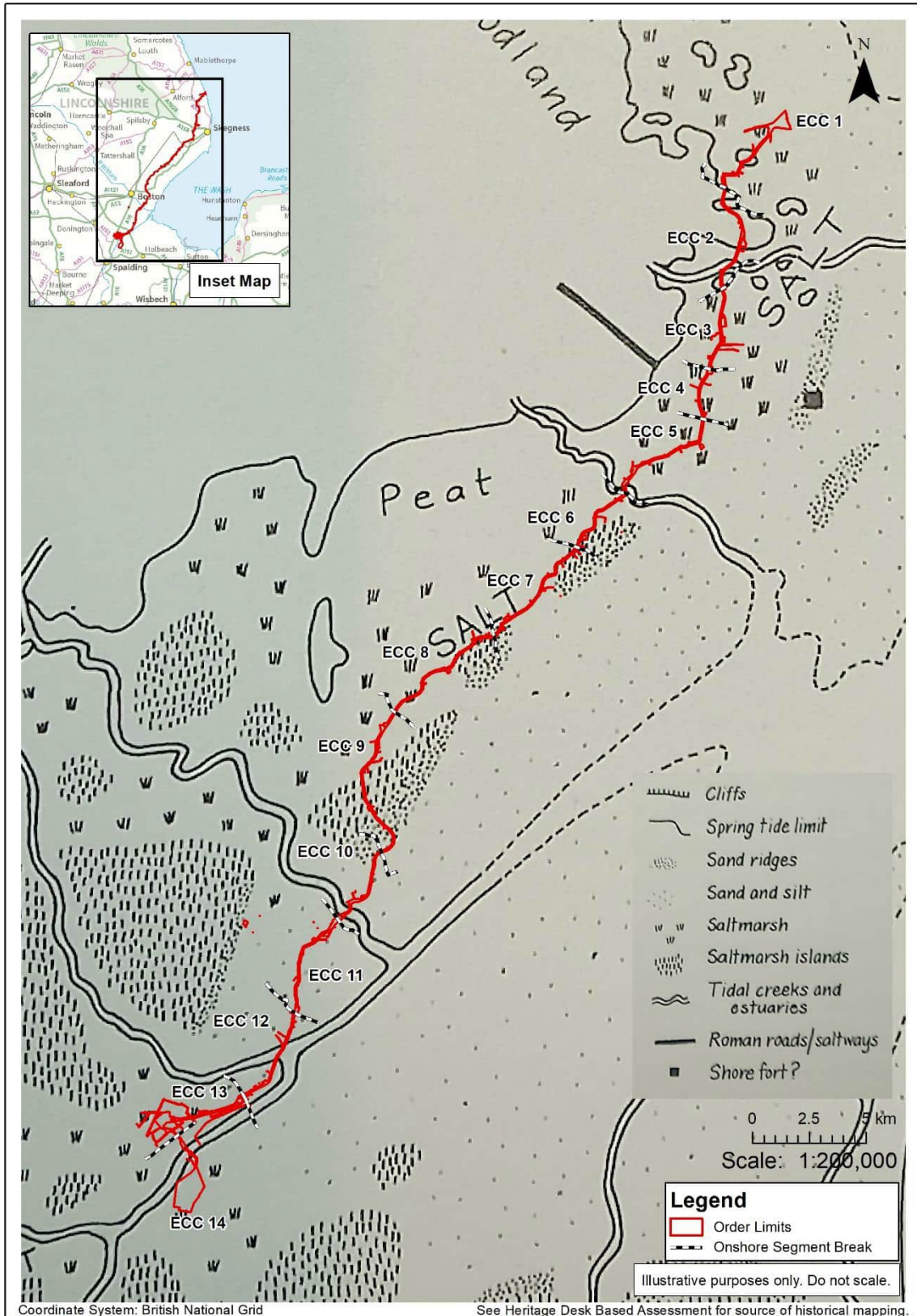
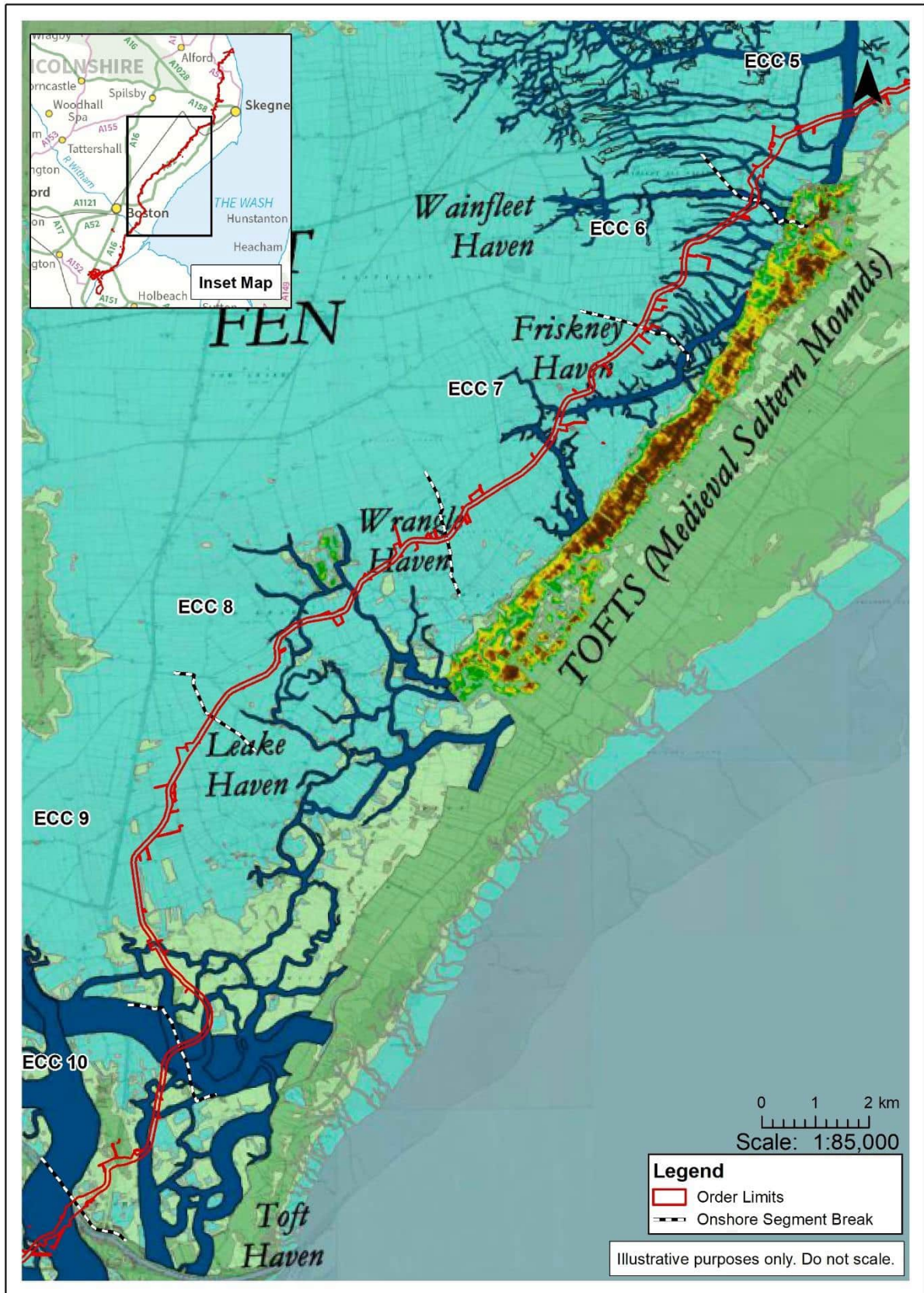


Plate 6 Late Roman/Post Roman Tidal Creeks (Green 2023: Figure 84)

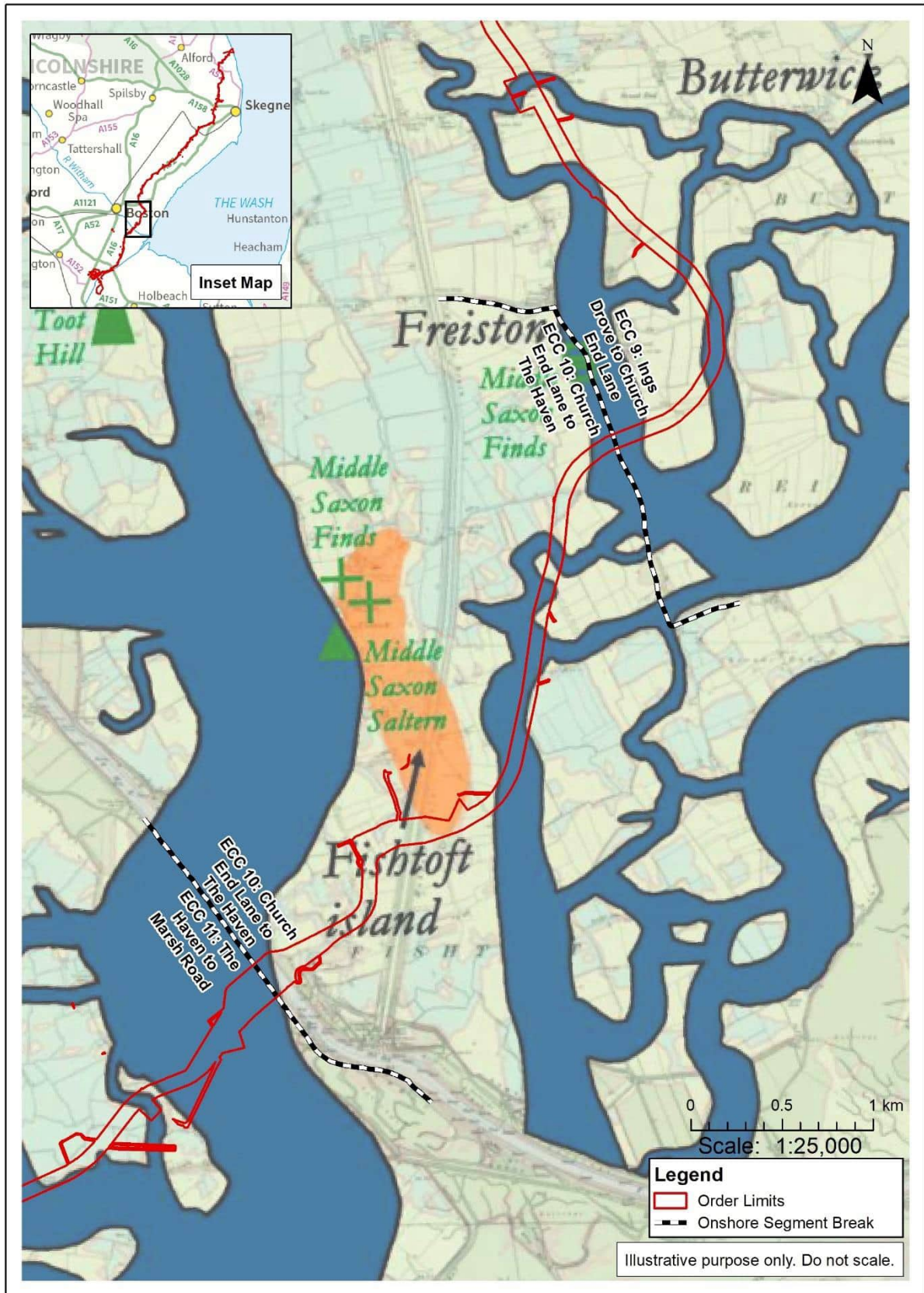


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Plate 7 The start of the Anglo-Saxon period (Green 2023: Figure 85)

