



Lynn and Inner Dowsing Offshore Wind Farms Archaeological Protocol



**LYNN & INNER DOWSING
OFFSHORE WIND FARMS**

ARCHAEOLOGICAL PROTOCOL

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

- 1.1.1. Wessex Archaeology was commissioned by Centrica Renewable Energy Limited to prepare an archaeological protocol for the construction, use and de-commissioning phases of the Lynn and Inner Dowsing offshore wind farms. The main development areas lie approximately five kilometres off Skegness on the Lincolnshire coast. They are linked to the coast by cable routes that continue in-shore, connecting to the grid at the Middlemarsh substation (**Figure 1**).

1.2. DEVELOPMENT PROPOSAL

- 1.2.1. The development consists of two rectangular areas, Lynn and Inner Dowsing, each comprising the construction of up to 30 wind turbines, with associated inter-array cabling between the turbines and up to three cables running from the centre of each wind farm to the landfall point. The feeder cables will pass under the beach and link to buried land cables at a connection chamber on the landward side of the sea defences at Skegness. The buried land cable will run inland to substation buildings that will also house wind farm control equipment and staff welfare facilities. From these substations power will be transferred inland, via buried or overhead lines, to Middlemarsh substation (**Figure 1**).

1.3. SCOPE

- 1.3.1. The following archaeological protocol is based on recommendations made in the Maritime Archaeological Assessment and Terrestrial Archaeological Assessment Technical Reports (Wessex Archaeology 2002a and Wessex Archaeology 2002b). These reports are hereafter referred to as the ‘desk-based assessments’ (DBA’s).
- 1.3.2. This protocol, as a condition of the licence issued by DEFRA, only applies to the subtidal and intertidal (to the Mean High Water Spring Mark) elements of the scheme. Curatorial responsibility for the subtidal aspects of the proposed project (outside of the jurisdiction of the local planning authority) resides with English Heritage (Maritime Team) (EHMT). Curatorial responsibility for any aspect of the proposed project that occurs within the jurisdiction of the local planning authority should be referred to the Principal Archaeologist for Lincolnshire County Council (PAOLCC).

2. IMPLEMENTATION

- 2.1.1. The responsibility for implementing this protocol rests with the construction companies and Centrica.
- 2.1.2. The construction company will ensure that project personnel are aware of archaeological communication requirements and the appointment of onboard vessel representatives as required.
- 2.1.3. The construction company will provide an archaeology communication plan. Typically this will include details of each nominated contact, and of any subsequent changes. The initial draft of the plan will be copied to EHMT and the PAOLCC to enable confirmation of appropriate contacts within these organisations.
- 2.1.4. The construction company will ensure that project personnel are aware of this protocol and the associated exclusion zones in force.
- 2.1.5. Centrica or any archaeological body that they may appoint to manage the implementation of the protocol will seek curatorial advice from EHMT and the PAOLCC.
- 2.1.6. All data obtained from the intertidal areas will be compiled in a format suitable for submission of Monument, Event and Source records for entry into the Lincolnshire Sites and Monuments Record. All appropriate data pertaining to the historic environment obtained for the subtidal area of the proposed development will be compiled in a format suitable for transmission to the National Monuments Record (Swindon).

3. ARCHAEOLOGICAL EXCLUSION ZONES

3.1. INTRODUCTION

- 3.1.1. Archaeological Exclusion Zones will be the principle means used to preserve *in situ* any features or deposits of potential or known archaeological interest. All of the Exclusion Zones listed in this document are based on preliminary information available at the time of the compilation of the desk-based assessment. They may be subject to change if further information becomes available (see section 3.4 below).

3.2. LOCATION AND EXTENT OF EXCLUSION ZONES

- 3.2.1. A total of eight maritime sites and 40 marine geophysical anomalies were identified during the maritime desk-based assessment (Wessex Archaeology 2002a). Of these nine were considered to be of sufficient interest to warrant the establishment of Archaeological Exclusion Zones (**Figure 2**). These sites are as follows:

WA ID	NGR E	NGR N	Description	LxBx H (m)	Location	Interpretation / name	Exclusion Zone Size (m)
2064	560297	362878	Wreck of cargo vessel lost in 1941	-	Lynn Cable Corridor	<i>Anonity</i>	50

WA ID	NGR E	NGR N	Description	LxBxH (m)	Location	Interpretation / name	Exclusion Zone Size (m)
2072 (inc. 3021, 3024-3026, and 3035-3036)	564618	367014	Tank landing craft that exploded and sank after hitting a mine, and a cluster of sidescan anomalies	-	Inner Dowsing Wind Farm	Tank Landing Craft LCT (4) No.1029	50
2077	563204	369254	DUKW marked as obstruction by UKHO, possible wartime loss	-	Inner Dowsing Wind Farm	DUKW Amphibious vehicle	50
3017	563260	368466	Long, linear hard reflector, large shadows	40x8	Inner Dowsing Wind Farm	Possible debris	100
3029	562500	369115	Area of disturbed seabed with numerous small hard reflectors	27x18	Inner Dowsing Wind Farm	Possible debris, height up to 0.5m	100
2080	559864	369141	Sewer outfall marked with buoy by UKHO	-	Inner Dowsing Cable Corridor	Sewer outfall	50

