RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Environmental Statement

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Appendix 22-3 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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Glossary

Term	Definition
Cropmark	Places where crops grow differentially over buried features such as ditches banks and walls and reveal the pattern of past sites and landscape in the colour and density of their growth.
Earthwork	Upstanding ditched and embanked features which show from the air via their shadows or via the differential topography revealed by visualised LiDAR data.
Soilmark	Places where differently coloured and toned soil which is part of buried features which are being directly brought to the surface by ploughing or erosion and are visible in contrast to the surrounding soil.

Acronyms

Term	Definition
APS	Air Photo Services Ltd
ArcGIS	Artificial Intelligence Geographic Information System
ASCII	American Standard Code for Information Interchange
CRS	Coordinate Reference System
CSV	Comma Separated Value file
CUCAP	Cambridge University Collection of Aerial Photography
DEM	Digital Elevation Model
DSM	Digital Surface Model
DTM	Digital Terrain Model
DXF	Drawing Exchange Format
EA	Environment Agency
EPSG	European Petroleum Survey Group
GIS	Geographic Information System
HER	Historic Environment Record
HRO	Humber Records Office
LiDAR	Light Detection And Ranging
NA	The National Archives
NGR	National Grid Reference
NLP	National LiDAR Programme
NMP	(Historic England) National Mapping Programme

Term	Definition
OS	Ordnance Survey
MonUID	EHER site reference
QGIS	Quantum Geographic Information System
RVT	Relief Visualisation Toolbox
SLRM	Simple Local Relief Model
WWI	World War One (1914-1918)
WWII	World War Two (1939 – 1945)

22.3 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

22.3.1 Introduction

1. Air Photo Services Ltd (APS) have been commissioned by Royal HaskoningDHV on behalf of RWE to undertake an assessment of airborne remote sensing and satellite imagery data alongside historic map regression analysis. This report presents the methodology and results of a baseline survey for the within the Onshore Development Area of the Dogger Bank South (DBS) East and DBS West Offshore Wind Farms (the Projects).

2. **Figure 22-3-1** shows the Onshore Development Area. This extends from Bentley, north to Beverley, then east to Routh and to the North Sea coast via Sigglesthorne. The coastal extent of the Onshore Development Area extends between Ulrome in the north, via Skipsea, to Hornsea Beach in the south. Following the drafting of this report the Onshore Development Area was refined to remove the southern beach access point.

3. This report represents the work undertaken by APS between September 2022 and February 2023.

22.3.2 Aim and Objective

22.3.2.1 Airborne and Satellite remote Sensing Data Analysis

22.3.2.1.1 Aim

4. This report provides information on the location and nature of buried and upstanding archaeological features visible on historic aerial photographs, modern aerial and satellite imagery and visualised LiDAR data to assess the buried, topographic, structural and micro topographic features within the Onshore Development Area.

5. The analysis assesses the present level of preservation of the buried and residual or extant historic landscape features. This was assessed in respect of the considerable landscape change wrought by intense arable farming to the west of the North Sea Coast.

22.3.2.1.2 Objective

6. The objective of this analysis and report is to identify the potential for heritage asset presence and preservation through the assessment of aerial photographs, satellite imagery and LiDAR data.

22.3.2.2 Map Regression Analysis

22.3.2.2.1 Aims

7. The map regression analysis aims to collect and present:
   - Appropriate and available historic maps;
   - Tithe maps where present in areas where Ecclesiastical Parishes levied Tithes;
   - Enclosure maps associated with Enclosure Awards; and
   - First Edition and subsequent revisions of Ordnance Survey (OS) maps.

22.3.2.2.2 Objectives

8. The objective of the map regression analysis is to investigate and demonstrate any landscape changes within the Onshore Development Area since the 17th century Common Era (CE).

22.3.3 Airborne and Satellite Remote Sensing Data Analysis

22.3.3.1 Sources of Data

9. **Annex A** details:
   - The data sources which were consulted, and their metadata as appropriate;
   - Methodologies employed; and
   - Conclusions drawn from the data acquisition and processing.

22.3.3.1.1 Summary of data sources

10. In summary, the assessment systematically examines the following sources of data:
    - Historic and modern aerial photographs via online sources;
    - Satellite imagery via online sources;
    - Specialist oblique, military oblique and vertical aerial photographs held as accessible prints and digital files at the Historic England (HE) Archive in Swindon, the locations of which are shown on
    - **Figure** *22-3-2*;
    - Oblique aerial photographs taken during the course of specialist surveys and held at the Humber Historic Environment Record (HHER) in Hull. The locations of these obliques are shown on **Figure 22-3-3**;
    - Online search of the Cambridge University Collection of Aerial Photographs (CUCAP) database which generates a Comma Separated Value file (CSV) file showing the locations of vertical and oblique aerial

photographic surveys and site targets which are shown on **Figure 22-3-4**. This collection remains in long term closure during its digitisation in Cambridge and it is not possible to see any of the actual images at the time of writing. Some are held in the HE Archive, but the National Mapping Programme (NMP) projects have not had access to the full range of CUCAP images.

- Search data as Shape (SHP) and Portable Document Format (PDF) files from the HHER;
- The HE NMP analyses and mapping are used as baseline data (Deegan 2017 a and b, 2017; Oakey et al., 2012). These data cover parts of Onshore Development Area which are shown on **Figure 22-3-5**;
- Environment Agency and National LiDAR Programme (NLP) LiDAR data;
- Online Genealogist Tithe maps covering all pre-modern parishes traversed by the Onshore Development Area. These online Tithe records present an appropriate data source in this instance and reflect the landscape as it was in the mid-19th century;
- Pre-19th century, Enclosure and estate maps which were consulted as original documents in the East Riding Records office at The Treasure House in Beverley and at Hull History Centre; and
- Georeferenced historical OS mapping provided as a digital package for commercial use by Groundsure.

22.3.4 Interpretation and Mapping Summary

11. All photos, satellite images and LiDAR data visualisations are interpreted and mapped at a level compatible with a 1:2500 scale OS digital base map.

12. Aerial photographs are closely examined by eye on screen and as paper copies which were photographed at high resolution. Vertical aerial photos are examined with the aid of a mirror stereoscope where appropriate, or in detail on screen when consulted as digital files.

13. Selected aerial photographs are digitally rectified to an OS base map using the QGIS rectification tool. This is done to remove perspective distortion and ensure correct rectification of aerial photographs to the OS map (Scollar 2002; Scollar and Palmer 2008. Images from Google Earth are also interpreted and rectified to OS map bases and used in accordance with observations made by Scollar and Palmer (2008).

14. The rectified files are then set as background layers in QGIS where features were interpreted and drawn over the rectified photographs.

15. The HE NMP data are taken into careful consideration, used as baseline data and updated where appropriate from newer data sources if appropriate. The recent nature and high quality of the born-digital NMP data in this area is noted.

16. Layers from the final drawing are used to prepare the illustration for this report and are provided digitally for import to a Geographic Information System (GIS), in ESRI Shapefile format.

17. LiDAR data are downloaded, visualised and imported to QGIS and ArcGIS for interpretation and mapping from the Environment Agency.

18. The extent of the Environment Agency and NLP data coverage is shown on **Figure 22-3-6**. The methods of data acquisition, standards and guidance, processing, transcription and interpretation are detailed in Annex A of this report, alongside a discussion of the limitation of each survey technique for archaeological discovery and mapping.

22.3.5 Environment

19. The nature of the environment has a complex effect on both the preservation and visibility of both buried and upstanding features from the air. Many factors combine to influence very marked seasonal and temporal limitations to visibility of cropmarks, soil marks, structures and residual structures and earthworks.

20. Land use, agricultural regimes, weather, the quality and angle of sunlight, geology and soil types are all major contributing factors to the visibility of heritage assets from airborne and satellite-derived sources.

22.3.5.1 Topography and Land Use

21. The Onshore Development Area lies to the west of the rapidly eroding North Sea Coast.

22. The land is predominately laid to arable use with some small areas of deciduous woodland and leisure use. The coastal hinterland is low-lying and is drained into Skipsea and Stream Drains by a series of ditches and dikes. To the east of Beverley, the North to South flowing River Hull traverses the Onshore Development Area and the land is a little higher and slightly undulating.

22.3.5.1.1 Topography and Land Use Conclusion

23. The region was attractive to Prehistoric, Roman, Medieval and Post-Medieval hunters, gatherers, and farming and trading populations due to its easily traversed topography and access to coastal and riverine environmental and food resources. The region presents some optimal environments for early settlement on the slightly higher ground to the immediate west of the wildlife-rich coastal area.

22.3.5.2 Geology

24. The extent, type and location of the geological deposits is shown on **Figure 22-3-7.**

25. The drift deposits (Cranfield University 2023, British Geological Survey (BGS) 2023) are predominately chalky till. The till is interspersed with some smaller areas of glaciofluvial sand and gravel, marine alluvium and Fen peat, river alluvium and further till deposits over chalk.

22.3.5.3 Soils

26. The extent and type of the soils are shown on **Figure 22-3-8**. The predominate soil types within the Onshore Development Area are HOLDERNESS and BURLINGHAM 2, which are slowly permeable loamy soils over freer draining chalky till. Seasonally wet soils of the FLADBURY 3 and the clayey DOWNHOLLAND associations lie over river and marine alluvium where the land is much less well drained. Smaller areas of loamy HUNSTANTON, BLACKWOOD and Bishampton 1 soils lie over till and glacio-fluvial drift. More permeable and better drained soils of the LANDBEACH association lie over glaciofluvial sand and gravel.

22.3.5.3.1 Geology and Soils Conclusion

27. The geology and soils present a mixed natural environment, some of which is well drained and favourable to the growing of arable crops and to the formation of crop marks over buried features. Other areas require more artificial drainage and are more moisture retentive.

28. The Onshore Development Area thus presents a varied and rich natural environment for agricultural cultivation alongside the need for drainage in some of the more waterlogged or lower lying areas.

22.3.6 Previously Recorded ('Baseline') Heritage Assets

29. The Onshore Development Area does not contain any Scheduled Monuments (SMs). Some SMs are contained within the wider site polygons which are traversed by the Onshore Development Area, but do not lie within it.

30. These are:

- A World War Two (WWII) heavy anti-aircraft gun structure which is listed on the National Heritage List for England (NHLE) as NHLE 1019186, to the north of Bentley at Butt Farm. This structure and its associated features are recorded as site **APS_017** by this assessment and are comprehensively mapped by the HE NMP (Oakey et al., 2012)
- NHLE 1013999, a Romano-British (Roman) enclosure and fields, c.63m to the northeast of and outside the Onshore Development Area at **APS_008**;
- Eske Medieval fields and settlement at NHLE 1005216, c.186m north of the Onshore Development Area at **APS_049** near Eske Manor; and
- A moated grange, NHLE 1007971, which lies beside Medieval fields recorded as **APS_067** c.190m to the west of the Onshore Development Area at Moor House Farm.

31. The HHER demonstrates that the Onshore Development Area contains known evidence for features and landscapes which date from the earlier prehistoric through the Medieval settlement and arable landscape to modern periods.

32. Arable areas show cropmarked remains of ring ditches and square barrows which indicate likely Bronze Age to Iron Age funerary sites alongside some known cropmarked ditched enclosures, field and tracks.

33. These known sites have been recorded previously by the HE NMP from aerial photographic sources where these data are available and represent the remains of a buried former landscape which dates from the Bronze and Iron Ages through to the Roman period, although some areas of cropmarks remain undated. The cropmarked landscape within the Onshore Development Area is present and visible but not extensive.

34. The region was widely farmed and settled in the Medieval period. Remains of ridge and furrow ploughing, which is now largely eroded, are recorded from 1940s and modern aerial and satellite imagery.

35. In later periods the expansion of more mechanised and widespread agriculture has led to the removal of post-enclosure field boundaries, particularly in the latter part of the 20th century. Some areas of drained low lying land and areas with post-1950s boundary loss, with some relict elements, lie among areas of bounded modern arable fields. The post-enclosure boundaries are recorded on the Tithe, Enclosure and earlier editions of the OS maps in this area and are often visible as microtopography via visualised LiDAR data, or marks in crops and soils over their former locations.

36. The North Sea coast was robustly defended during the 20th century. The coast and its immediate hinterland between Ulrome and Hornsea Beach contained complex and dense remains of varied coastal defensive structures, pillboxes, barbed wire and ditched defences. many of these have been removed following WWII and are recorded by the HE NMP from 1940s and 1950s aerial photographs. The present condition, and presence or absence, of these features, are recorded by this assessment. Inland defensive features, such as the heavy anti-aircraft emplacement at APS_017, are also present.

22.3.6.1.1 Baseline heritage assets conclusion

37. Overall, the HHER and three HE NMP projects demonstrate the range of previously recorded archaeological resource in the area and have served as an important indication of the type of sites which are, or have been, visible via airborne remote sensing data sources.

22.3.7 Results of the Airborne and Satellite Remote Sensing Data Analysis

38. The results of this analysis are summarised in **Table 22-3-1** and are illustrated by the heritage mapbook which is indexed at **Figure 22-3-9**. The detailed mapping is presented at **Figure 22-3-10a to 22-3-10p** which are supplied separately as pdf files, as the Mapbook are too large to include into a standard word document, for accessibility purposes.

39. The detailed sources and condition notes are recorded in the Shapefile which accompanies this report.

Table 22-3-1 Gazetteer of sites recorded from airborne remote sensing and LiDAR data sources

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_001	Ridge and Furrow	2-10n	Levelled (EA LiDAR 2018 1m and GE 2023)	Medieval / Post Medieval			An area of Medieval / Post Medieval ridge and furrow which is now eroded.	500568	439358
APS_002	Field System	2-10n	Microtopographic Earthworks (EA LiDAR 2018 1m and GE 2023)	Unknown			A bank orientated approximately northwest - southeast which is visible as an earthwork and a cropmark has been identified through aerial imagery sources.	500583	438925
APS_003	Bank	2-10n	Microtopographic Earthwork (EA LiDAR 2018 1m)	Medieval		1566264	A bank orientated approximately north - south which is visible as an earthwork has been identified through aerial imagery sources.	500589	439801
APS_004	Pit	2-10n	Cropmark (GE 2017)	Unknown			A group of pits of unknown date are visible as cropmarks on aerial imagery sources.	500697	439079
APS_005	Field Boundary	2-10n	No Longer Present (EA LiDAR 2018 1m and GE 2023)	Post Medieval			A former field boundary dating to the Post Medieval period was visible as an earthwork and was orientated approximately northwest - southeast. The feature has been removed and is no longer present.	500700	439567
APS_006	Ditch	2-10n	No longer present (EA LiDAR 2018 1m and GE 2023)	Unknown		1566264	A ditch orientated approximately northwest - southeast which was visible as an earthwork has been identified through aerial imagery sources and is no longer extant.	500718	439164
APS_007	Ditch	2-10n	Cropmark (GE 2023)	Unknown			A ditch orientated approximately northeast - southwest which is visible as an earthwork and later as a cropmark has been identified through aerial imagery sources.	500718	439104

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_008	Ridge and Furrow	2-10n	Cropmark (GE 2023)	Medieval / Post Medieval		1566264 1551834 1552246	Areas of Medieval / Post Medieval Ridge and Furrow are orientated approximately north - south and are visible as eroded earthworks and cropmarks on aerial imagery sources.	500868	439787
APS_009	Enclosure	2-10o	Cropmark	Prehistoric		1087966	A partial enclosure which is visible as a cropmark on aerial imagery sources. Lies just outside the Onshore development Area	501363	437462
APS_010	Ditch	2-10o	Built Over, Partial Cropmark (GE 2022)	Unknown		1087954	Undated series of parallel east - west aligned sinuous ditches are visible as cropmarks on aerial photographs, satellite imagery and previously mapped by NMP.	501416	437619
APS_011	Field Boundary	2-10o	Built Over, Partial Cropmark (GE 2022)	Post Medieval			A group of former field boundaries dating to the Post Medieval period are visible as earthworks and cropmarks on aerial imagery sources.	501437	437575
APS_012	Extractive Pit	2-10o	Reinstated Land	Post Medieval			Extraction pit visible on aerial imagery sources, which is now infilled and reinstated.	501449	437454
APS_013	Enclosure	2-10o	Cropmark (GE 2022)	Prehistoric			A partial enclosure with associated ditch and a pit which is visible as a cropmark on aerial imagery sources.	501473	437157
APS_014	Ditch	2-10o	Under tree/Shrubbery	Unknown			A group of ditches on a variety of orientations have been identified through aerial imagery sources.	501475	436282

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_015	Ridge and Furrow	2-10m	Eroded/Levelled (EA LiDAR 2018 and GE 2023	Medieval / Post Medieval		1551524	An area of Medieval / Post Medieval ridge and furrow which is now eroded.	501553	441789
APS_016	Ridge and Furrow	2-10m	Eroded, with one field outside of the Onshore Development Area upstanding	Medieval / Post Medieval		1552224	An area of Medieval / Post Medieval ridge and furrow which is now eroded to microtopography.	501804	441233
APS_017	Anti-Aircraft Battery	2-10o	Extant monument (GE 2022)	World War II	MHU15288 MHU15124	1332010	Remains of Scheduled Anti-Aircraft Battery (NHLE 1019186) visible as a structure on aerial imagery sources.	501818	436930
APS_018	Ridge and Furrow	2-10o	Eroded (GE 2022)	Medieval / Post Medieval		1087954	An area of eroded Medieval / Post Medieval ridge and furrow.	501939	437959
APS_019	Extractive Pit	2-10o	Reinstated Land, used as golf course. (GE 2022)	Post Medieval		1566096	Extractive pit visible as earthwork disturbances on aerial imagery sources. Site now redeveloped as a golf course.	501990	438416
APS_020	Ridge and Furrow	2-10o	Microtopographic Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1566276	An area of Medieval / Post Medieval ridge and furrow is visible as an earthwork on aerial imagery sources.	502042	436114
APS_021	Field Boundary	2-10m	Removed (GE 2022)	Post Medieval			Field boundary visible as cropmark on aerial imagery sources.	502099	441581
APS_022	Field Boundary	2-10o	Removed, possible residual microtopography (EA LiDAR 2018 and GE 2022)	Post Medieval			Field boundary visible as cropmark on aerial imagery sources	502137	437629

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_023	Ridge and Furrow	2-10m	Eroded (EA LiDAR 2018 1m, GE 2022)	Medieval / Post Medieval		1552246	An area of Medieval / Post Medieval ridge and furrow which is now eroded to microtopography.	502252	441354
APS_024	Chalk Pit	2-10o	Extant Mining Site (LiDAR 2018 1m, GE 2022)	Post Medieval / Modern		1565962	Chalk pit visible on aerial imagery sources.	502340	438163
APS_025	Ridge and Furrow	2-10p, 2-10o	Levelled (EA LiDAR 2018 1m, GE 2022)	Medieval / Post Medieval		1566013	An area of eroded Medieval / Post Medieval ridge and furrow and a former chalk pit.	502405	437393
APS_026	Ridge and Furrow	2-10p, 2-10o	Built over, one field contains extant earthworks (EA LiDAR 2018 1m, GE 2022)	Medieval / Post Medieval		1566274	An area of eroded Medieval / Post Medieval ridge and furrow.	502489	436803
APS_027	Ridge and Furrow	2-10m	Eroded (EA LiDAR 2018 1m, GE 2022)	Medieval / Post Medieval		1552224	An area of eroded Medieval / Post Medieval ridge and furrow.	502673	441747
APS_028	Modern Service	2-10p, 2-10o	Extant	Modern			The line of a modern service trench which has been identified through aerial imagery sources.	502686	436653
APS_029	Airfield	2-10m, 2-10l	In use for training	World War II	MHU11146	1401624	Formerly Leconfield Airfield, now army barracks and training site.	502733	443305
APS_030	Rectilinear Enclosure	2-10p, 2-10o	Areas of site may have been removed by laying of services.	Prehistoric	MHU3530	1565984	Series of cropmark ditches which appear comprising a settlement site and likely field system including trackways, pits and enclosures visible in aerial photographs, satellite imagery and LiDAR. Previously recorded by NMP.	502794	436427