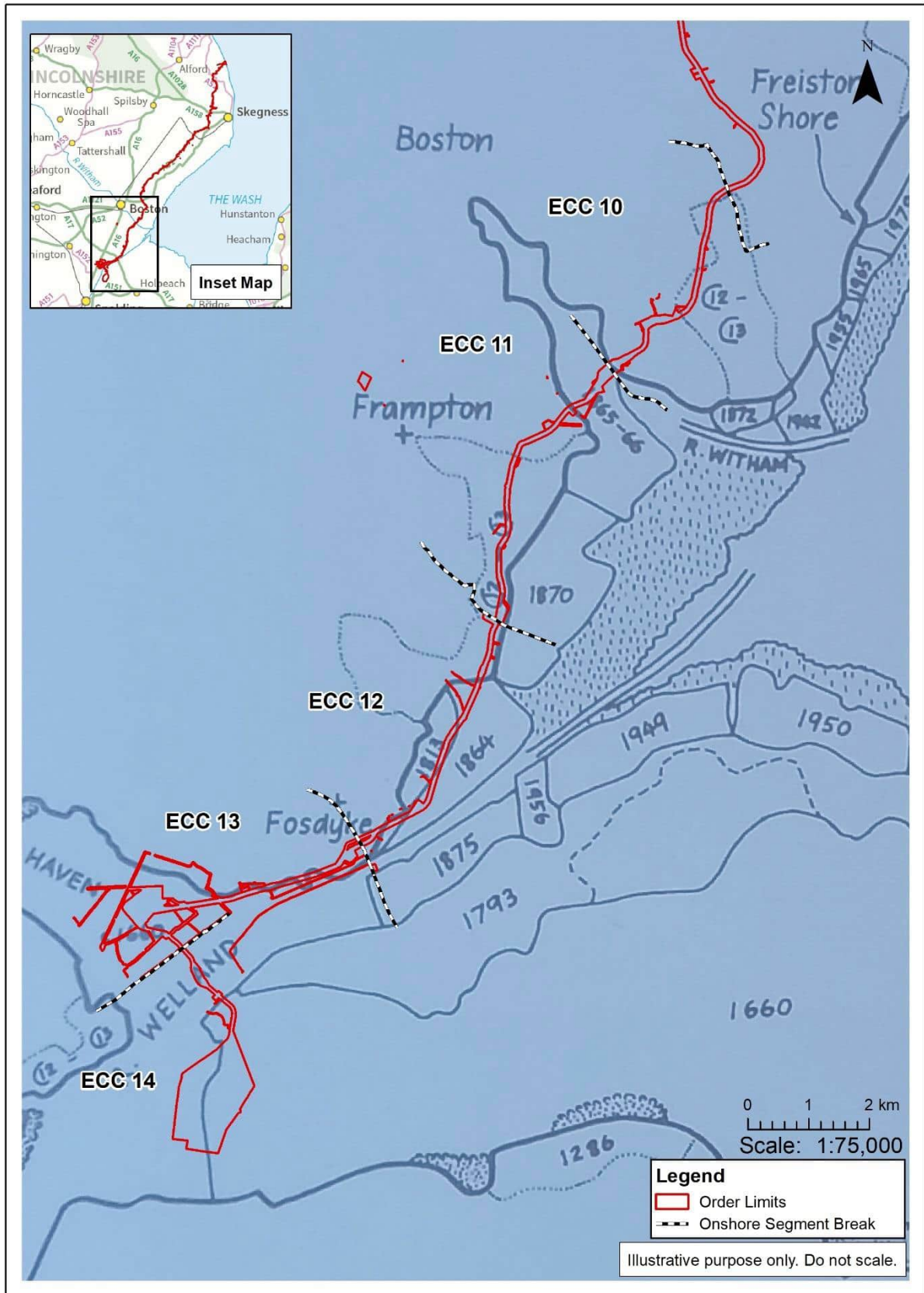


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Plate 8 Coastline of 1300 (Robinson 1981: 35)

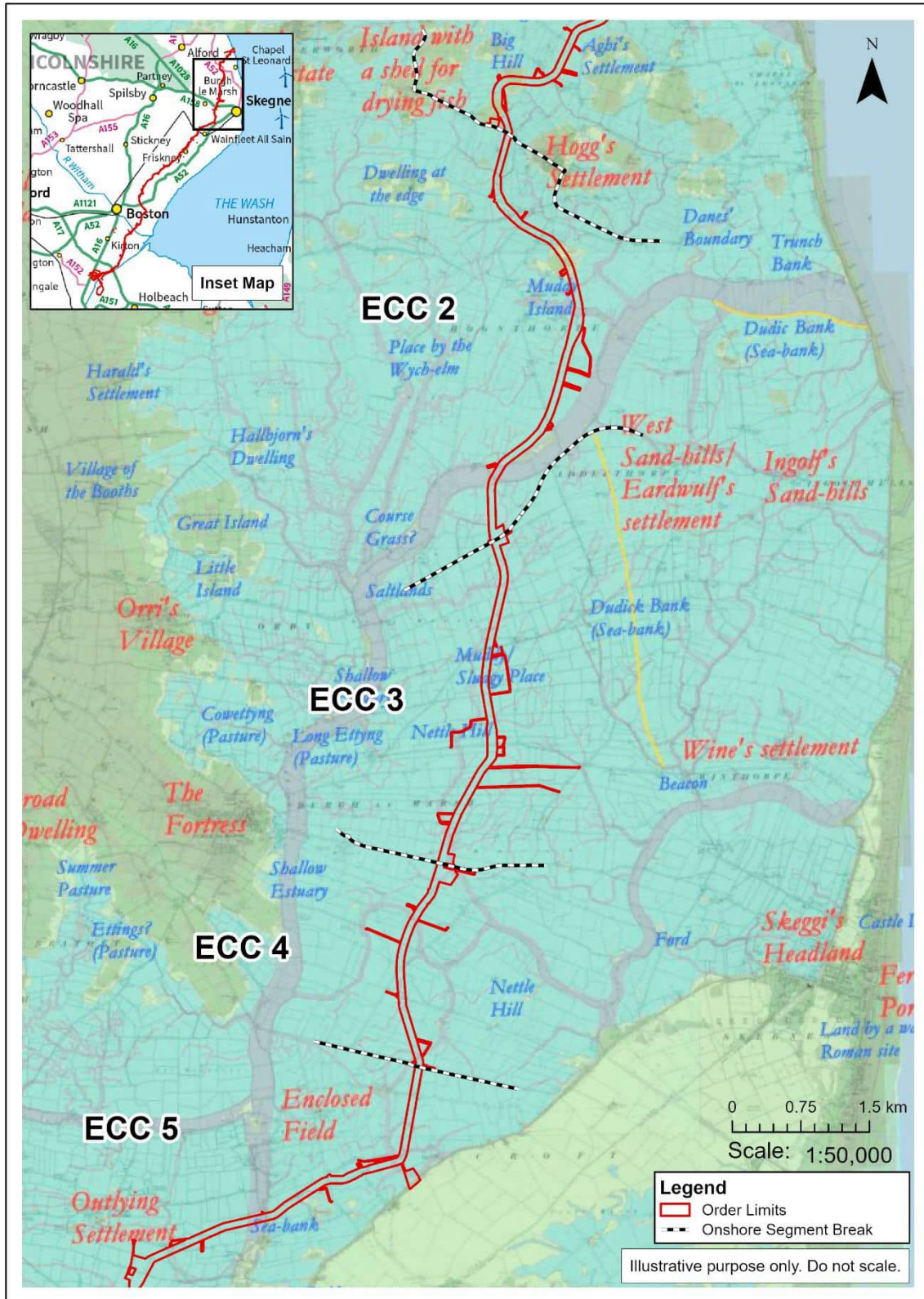


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Plate 9 Medieval settlement within segments ECC2-4 (Green 2023: Figure 26)



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Plate 10 Segments ECC5-ECC7 (Green 2023: Figure 90)

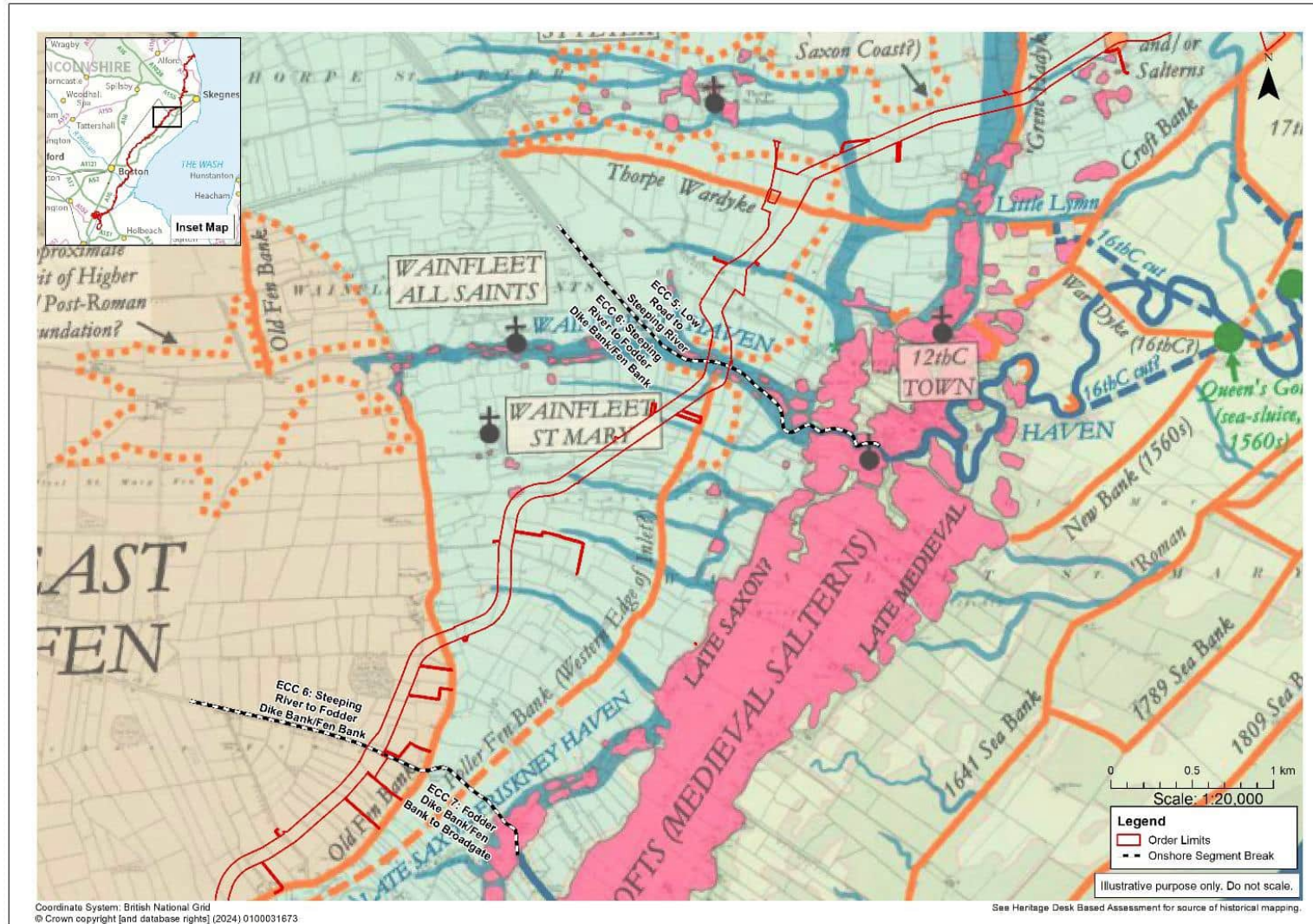


Plate 10 B Segments ECC6-ECC7 (Green 2023: Figure 88)