Table 1: Archaeological Exclusion Zones

- 3.2.2. None of the other sites and geophysical anomalies are considered to be of sufficient sensitivity to warrant the implementation of Archaeological Exclusion Zones.
- 3.2.3. The diameters of the Archaeological Exclusion Zones are specified in **Table 1** and illustrated in **Figure 2**).
- 3.2.4. Archaeological Exclusion Zones will apply to construction works, vessel mooring and any other activities that may disturb the seabed during the installation of the wind farm.
- 3.2.5. Archaeological Exclusion Zones will not be subject to any development-related activities and will be avoided by the proposed development. The locations, extent and conditions applicable to the Archaeological Exclusion Zones will be made available to all relevant parties.

3.3. ESTABLISHING NEW EXCLUSION ZONES

- 3.3.1. If new finds of archaeological importance come to light during the course of construction they may be subject to the implementation of additional Archaeological Exclusion Zones.

- 3.3.2. EHMT and/or PAOLCC will be consulted on the need for, and the design (position, extent) and implementation of any new Archaeological Exclusion Zones.

3.4. ALTERING EXCLUSION ZONES

- 3.4.1. Archaeological Exclusion Zones may be altered (enlarged, reduced, moved or removed) as a result of archaeological field evaluation. Archaeological field evaluation may include suitable high-resolution marine geophysical survey, and/or survey by diver/ROV (see Sections 4 and 6).
- 3.4.2. The alteration of Archaeological Exclusion Zones will only be undertaken following consultation with EHMT and/or PAOLCC. Following alteration, a new plan giving details of the Archaeological Exclusion Zones will be drawn up and issued to each nominated point of contact.

3.5. MONITORING OF EXCLUSION ZONES

- 3.5.1. A monitoring programme will check the integrity of the Archaeological Exclusion Zones to determine if they have been affected by the development associated with the project. The mechanics of the monitoring programme will be agreed between the developer, archaeological contractor and curatorial authority in advance of construction work.
- 3.5.2. Development-related activities within a defined Archaeological Exclusion Zone will be considered a breach of the condition of the licence(s) issued for this project. The developer must ensure that the consenting authority is made fully aware of any such breach, and that in the event of a breach archaeological advice is sought from the archaeological curatorial authority.
- 3.5.3. The monitoring programme employed for the duration of this project is to report on the integrity and validity of the Archaeological Exclusion Zones and to include recommendations regarding amendment of the extent, removal and/or creation of new zones.
- 3.5.4. On completion of the construction phase, a report will be compiled on the effectiveness of the Archaeological Exclusion Zones, any alterations to them, and the results of monitoring.

4. MARINE GEOPHYSICAL SURVEY

4.1. INTRODUCTION

- 4.1.1. The analysis of geophysical data enables the recovery of archaeological data concerning both submerged prehistoric landscapes and wrecks or wreck-related features. This data may be used to enhance the archaeological record, or to alter (enlarge, reduce, move or remove) existing Archaeological Exclusion Zones.
- 4.1.2. An archaeological assessment of sidescan data provided by Centrica was conducted as part of the maritime desk-based assessment. The results of this survey were considered to be average to good for the purposes of identifying cultural remains. In

total, 40 anomalies of potential archaeological interest were identified (Wessex Archaeology 2002a).

4.2. PLANNING FURTHER GEOPHYSICAL SURVEYS

4.2.1. If any further geophysical surveys are conducted they will include archaeological input at the planning stage so that archaeological considerations can be taken into account. Companies planning geophysical surveys should advise Centrica that further surveys are being planned.

4.2.2. This input will take the form of advice from an appropriately qualified marine archaeologist on the following points:

- Available details of sites and/or anomalies identified in the desk-based assessment;
- Archaeological potential of areas where no existing sites and/or anomalies are yet known;
- Geophysical sources/equipment;
- Methodologies, including spacing and orientation of lines and cross lines;
- Source/equipment settings;
- Requirements for post-processing, interpreting and archiving resulting data.

4.3. UNDERTAKING FURTHER GEOPHYSICAL SURVEYS

4.3.1. Consideration should be given to having a suitably experienced archaeologist contracted on a consultancy basis during the collection of the data. The archaeologist would advise on the suitability for archaeological purposes of the data being acquired, and be able to propose minor changes to the survey method, settings, etc. in order to optimise archaeological results, and thereby reduce the need for repeat surveys.