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_031	Ridge and Furrow	2-10p, 2-10o	Microtopographic Earthworks (EA LiDAR 2018) No upstanding earthworks visible (GE 2022)	Medieval / Post Medieval		1566276	An area of Medieval / Post Medieval ridge and furrow is visible as an earthwork on aerial imagery sources.	502805	436077
APS_032	Ditch	2-10p	Cropmark (GE 2022)	Medieval		1566060	A ditch orientated approximately north - south which is visible as an cropmark has been identified through aerial imagery sources.	503349	436805
APS_033	Field Boundary	4, 5	Cropmark (GE 2017) not visible in conditions on GE 2022	Post Medieval		1550502	Rectilinear ditch visible as a cropmark on aerial imagery sources. Mapped by NMP as Post Medieval field boundary.	503446	441447
APS_034	Field Boundary	2-10p	Levelled (GE 2022)	Post Medieval			Former field boundary visible as cropmark on aerial imagery sources.	503512	437619
APS_035	Ditch	2-10p	Cropmark (GE 2022, 2022)	Unknown			An area of former field systems and ditches which are visible as cropmarks through aerial imagery sources.	503518	435784
APS_036	Modern Service	2-10p	In situ	Modern		1566276	The line of a modern service trench which has been identified through aerial imagery sources.	503552	435328
APS_037	Ridge and Furrow	5	Eroded (EA LiDAR 2018 1m)	Medieval / Post Medieval		1552224	An area of eroded Medieval / Post Medieval ridge and furrow.	503554	441895
APS_038	Ditch	2-10p	Cropmark and microtopgraphic earthworks (Environment Agency LiDAR 2018 and GE 2022)	Post Medieval		1565996	An area of Medieval / Post Medieval ridge and furrow which is orientated approximately east - west, separated by two ditches is visible as an earthwork and later a cropmark on aerial imagery sources.	503556	436540

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_039	Double Ditched Enclosure	2-10p	Cropmark (GE 2022)	Iron Age / Roman		1087958	A partial double ditched enclosure which is visible as a cropmark on aerial imagery sources.	503606	436805
APS_040	Ridge and Furrow	2-10p	Levelled (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval			An area of eroded Medieval / Post Medieval ridge and furrow which is orientated approximately north - south and is visible as earthworks and cropmarks on aerial imagery sources.	503673	435773
APS_041	Ditch	2-10p	Cropmark	Unknown			A ditch orientated approximately north - south which is visible as a cropmark and has been identified through aerial imagery sources.	503839	435367
APS_042	Ridge and Furrow	2-10l	Residual earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1552246	An area of eroded Medieval / Post Medieval ridge and furrow.	503941	441551
APS_043	Enclosure	2-10p	Cropmark	Prehistoric	MHU8446	1087958	Area of ring ditches and enclosures visible as cropmarks.	504025	437095
APS_044	Ridge and Furrow	2-10l	Residual Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1551566	An area of eroded Medieval / Post Medieval ridge and furrow.	504518	441197
APS_045	Field Boundary	2-10l	Cropmark	Medieval / Post Medieval			Field boundary visible as an extant boundary on aerial imagery sources. No longer present	504813	442737
APS_046	Ridge and Furrow	2-10l	Residual Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1551833	An area of eroded Medieval / Post Medieval ridge and furrow is visible as a cropmark on aerial imagery sources.	504987	442004

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_047	Medieval Village	2-10l	Residual Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval	MHU6558	910627 1551566	Medieval village of Storkhill, banks, platforms and fishponds.	505229	441695
APS_048	Pit	2-10l, 2-10k	Cropmark	Unknown			A pit of unknown date is visible as a cropmark on aerial imagery sources.	506141	442740
APS_049	Deserted Medieval Village	2-10l, 2-10k	Microtopographic Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval	MHU2581	1552966	The Scheduled site of Eske Deserted Medieval settlement (NHLE 1005216) is visible as earthworks on aerial imagery and visualised LiDAR data sources.	506226	443208
APS_050	Field Boundary	2-10k	Removed	Post Medieval			Field boundary visible as cropmark on aerial imagery sources.	507093	442847
APS_051	Ditch	2-10k	Cropmark	Unknown			Ditch visible as a cropmark on aerial imagery sources.	507780	442857
APS_052	Field Boundary	2-10k	Cropmark	Medieval / Post Medieval			Former field Boundary visible as an extant boundary on aerial imagery sources. No longer present.	508279	442743
APS_053	Ridge and Furrow	2-10j	Residual Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1463591	An area of Medieval / Post Medieval ridge and furrow is visible as an eroded residual earthwork on aerial imagery sources.	508951	442284
APS_054	Field Boundary	2-10j	Removed	Post Medieval			Field boundary visible as an extant boundary on aerial imagery sources. No longer present.	509679	441981

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_055	Trackway	2-10j	Cropmark	Prehistoric / Roman	MHU15410	1463587	A later prehistoric or Roman period trackway and associated field boundaries are visible as cropmarks on aerial photographs	509806	442046
APS_056	Ditch	2-10j	Cropmark (GE 2022)	Unknown	MHU8840	1334599	Ditch visible as cropmark on aerial imagery sources.	510456	442388
APS_057	Enclosure	2-10j	Earthwork (EA LiDAR 2018 1m and GE 2022)	Unknown	MHU19092 MHU3597	1463627	Possible enclosure and ring ditch at Riston Carr.	511110	442784
APS_058	Ridge and Furrow	2-10j, 2-10i	Eroded, with one field outside the Onshore Development Area containing residual earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1460388	An area of eroded Medieval / Post Medieval ridge and furrow is visible as a cropmark on aerial imagery sources.	511891	443242
APS_059	Enclosure	2-10i	Cropmark	Iron Age / Roman	MHU17944	1460347	Enclosure and ditches of possible Iron Age / Roman date visible as cropmarks on aerial imagery sources.	512256	443891
APS_060	Ridge and Furrow	2-10i	Eroded with possible residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1460347	An area of eroded Medieval / Post Medieval ridge and furrow.	512435	444007
APS_061	Ridge and Furrow	2-10i	Very residual microtopographic remains Earthwork (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1460388	An area of eroded Medieval / Post Medieval ridge and furrow.	512864	443905

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_062	Field Boundary	2-10i	Cropmark, tree still planted on line of boundary. (GE 2022)	Post Medieval			A former field boundary dating to the Post Medieval period is visible as an earthwork on aerial imagery sources.	513248	444606
APS_063	Trackway	2-10i	Cropmark and residual microtopography (EA LiDAR 2018 1m and GE 2022)	Iron Age / Roman	MHU7169	1460420	Probable Iron Age / Roman Trackway with branching tracks, visible as a cropmark on aerial imagery sources.	513446	444416
APS_064	Open Cast Mining	2-10h	Partially reinstated land and partially extant mining site (EA LiDAR 2018 1m and GE 2022)	Post Medieval		1460463	Area of possible open cast mining visible on aerial imagery sources. This site is outside the Onshore Development Area.	513696	446326
APS_065	Ridge and Furrow	2-10i 2-10h	Cropmark and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1460378	An area of eroded Medieval / Post Medieval ridge and furrow is visible as a cropmark on aerial imagery sources.	513775	445060
APS_066	Geological Disturbance	2-10f	Soilmark/Cropmark	Unknown		No NMP Coverage	Area of geological disturbance visible on aerial imagery sources.	513883	452479
APS_067	Ridge and Furrow	2-10f	Microtopographic earthworks and cropmarks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		No NMP Coverage	An area of eroded Medieval / Post Medieval Ridge and Furrow is visible as microtopography via LiDAR data sources.	513999	451469
APS_068	Medieval Village	2-10h	Cropmark and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval	MHU3617	1460388	Earthwork remains of Medieval crofts and tofts associated with the Catfoss Medieval Village are visible on aerial imagery sources along with areas of eroded ridge and furrow. Cropmark remains of an Anti-Glider Ditch area also visible.	514467	447186

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_069	Deserted Medieval Village	2-10g, 2-10f	Cropmarks and residual earthworks are still present (EA LiDAR 2018 1m and GE 2022)	Medieval	MHU982 Listed Building No 1249440	No NMP Coverage	The site of Nunkeeling Deserted Medieval settlement is visible as earthworks on aerial imagery and LiDAR data sources.	514521	450244
APS_070	Modern Service	2-10g, 2-10f	Extant service	Modern		No NMP Coverage	The line of a modern service trench which has been identified through aerial imagery sources.	514700	450636
APS_071	Ridge and Furrow	2-10h, 2-10f	Cropmarks and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		No NMP Coverage	An area of eroded Medieval / Post Medieval Ridge and Furrow is visible as microtopography via LiDAR data sources.	514840	447972
APS_072	Ridge and Furrow	2-10h	Cropmarks and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		1460491	An area of eroded Medieval / Post Medieval ridge and furrow is visible on aerial imagery sources.	514873	445725
APS_073	Ridge and Furrow and former sand pit	2-10h	Cropmarks and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval	MHU3621	1460388	Eroded ditch and ridge and furrow visible on aerial imagery sources, now eroded. A former sand pit is also depicted by the NMP.	514874	446301
APS_074	Ridge and Furrow	2-10f, 2-10e	Residual microtopographic earthworks (EA LiDAR 2018 1m)	Medieval / Post Medieval		No NMP Coverage	An area of eroded Medieval / Post Medieval ridge and furrow which is no longer visible as an earthwork on aerial imagery sources.	515132	452866

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_075	Field Boundary	2-10e	Physical boundary is removed but is still demarcated by cropmarks and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Post Medieval		No NMP Coverage	Field Boundary visible as cropmark on aerial imagery sources.	515480	453239
APS_076	Ridge and Furrow	2-10e, 2-10f	Cropmarks and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		No NMP Coverage	An area of eroded Medieval / Post Medieval ridge and furrow is visible as a cropmark on aerial imagery sources.	516121	453429
APS_077	Ridge and Furrow	2-10e, 2-10b	Cropmarks and residual microtopographic earthworks (EA LiDAR 2018 1m and GE 2022)	Medieval / Post Medieval		No NMP Coverage	An area of eroded Medieval / Post Medieval Ridge and Furrow is visible as microtopography via LiDAR data sources.	516782	454000
APS_078	Trackway	2-10e, 2-10b	Public footpath still in use.	Post Medieval		No NMP Coverage	Footpath visible as cropmark on aerial imagery sources. Depicted by the OS up until the 1950s.	517040	454200
APS_079	Defensive Site	2-10a	Built Over and lost to coastal erosion (EA LiDAR 2018 and GE 2022)	World War II		1445254 1445244 1445179 1444991 1444977	WWII military site consisting of Anti Glider Ditches, Barbed Wire fences and Weapons Pits. All features removed and built over.	517363	457446
APS_080	Ridge and Furrow	2-10e, 2-10b	Heavily eroded with some areas only visible in cropmark (EA LiDAR 2018 and GE 2022)	Medieval / Post Medieval		1445422 1446031	A large area of eroded Medieval / Post Medieval ridge and furrow.	517464	455773

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_081	Military Camp	2-10a	Pillbox remains extant, camp has been built over.	World War II		1445295 1445415	Semi-Circular wire defence was added in 1941 removed in 1946	517493	456898
APS_082	Anti Glider Ditch	2-10a	Built Over	World War II		1445281	WWII Anti Glider Ditches are visible as earthworks on aerial imagery sources. Removed between 1941 and 1946. Outside the Onshore development Area.	517584	456447
APS_083	Anti-Aircraft Battery	2-10b	Pillbox remains upstanding, other structures removed/ built over.	World War II	MHU21210 MHU20108	1445866 1445865	Remains of Anti-Aircraft Battery (NHLE 1021192) which is partially removed, and a pillbox.	517625	454726
APS_084	Bomb Crater	2-10b	LiDAR shows no earthwork signs of craters however slight cropmarks are visible (EA LiDAR 2018 and GE 2022)	World War II	MHU21208	1445286	Line of bomb craters visible on early aerial imagery sources, now infilled and not visible via visualised LiDAR data.	517695	455469
APS_085	Pillbox	2-10b	Pillbox remains upstanding.	World War II	MHU9990	1445126	WWII Pillbox visible as an extant structure on aerial imagery sources.	517764	455740
APS_086	Pillbox	2-10b	Pillbox remains upstanding. Barbed Wire fence removed.	World War II	MHU21220 MHU17599	1445911	WWII Pillbox visible as an extant structure on aerial imagery sources. Likely ring ditch MHU17599 refers to this site as there was a ringed likely barbed wire fence surrounding it. Linear cropmarks indicate access and likely former fencing.	517876	453950
APS_087	Pillbox	2-10b	Pillbox remains upstanding. Barbed Wire fence is removed.	World War II	MHU18422	1445868	WWII Pillbox visible as an extant structure on aerial imagery sources	517941	454399

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_088	Pillbox	2-10b	Pillbox remains upstanding.	World War II	MHU9991	1444988	WWII Pillbox visible as an extant structure on aerial imagery sources.	517969	455179
APS_089	Pillbox	2-10b	Cropmark remains of possible pillbox.	World War II	MHU18422	1445868	WWII Pillbox 'The Hold' visible as a structure on aerial imagery sources with former barbed wire obstruction encircling the feature which was recorded by the HE NMP.	518043	454400
APS_090	Pillbox	2-10b	Pillbox remains upstanding.	World War II	MHU9941	1445887	WWII Pillbox visible as an extant structure on aerial imagery sources, with former barbed wire enclosure and another former structure which lies just on the edge of the PEIR boundary.	518067	454620
APS_091	Pillbox	2-10b	Lost to coastal erosion	World War II	MHU21233		Structure. Possible remains of WWII Pillbox on the beach, which is no longer extant.	518233	455037
APS_092	Airfield Decoy	2-10b, 2-10c	Built Over	World War II	MHU21238	1445907	WWII Anti-Tank defences visible as structures on early aerial imagery sources. Slowly removed from 1946, hexagonal structure was all that remained in 1977. This area is now redeveloped as a golf course.	518361	453464
APS_093	Anti-Tank Defences	2-10b	Lost to coastal erosion	World War II	MHU21243 MHU21242 MHU21234	1445907	WWII Anti-Tank defences visible as structures on early aerial imagery sources.	518464	454604

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_094	Ridge and Furrow	12, 14, 15, 16	Partially built over, mostly levelled. (EA LiDAR 2018 and GE 2022)	Medieval / Post Medieval		1446031	An area of eroded Medieval / Post Medieval ridge and furrow.	518564	452609
APS_095	Firing Range	2-10c	Built Over / Lost to Coastal Erosion	World War II	MHU18727	913745	WWII firing range, consisting of two bombing range direction arrows and observation posts. No longer in situ due to coastal erosion.	519012	452822
APS_096	Searchlight Battery	2-10c	Lost to coastal erosion	World War II	MHU18729	913759	Searchlight Battery is visible as an upstanding structure in early 1940's photographs. Removed or destroyed by coastal erosion.	519199	452288
APS_097	Radar Station	2-10c	Lost to coastal erosion.	World War II	MHU18730 MHU21251 MHU21272 MHU21273	914087	WWII Coast Defence Chain Home Low Radar station and combined Tx/Rx Block for Auxiliary power. Destroyed by coastal erosion.	519200	452191
APS_098	Military Camp	2-10a	Built Over.	World War II	MHU9946	913606	Site of former WII heavy anti-aircraft battery, now lost to coastal erosion.	519535	451114
APS_099	Anti-Aircraft Battery	2-10a	Removed and built over. Area is partially lost to coastal erosion.	World War II	MHU9946 MHU9944	1446016 1446034 913554 913573 913606	Site of former WII heavy anti-aircraft battery, decommissioned in 1946 where the site was seen as being dismantled. By 1962 there are only foundations visible.	519671	450826

APS Site reference	Asset Type	Mapbook figure 22-2-10 page reference	Condition at most recent observation	Period	HHER MonUID	HE NMP_UID	Comment	Easting	Northing
APS_100	Trench	2-10a	Command Post and Pillbox are still standing. Area has been lost to coastal erosion.	World War II	MHU18741 MHU18742 MHU21262	1446001	WWII coastal defences comprising of weapons pits, trenches and barbed wire fences. Partially lost to coastal erosion.	519838	450408
APS_101	Beach Defence	2-10a	Partially lost to coastal erosion. Military buildings removed and area has been repurposed.	World War II	MHU18888 MHU18910 MHU18930	915935	Anti-tank cubes and minefield associated with WWII coastal defences. Barbed wire fencing was no longer visible from 1946. Area is partly lost to coastal erosion.	520004	450092

40. This assessment records 101 individual sites or areas within or adjacent to the Onshore Development Area. Many of these features were recorded previously by the HE NMP and the HHER. These previous interpretations are noted and incorporated fully into the GIS database, where they are acknowledged and separated from the newly interpreted or augmented site interpretations made by APS.

41. The majority of the arable areas are heavily ploughed and the cropmarked indications over pre-modern features do not display any significant microtopography. This is evidenced by examination of the visualised LiDAR data. There is however obvious potential for the discovery of sub-surface features and deposits in and around the visible foci of cropmarked enclosures, tracks, boundaries and ditches.

42. Relict post-Enclosure field systems are evident where their boundaries were removed in the 20th century to facilitate modern agriculture. These more recent features show as very slightly upstanding microtopography via visualised LiDAR data or as cropmarks on aerial photographs where they were removed.

22.3.7.1 Prehistoric and Roman Features

43. A cropmarked ditched rectilinear enclosure at **APS_009** is shown on **Figure 22-3-10o**. This possible settlement site lies 55m to the west and outside of the Onshore Development Area and is recorded as a likely prehistoric site by the HE NMP. It may be associated with a rectilinear ditched enclosure at **APS_013**, which is also shown on **Figure 22-3-10o** and is recorded as a cropmark alongside associated pits and ditches. APS-013 lies within the Onshore Development Area, 120m to the south of APS-009. Both sites lie to the west of the modern A1079 at Butt Farm to the north of Bentley.

44. A rectilinear cropmarked ditched enclosure, **Figure 22-3-10p and 2-10o**, is visible alongside a buried cropmarked circular enclosure (known as a 'ring ditch') and ditched field boundaries at **APS_030** (HHER MHU3530)**.** Both the ring ditch, which could be the remains of a Bronze Age funerary monument known as a round barrow, and the enclosure, lie just outside the boundary of the Onshore Development Area. The ring ditch is lies 55m to the northeast of the boundary, whilst the enclosure lies c.80m to its east, between the modern A164 and A1079 to the northeast of Bentley. Parts of the associated field system lie within the Onshore Development Area.

45. Cropmarked traces of a more complex, possibly multi-period prehistoric landscape are visible at **APS_043** which is shown on **Figure 22-3-10p**, to the south of the A164 near Bentley. The HHER records a 'reserved' MonUID at this location, MHU17560. Within the Onshore Development Area, these sites comprise ring ditches, ditched enclosures, pits, trackways and some embanked features. These are likely to be part of a wider landscape of prehistoric and later features which extend outside of the Onshore Development Area and into the site of Archbishops Park at HHER MHU8446.

46. A double ditched cropmarked enclosure with associated ditches at **APS_039, Figure 22-3-10p**, lies adjacent to and may be associated with **APS_043**. The NMP dates this feature to the later prehistoric Iron Age.

47. A later prehistoric or Roman period trackway and associated field boundaries are visible as cropmarks at **APS_055**, HHER MHU15410, to the south of the A1035 and to the west of Long Riston. These features which are shown on **Figure 22-3-10j** lie partially within the Onshore Development Area. They are part of a wider landscape of similar cropmarked tracks and boundaries. An undated cropmarked field boundary at **APS_054** may be associated with the parallel ditched tracks at APS_055.

48. A ditched enclosure and field boundary, **APS_059** (HHER MHU 17944) is dated by the NMP as a possible Iron Age or Roman cropmarked site, to the south of Bowlams Dike, within the Onshore Development Area. This site is shown on **Figure 22-3-10i**.

49. A cropmarked trackway, **APS_063** (HHER MHU7169) is also dated to the Iron Age or Roman periods. These features, which are shown on **Figure 22-3-10i**, is visible as a cropmark and microtopography. It lies partially within and extends outside of the Onshore Development Area between Riston Road and Stream Dike.

22.3.7.2 Undated Features

50. This analysis identified twelve cropmarked sites which are as yet undated which lie within, partially within or adjacent to the Onshore Development Area. Eleven of these are the following more fragmentary cropmarked pits and ditches:

- **APS_002 Figure 22-3-10n**, a cropmarked residual bank which may be a headland but is as yet undated;
- **APS_004 Figure 22-3-10n**, a cropmarked pit;
- **APS_006 Figure 22-3-10n**, a cropmarked ditch;
- **APS_007 Figure 22-3-10o**, a cropmarked ditch;

- **APS_010 Figure 22-3-10o**, a cropmarked ditch;
- **APS_014 Figure 22-3-10o**, a cropmarked ditch;
- **APS_035 Figure 22-3-10p**, a cropmarked ditched field system;
- **APS_041 Figure 22-3-10p**, a cropmarked ditch;
- **APS_048 Figure 22-3-10l and 2-10k**, a cropmarked pit;
- **APS_051 Figure 22-3-10k**, a cropmarked ditch; and
- **APS_056 Figure 22-3-10j**, a cropmarked ditch.