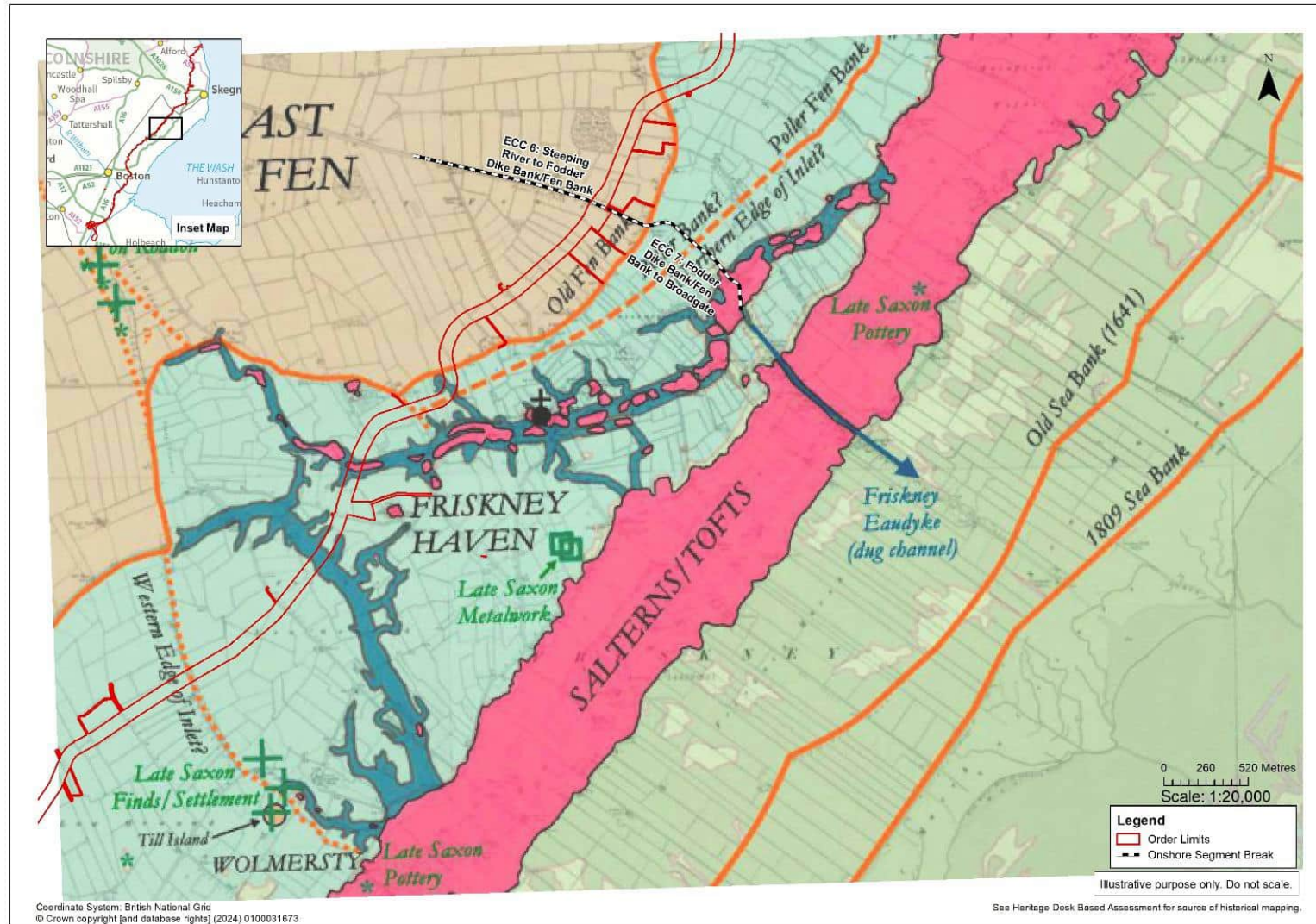


Plate 11 Northern and central parts of ECC7 (Green 2023: Figure 88)

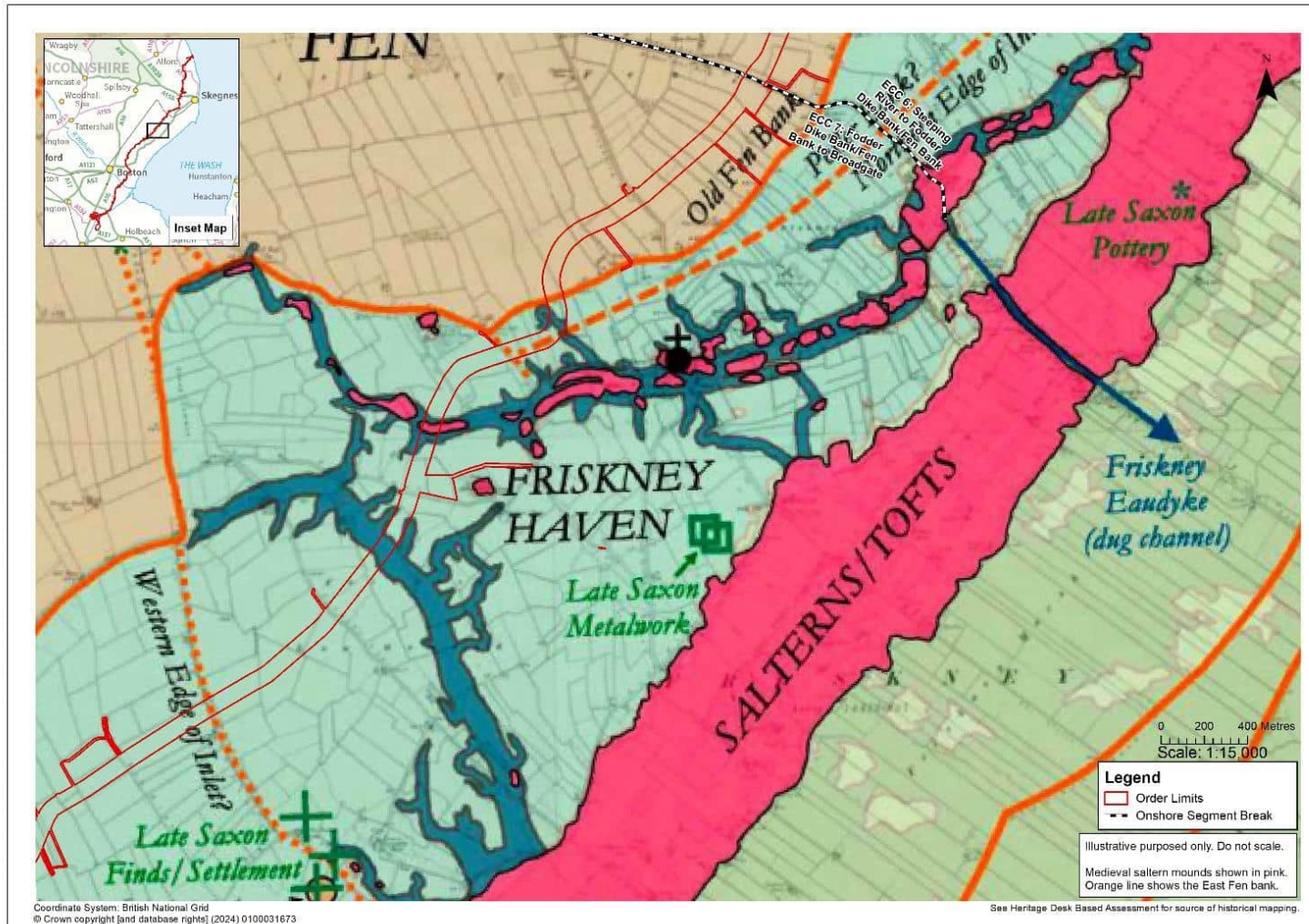


Plate 12 Anderby Enclosure Map 1805

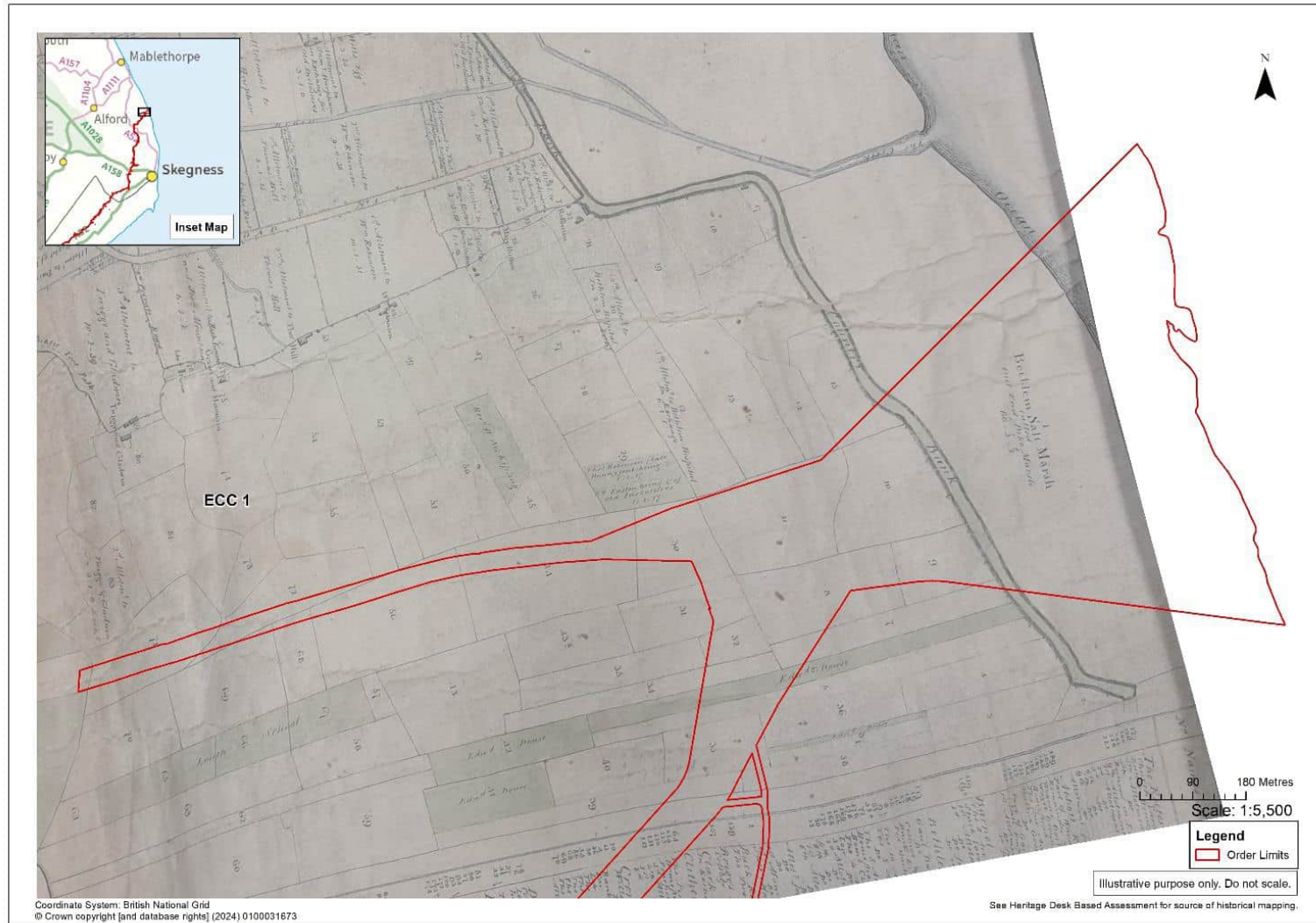
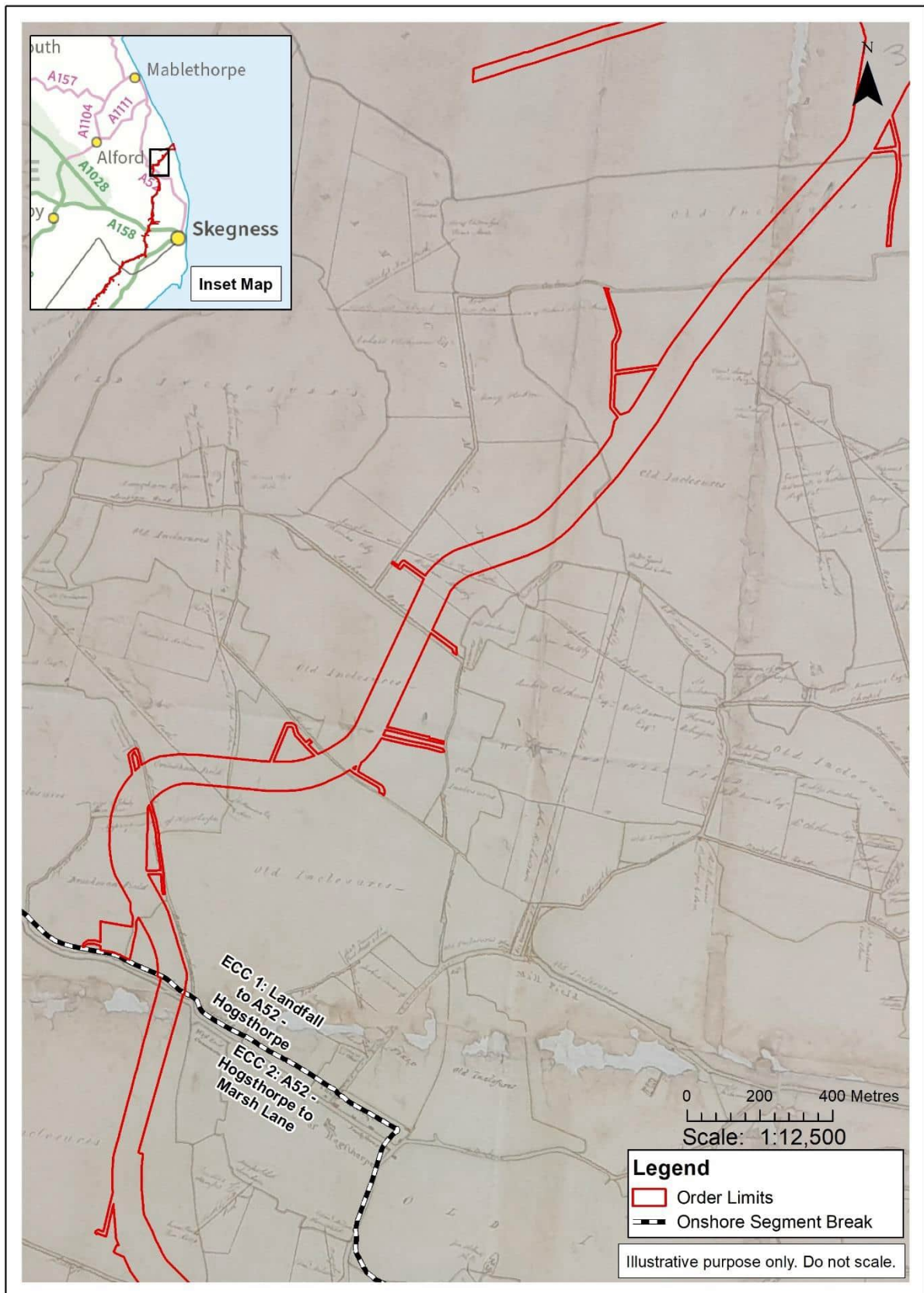