4.4. ARCHAEOLOGICAL INTERPRETATION OF FURTHER GEOPHYSICAL DATA

4.4.1. Any further geophysical survey data should be interpreted by a suitably experienced archaeologist. Data sources with the potential for identifying archaeological remains are as follows:

- **Sidescan** survey may identify wrecks and other related debris of all periods that lie (at least in part) above the surface of the seabed;
- **Magnetometer** survey may identify wrecks and other related debris of all periods (though principally post-medieval and modern) on the surface of and under the seabed;
- **Boomer** and/or **Chirp** (hereafter termed **seismic**) survey may identify features and deposits that relate to the topography of an area prior to its burial and inundation during the prehistoric period, and buried objects such as wrecks (note: seismic data has to be calibrated with bathymetric data to enable the calculation of absolute heights);
- **Bathymetry** may be used to characterise wrecks and other related debris of all periods that lie (at least in part) on the surface of the seabed. The density of data generated by multibeam bathymetric surveys gives it a considerable advantage, in archaeological terms, over single beam bathymetry.

4.4.2. Archaeological interpretation should include:

- Examination of sidescan, magnetometer and, if available multibeam and seismic data for areas within the vicinity of known wreck sites and previously identified geophysical anomalies;
- Examination of sidescan, magnetometer and, if available multibeam and seismic data within areas that will be subject to scheme impacts in order to identify any as yet unknown wreck remains;
- If available, seismic data should be assessed in order to plot the general trend of the sub-surface sediments with archaeological potential;
- Following the initial assessment, further detailed interpretation of seismic data should be undertaken within those areas that will be subject to scheme impacts.

4.4.3. The archaeological results of any further geophysical survey will be compiled as a report, which will include likely requirements (if any) for further archaeological work.

5. MARINE GEOTECHNICAL SURVEY

5.1. INTRODUCTION

5.1.1. Analysis of borehole and vibrocore samples will enable the recovery of archaeological data relating to submerged terrestrial prehistoric archaeology within the development area.

5.1.2. To date a Stage 1 (see **Appendix II** for description of stages) assessment of borehole and vibrocore logs has already been undertaken by Wessex Archaeology (2005).

5.2. PLANNING FURTHER GEOTECHNICAL SURVEYS

5.2.1. No further geotechnical work is anticipated at this time, however if any further geotechnical surveys are conducted they will include archaeological input at the planning stage so that archaeological considerations can be taken into account.

5.2.2. This input will take the form of advice from an appropriately qualified archaeologist on measures designed to optimise archaeological results from the planned survey, including:

- Available details of those areas of potential identified during the desk-based assessment;
- Geotechnical equipment, including core types;
- Methodology, including core positions, numbers and logging;
- Requirements for description and sub-sampling of geotechnical cores and samples.

5.3. ARCHAEOLOGICAL USE OF GEOTECHNICAL DATA

- 5.3.1. The nature of environmental deposits are such that without assessing core samples it is not possible to determine whether deposits with palaeo-environmental potential survive and if they do exist whether the information they contain is of sufficient quality to warrant detailed archaeological analysis. As a result, a staged approach is applied to the archaeological assessment of geotechnical cores, with decisions concerning the continuation of the sequence taken at the end of Stages 2 and 3. It is anticipated that the decision to move onto the next stage will only be undertaken if the evidence warrants further work, and it is required by EHMT.

6. DIVER/ROV OBSTRUCTION SURVEYS

6.1. INTRODUCTION

- 6.1.1. Archaeological diver and/or ROV surveys are principally employed in order to gather archaeological data concerning wreck sites and geophysical anomalies. This data may be used to enhance the archaeological record, or to alter (enlarge, reduce, move or remove) existing Archaeological Exclusion Zones.
- 6.1.2. No diver or ROV survey data was assessed during the desk-based assessment phase of the project, and it is understood that no surveys are planned for the construction phase of the Lynn and Inner Dowsing wind farms. The only circumstances whereby diver/ROV surveys may be required for archaeological purposes are: where it is not possible to protect an archaeological site through the implementation of an Archaeological Exclusion Zone; or where visual clarification is sought in order to alter an Archaeological Exclusion Zone.

6.2. PLANNING DIVER/ROV SURVEYS

- 6.2.1. Diver/ROV surveys may be undertaken primarily for archaeological purposes by an archaeological contractor. In such cases, planning for the survey should follow normal archaeological procedures.
- 6.2.2. Any diver/ROV surveys undertaken primarily for engineering, ecological or other non-archaeological purposes should include archaeological input at the planning stage so that archaeological considerations can be taken into account. Companies planning diver/ROV survey should, through their nominated point of contact, advise Centrica that further survey is being planned.
- 6.2.3. This input will take the form of advice from an appropriately qualified marine archaeologist on measures to optimise archaeological results from the planned survey, including:
- Available details of sites and/or anomalies identified in the desk-based assessment;
 - Archaeological potential of areas where no existing sites and/or anomalies are yet known;
 - Type and level of diver/ROV positioning, voice recording and video/still recording;

- Clear guidance on the types of sites and finds that are to be reported and recorded.