51. **APS_057 Figure 22-3-10j**, is a supposed enclosure, field system and ring ditch at Riston Carrs which was identified by the NMP and remains of uncertain date and type.

22.3.7.3 Medieval – Post Medieval Features

52. The Medieval landscape which is visible within the Onshore Development Area largely comprises the eroded remains of strip field which produce typical areas of ridge and furrow caused by their cultivation by a heavy ox-drawn plough. This ridge and furrow is now eroded by modern mechanised ploughing and visible as marks in crops and souls over the former ridges.

53. The earthwork and cropmarked remains of Deserted Medieval Villages (DMVs) are numerous in this region. Residual earthworks show former banks, ditches and fishponds as microtoipography via visualised LiDAR data at Storkhill, **APS_047** (MHU6558). Storkhill DMV lies partially within the Onshore Development Area where it is shown on **Figure 22-3-10l**.

54. The Onshore Development Area traverses the southern edge of the outfields to the Scheduled site of Eske DMV, **APS_049** (NHLE 1005216, HHER MHU2581), but does not cross the core of the former settlement, as shown on **Figure 2-10l**. The Scheduled area lies between c. 175 and 185m to the north of the boundary of the Onshore Development Area.

55. The Onshore Development Area similarly traverses only the outfields to the DMV at Catfoss, **APS_068** (HHER MHU3617) as shown on **Figure 22-3-10g**.

56. **APS_069**, **Figure 22-3-10g and 2-10f**, records earthworks at Nunkeeling (HHER MHU982 and a Priory as a Listed Building 1249440) which are partially traversed by the Onshore Development Area in their north-eastern extremity.

57. There are extensive remains of post-Enclosure boundaries which were set out in the Post-Medieval period when the land was enclosed and removed in modern times to facilitate mechanised agriculture.

22.3.7.4 Modern, including World War II (WWII), features

58. The coastal area between Ulrome, Skipsea and Hornsea Beach and the coastal hinterland was fortified as an essential first-line defence against invasion from the North Sea during WWII (1939-1945). A series of concrete structures such as gun batteries and pillboxes were augmented by temporary barbed wire and concrete defensive obstructions. These features are recorded in detail by the HE NMP in their original condition from vertical aerial photographs taken by the Royal Air Force (RAF) in the 1940s. Their dismantlement after WWII is documented by RAF imagery captured in the 1950s and 1960s, after which the land was swiftly returned to arable and leisure use. The original features as mapped by the NMP, with some additions of anti-glider ditches, are included in detail within this assessment with a note of their present condition. Coastal erosion has progressed in the intervening 84 years since the beginning of WWII, and some features recorded from earlier aerial photographs have been eroded by the encroaching sea.

59. Features which are still extant in 2023 comprise:

- **APS_017**, an extant Scheduled anti-aircraft battery near a possible moated site, (NHLE 1019186, HHER MHU15124 and 15288). This site is preserved as a partial structure and lies inland from the coast at Butt Farm near Bentley. It is shown on **Figure 22-3-10o**.
- The partial remains of an anti-aircraft battery, **APS_080 and 083** are extant and a small structure is Scheduled as NHLE 1021192 (HHER MHU 21210 and 20108), within the Onshore Development Area to the immediate east of Hornsea Road B1242. This feature is shown on **Figure 22-3-10b**. A pillbox is also preserved but is not scheduled. The Scheduled area does not lie within the Onshore Development Area.
- Pillboxes **APS_085** to **APS_091** remain extant or partially extant within the coastal area and are shown on **Figure 22-3-10b**. Their associated barbed wire and other defensive features were removed and presumably recycled in the immediate post war years.
- Leconfield WWII airfield, **APS_029**, **Figure 22-3-10l and 2-10k** (HHER MHU11146) is still in use as a military training site.

60. Later modern features comprise the visible cropmarks and microtopography over long linear trenches dug to accommodate modern services.

22.3.8 Conclusion of the Airborne and Satellite Remote Sensing Data Analysis

61. Aerial photographs, satellite images and LiDAR survey data gathered between the 1940s and the present time in places show a former landscape of buried eroded possible funerary, settlement, access and agricultural features which are mainly visible on the lighter soils.

62. Features dating to the prehistoric, Roman, Medieval, Post Medieval and modern periods have been identified and mapped. The majority of these features have been previously identified by the HHER and HE NMP surveys.

63. In some cases, this assessment has augmented and added to these data from modern airborne and satellite imagery sources.

64. It is likely that the below-ground archaeological deposits which cause the marks in crops and grass in this area are more extensive, both horizontally and vertically, than shown via the aerial imagery. Absence of cropmark evidence does not necessarily indicate an absence of archaeological deposits in apparently blank areas.

65. The separation of dating into specific periods of prehistory and history can only be confirmed by ground-based or documentary analyses, but some dating evidence for sites within the Onshore development Area has been proposed by the HHER and NMP and by observation of morphological characteristics of cropmarked sites.

66. From an aerial perspective, this landscape may be analysed in a 'living' manner as one which developed over time and contains many multi-period elements. These will be more deeply stratified and extensive below the ground than is apparent in the results of the survey. The remains visible as cropmarks are all likely to have been impacted by agricultural cultivation, to some degree, and retain minimal or no micro-topographic features visible on the ground surface.

67. The extensive WWII defensive features have been greatly reduced by their dismantlement and by marine erosion, but some of the concrete structures are still in place.

68. The assessment leads into and has benefited from a concurrent study of historic maps, which detail the development of the landscape over the past two centuries. This map regression study is presented below.

22.3.9 Map Regression Analysis

69. An historic map regression study was undertaken concurrent with the LiDAR data analysis, aerial and satellite imagery to provide understanding of the development of the modern landscape.

22.3.9.1 Sources of Cartographic Data

22.3.9.1.1 17th – 19th Century Mapping

70. Earlier mapping over the East Riding of Yorkshire showed the landscape prior to the legal change which took agricultural land from open field and common land to enclosed land with recorded ownership and tenancy deeds.

71. In this region, early maps are held at the Hull history centre, and comprise:

22.3.9.1.1.1 Map of the East Rideing (sic.) of Yorkshire, R Blome, 1673

72. Blome's map, which is shown on **Plate 22-3-1**was surveyed and published in 1673. It covers the whole region and provides an overview of the small towns and rivers, the coast and general landscape. The map indicates an enclosed area of woodland at Lekenfeld (later Leckonfield, the site of a 20th century airfield). Beverley, Bentley, Shipsey (Skipsea) and Hornesey (Hornsea) are labelled on **Plate 22-3-1** to assist orientation. The coast is depicted in detail with an inland 'gap' and lagoon at Hornesey (Hornsea).

73. The map indicates a rural landscape falling from the Yorkes Would (the Yorkshire Wolds) to the flat land interspersed with Rivers and streams in the coastal hinterland. The River Hull is depicted between Hull on the Humber and the coast to the north east

Plate 22-3-1 Map of the East Rideing (sic.) of Yorkshire, R Blome, 1673

22.3.9.1.1.2Map of the East Riding of Yorkshire by Robert Morden, 1695

74. Morden's map was surveyed in 1695 and is shown on **Plate 22-3-2.** It covers the whole region and provides an overview of the small towns and rivers, the coast and general landscape. It does not depict specific details of the landscape and shows the area in the same level of detail as Blome indicated twenty two years previously.

Plate 22-3-2 Map of the East Riding of Yorkshire by Robert Morden, 169

22.3.9.1.2 The East Riding of Yorkshire, Surveyed in 1773 and published in 1776 by J. Ellis. 'drawn from the latest surveys; corrected and improved by the best authorities'

75. Ellis' map, **Plate 22-3-3**, indicates more detail in the landscape and the road network, 100 years on from mapping published by Blome and Morden.

76. The gap at the coast at Hornsea is now closed, and the map depicts an inland lake with a connection to the sea via Hornsea Beck rather than a coastal lagoon.

Plate 22-3-3 The East Riding of Yorkshire, Surveyed in 1773 and published in 1776 by J. Ellis

22.3.9.1.3 Tithe and Enclosure Maps

22.3.9.1.3.1 Tithe Maps

77. Tithe maps are a detailed survey of the rural landscape within ecclesiastical parish boundaries in force at the time of survey. Tithe apportionment documents show the landholders and tenants of areas subject to tithe. The primary function of the Tithe maps is to provide a graphic index or visual means of reference to the apportionments, for taxation purposes within each ecclesiastical parish. Each piece of land liable to tithes is depicted and given a plot number, unique within that parish, by which it could be identified in the apportionment. Tithe maps are detailed and present a dated surveyed record of the land (Kain and Oliver, 1995) and its boundaries in areas which were subject to ecclesiastical tithe taxation.

22.3.9.1.3.2 Enclosure maps and awards

78. In the Post Medieval period, open fields lands and commons were enclosed and bounded in parts following the Enclosure Bills enacted by Parliament between 1604 and 1914.

79. Enclosure, also known as Inclosure, describes various ways in which land was redistributed into designated units, usually consolidating small landholdings into larger farms. This included the conversion of commons, wasteland and open fields to formally enclosed units of land, the conversion of arable land to pasture and the partition of large areas of communally farmed land into small fields farmed and owned or tenanted by individuals.

80. Tithe and Enclosure maps from the following parishes, listed at **Table 22-3-2**, were available for this assessment. They present a view on the landscape between 1709 and 1845. The parish index for the Tithe and concurrent or later Enclosure maps is shown in relation to the Onshore Development Area on **Figure 22-3-11**.

Table 22-3-2 Tithe and Enclosure Maps

Parish	Map type	Survey date	Figure
Bentley	Tithe	1838	**Figure 22-3-12**
Walkington	Inclosure	1794	**Figure 22-3-13**
Bishop Burton	'Plan', Tithe	1771-1787	**Figure 22-3-14**
Cherry Burton	Tithe	1839	**Figure 22-3-15**
Molescroft	Enclosure	1803	**Figure 22-3-16**
Routh	Tithe	1845	**Figure 22-3-17**
Leven	Tithe	1842	**Figure 22-3-18**
Catwick	Tithe	1844	**Figure 22-3-19**
Beeford	Tithe	1845	**Figure 22-3-20**
Bonwick	Tithe	1841	**Figure 22-3-21**
Ulrome	Tithe	1843	**Figure 22-3-22**
Skipsea	Enclosure	1764	**Figure 22-3-23**
Atwick	'As Inclosed'	1709	**Figure 22-3-24**

81. The Tithe and Enclosure maps indicate a settled and established post-Enclosure rural landscape. They provide information on the boundaries and land areas which were later mapped by the OS, and confirm some of the features which are generally still visible and extant on historic aerial photos and have now been removed.

22.3.9.1.4 Historic Ordnance Survey Maps

82. From the mid-19th century, the OS surveyed, published then revised mapping from their first editions, which in this area were published between 1850 and 1855, at 1:2,500 (the 'County series') and 1:10560 scale (Oliver, 2013).

The following map dates which are detailed at **Table 22-3-3** are shown in the listed figure, which cover the entire length of the Onshore Development Area.

Table 22-3-3 OS maps which were used for this assessment

OS map date	Figure	Comment
1850-1855	**Figure 22-3-25**	In the mid-19th century, the landscape over the entirety of the Onshore Development Area was laid to enclosed farmland with established roads. Drains are visible in the east and north eastern part of the Onshore Development Area where the land had been improved for agricultural use by this date. Some boundaries are depicted as wooded, others as simple lines which indicate either hedgerows or fences and ditches. There are some small areas of deciduous woodland and no large mapped areas of extraction or mining. However, some small isolated marl pits are present at this date, near Hall Farm. Some areas of extraction may be expected at an area depicted as Clayfield Closes which lies to the south of a depicted brick and tile yard which lies outside of the Onshore Development Area to its north and is shown on page 9 of Figure 2-25. Bentley Moor Wood and East Wood are depicted on this map (Figure 2-25 page 15) within the Onshore Development Area. An area of the old sand pits at Catfoss, is depicted on this map (Figure 2-25 page 8). The pit area lies partially within the Onshore Development Area. The pit will have removed the top and sub soils down to substrate at this location. This is mapped by the NMP and is included in this assessment within **APS_073**. **Plate 22-3-4** shows this location as mapped on the next OS revision, in 1885-9 and **Plate 22-3-5** shows it as mapped by the NMP from aerial imagery in 2012.
1889-1895	**Figure 22-3-26**	In the late 1880s, the OS records the same rural landscape, with the addition of some details and the removal of some smaller woodlands such as East Wood, throughout the Onshore Development Area The Onshore Development Area passes to the west of Victoria Barracks and to the immediate east and though the former grounds of a building which was then used as the East Riding Lunatic Asylum. These structures are shown on **Figure 22-3-26o**. **Figure 22-3-26m** shows the line of the York, Market Weighton and Beverley Railway which was established between 1855 and 1889. The railway ran in a cutting and on a level track through the Onshore Development Area to the north of Beverley. At the coast, the site of Moor Hill Beacon is recorded and shown on page 15, at Skirlington Sands in Atwick parish. The former inlet to a coastal lagoon at Hornsea Beach which was depicted by Blome (**Plate 22-3-6**) and Morden (**Plate 22-3-2**) in 1673 and 1695, is shown on this map. The gap is closed by 1885-89, when Double Dike is named Double Gate and shown on page 16. The area of the former sea lagoon is traversed by a narrow part of the Onshore Development Area and is laid to bounded fields immediately to the west of the coast in 1885-89. Changes in this area are shown on **Plate 22-3-6, Plate 22-3-7a**nd **Plate 22-3-8**.
1908-1911	**Figure 22-3-27**	This edition shows very limited changes to the landscape as in 1885-89.
1950-1956	**Figure 22-3-28**	This edition shows very limited changes to the landscape as in 1885-89. However, by the time of this revision, the East Riding Lunatic Asylum which had previously been depicted to the immediate west of the Onshore Development Area near the former Victoria Barracks was re-purposed and re named as Broadgate Hospital by the 1950s. Figure 2-28 indicates this change, where the Onshore Development Area runs to the east of a playing field, which is likely associated with the hospital.
1973-1982	**Figure 22-3-29**	By 1973 -82, **Figure 22-3-29p** shows the development of the main road, A1079 around Beverley to its south and west since the 1950s **Figure 22-3-29m** shows that the former railway to the north of Beverley was dismantled between 1956 and 1973, likely in the 1960s.

OS map date	Figure	Comment
		Meaux and Routh East Drain (Holderness drainage) is no longer depicted on the more modern map and was removed by the 1970s, where it traversed APS_056 in the 1950s to the west of Monk Dyke to the east of Routh, **Figure 2-29j. Figure 22-3-29h** shows that the sandpit at Catfoss Hall Farm (APS-073) is no longer depicted and no longer extant by 1973-82. Many of the former field boundaries have been removed since the 1950s to amalgamate the smaller fields into larger ones. Some of these boundaries are visible as residual topography on visualisations of LiDAR data or as crop and soil marks on aerial photographs. This attrition of field boundaries is particularly evident in Catwick parish to the south of Bowlams Dike and Catwick Bridge, **Figure 2-29i**, and in areas to the north of Catfoss and Nunkeeling. At Nunkeeling, the OS previously depicted and labelled a manor house on the remains of a Benedictine priory founded by Nuns in AD 1172, at Nunkeeling, where the Scheduled area lies outside the Onshore Development Area at APS-70. This was simply labelled as hall Garths in the 1970s when these depictions of antiquities were removed from the more modern maps by the OS. Further smaller areas of field boundary removal are also noted at Beverley Closes to the west of Stream Dike and Hall Garth, **Figure 2-29e**. A Public Footpath was depicted on former editions of the OS map, which runs southwards from Hall Garth and traverses the Onshore Development Area. This footpath is now visible as a cropmark, APS-78, and is no longer depicted by the OS after the 1950s as shown of **Figure 2-29e**. **Figure 22-3-29a** shows the development of the Seaside and Galleon Beach caravan parks at Ulrome Sands. **Figure 22-3-29c** shows Grange and Low Skirlington caravan parks adjacent to the Onshore Development Area at Skirlington Sands. Moor Hill Beacon is no longer depicted as an antiquity and is likely to have been eroded and washed away by the sea at this date. At Hornsea Beach, Double Dike which was later renamed Double Gate is no longer labelled at the site of a former inlet into a coastal lagoon which was first mapped in the 18th century by both Blome and Morden.
1988-1993	**Figure 22-3-30**	There is incomplete mapping coverage for this timeline, but previous maps supply more than sufficient data to ensure a comprehensive historic map regression. This edition of the OS map indicates a new railway line on **Figure 22-3-30l**, which traverses the Onshore Development Area at Molescroft Carr.

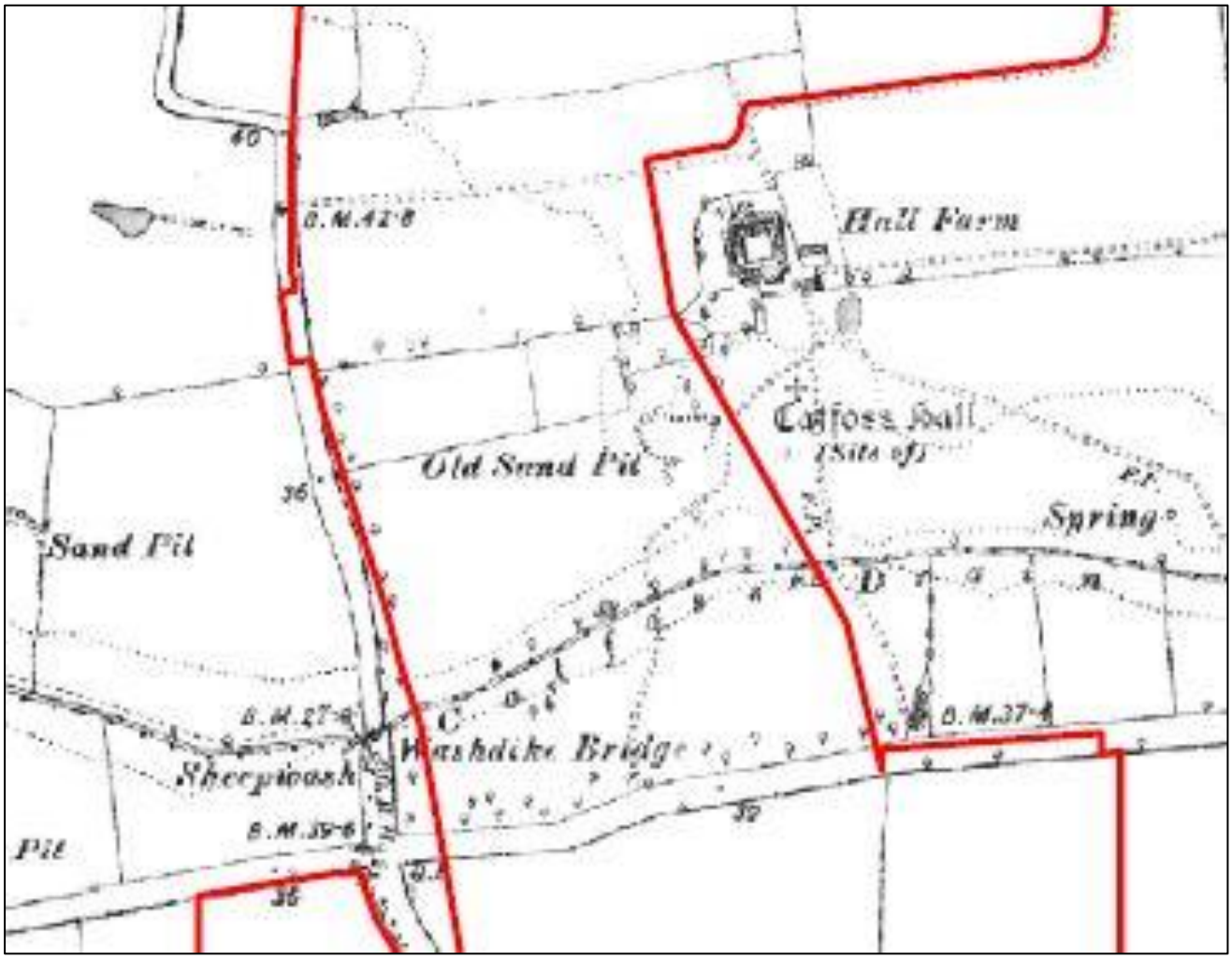


Plate 22-3-4 Old sand pit at Catfoss, mapped by the OS, 1885-89

Plate 22-3-5 Old sand pit as Catfoss, mapping within this assessment as APS-073 from aerial imagery by HE NMP