Plate 13 Hogsthorpe Enclosure Map 1807



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Plate 14 1855 Map of Sea Walls

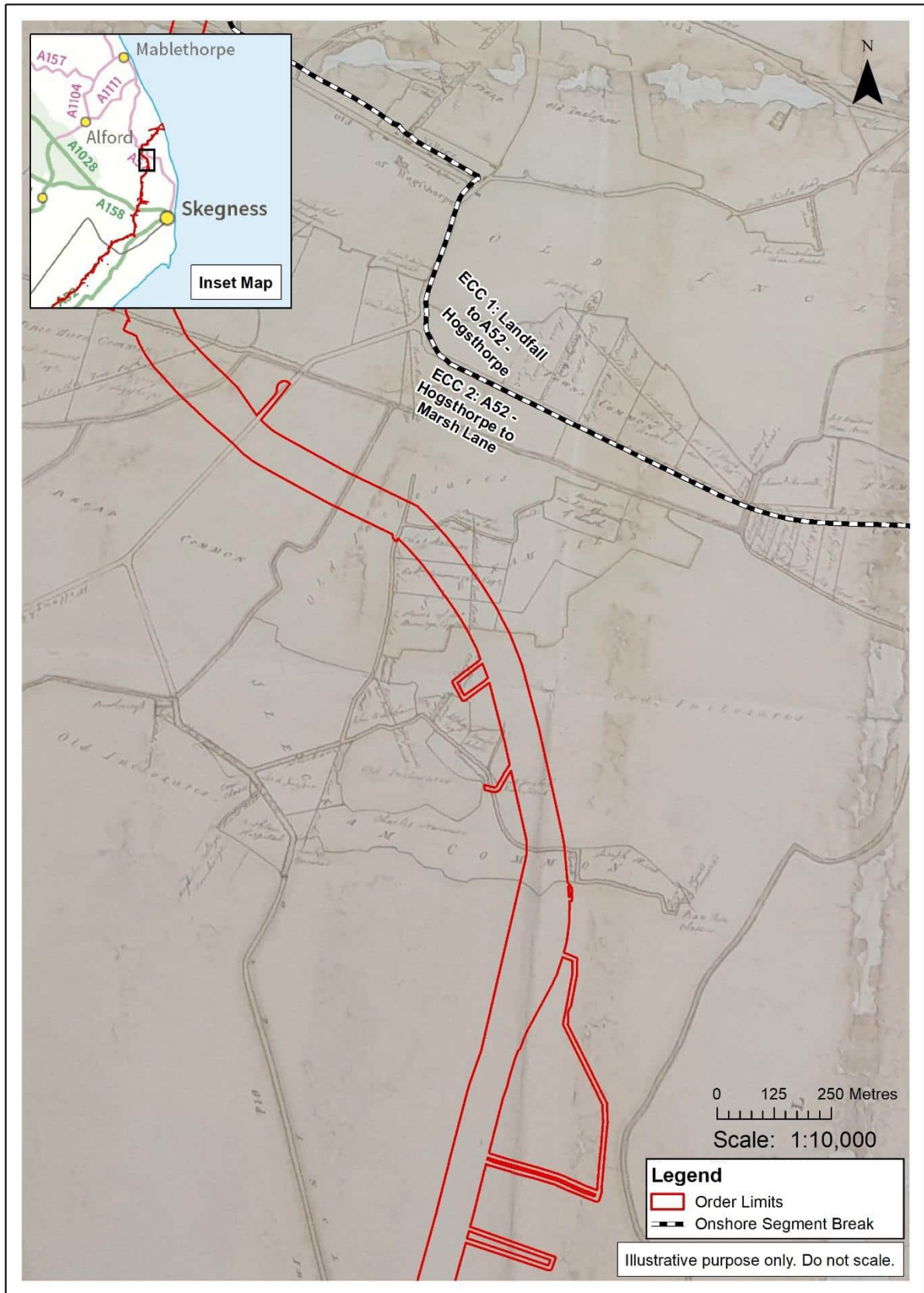


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Plate 15 Hogsthorpe Enclosure Map 1807

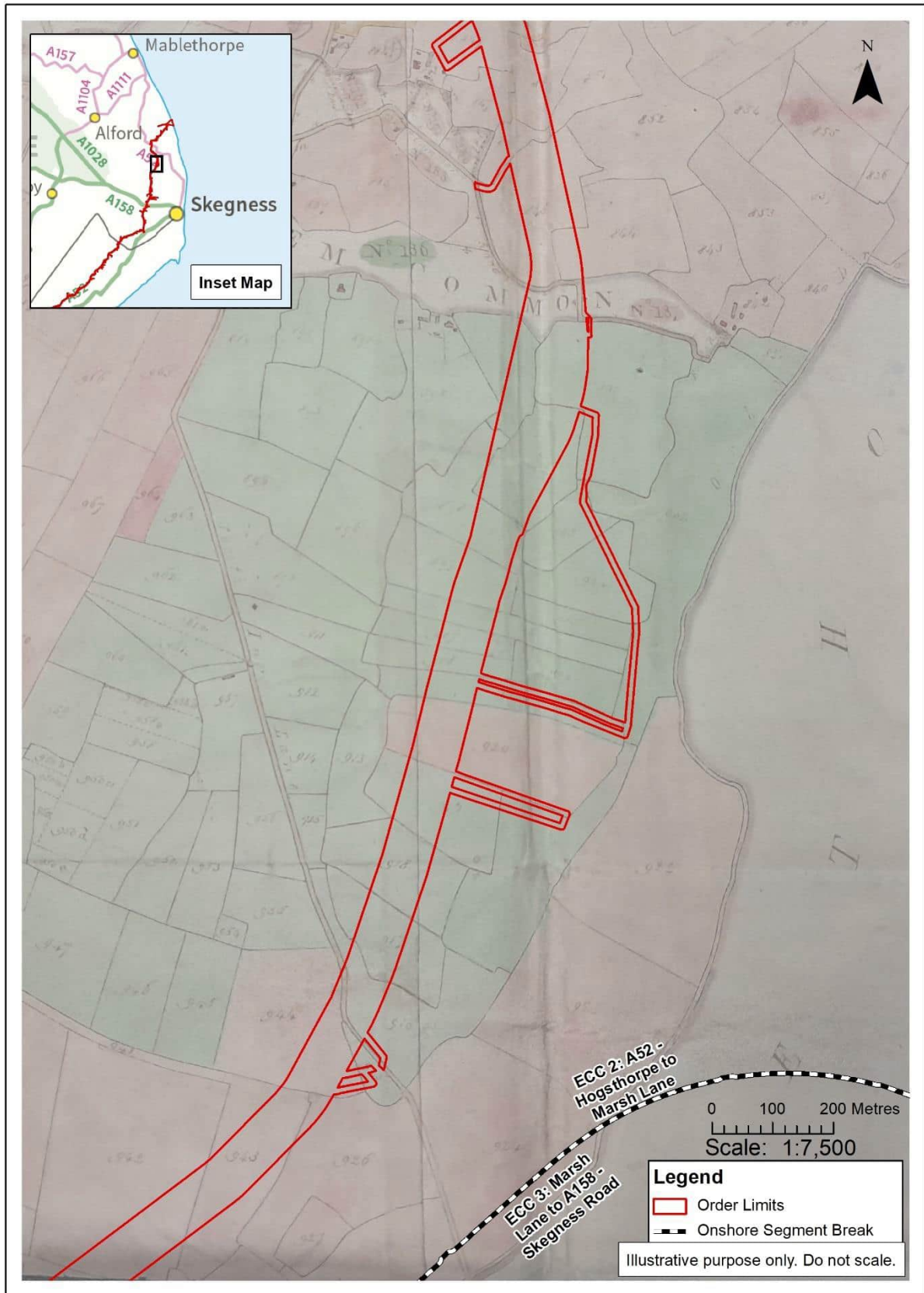


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Plate 16 Hogshorpe Enclosure 1811