6.2.4. Consideration should be given to having an archaeologist (or archaeological team) present during any diver or ROV surveys, either as an observer(s) or participating diver(s) to optimise archaeological results and thereby reduce the need for repeat survey.

6.3. REVIEW OF DATA COLLECTED BY DIVER/ROV SURVEYS

6.3.1. Following the completion of the diver/ROV survey all data, including video footage will be reviewed by an appropriately qualified archaeologist.

6.3.2. This review will identify any sites that are potentially of archaeological interest – typically this will involve the identification of vessel remains, rather than just stray artefacts. The report will identify those sites and/or geophysical anomalies that are of sufficient archaeological interest to warrant further investigation. It will also identify those sites that are no longer of archaeological interest, and hence may be removed from the list of Archaeological Exclusion Zones.

6.3.3. This phase of work will constitute a Level 1 Archaeological Wreck Record (see **Appendix I**).

6.4. ARCHAEOLOGICAL SITE ASSESSMENT

6.4.1. If the review of data collected by diver/ROV survey identifies any sites of archaeological interest that will be subject to impact during construction then a Level 2 Archaeological Wreck Survey (see **Appendix I**) will be required.

6.4.2. A Level 2 Archaeological Wreck Survey will involve two to four dives on each site by suitably experienced archaeologists. Recording will be conducted to a level whereby a statement can be made as to the date, character, extent and archaeological importance of the site. Typically this will include a sketch plan of the site supported by key measurements and accurate positional information. Significant diagnostic features will be recorded by photography backed up with written records and measurements. Limited documentary research may also be required to support the assessment of importance.

6.4.3. The archaeological results of any diver/ROV survey will be compiled in a report, which will also include a statement of the likely requirements (if any) for further archaeological work.

7. FINDS REPORTING PROCEDURE

7.1. SCOPE

7.1.1. A Finds Reporting Procedure will address the reporting of finds of archaeological material, recovered from the intertidal and subtidal areas during the construction of the wind farms. A draft copy of the Finds Reporting Procedure will be produced as a stand-alone document. Once agreed it will be reproduced in a form suitable for use onboard construction vessels.

- 7.1.2. The relevant staff on all construction vessels will be informed of the Finds Reporting Procedure, details of the find types that may be of archaeological interest, and the potential importance of any archaeological material encountered.
- 7.1.3. Provision will be made by the construction company, in accordance with the communication plan, for the prompt reporting/recording of archaeological remains encountered, or suspected during works to EHMT and PAOLCC. If the find is 'wreck' within the meaning of the Merchant Shipping Act (1996) then a report will also be made to the Receiver of Wreck. If the find is 'treasure' within the meaning of the Treasure Act (1996) then a report will also be made to the Coroner. Full contact detail for all relevant parties will be included in the Finds Reporting Procedure document.
- 7.1.4. The response to reported finds will be implemented through the measures set out in this protocol, including further survey or establishment of new Archaeological Exclusion Zones if appropriate.
- 7.1.5. The Finds Reporting Procedure will be monitored by means of assessment of any finds reported during construction..
- 7.1.6. At the end of the construction phase a report will be prepared on the results of the Finds Reporting Procedure. The results will be included in the final archaeological report in the section covering maritime sites and finds within the area affected by the wind farm (see also Section 11).

8. INTERTIDAL WALKOVER SURVEY

8.1. INTRODUCTION

- 8.1.1. The DBA identified two main areas of archaeological potential that are likely to be impacted by the wind farm development (Wessex Archaeology 2002b). These are:
- Potential Mesolithic to Medieval archaeology within the inter-tidal zone and on the foreshore;
 - Potential Mesolithic to Post-Medieval activity along the terrestrial line of the cable route.
- 8.1.2. The preferred methods of mitigation for these areas are outlined in the following sections.
- 8.1.3. The walkover survey will be used to gather archaeological data about the character, location, extent and date of any archaeological sites visible on the ground along the line of the foreshore and terrestrial cable route.

8.2. FIELDWORK

- 8.2.1. The line of the foreshore and terrestrial cable route will be visually inspected by an appropriately qualified archaeologist for the presence of archaeological sites. Position-fixes will be obtained for all sites to an accuracy level of not more than one metre, and the visible extents of all sites will be recorded to the same level of accuracy. Where the observed sites correspond with sites known from the desk-based

assessment, the existing record will be updated. Where new sites are encountered, a new record will be created.

- 8.2.2. The report on this phase of work will outline the results of the survey and identify any sites that require further work.

9. FORESHORE CORING

9.1. INTRODUCTION

- 9.1.1. The collection of cores from those parts of the foreshore between low water and the junction chamber that are accessible will identify whether any deposits relating to the presence of past land-surfaces survive within this area. This data will be used to enhance the archaeological record for deposits that are impacted during the course of construction by the excavation of trenches or other groundworks (directional drilling along the cable route will not produce a level of impact that warrants coring).