Plate 22-3-6 Hornsea Beach, depiction of coastal lagoon by Blome in 1673

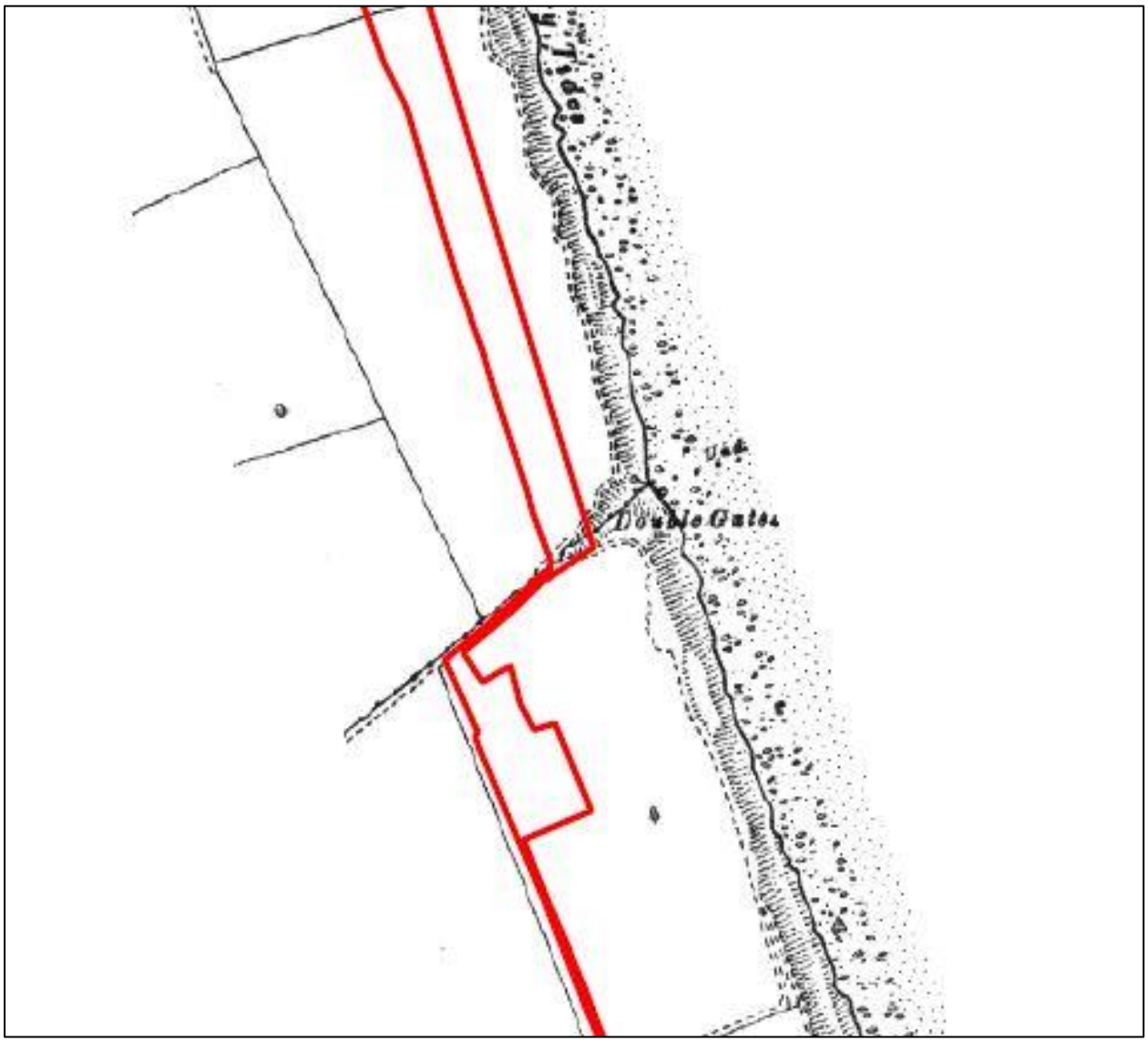


Plate 22-3-7 OS mapping 1885-89 Hornsea Beach

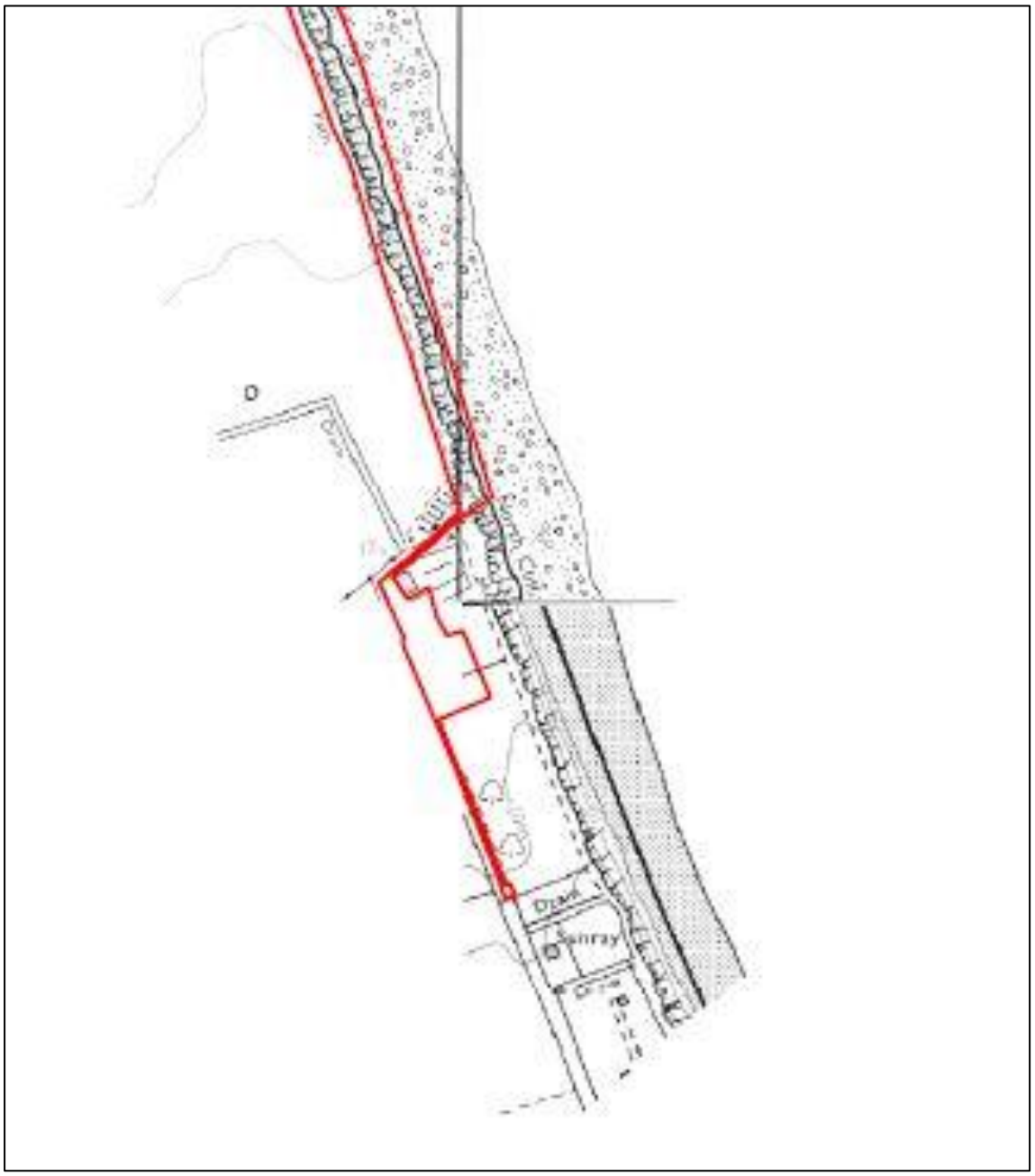


Plate 22-3-8 Hornsea Beach, OS 1973-1982

22.3.10 Map Regression Conclusion

83. The landscape within the Onshore Development Area, from Beverley to the North Sea Coast, is rural. The area has been under arable cultivation since first recorded in detail on the Tithe and enclosure maps dating from the late 18th century. The modern landscape boundaries were established during the 18th and 19th century following the Enclosure acts.

84. A railway was constructed to the north of Beverley and depicted on OS mapping by 1885-92. This was likely dismantled in the 1960s and is depicted as such on the 1973-82 OS map.

85. OS mapping revised between 1988 and 1993 shows a new railway line at Molescroft Carr, and the construction of new caravan parks at the coast.

86. The coastal area is subject to past and ongoing marine erosion. There are no antiquities depicted within The Onshore Development Area, and the Moor Hill Beacon on the coast is not depicted or present after 1973.

87. After the 1950s, the landscape began to open up with the removal of some Post Enclosure field boundaries which changed the rural environment since it was established following land enclosure, making the way for modern mechanised agricultural cultivation methods. The small hamlets, farms and settlements have been stably present and mapped since at least the 18th century and likely before.

Annex A Airborne and Satellite Remote Sensing Metadata

Data Types and Sources

88. This survey has utilised a range of sources and archives in order to identify, interpret and map heritage features from the air and from satellite imagery. This section gives details about the methodology employed to search each archive, the type of data available for study and the interpretation methods applied to each data set.

Online Aerial and Satellite-derived Images

89. Since 1999, digital mosaics of multiple timelines of georeferenced aerial photographs and satellite images were uploaded to geoportals such as Google Earth and at Bing.com. The dates attributed to these images are not 100% assured or authenticated, but for heritage survey purposes this has no legal implication in this instance. They are available in real time as open-source imagery online, with some copyright requirements. The range of available imagery may change when new sources are uploaded.

90. All available online aerial and satellite derived images which constitute the open-source mosaics of aerial imagery displayed on Google Earth and Bing.com/Maps (aerial and birds-eye if available) were consulted for this survey. All timelines available on these geoportals were systematically consulted and re-referred, between September 2022 and February 2023.

91. Following magnification, relevant images were captured at the highest resolution using the 'save-image' function in Google Earth Pro or a screen snipping tool. They were saved, labelled and filed for geo-referencing.

92. Summer timelines at Google Earth were very helpful in the recording of cropmarked buried sites.

93. Aerial images displayed at Bing Maps was used in the same manner but with the limitations that there was a restricted single view timeline and less flexible image capture mechanisms. The Microsoft 'snipping tool' was used to capture the relevant images which generally were not as informative as the comprehensive timeline datasets at Google Earth.

Aerial Photographs Held at The Historic England Archive

94. Paper copies and later digital files of all vertical and oblique and specialist oblique aerial photos held at the HE Archive were examined in detail in the Historic England Public Search Room (HEPSR), by Adam Jarvis ACIfA. Relevant photographs were recorded using a high-resolution digital camera and filed. Selected images were georeferenced for the project archive. A map showing the Historic England aerial photograph coverage is presented on **Figure 22-3-2.**

Aerial photographs held at The Cambridge University collection of Aerial photographs (CUCAP)

95. The CUCAP collection is closed to consultation and has not been available to the more modern NMP projects. Some of the images are available in the HE Archive as duplicates. A cover search was obtained online (University of Cambridge, 2024) and a map showing the CUCAP aerial photograph coverage is presented at **Figure 22-3-4**.

Aerial Photographs held at The Humber Archaeology Partnership

96. Specialist oblique aerial photographs taken by local aerial archaeologists are held at the Humber Archaeology Partnership at HHER in Hull. All images, which are filed on a parish-by parish basis and were examined in person at HAP in Hull. Images which are not held at the HE Archive are used for this assessment. Their locations are shown on **Figure 22-3-3**.

Historic England National Mapping Programme Data

97. National Mapping Programme data were supplied as GIS ready files which were incorporated to the assessment database with acknowledgement of their source.

Environment Agency LiDAR Data

98. The Environment Agency collects LiDAR data from airborne survey platforms at varying resolutions, which are available for downloading, processing, visualising and interpreting via the Environment Agency website (Environment Agency, 2024).

99. LiDAR data indicate variation in the height of the ground surface. Data is collected by an active laser beam fired in pulses which scans the ground surface. The reflected pulses are recorded by the sensor on board a geolocated airborne survey platform, fitted with an inertial measurement unit to record the roll, pitch and yaw of the aircraft.

100. The point cloud data derived from the survey are processed into a series of Digital Elevation Models (DEM) usually in American Standard Code for Information Interchange (ASCII) format. These include Digital Surface Models (DSM) which contain tree cover and buildings, and Digital Terrain Models (DTM) which remove tree cover and can reveal features beneath the tree canopy (Bennett et al., 2012; Hesse, 2010; Štular et al., 2012, Historic England, 2018).

101. These data are of assistance in recording micro and macro topographic features which may indicate relict or extant archaeological features and historic landscapes alongside more modern features. LiDAR data are best interpreted and used in conjunction with modern and historic aerial photographs and maps to provide ground truth information for features and sites recorded via this prospection method.

102. The required data are identified by using the Environment Agency timestamp shapefile detailing the LiDAR file names within the area of interest and the OS 10km and 5km grid square to identify the grids and quarter sheets. Digital Terrain Models are selected as the primary data source as the ability to remove the vegetation cover makes it ideal for prospection. All available LiDAR data for this project were downloaded for completeness of evidence. The metadata for the LiDAR downloaded for this assessment can be seen at **Table 22-3-4**.

103. The whole study area was covered by NLP LiDAR data at 1m resolution with other data available in individual survey areas.

104. A map detailing the LiDAR data coverage is presented at **Figure 22-3-6**.

105. The data are visualised into Hillshade, Multi Directional Hillshade, Sky View Factor, Open Positive and Open Negative using the Relief Visualisation Toolbox (RVT) Version 2.2.1. These visualisations were chosen as they are of most use for archaeological prospection. The multiple ASCII tiles are merged before being visualised for ease of use in the GIS. The data are analysed alongside the aerial photographs and base mapping to double check the topography and nature of features interpreted from LiDAR data.

106. An additional visualisation was created using a simplified process based upon the methodology proposed by Hesse to create a Simple Local Relief Model (SLRM) (Hesse, 2010). A low pass filter was applied to nearest neighbour resampling, and the resampled model was removed from the original DTM, creating a Local Relief Model. This was then processed through the RVT with a smoothing factor of 20m.

Table 22-3-4 LiDAR tiles which were downloaded and processed for this assessment

OS Tilename	Year Captured	Resolution (m)
TA0035	2018	1
TA0036	2005	1
TA0038	2005	1
TA0040	2005	1
TA0040	2018	1
TA0141	2014	0.5
TA0234	2000	2
TA0234	2005	1
TA0236	2000	2
TA0236	2005	1
TA0238	2005	1
TA0240	2002	2
TA0240	2005	2
TA0240	2005	1
TA0240	2018	1
TA0241	2014	0.5
TA0241nw	2005	0.25
TA0241sw	2005	0.25
TA0242	2002	2
TA0242	2005	2
TA0242	2005	1
TA0242	2018	1
TA0335	2008	0.5
TA0336	2008	0.5
TA0341	2014	0.5
TA0342	2014	0.5
TA0434	2000	2
TA0434	2005	1
TA0435	2008	0.5
TA0436	2005	1
TA0436	2008	0.5
TA0440	2002	2
TA0440	2005	2
TA0440	2005	1
TA0440	2018	1
TA0441	2014	0.5
TA0442	2002	2
TA0442	2005	2
TA0442	2005	1

OS Tilename	Year Captured	Resolution (m)
TA0442	2014	0.5
TA0442	2018	1
TA0540	2018	1
TA0542	2014	0.5
TA0542	2016	0.5
TA0542nw	2006	0.25
TA0642	2002	2
TA0642	2005	2
TA0642	2014	0.5
TA0642	2016	0.5
TA0642	2018	1
TA0643	2016	0.5
TA0742	2016	0.5
TA0742nw	2006	0.25
TA0743	2016	0.5
TA0743sw	2006	0.25
TA0840	2005	2
TA0841	2016	0.5
TA0842	2002	2
TA0842	2005	2
TA0842	2016	0.5
TA0842	2018	1
TA0941	2016	0.5
TA0942	2016	0.5
TA1040	2018	1
TA1042	2005	2
TA1042	2016	0.5
TA1042ne	2006	0.25
TA1042nw	2006	0.25
TA1042se	2006	0.25
TA1042sw	2006	0.25
TA1043	2016	0.5
TA1045	2018	1
TA1050	2018	1
TA1142	2016	0.5
TA1143	2016	0.5
TA1242	2005	2
TA1243	2016	0.5
TA1243ne	2006	0.25
TA1244	2005	2

OS Tilename	Year Captured	Resolution (m)
TA1244	2016	0.5
TA1244se	2006	0.25
TA1244sw	2006	0.25
TA1344	2016	0.5
TA1344ne	2006	0.25
TA1344nw	2006	0.25
TA1344sw	2006	0.25
TA1345	2016	0.5
TA1345se	2006	0.25
TA1444	2005	2
TA1444	2016	0.5
TA1444nw	2006	0.25
TA1445	2016	0.5
TA1446	2016	0.5
TA1545	2016	0.5
TA1545	2018	1
TA1546	2016	0.5
TA1550	2018	1
TA1555	2018	1
TA1652	2009	1
TA1652	2012	1
TA1652	2015	1
TA1654	2008	1
TA1654	2009	1
TA1654	2010	1
TA1654	2012	1
TA1654	2013	1
TA1654	2014	1
TA1654	2015	1
TA1654	2016	1
TA1654	2017	1
TA1654	2018	1
TA1654	2019	1
TA1654	2020	1
TA1654	2021	1
TA1654	2022	1
TA1656	2008	1
TA1656	2009	1
TA1656	2010	1
TA1656	2012	1

OS Tilename	Year Captured	Resolution (m)
TA1656	2013	1
TA1656	2014	1
TA1656	2015	1
TA1656	2016	1
TA1656	2017	1
TA1656	2018	1
TA1656	2019	1
TA1656	2020	1
TA1656	2021	1
TA1656	2022	1
TA1852	2008	1
TA1852	2009	1
TA1852	2010	1
TA1852	2012	1
TA1852	2013	1
TA1852	2014	1
TA1852	2015	1
TA1852	2016	1
TA1852	2017	1
TA1852	2018	1
TA1852	2019	1
TA1852	2020	1
TA1852	2021	1
TA1852	2022	1
TA1854	2008	1
TA1854	2009	1
TA1854	2010	1
TA1854	2012	1
TA1854	2013	1
TA1854	2014	1
TA1854	2015	1
TA1854	2016	1
TA1854	2017	1
TA1854	2018	1
TA1854	2019	1
TA1854	2020	1
TA1854	2021	1
TA1854	2022	1
TA1856	2008	1
TA1856	2009	1

OS Tilename	Year Captured	Resolution (m)
TA1856	2010	1
TA1856	2012	1
TA1856	2013	1
TA1856	2014	1
TA1856	2015	1
TA1856	2016	1
TA1856	2017	1
TA1856	2018	1
TA1856	2019	1
TA1856	2020	1
TA1856	2021	1
TA1856	2022	1

Data Processing

107. The collected digitised photographs and images were labelled and archived and selected frames were georectified to the OS digital map base with the QGIS and ArcGIS georectification tools for interpretation and mapping. The project used an OSGB/1936 British National Grid European Petroleum Survey Group (EPSG):27700 Coordinate Reference System (CRS).

108. Interpretative or source queries were addressed as appropriate by further reference to the archived photographs in the survey files.

109. Following comparison to other airborne sources and all EHER data, extent of area polygons were digitised around the interpreted extent of features identified, and a site database created in QGIS as an attribute table within a shapefile.

110. When all data sources had been examined, interpretative polygons were digitised to further shapefiles to indicate the form, extent and type of extant features within areas.

Data Presentation

111. The data are presented in shapefile data format within the project GIS. A shapefile contains geographical reference data as individual objects such as a ditch, a bank, a structure or a coordinate area. Features exist as 'objects' and their 'attributes' where the interpretations are recorded within the shapefile.