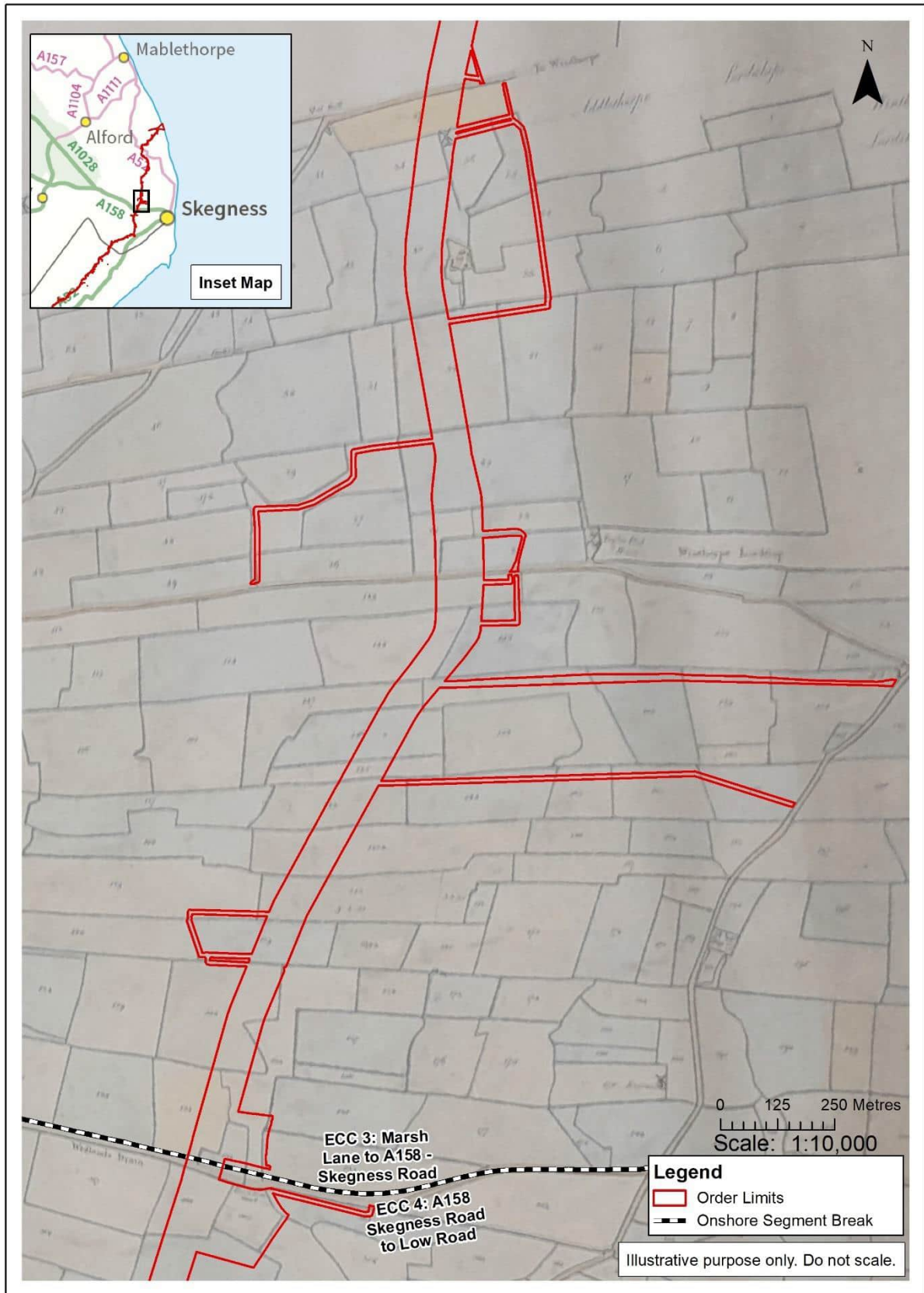


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Plate 17 Burgh le Marsh Enclosure 1810

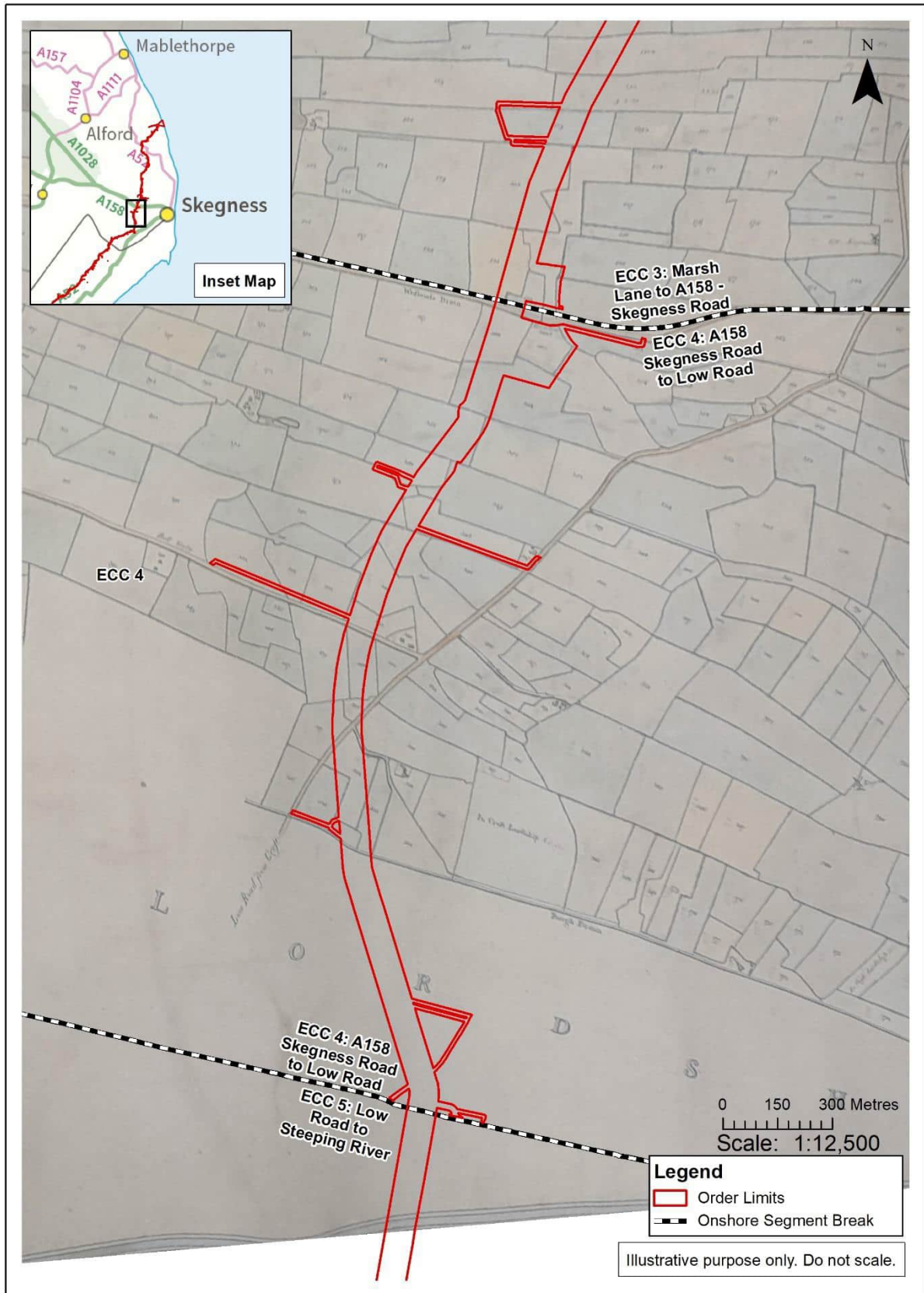


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Plate 18 Burgh le Marsh Enclosure Map 1810

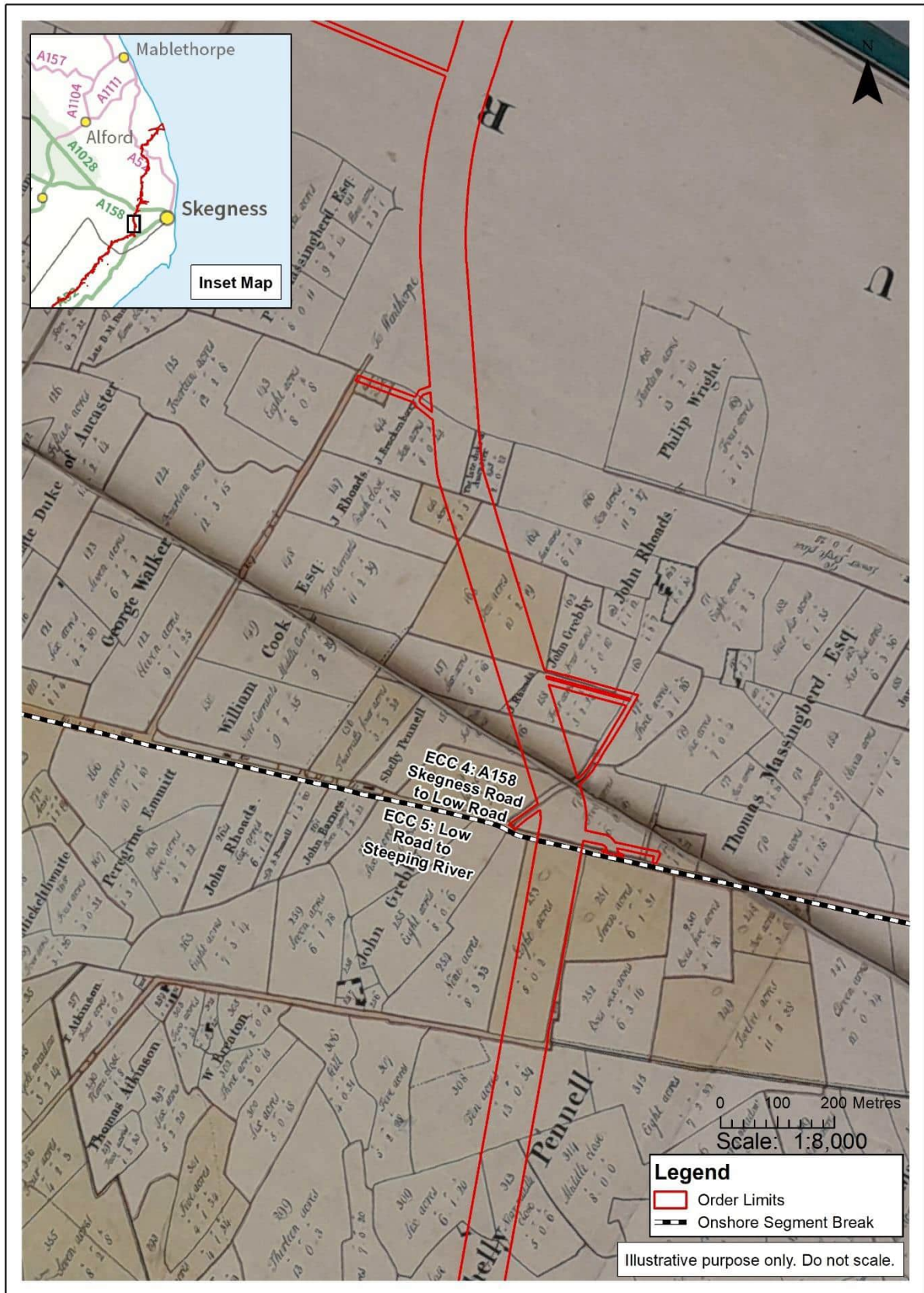


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Plate 19 Map of the Parish of Croft 1809



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Plate 20 Croft Enclosure Map 1809