9.2. FIELDWORK AND ANALYSIS

- 9.2.1. The nature of environmental deposits are such that without assessing core samples it is not possible to determine whether deposits with palaeo-environmental potential survive and if they do exist whether the information they contain is of sufficient quality to warrant detailed archaeological analysis. As a result, a staged approach is applied to the archaeological assessment of foreshore coring programmes, with decisions concerning the continuation of the sequence taken at the end of Stages 2 and 3. It is anticipated that the decision to move onto the next stage will only be undertaken if the evidence warrants further work, and it is required by EHMT and/or PAOLCC. The stages are described in **Appendix II**
- 9.2.2. The foreshore coring programme will be informed by the intertidal walkover survey (see Section 8) and the desk-based assessments (Wessex Archaeology 2002a and 2002b). If there is evidence for the presence of a palaeo-channel running down the beach, cores will be collected at right angles to the line of the channel at intervals of 25-50 metres up to the edge of the channel or 100 metres from the centre-line of the cable route (whichever is reached first), and at intervals of 50-100 metres along the line of the cable route. If there is no evidence for the presence of a palaeo-channel then cores will only be collected at intervals of 50-100 metres along the line of the cable route.
- 9.2.3. Cores will be collected using a suitable coring / borehole method under the supervision of an appropriately qualified archaeologist. Core logs, comprising an archaeological description of the sediments, will be generated for all cores. These core logs will be used to categorise and model the beach deposits along the line of the cable route.

10. REPORTING AND ARCHIVING

- 10.1. As stated in each section above, each element of work will give rise to one or more reports. As indicated, upon completion of construction a final archaeological report

will also be prepared to synthesise the results of the various investigations. The final archaeological report will address the following themes:

- Maritime sites and finds;
- Palaeo-geography and prehistoric archaeology.

10.2. If significant archaeological sites and finds are recorded then this final report will be preceded by an assessment report that establishes the value of the recorded archaeology and provides a costing for analysis, publication and archiving (including deposition of archive). Decisions regarding the level of publication required will be taken following consultation with EHMT and PAOLCC.

11. REFERENCES

Wessex Archaeology, 2002a, 'Lynn and Inner Dowsing Offshore Wind Farms: Maritime Archaeological Assessment, Technical Report', Unpublished Report ref: 51145.02.

Wessex Archaeology, 2002b, 'Lynn and Inner Dowsing Offshore Wind Farms: Terrestrial Archaeological Assessment' Unpublished Report ref: 51145.04.

Wessex Archaeology, 2005, 'Lynn & Inner Dowsing Offshore Wind Farm: Stage 1 Borehole Assessment' Unpublished Report ref: 59091.01.

APPENDIX I: ARCHAEOLOGICAL WRECK RECORDING LEVELS

Level	Type	Objective	Sub-level	Character	Scope	Description
1	Assessment	A record sufficient to establish the presence, position and type of site.	1a	Indirect (desk-based)	A basic record based on documentary, cartographic or graphic sources, including photographic (incl. AP), geotechnical and geophysical surveys commissioned for purposes other than archaeology.	Documentary assessment / inventory of a site, compiled at the start of work on a site, and updated as work progresses.
			1b	Direct (field)	A basic record based on field observation, walkover survey, diving inspection etc., including surveys commissioned specifically for archaeological purposes.	Typically a 1-2 dive visit to the site (to assess a geophysical anomaly, etc.).
2	Evaluation	A record that provides sufficient data to establish the extent, character, date and importance of the site.	2a	Non-intrusive	A limited record based on investigations that might include light cleaning, probing and spot sampling, but without bulk removal of plant growth, soil, debris etc.	Typically a 2-4 dive visit to assess the site's archaeological potential, backed up by a sketch plan of the site with some key measurements included.
			2b	Intrusive	A limited record based on investigations including vigorous cleaning, test pits and/or trenches. May also include recovery (following recording) of elements at immediate risk, or disturbed by investigation.	Either an assessment of the buried remains present on a site; the recovery of surface artefacts; or cleaning to inform for example a 2a investigation.
3	In situ	A record that enables an archaeologist who has not seen the site to comprehend its components, layout and sequences.	3a	Diagnostic	A detailed record of selected elements of the site.	The first stage of a full record of the site. This would include a full measured sketch of the site and a database (or equivalent) entry for all surface artefacts.
			3b	Unexcavated	A detailed record of all elements of the site visible without excavation.	Full site plan (i.e. planning frame or equivalent accuracy) with individual object drawings, and full photo record (possibly including a mosaic).
			3c	Excavated	A detailed record of all elements of the site exposed by open excavation of part or whole of the site.	This may take the form of full or partial excavation of a site.