112. In addition to the shapefile, the data derived from the survey are presented in the heritage mapbook.

113. The mapbook presents keyed, labelled and individually numbered illustrations at a consistent scale.

114. The data are also presented as a gazetteer of sites. The gazetteer is derived from selected attributes within the extent of area mapping shapefile. It summarises the location, type, condition and interpretation of each individually identified site or area of features.

Interpretative Mapping

Extent of area mapping

115. Extent of area mapping was undertaken initially to identify archaeological assets through 'APS Site Polygons.' These polygons indicate the extent of area around a feature or group of archaeological features. A detailed supporting attribute table was compiled at this stage detailing the following for each feature:

- APS Site Number;
- Asset Type;
- Broad Type;
- NMP coverage;
- APS derived records;
- Evidence Type (1-10);
- Source (1-10);
- Period;
- Monument UID Number;
- Source HER/SMR;
- Comment;
- NMP Additions/Remapping;
- By;
- Supplier;
- Client;
- Project;
- Easting;
- Northing;
- National Grid Reference;
- Map Source; and
- Mapbook Number.

116. This process created a database which forms the basis for all detailed mapping and analysis.

117. Aerial imagery and LiDAR analysis is a non-intrusive survey method, and not all features which are identified may be accurately dated by this means alone.

Assumptions and Limitations

Historic Aerial Photographs

118. The assumption that aerial photographic survey and vertical and oblique aerial photographs show all features and will reveal a complete archaeological record in any given area is erroneous. This is due to many interactive survey, seasonal, environmental, meteorological and perception and interpretation issues which are set out below.

119. Interpretation of aerial photographs relies either on visual identification of the effect heritage assets have on crops and other vegetation, marks in soils or visible features or earthworks which are more visible at times of clear low light.

120. It is important to note that aerial photographs usually only show part of the horizontal and vertical extent of buried and upstanding features. Their capacity to reveal features as cropmarks, vegetation marks, soil marks or as the shadows cast by banks, ditches and walls, depends upon several environmental and agricultural factors prevalent at the time of the photographic survey. It is possible for many years' photography over one site to show nothing at all, and then during one instance of survey to reveal complex buried cropmark features. The direction of light at the time of photography, with reference to shadows cast and crop or soil marked features highlighted, can also affect the visibility of features on aerial photographs. Unlike digitally processed LiDAR and other data, the azimuth of the sun cannot be changed on a conventional aerial photograph.

121. Past and present land use also presents limitations to visibility of features. A cropped arable regime of cereals often allows the formation of cropmarks, whereas grassland, unless seen in times of extreme moisture stress, can mask the appearance of buried features. The time of year is thus important in gaining maximum benefit from aerial photographic sorties. In winter, the low leaf index and lower light angle assists visibility of topographic and earthwork features. In summer, ripening crops, often from April through to harvest in July/August, may show differential marks over buried features. Dry conditions will often cause parching in grass, which will then reveal areas of former foundations as the grass dies over the harder less moisture retentive buried features.

122. Following harvest, weathering and ploughing, marks in soil often show where buried archaeological deposits are being actively ploughed and brought to the surface.

123. In this region the arable areas are intensively eroded by ploughing. The areas of lighter shallow soils over well drained substrates are conducive to the formation of cropmarks over both buried heritage assets and complex and extensive geological anomalies in the substrates.

124. In constructing a comprehensive interpretation of the archaeological landscape, it is essential to examine a range of photographs, taken under a variety of environmental conditions, as has been done in this case.

125. The aerial photographs taken in the 1940s often recorded extant landscapes which have been altered or carry evidence for pre-modern fields and extant military features, particularly in coastal areas. These historic photos provide a starting point for the assessment of landscape change, in conjunction with the study of historic maps and modern aerial and satellite-derived imagery.

126. The remit of past oblique aerial surveys, the survey areas chosen and the visibility of sites to the aerial archaeologist can often determine the content and coverage of oblique aerial photography. Observer led flights may be heavily biased and may miss features which were present but were not seen or recorded. This area has been surveyed carefully by aerial archaeologists and subject to past mapping by the NMP, but some additions and clarifications to former mapping and interpretations have been made as expected.

127. It is also important to note that the perception of the environment and expectation of what is to be found may often limit the air photo analyst's mental 'openness' to features. This perception factor is mitigated by repeated examination of imagery taken in different years and under different conditions, and by teamwork between two or more interpreters checking the data. 'Photo fatigue' is also a factor in drop-off rates of discovery or perception of features. It is mitigated by alternating activities and personnel, checking interpretations with other team members and taking adequate visual breaks.

Online Aerial Photographs and Satellite Images

128. Google Earth regularly uploads new images and attributes some images with the name of the provider and a date of capture. These dates are not verified, but for archaeological survey this is not a legally essential element of the metadata. The issue with data derived from geoportals such as Google Earth is that it changes and is added to; it is a dynamic collection of varied mosaiced dated images and varied resolutions of data derived from aerial photography and satellite imagery. During 2017-2018, Google began to capture its own data, and these layers are largely 'unattributed' in terms of provider. The main UK providers to Google Earth include Getmapping, Infoterra and Bluesky, The GeoInformation Group (Centremaps), Maxar and CNES/Airbus. The mosaic 'cuts' where images have been blended together and captured in different seasons are readily apparent, often within the same 'timeline' data.

Aerial Imagery and LiDAR Data Limitations: Conclusions

Aerial Imagery

129. Aerial photograph assessments are often based on sequences of historical imagery which provide a series of 'snapshots' of the landscape under different conditions. In contrast, LiDAR and multi-spectral data are typically gathered at a single or series of closely spaced points in time. Levelled features which are now only visible as cropmarks are not usually visible via LiDAR data unless they are recorded as substantially differing vegetation heights within a DSM, or the features causing the cropmarks are still extant as micro topographic differences in the ground surface.

130. The limitations of these data sources are appreciated and considered during survey and use of multiple data sources. Multiple times of survey increases the discovery rate and certainty of interpretation from all airborne data sources when they are examined concurrently.

LiDAR Data

131. LiDAR data are collected for multiple environmental and engineering survey purposes and are therefore sometimes not in compliance with optimum timeframes for heritage survey requirements. An optimum LiDAR survey date for recovery of micro and macro topographic heritage data spans late November to mid-March in the northern hemisphere. This is when leaf canopy and vegetation are at their lowest and a higher proportion of bare earth is exposed in both woodland and open areas to ensure that the laser pulses reach and return to and from the ground in sufficient density to record topography to create an accurate and detailed DTM.

132. Whilst of excellent high resolution, some data are not gathered at an optimal time for specific heritage survey purposes, as they are provided to serve the needs of multi-disciplinary surveys. A lower resolution survey captured during the winter months very often provides more data due to the lack of intervening vegetation which prevents sufficient laser points from reaching the ground surface. A low density of vegetation and leaf canopy is essential to the effectiveness of LiDAR survey in that it ensures maximum penetration of light signals to the ground surface in vegetated areas.

133. The LiDAR data are, however, of assistance in recording some micro and more macro topographic features which may indicate relict or extant archaeological features and historic landscapes. They were used over the survey area in multiple visualisations alongside the aerial photographs and satellite image data. LiDAR data are best interpreted and used in conjunction with modern and historic aerial photographs and maps to provide ground truth information, and this was achieved in this survey.

134. For LiDAR data captured during 'leaf / crop on' conditions, less data is recorded due to foliage and vegetation masking the route of the laser. Similarly, areas of water will absorb the laser giving no returned points.

135. The majority of the NLP LiDAR data were collected between October and March, with varied dates for smaller surveys.

136. When the point cloud is processed into a DTM, reduced ground coverage results in a simplified geometry surface interpolated from the few available data points which can obstruct features of interest.

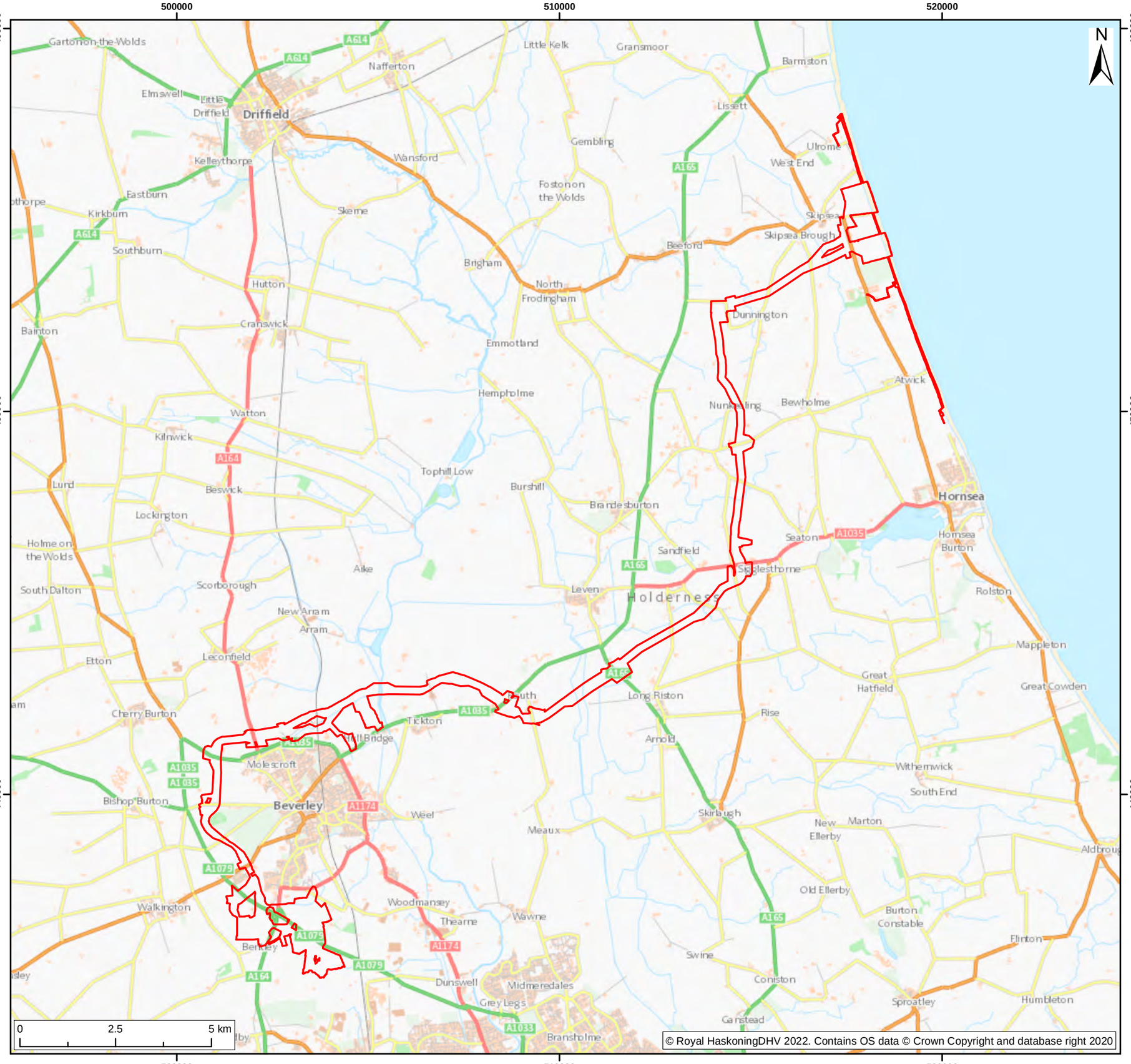
137. The horizontal cell resolution of LiDAR data can also influence the detection rates of archaeological features. This can occur where the spacing of point measurements is sufficiently wide to conceal or reduce the visibility of small archaeological features. This may have affected this assessment in areas where LiDAR data were gathered at 2m, 1m and 50cm resolutions as opposed to the more detailed 25cm resolution data.

138. It is also important to note that LiDAR visualisation techniques are continually developing and advancing. The multiple visualisations now applied to DSM and DTM data via the RVT used for this survey are effective in heritage interpretation. Hillshade, and particularly fixed-direction Hillshade, visualisations do not show the correct position of the actual features, only the position of their virtual 'shadows' on the ground. It is thus important to use multiple visualisations of LiDAR data to ensure accurate positioning of recorded features and optimise the results. LiDAR data: conclusion

139. The majority of the LiDAR data were captured at times of low leaf index; however, these data did not reveal consistently significant topographic heritage assets over the whole of this area. This is due to the eroded and buried nature of the cropmarked sites which constitute the majority of the aerial evidence which is largely eroded to sub-surface level.

Figures

Figure 22-3-1 Site Location
Figure 22-3-2 Historic England Aerial Photographs
Figure 22-3-3 Humber Historic Environment Record Aerial Photograph Coverage
Figure 22-3-4 Cambridge University Collection of Aerial Photography Coverage
Figure 22-3-5 National Mapping Programme Project Coverage
Figure 22-3-6 LiDAR Coverage
Figure 22-3-7 Onshore Development Area Geology
Figure 22-3-8 Onshore Development Area Soils
Figure 22-3-9 Mapbook Index
Figure 22-3-10 Mapbook
Figure 22-3-11 Parish Index for Tithe and Inclosure Maps
Figure 22-3-12 Bentley Tithe Map 1838
Figure 22-3-13 Walkington Inclosure Map 1794
Figure 22-3-14 Bishop Burton Plan 1771 – 87
Figure 22-3-15 Cherry Burton Tithe Map 1839
Figure 22-3-16 Molescroft Enclosure Map 1803
Figure 22-3-17 Routh Tithe Map 1845
Figure 22-3-18 Leven Tithe Map 1832
Figure 22-3-19 Catwick Tithe Map 1844
Figure 22-3-20 Beeford Tithe Map 1845
Figure 22-3-21 Bonwick Tithe Map 1841
Figure 22-3-22 Ulrome Tithe Map 1843
Figure 22-3-23 Skipsea Enclosure Map 1764
Figure 22-3-24 Atwick as Inclosed 1709
Figure 22-3-25 Ordnance Survey Mapping 1850 – 1855
Figure 22-3-26 Ordnance Survey Mapping 1889 – 1895
Figure 22-3-27 Ordnance Survey Mapping 1908 – 1911
Figure 22-3-28 Ordnance Survey Mapping 1950 – 1956
Figure 22-3-29 Ordnance Survey Mapping 1973 – 1982
Figure 22-3-30 Ordnance Survey Mapping 1988 - 1993



Legend:

Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Site Location

Figure: 22-3-1

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0418

Co-ordinate system: British National Grid

Page Size: A3

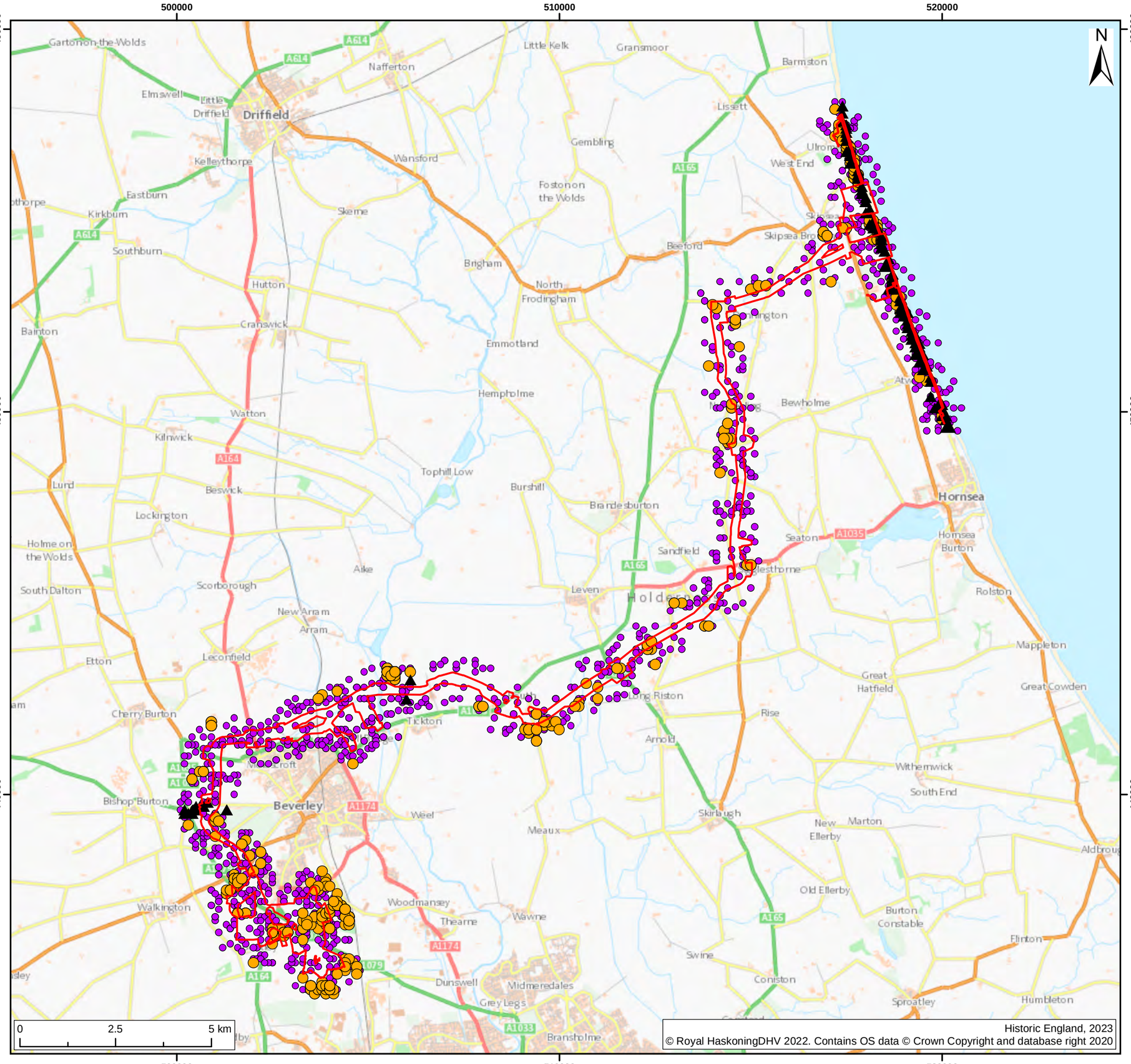
Scale: 1:100,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- Verticals
- Obliques
- Military Obliques

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Historic England Aerial Photographs

Figure: 22-3-2 | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0419

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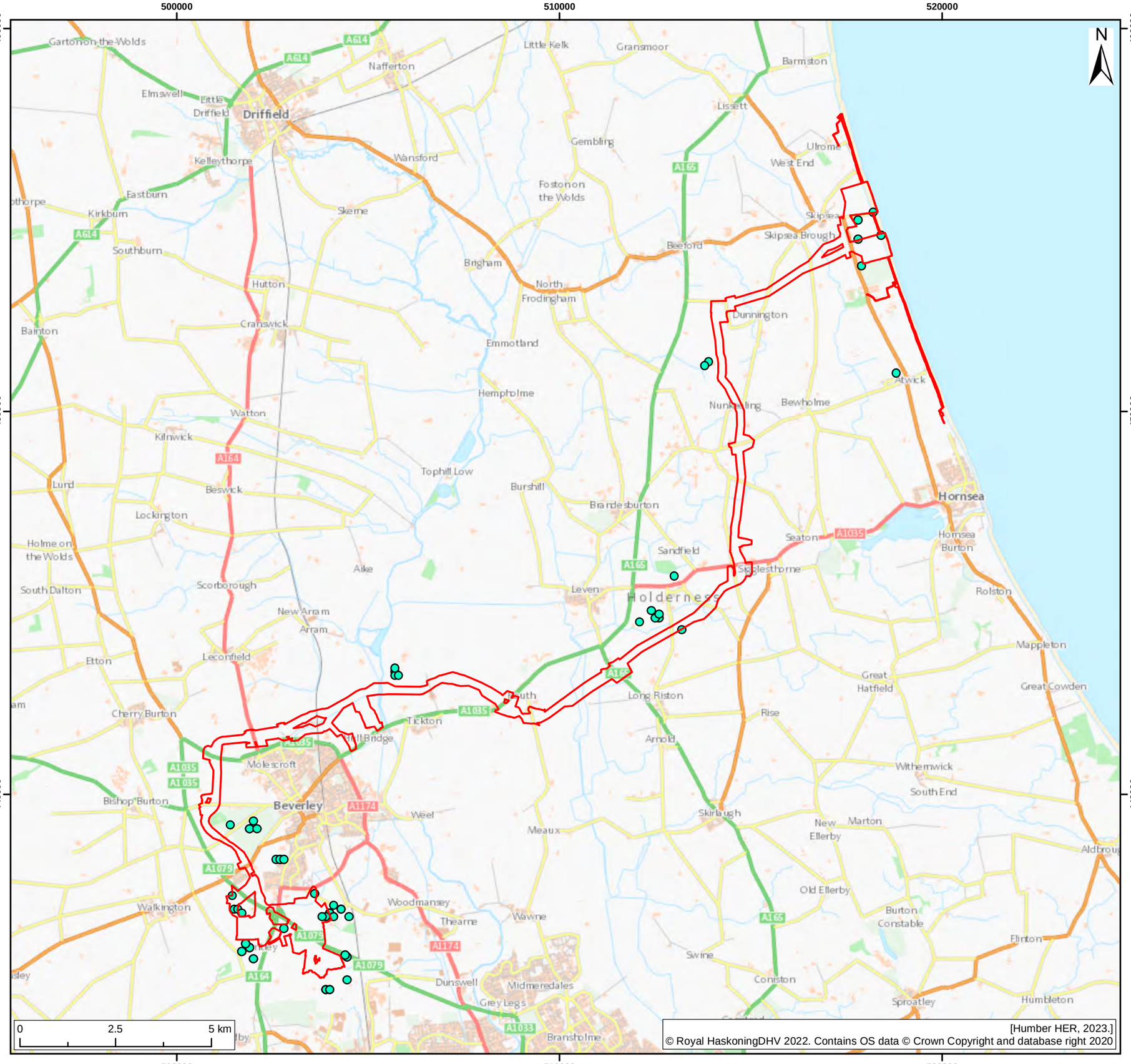
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- Humber Historic Environment Record Aerial Photographs