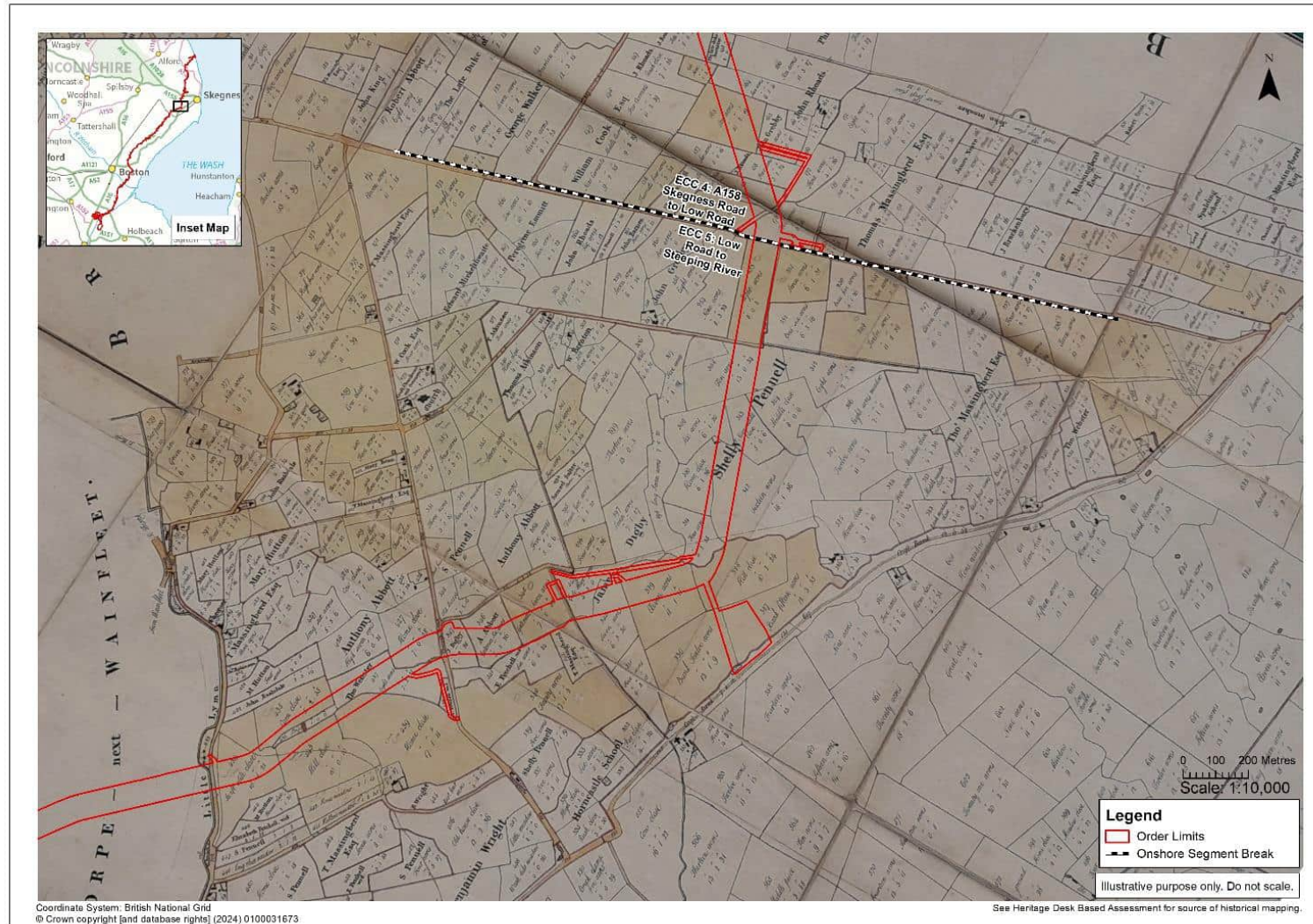
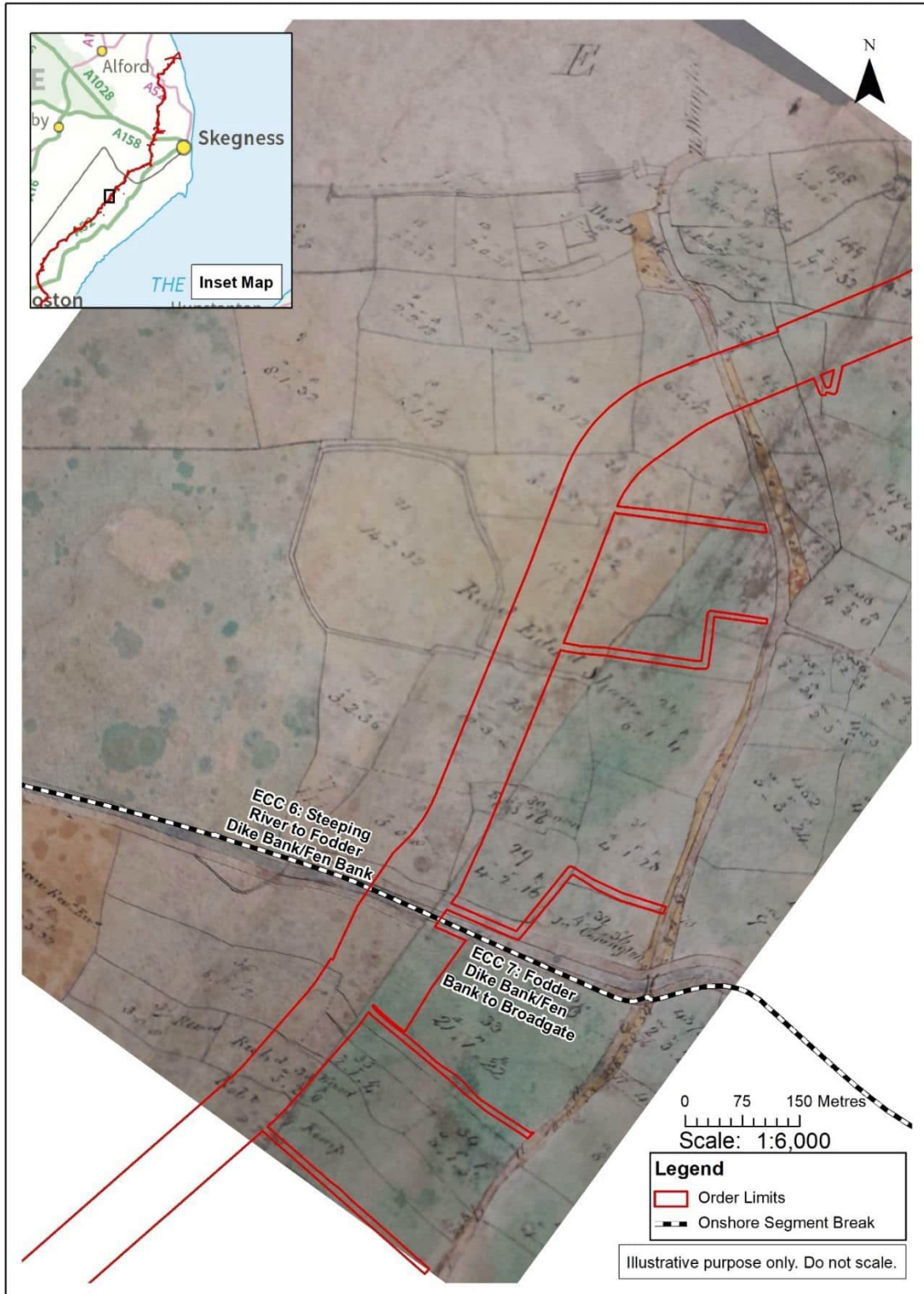


Plate 21 Friskney Enclosure 1847 – area to the east of Duck Decoy (NHLE 1019098)



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Plate 22 Wrangle Enclosure Map 1807 showing strip fields to LHS of frame