Level	Type	Objective	Sub-level	Character	Scope	Description
4	Removal	A record sufficient to enable analytical reconstruction and/or reinterpretation of the site, its components and its matrix.			A complete record of all elements of the site in the course of dismantling and/or excavation.	
5	Intra-site	A record that places the site in the context of its landscape and other comparable sites.			A complete record of all elements of the site, combined with selective recording of comparable sites and investigation of the surrounding area.	...

Note: these levels represent guidance formulated by Wessex Archaeology for use during the archaeological investigation of wreck sites. They are currently used by English Heritage, but have not been formally accepted as a standard means of grading archaeological work.

APPENDIX II: GEOTECHNICAL ASSESSMENT STAGES

Stage 1: Planning

Desk-based archaeological assessment of core logs generated by geotechnical contractors. This assessment will establish the likely presence of horizons of archaeological interest and broadly characterise them, as a basis for deciding what Stage 2 archaeological recording is required. The Stage 1 report will state the scale of Stage 2 work proposed.

Stage 2: Coring and Recording

Archaeological recording of selected retained or new cores. This will entail the splitting of the cores, with half of each core being cleaned and recorded. The Stage 2 report will state the results of the archaeological recording and will indicate whether any deposits that have the potential to contain palaeo-environmental information survive, and hence whether any Stage 3 work is warranted. The absence of any deposits containing palaeo-environmental potential (typically fine-grained sediments and/or peat) will mean that analysis will not continue beyond this stage.

Stage 3: Sampling and Assessment

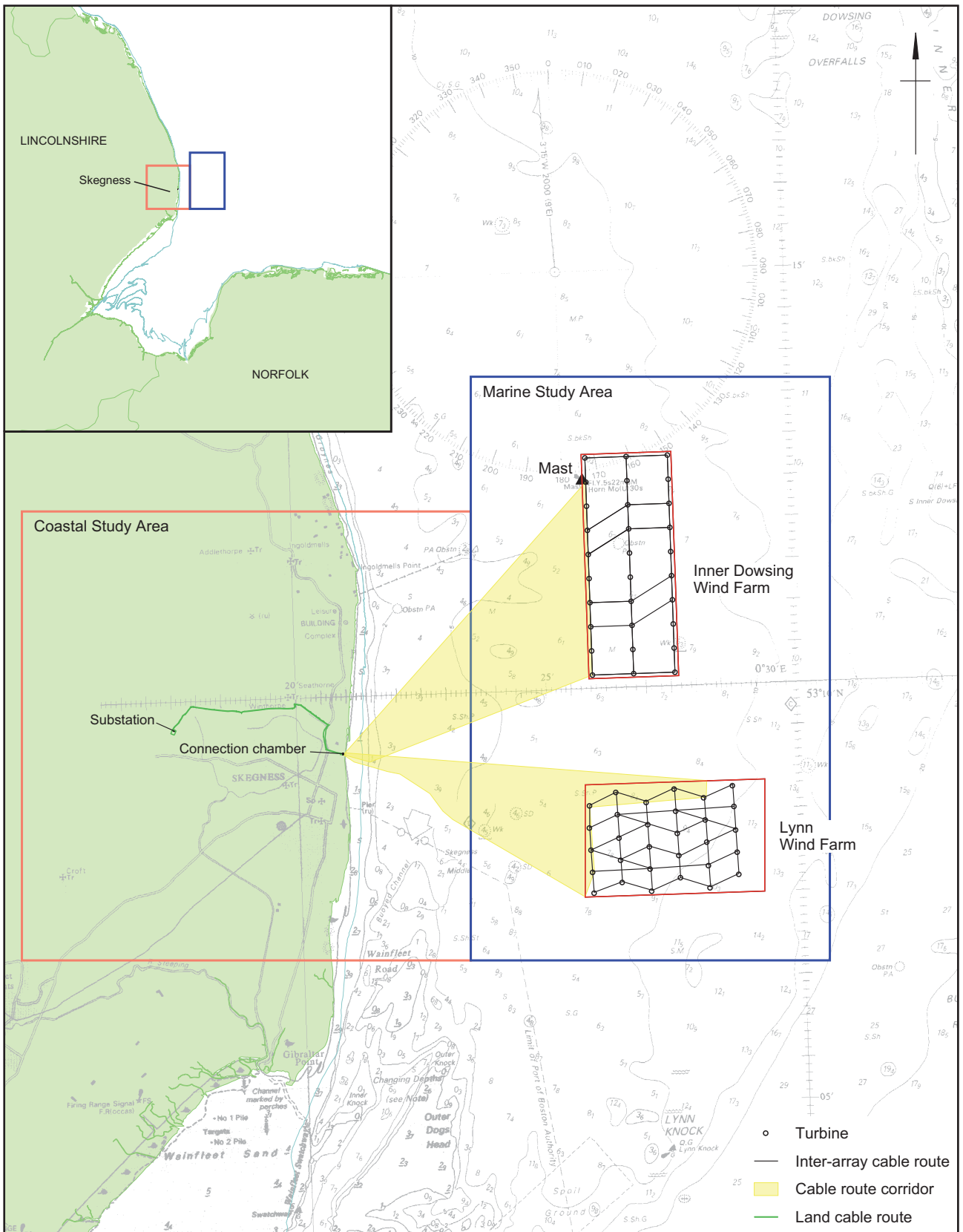
Sub-samples will be taken from selected cores and assessed for palaeo-environmental material (pollen, diatoms and foraminifera). Assessment will comprise laboratory analysis of the samples to a level sufficient to enable the value of the palaeo-environmental material surviving within the cores to be identified. Sub-samples will also be taken and retained at this stage in case radiocarbon dating is required during Stage 4.