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Humber Historic Environment Record
Aerial Photograph Coverage

Figure: 22-3-3 | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0420

Co-ordinate system:	Page Size:	Scale:
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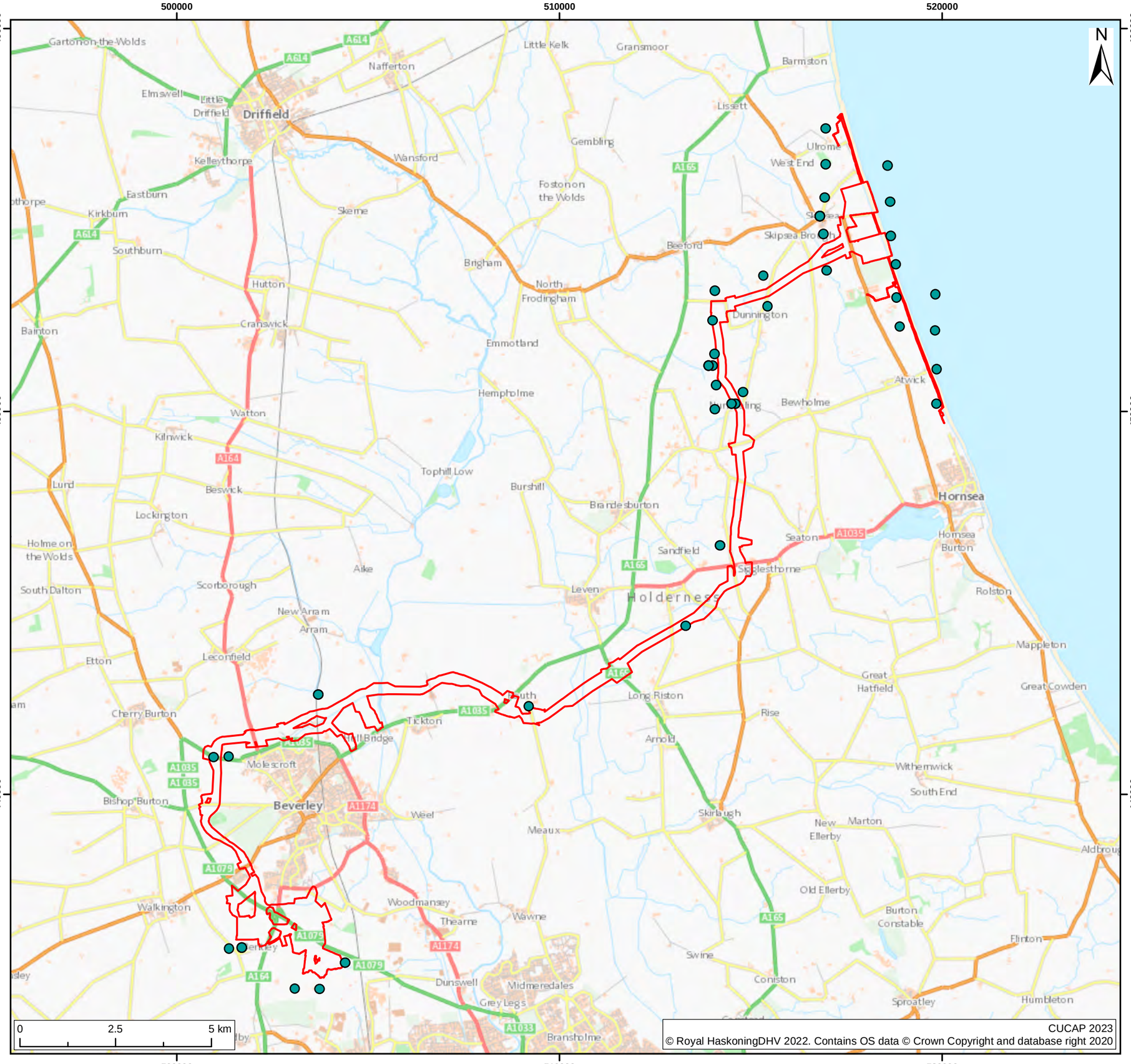
Project:

Dogger Bank South
Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- CUCAP APs

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Cambridge University Collection of Aerial Photography Coverage

Figure: 22-3-4 | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0421

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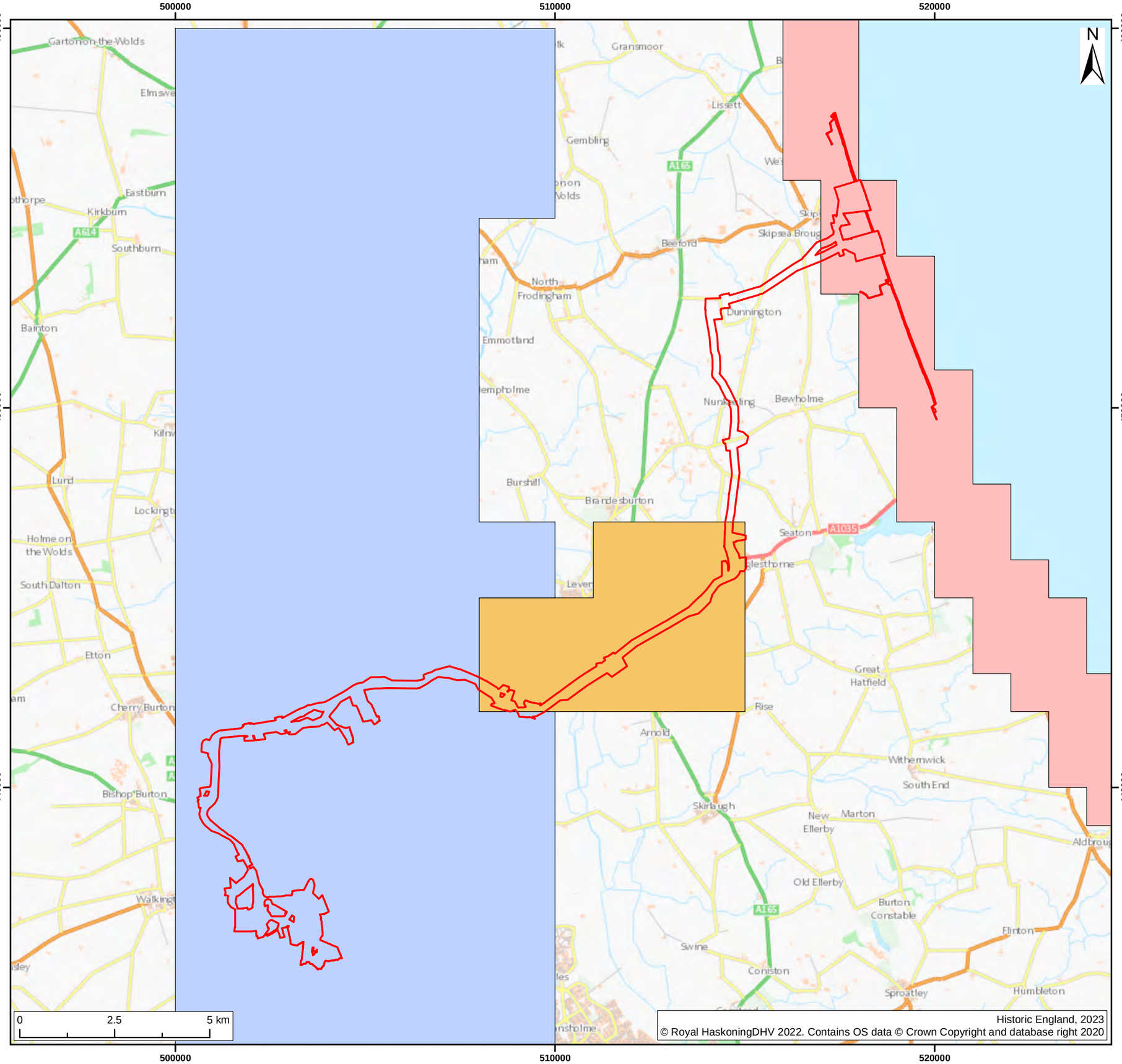
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- East Yorkshire Aggregates Levy Sustainability Fund
- Hull Valley
- Yorkshire Rapid Coastal Zone Assessment Survey

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
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Title:

National Mapping Programme Project Coverage

Figure: 22-3-5 | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0422

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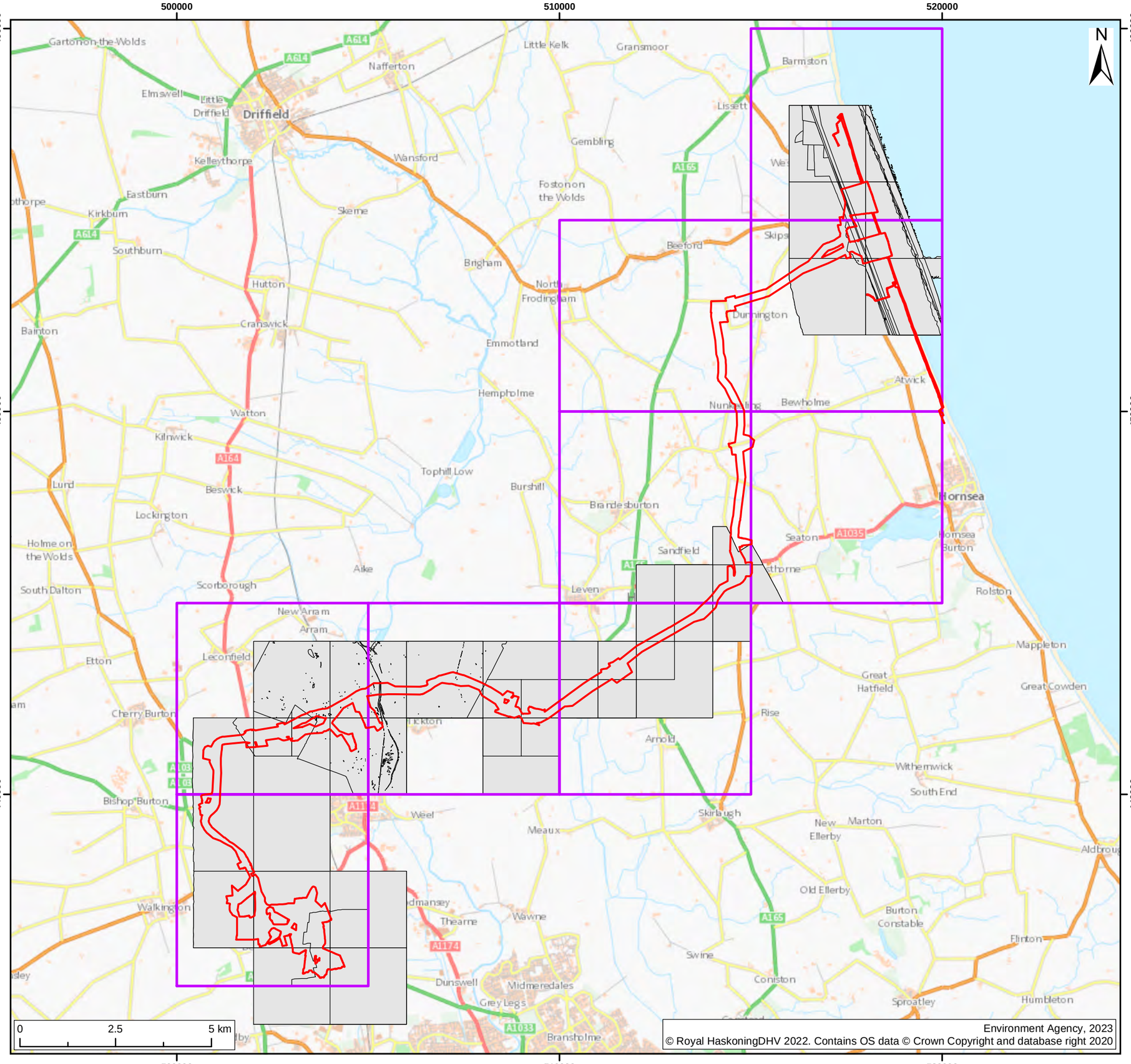
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- Environment Agency LiDAR Coverage
- National LiDAR Programme Coverage

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

LiDAR Coverage

Figure: 22-3-6

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0423

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:100,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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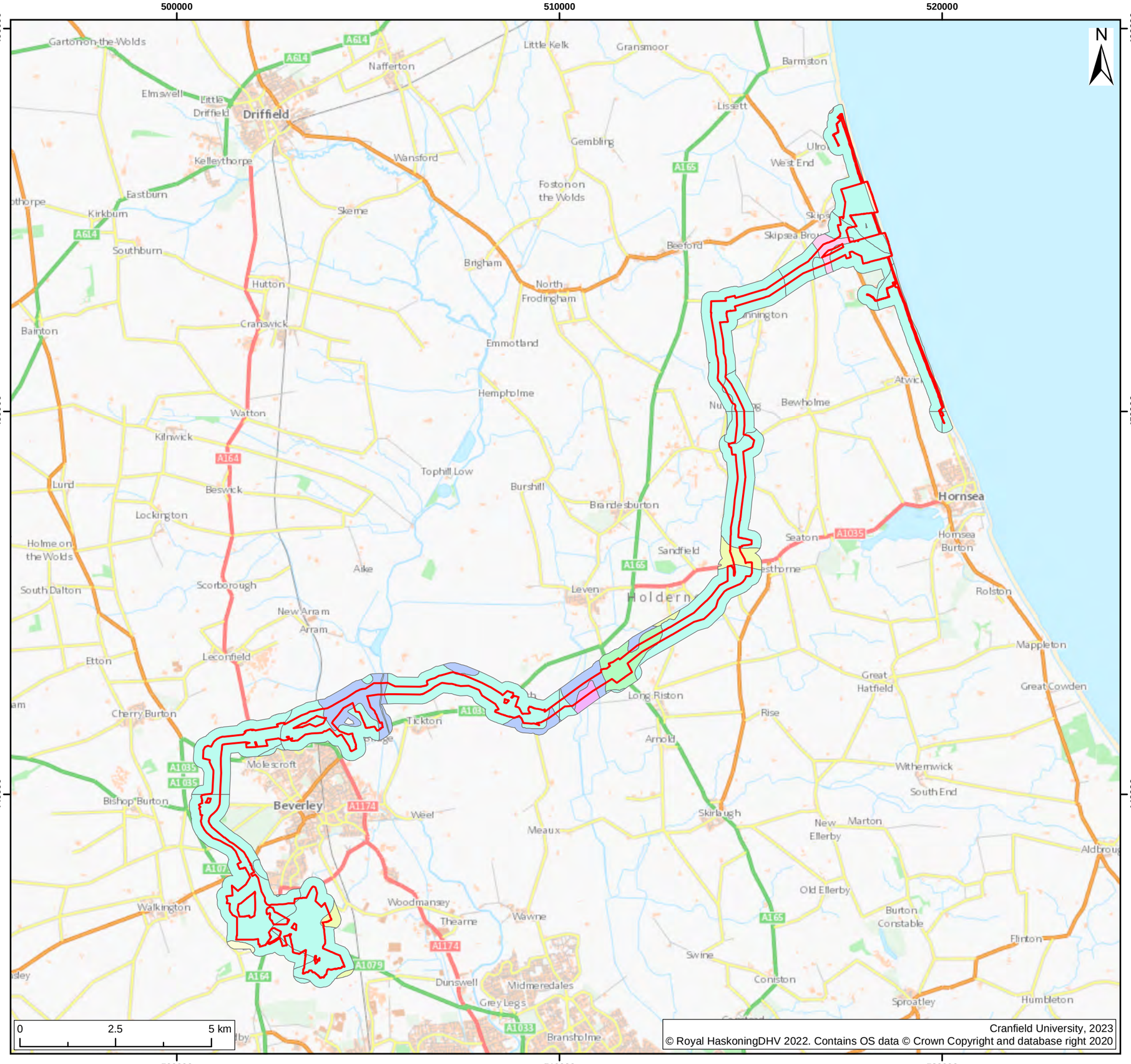

Legend:

- Assessment Study Area
- Chalky till
- Glaciofluvial drift
- Glaciofluvial or river terrace drift
- Glaciofluvial sand and gravel
- Marine alluvium and fen peat River
- alluvium
- Till and glaciofluvial drift
- Till and glaciofluvial drift over chalk

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
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Title:

Onshore Development Area Geology

Figure: 22-3-7 | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0424

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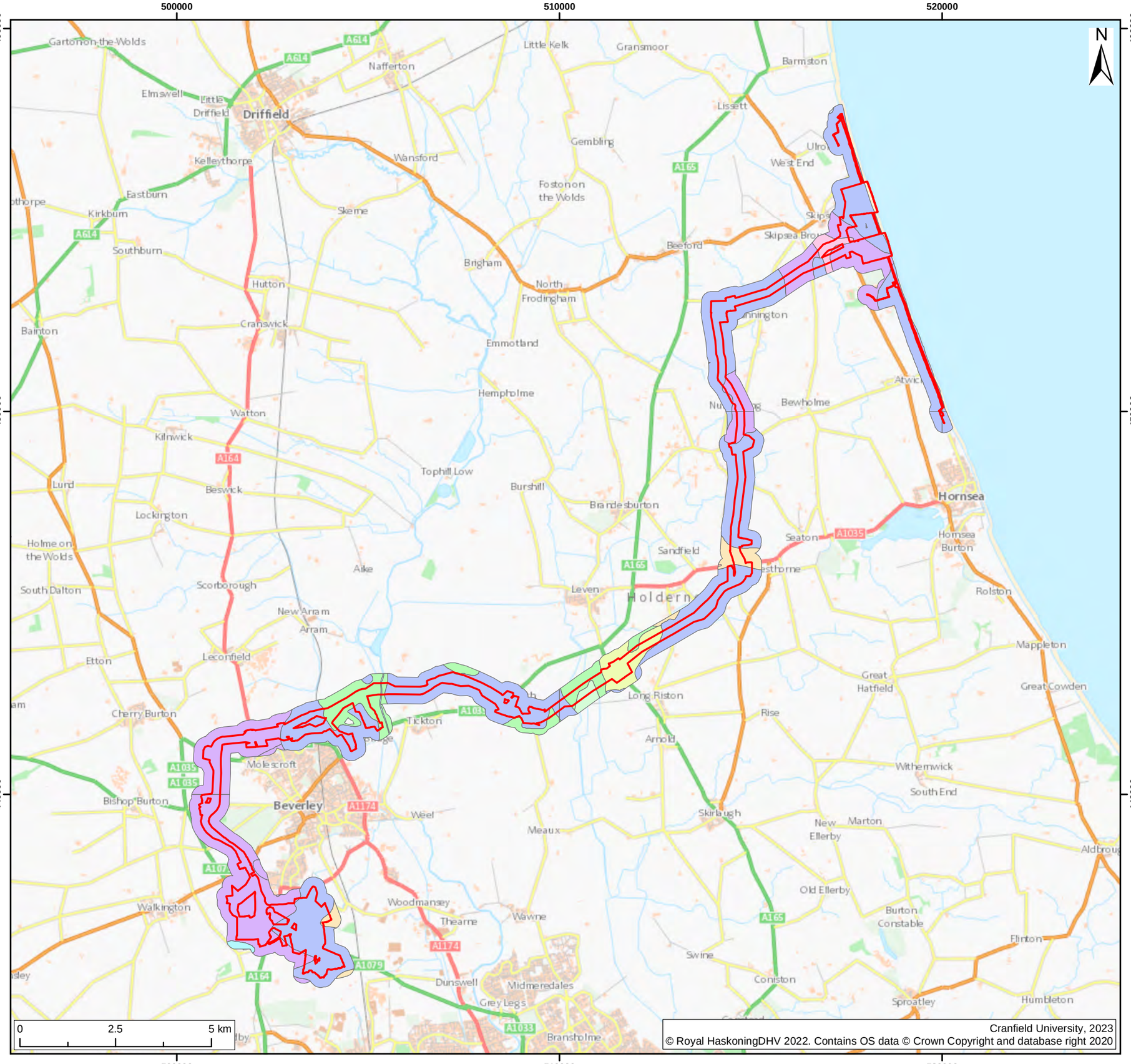
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- BLACKWOOD
- BURLINGHAM 2
- Bishampton 1
- DOWNHOLLAND 3
- FLADBURY 3
- HOLDERNESS
- HUNSTANTON
- LAKE
- LANDBEACH
- WICK 1