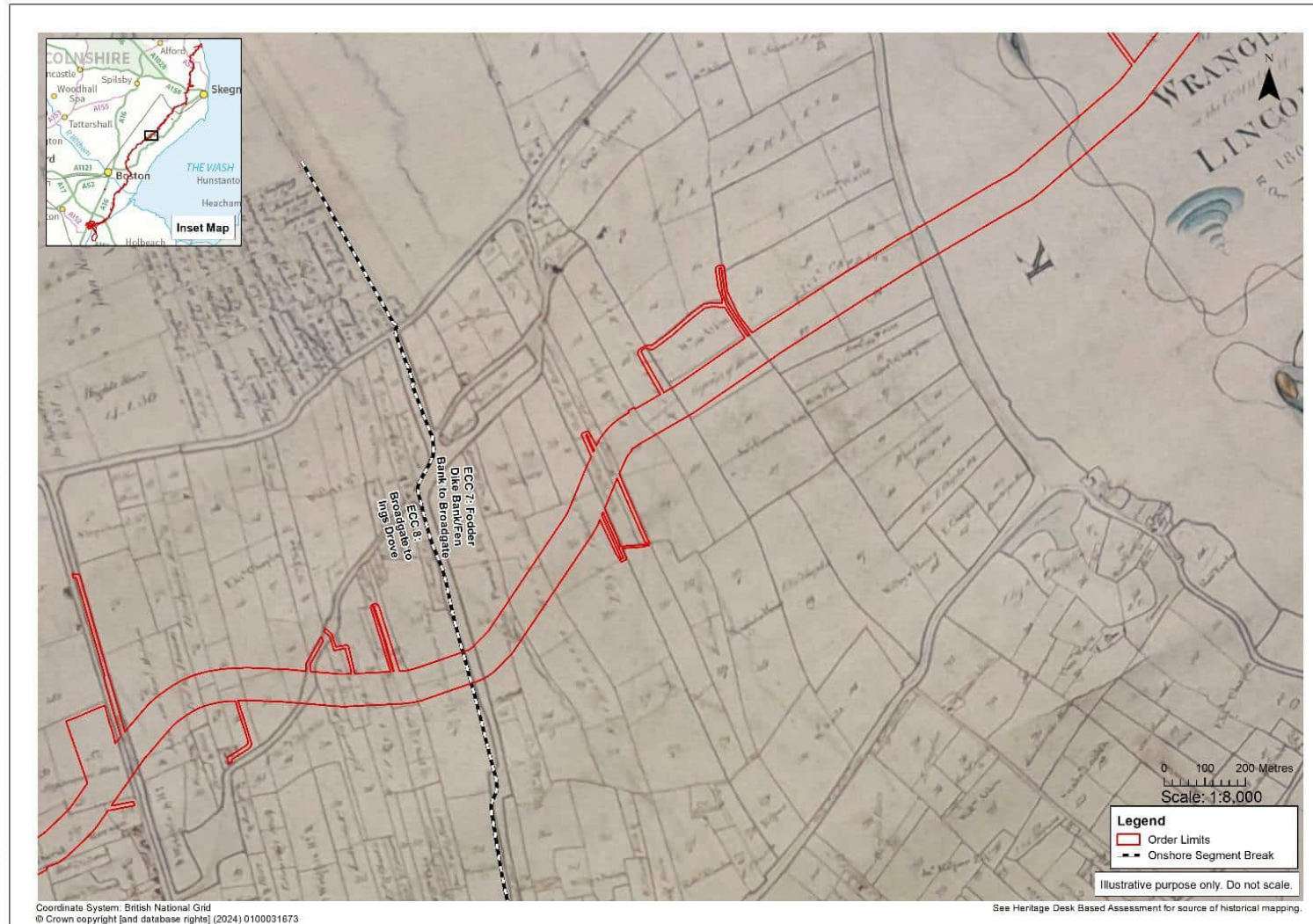


Plate 23 Friskney Enclosure 1847 showing strip fields

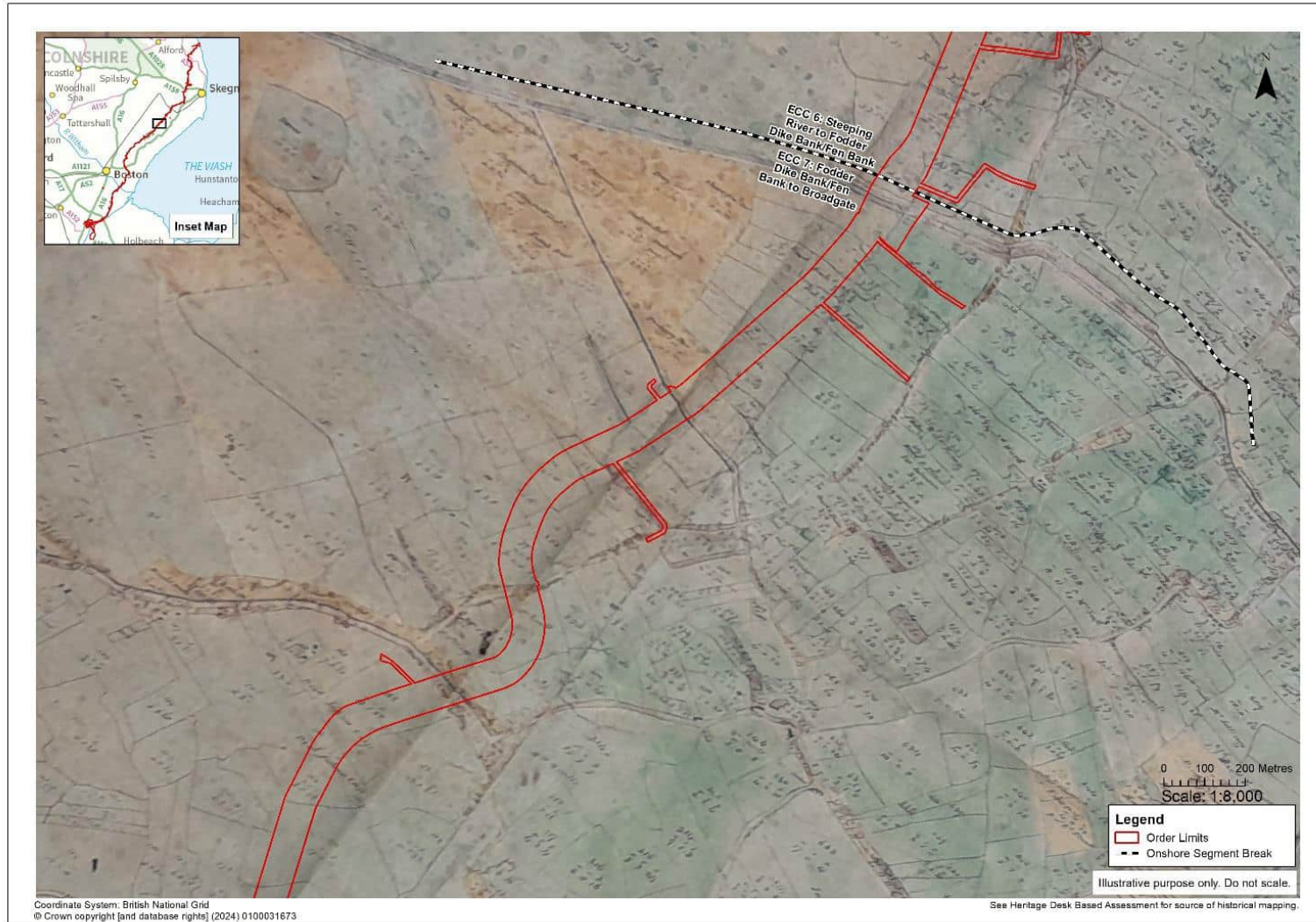


Plate 24 Friskney Enclosure 1847

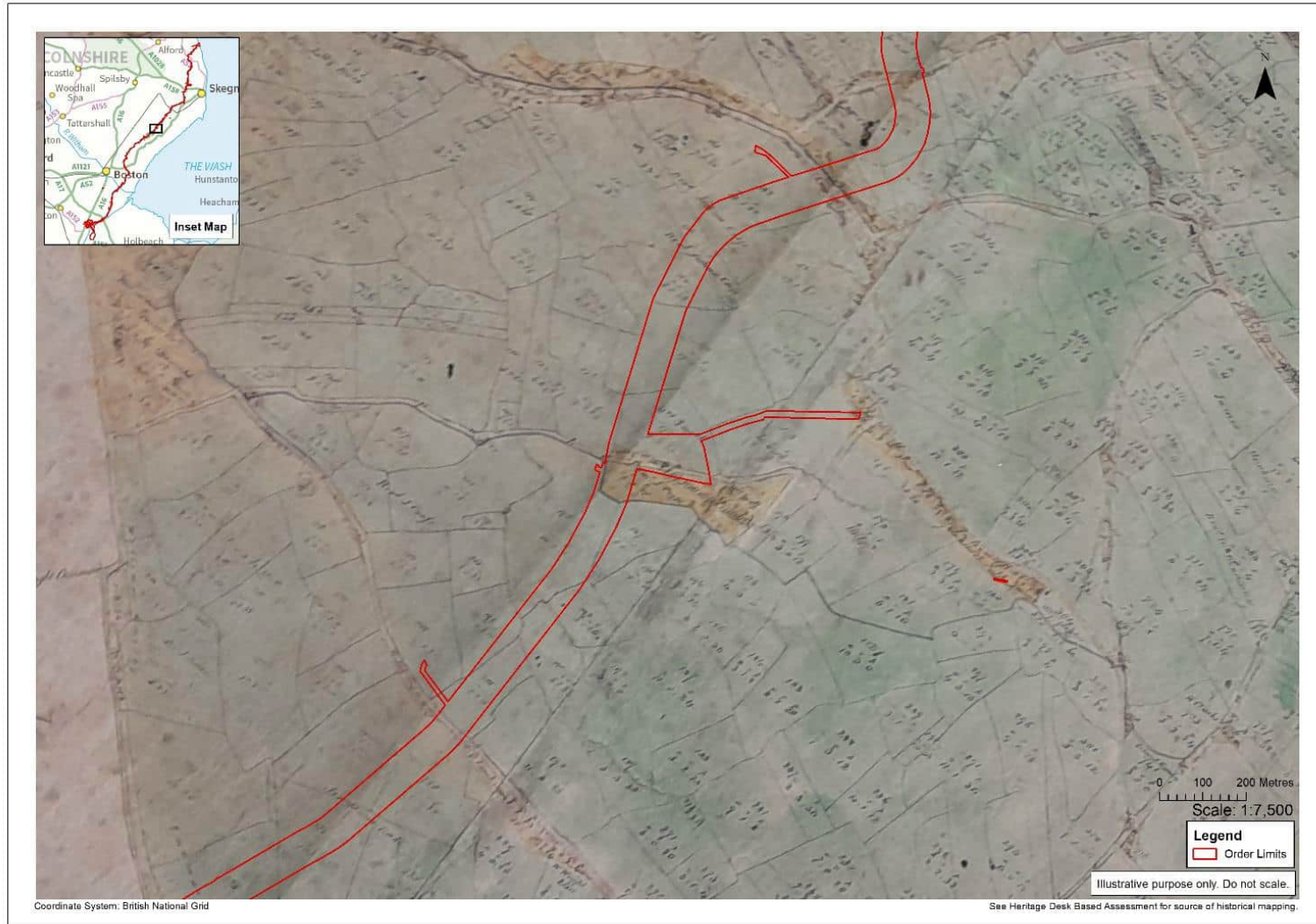


Plate 25 Wrangle Enclosure 1807 showing strip fields to RHS of frame

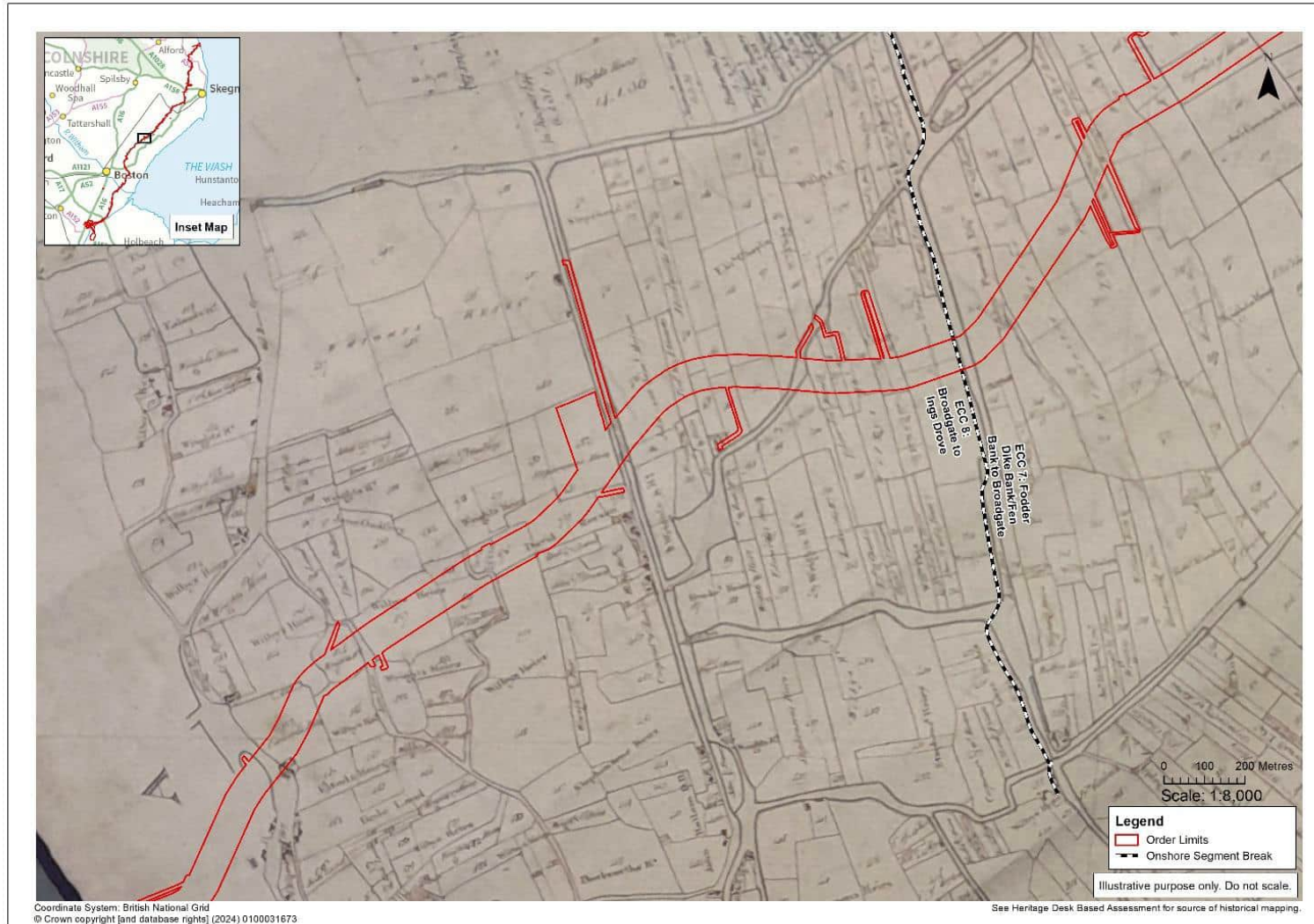