The Stage 3 report will set out the results of each laboratory assessment together with an outline of the archaeological implications of the combined results. It will indicate whether the data contained within the cores is sufficient to allow for an understanding of the archaeological, lived-in and studied landscape, and thus whether any Stage 4 work is warranted.

Stage 4: Analysis and Dating

Stage 4 comprises full analysis of any pollen, diatoms and/or foraminifera assessed during Stage 3. Stage 4 will typically be supported by radiocarbon dating of suitable sub-samples. Stage 4 will result in an account of the successive environments within the coring area, a model of environmental change over time, and an outline of the archaeological implications of the analysis.

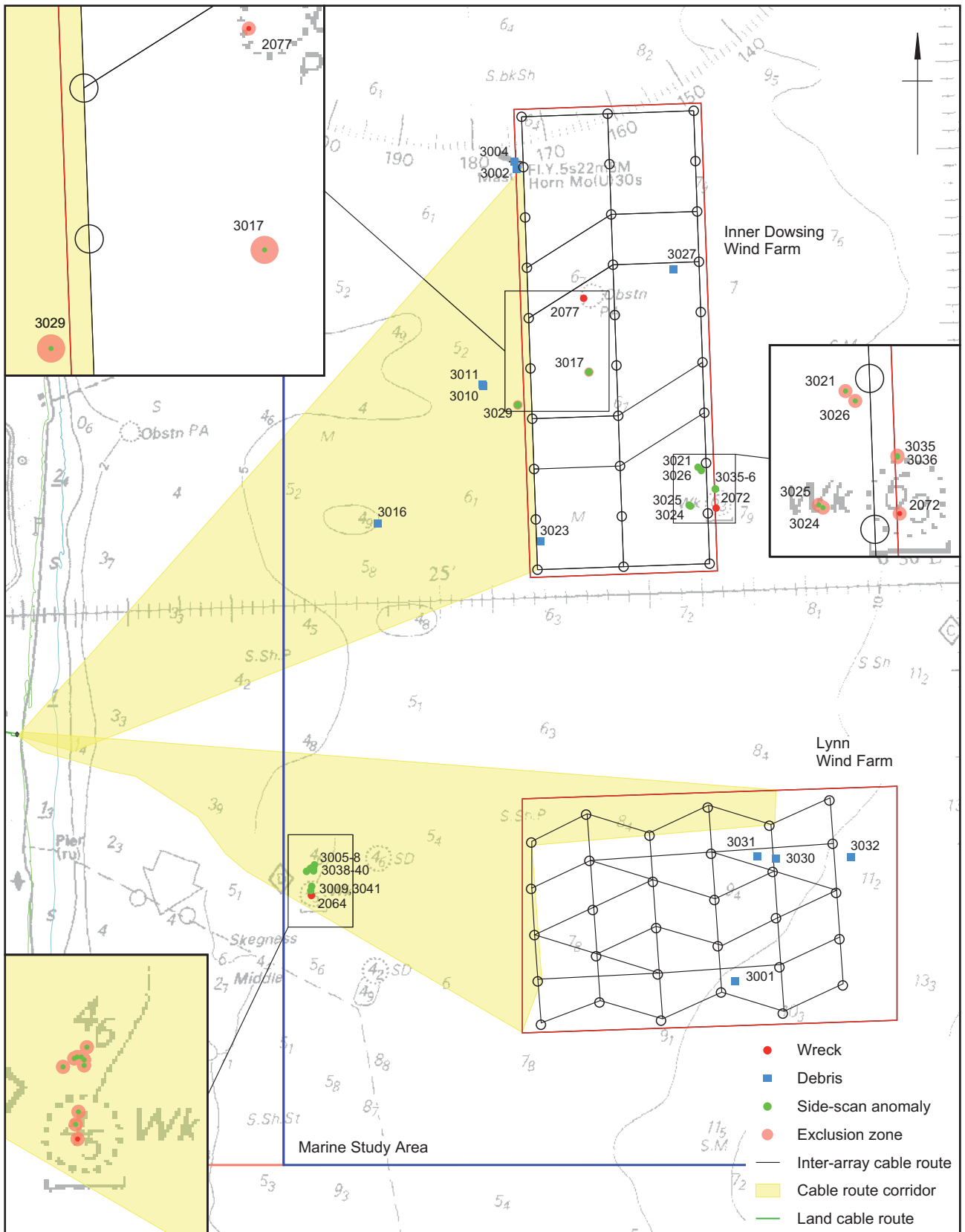
If undertaken, Stage 4 should be reported as part of a final report covering all aspects of the palaeo-topography and prehistory of the area affected by the development. This may also include relevant elements data generated by the desk-based assessment, marine geotechnical coring and terrestrial watching brief (see Section 10).