Plate 26 Old Leake early nineteenth century map

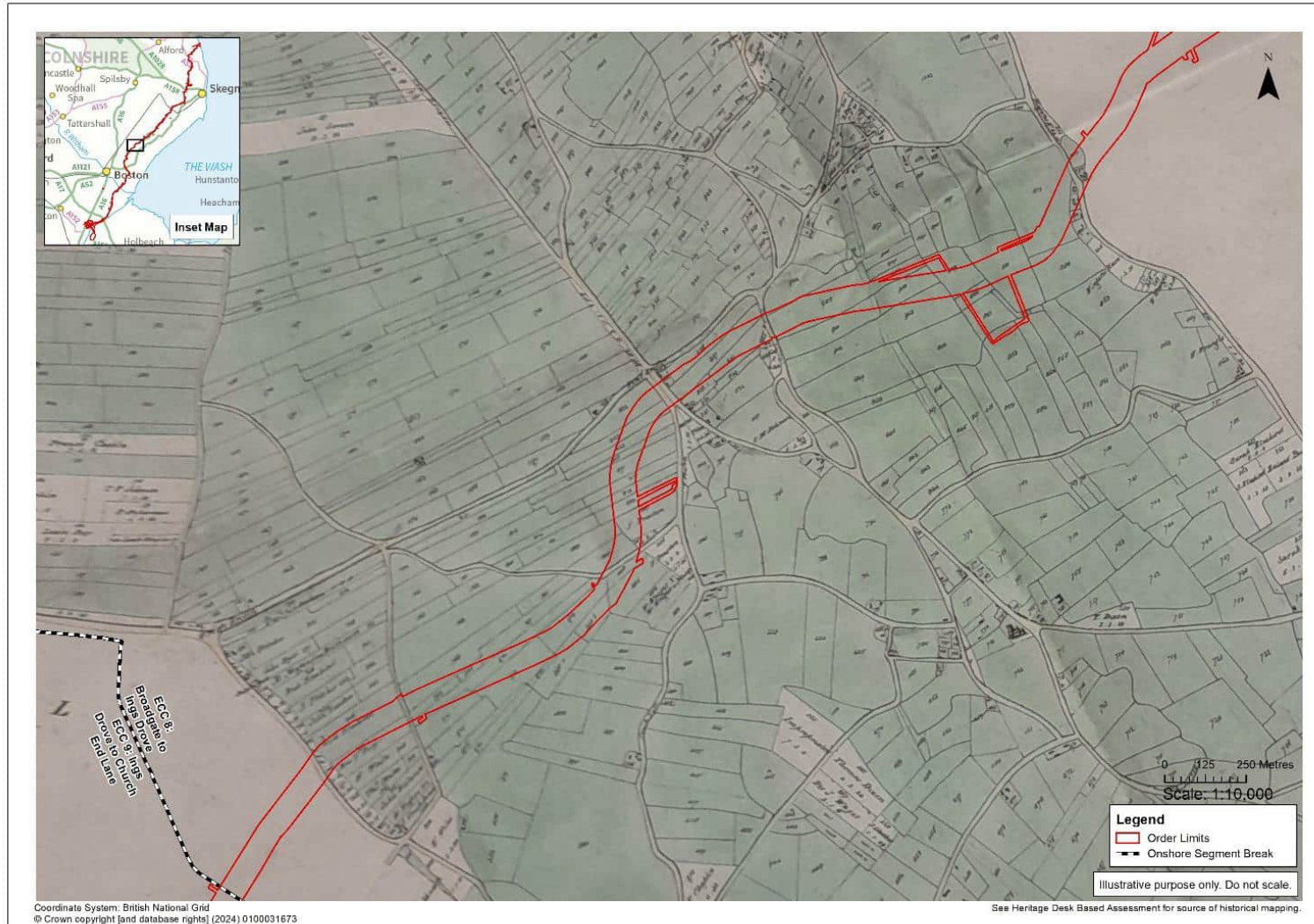


Plate 27 Freiston Enclosure Map 1820

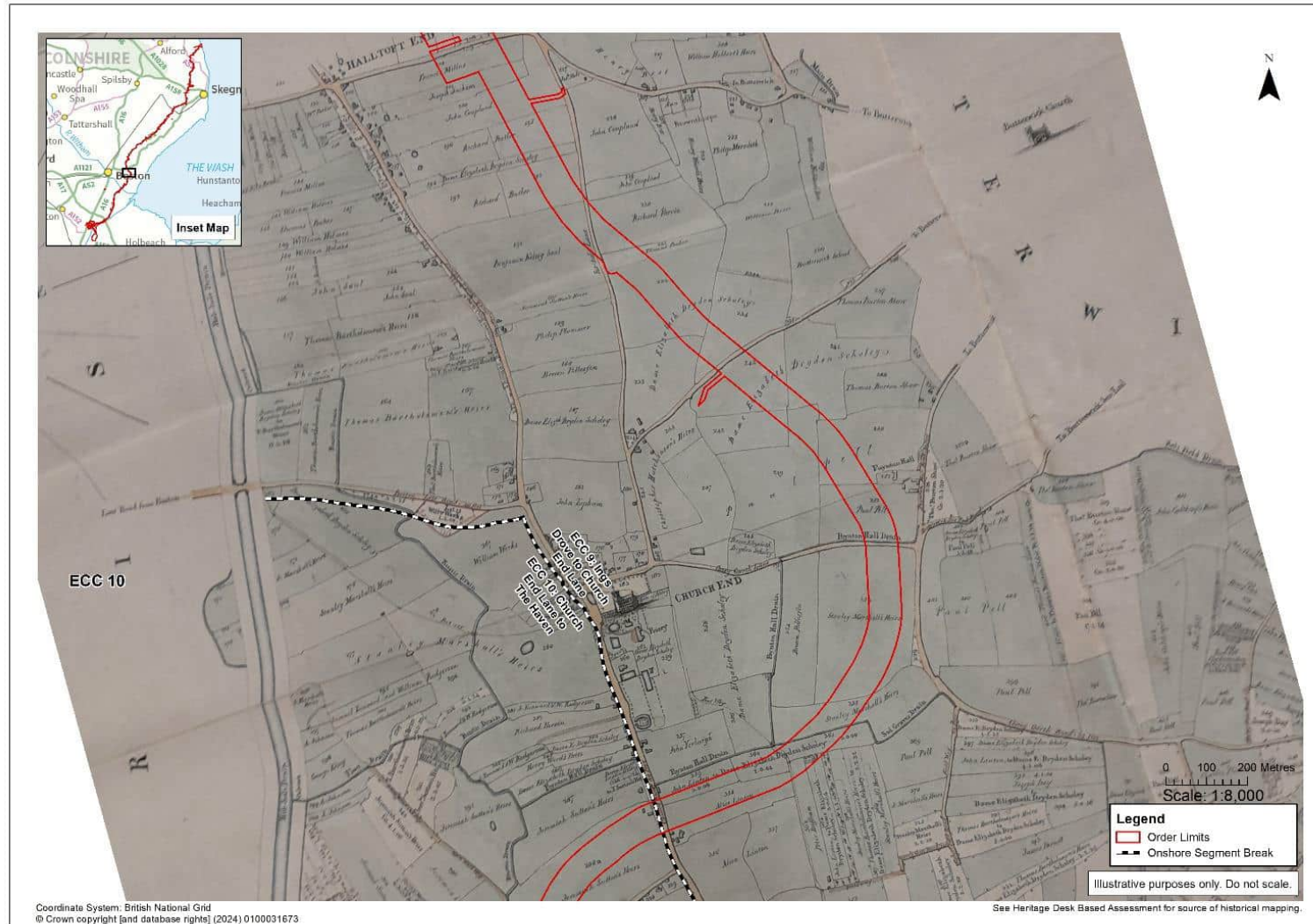


Plate 28 Freiston 1820 Enclosure Map

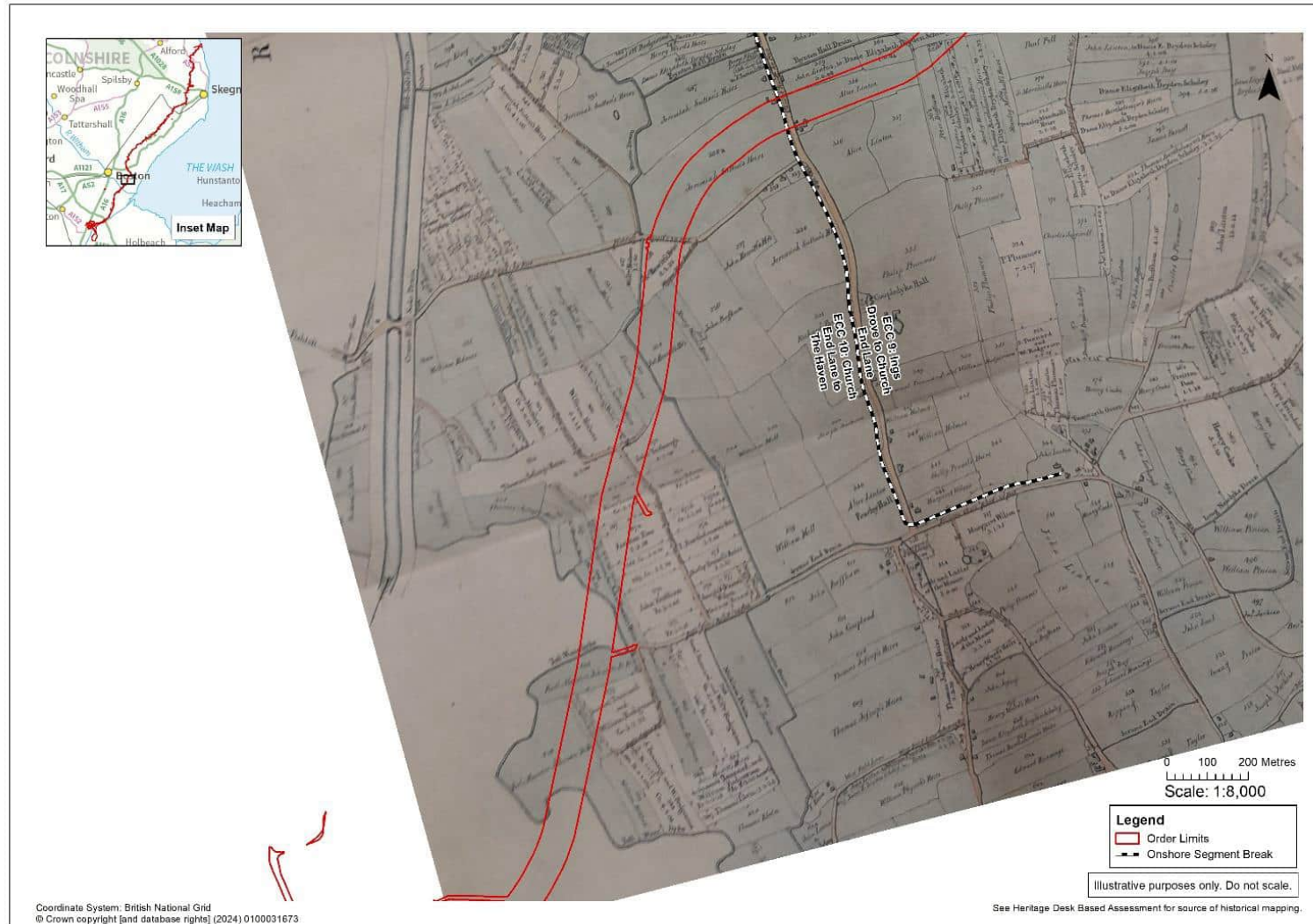


Plate 29 Fishtoft 1844 Enclosure Map

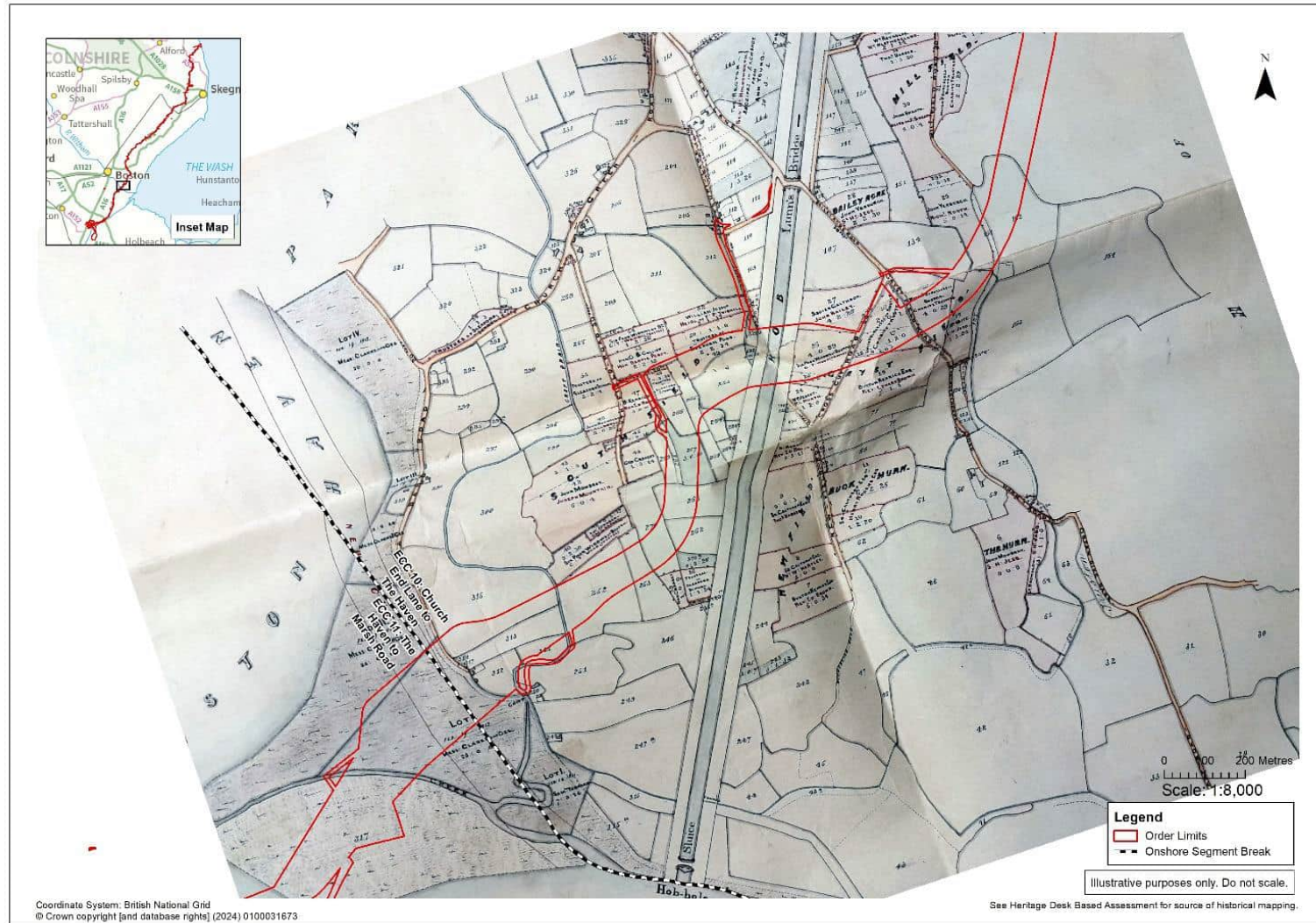


Plate 30 Kirton Map 1839