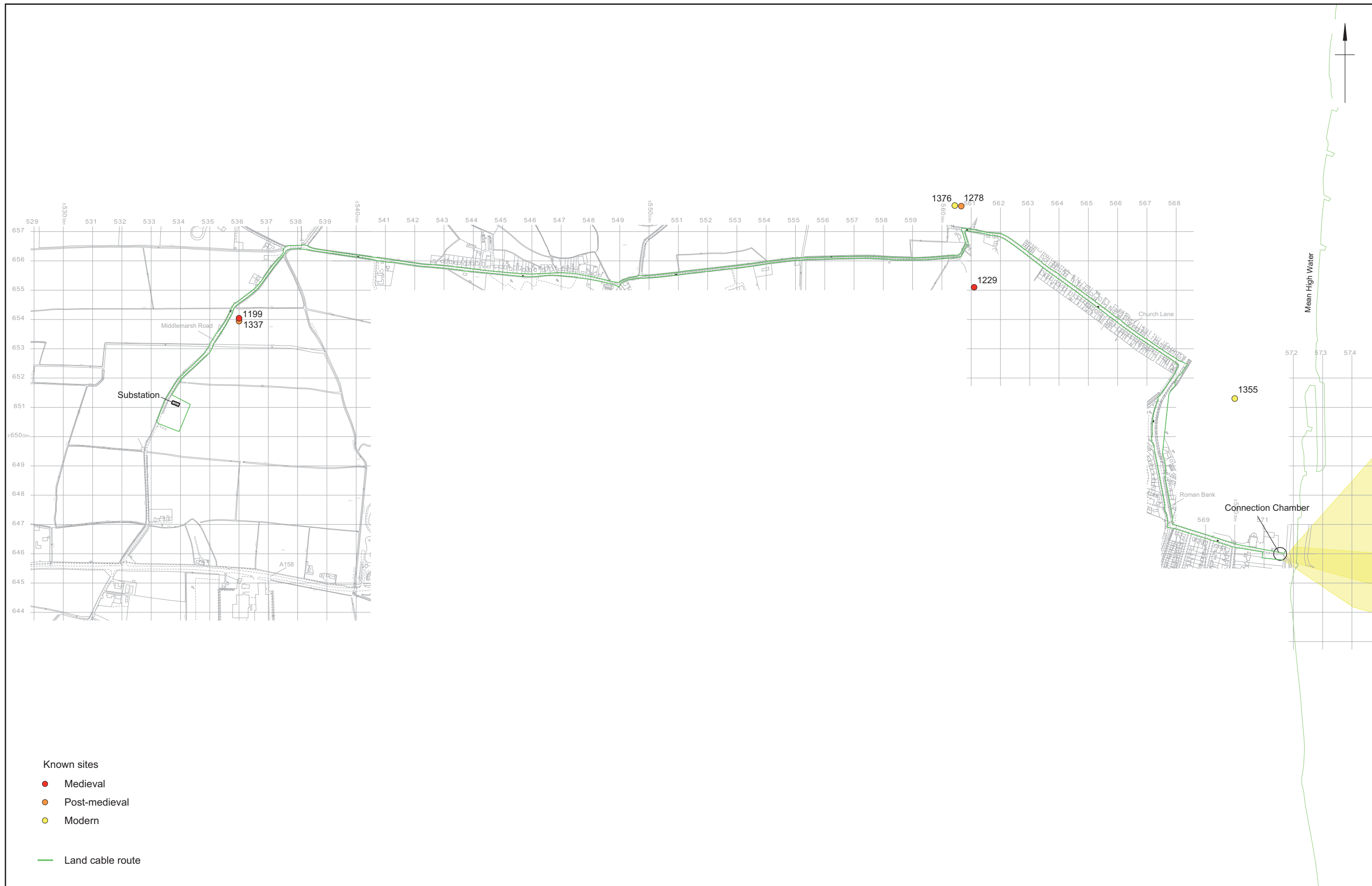
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	<p>Scale: 1:120,000</p>	<p>Illustrator: KJB</p>	
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Site location

Figure 1



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- Known sites
- Medieval
 - Post-medieval
 - Modern
- Land cable route



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