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Onshore Development Area Soils

Figure: 22-3-8 | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0425

Co-ordinate system:	Page Size:	Scale:
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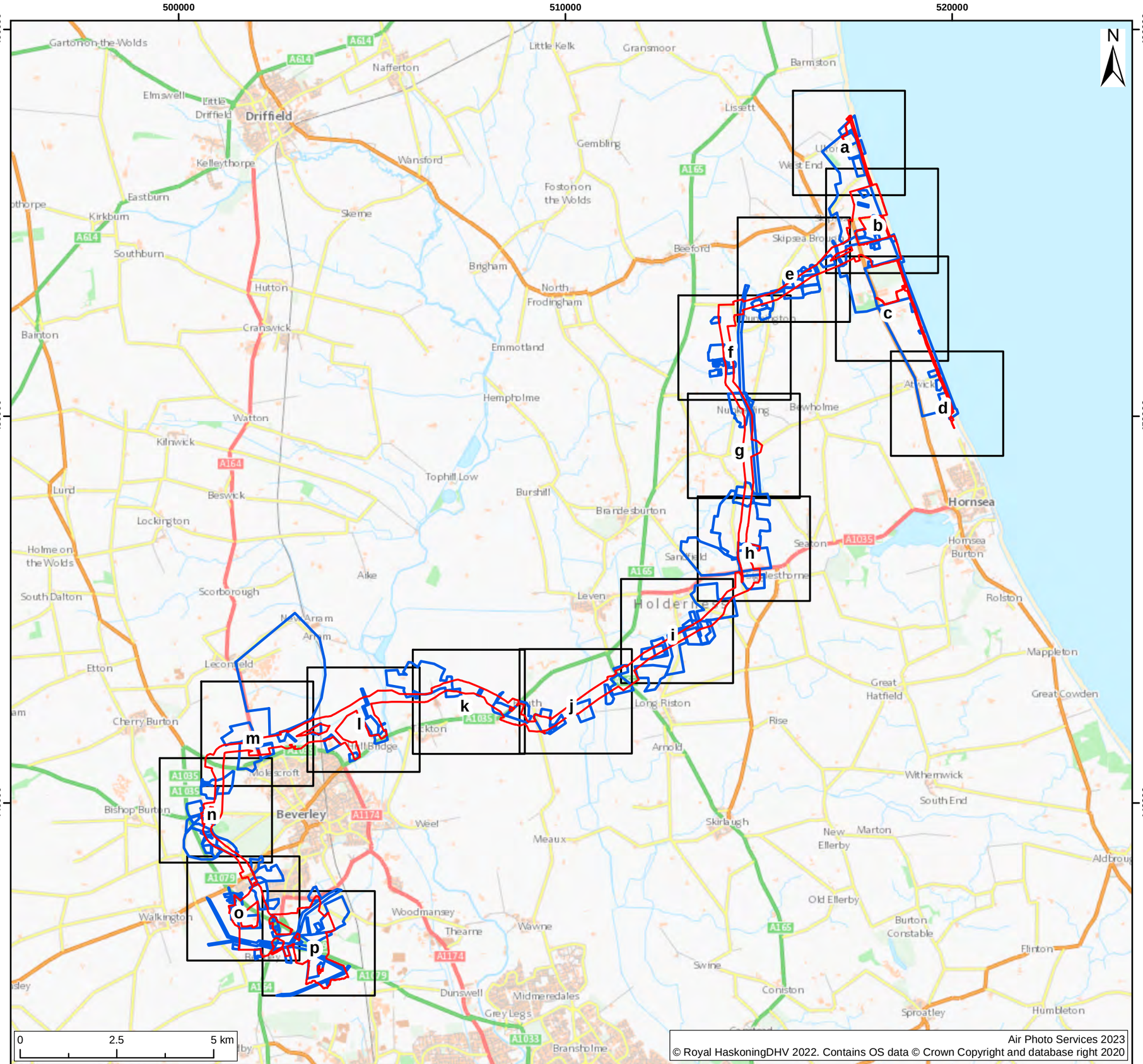
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



Legend:

- Assessment Study Area
- Site Extents
- Mapbook Pages

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Mapbook Index

Figure: 22-3-9

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0426

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:100,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES

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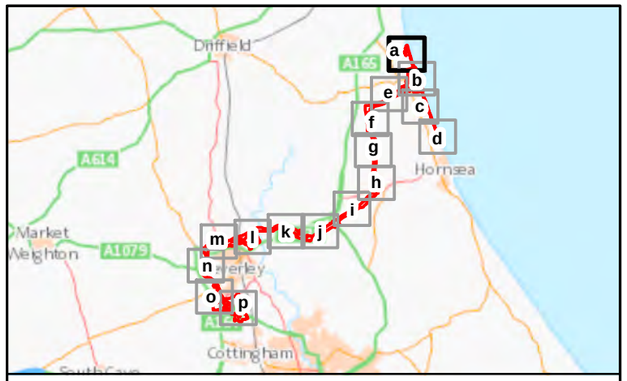

Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-3-10a	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

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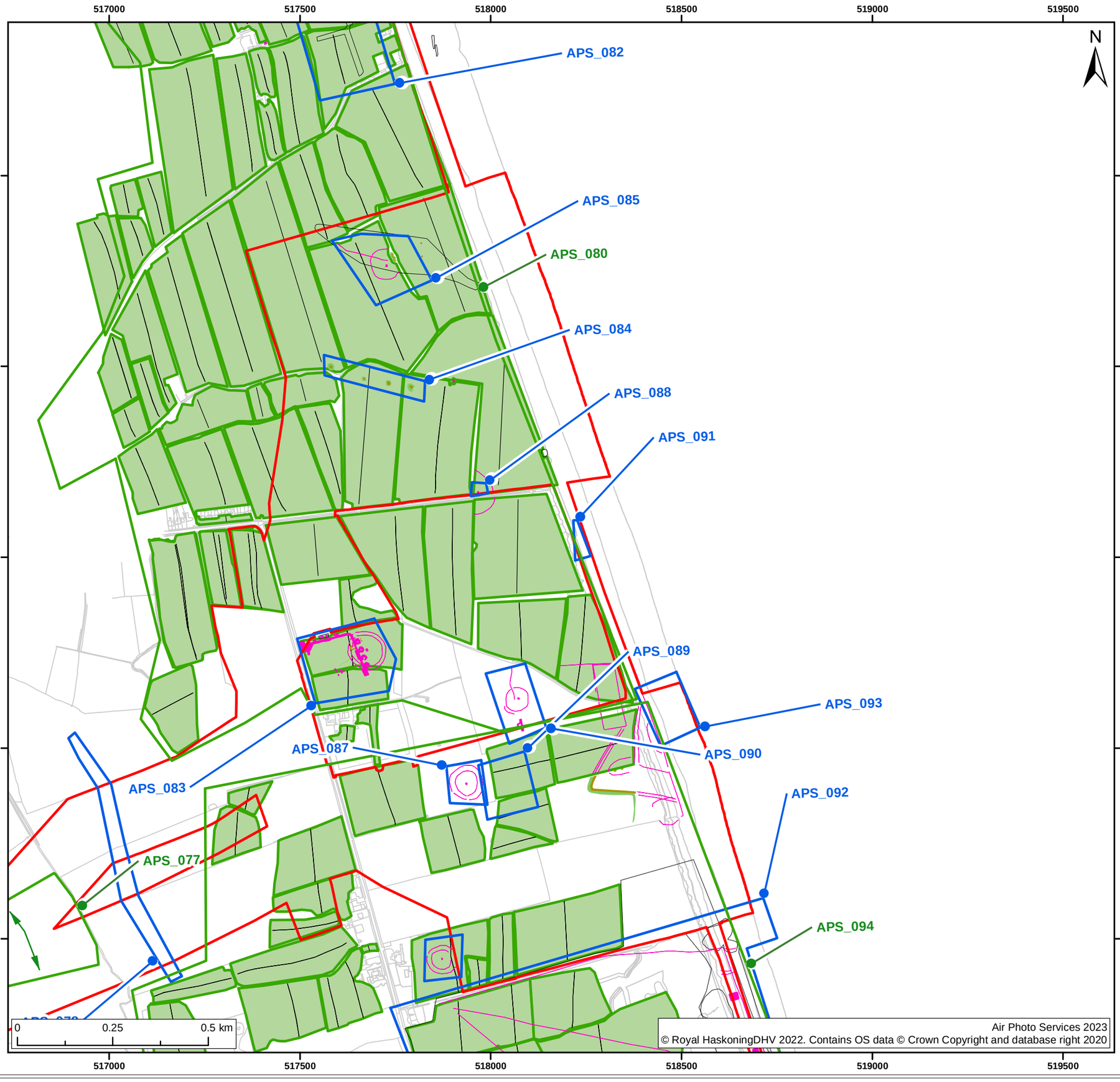
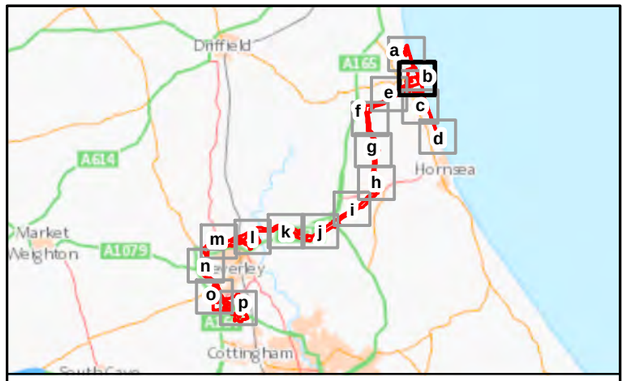
Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow
- Ridge and Furrow Direction

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10b

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

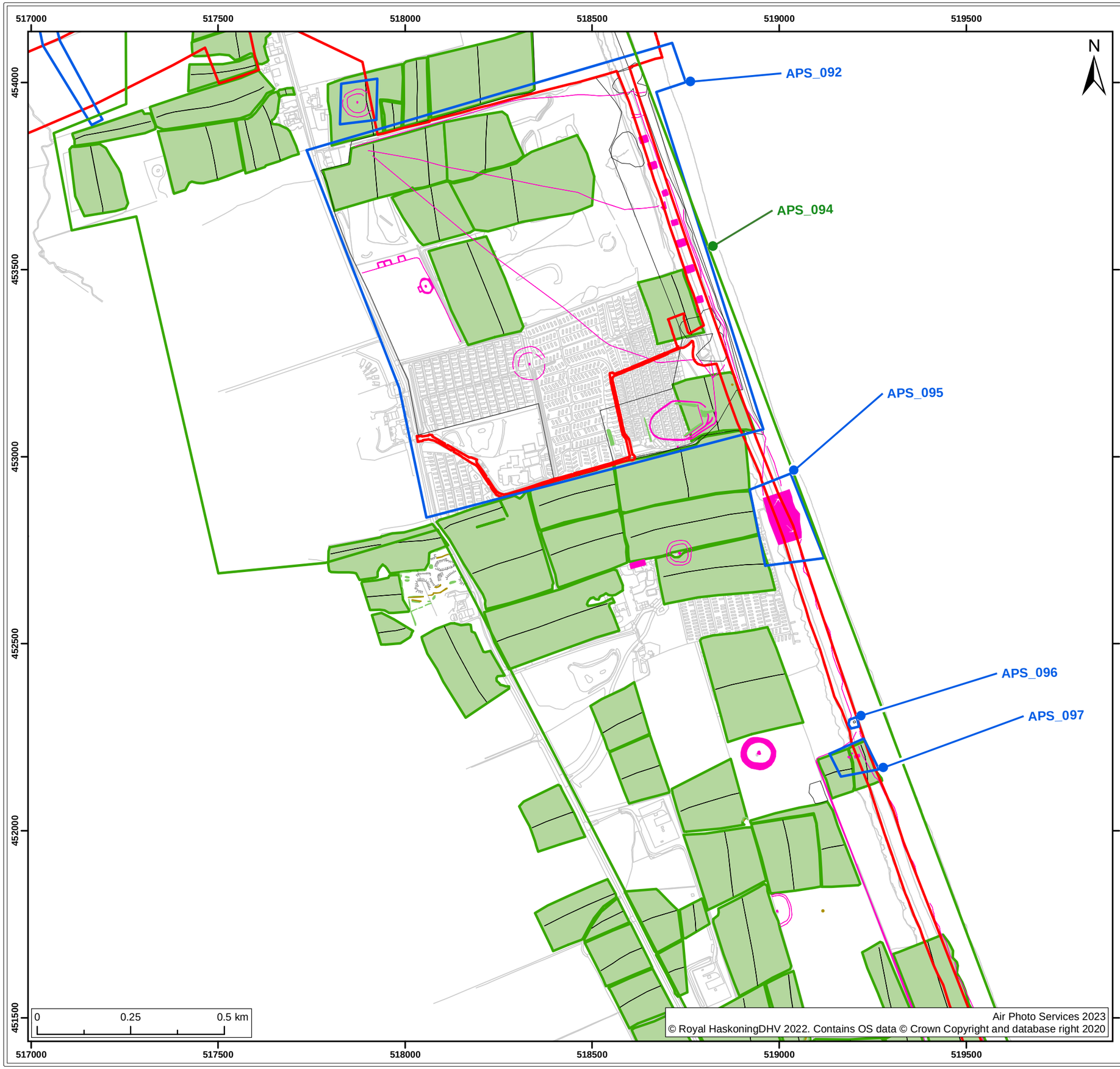
Page Size: A3

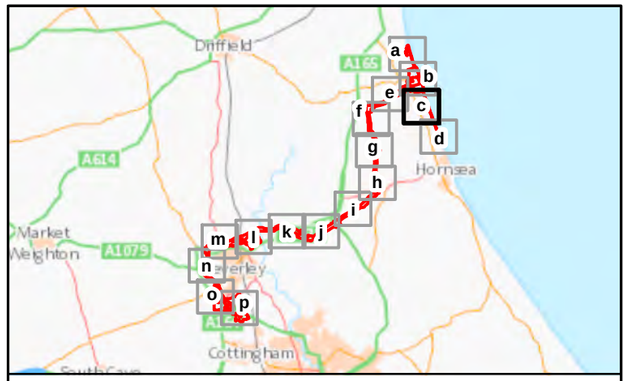
Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10c

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

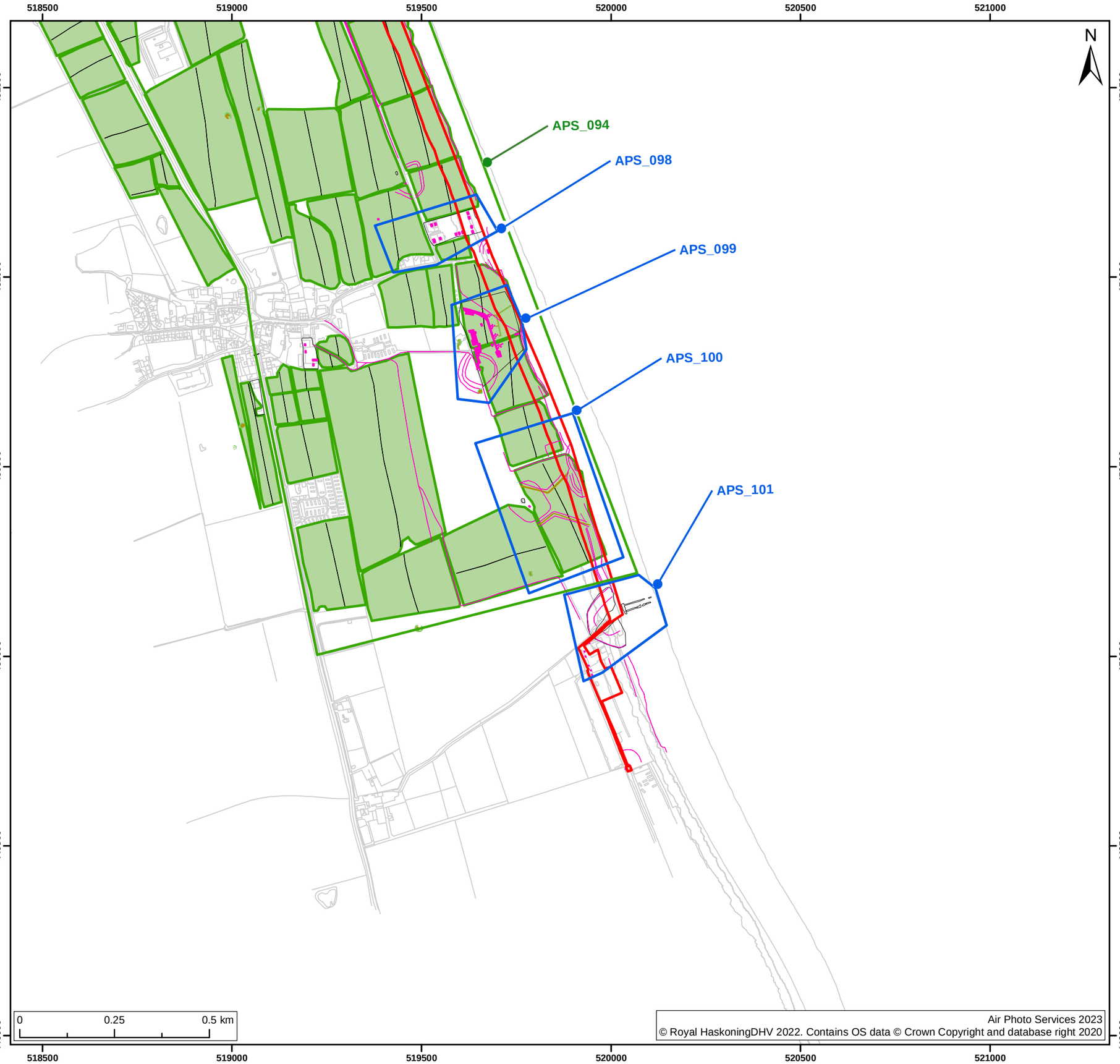
Project:

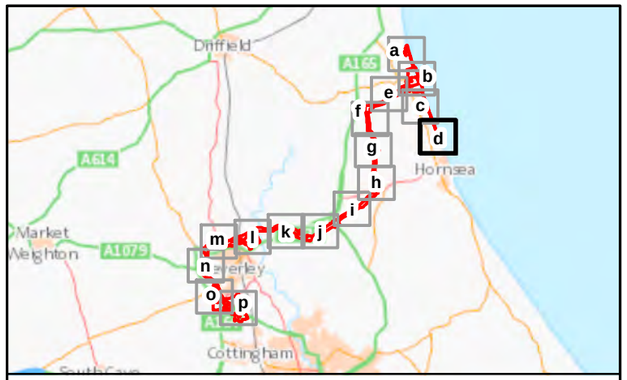
Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES

RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
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Title:

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Figure: 22-2-10d

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

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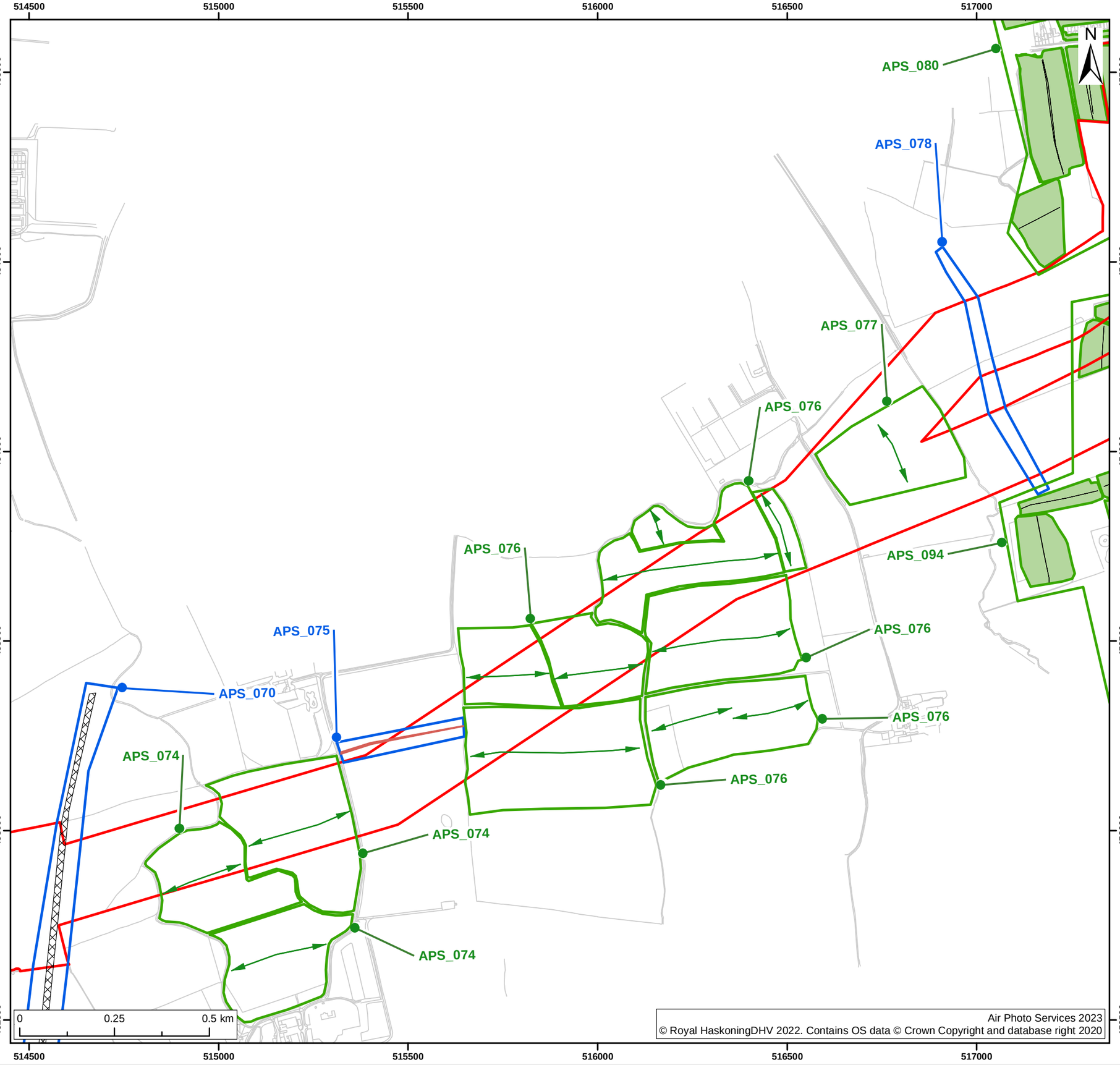
Scale: 1:10,000

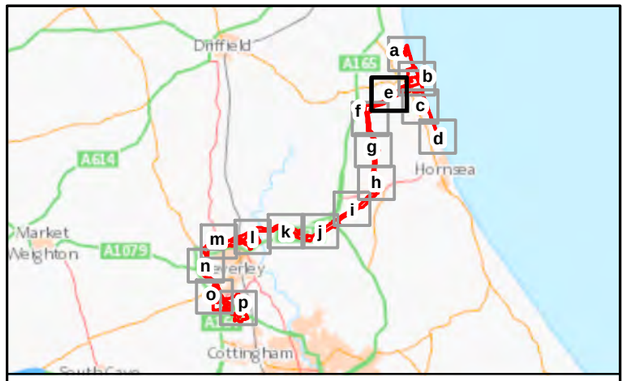
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Modern Service
- Ridge and Furrow Direction

NMP Mapping

- Ridge and Furrow Alignment
- Ridge and Furrow Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Mapbook Page 05 of 16

Figure: 22-2-10e

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system:	Page Size:	Scale:
British National Grid	A3	1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES

RWE

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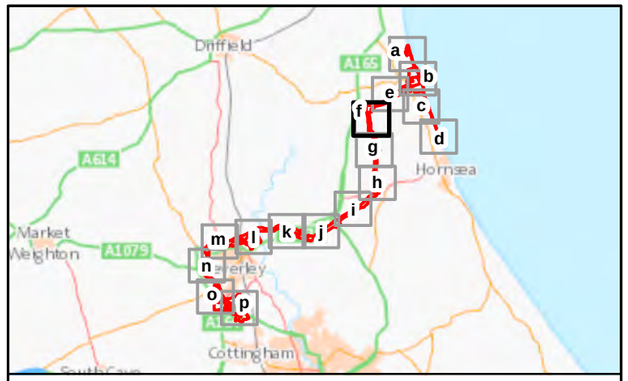

Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Modern Service
- Ridge and Furrow Direction

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
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Title:

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Figure: 22-2-10f

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE

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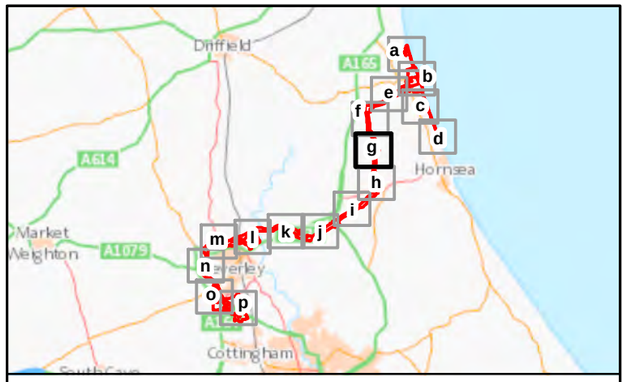

Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Ditch
- Modern Service
- Water Feature
- Ridge and Furrow Direction

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10g

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE

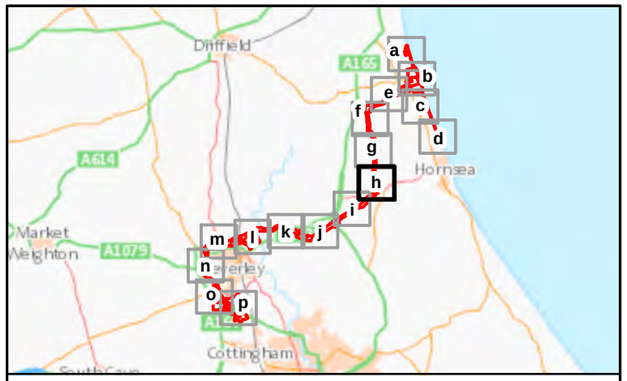
513500 514000 514500 515000 515500 516000

447500 447000 446500 446000 445500

N

APS_071
APS_068
APS_064
APS_073
APS_072
APS_065

0 0.25 0.5 km



Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Defensive Site
- Ditch
- Ridge and Furrow Direction

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC

Title:

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Figure: 22-2-10h

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE

511500 512000 512500 513000 513500 514000

445500 445000 444500 444000 443500

N

APS_06

APS_060

APS_062

APS_063

APS_059

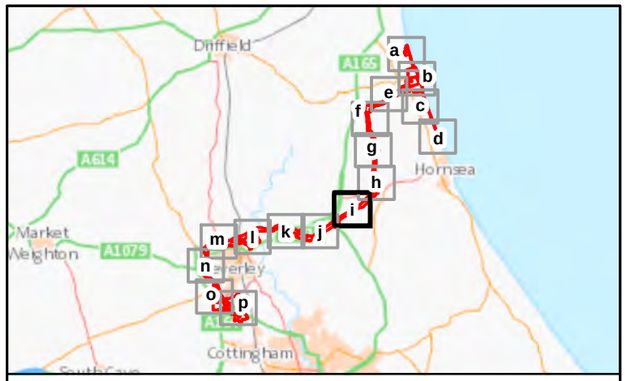
APS_061

APS_058

APS_058

APS_058

0 0.25 0.5 km



Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Mapbook Page 09 of 16

Figure: 22-2-10i

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE

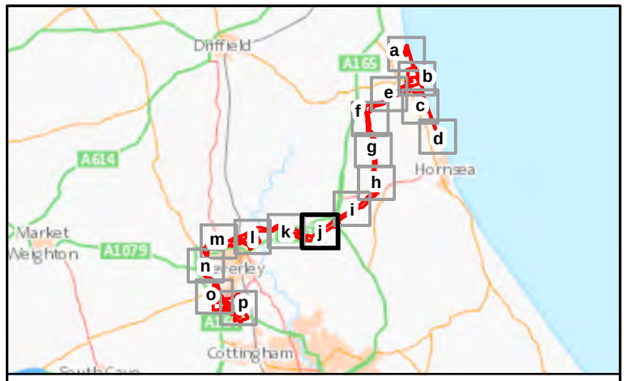
509000 509500 510000 510500 511000 511500

443500 443000 442500 442000 441500

N

APS_058
APS_057
APS_058
APS_056
APS_055
APS_053
APS_053
APS_054

0 0.25 0.5 km



Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary

NMP Mapping

- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10j

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

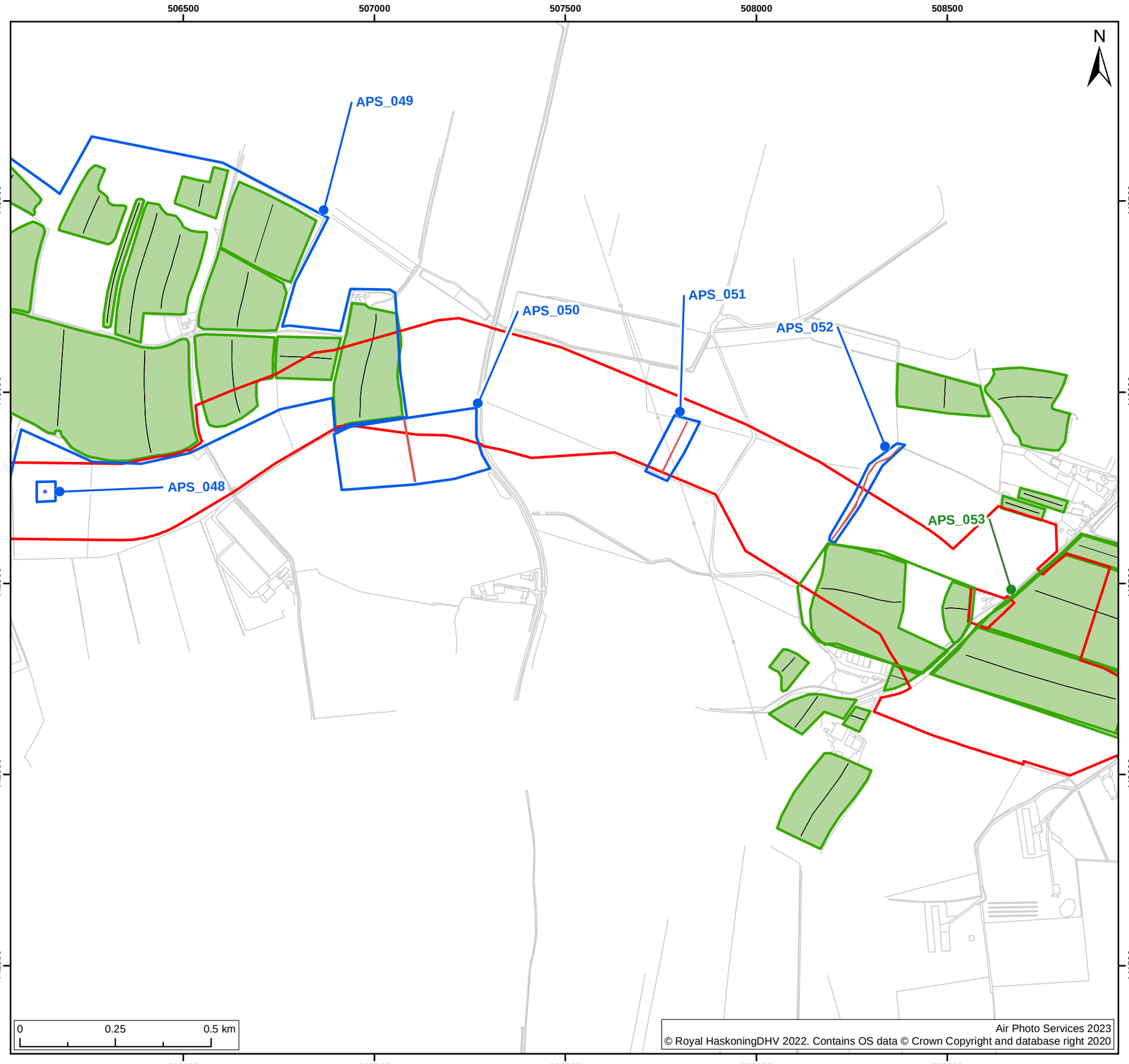
Page Size: A3

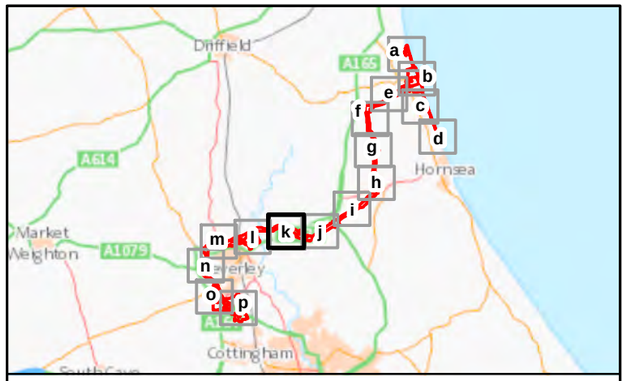
Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Pit

NMP Mapping

- Ridge and Furrow Alignment
- Ridge and Furrow Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10k

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE

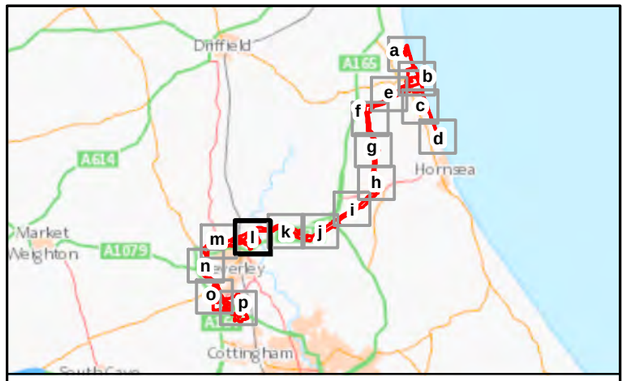
503500 504000 504500 505000 505500 506000

443500 443000 442500 442000 441500 441000

APS_029
APS_049
APS_045
APS_048
APS_046
APS_047
APS_037
APS_042
APS_044

N

0 0.25 0.5 km



Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Pit
- Ridge and Furrow Direction

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR
S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC

Title:

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Figure: 22-2-10l

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

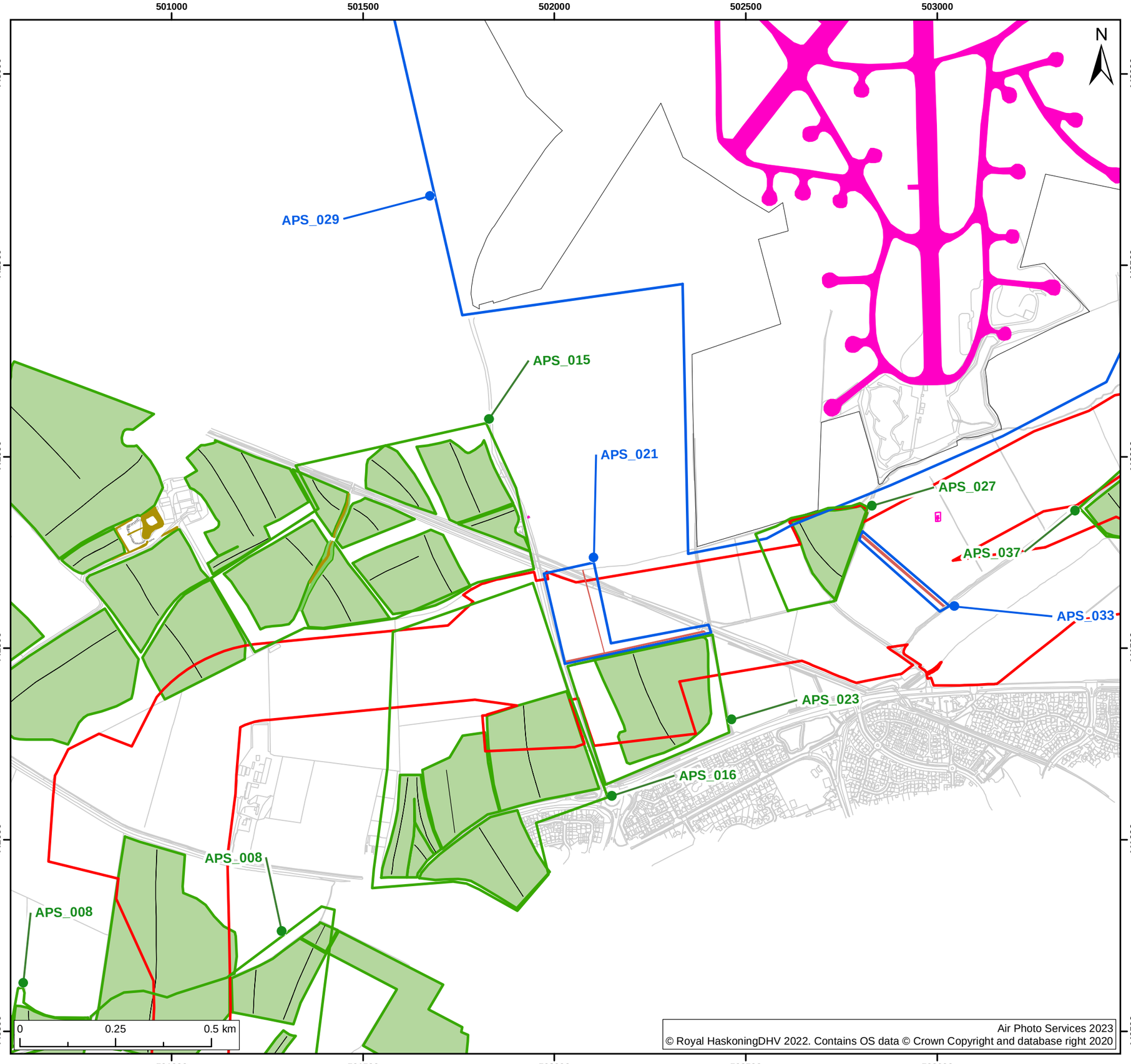
Page Size: A3

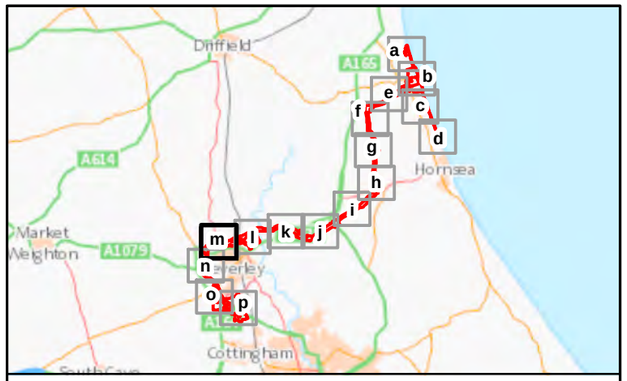
Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10m

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES

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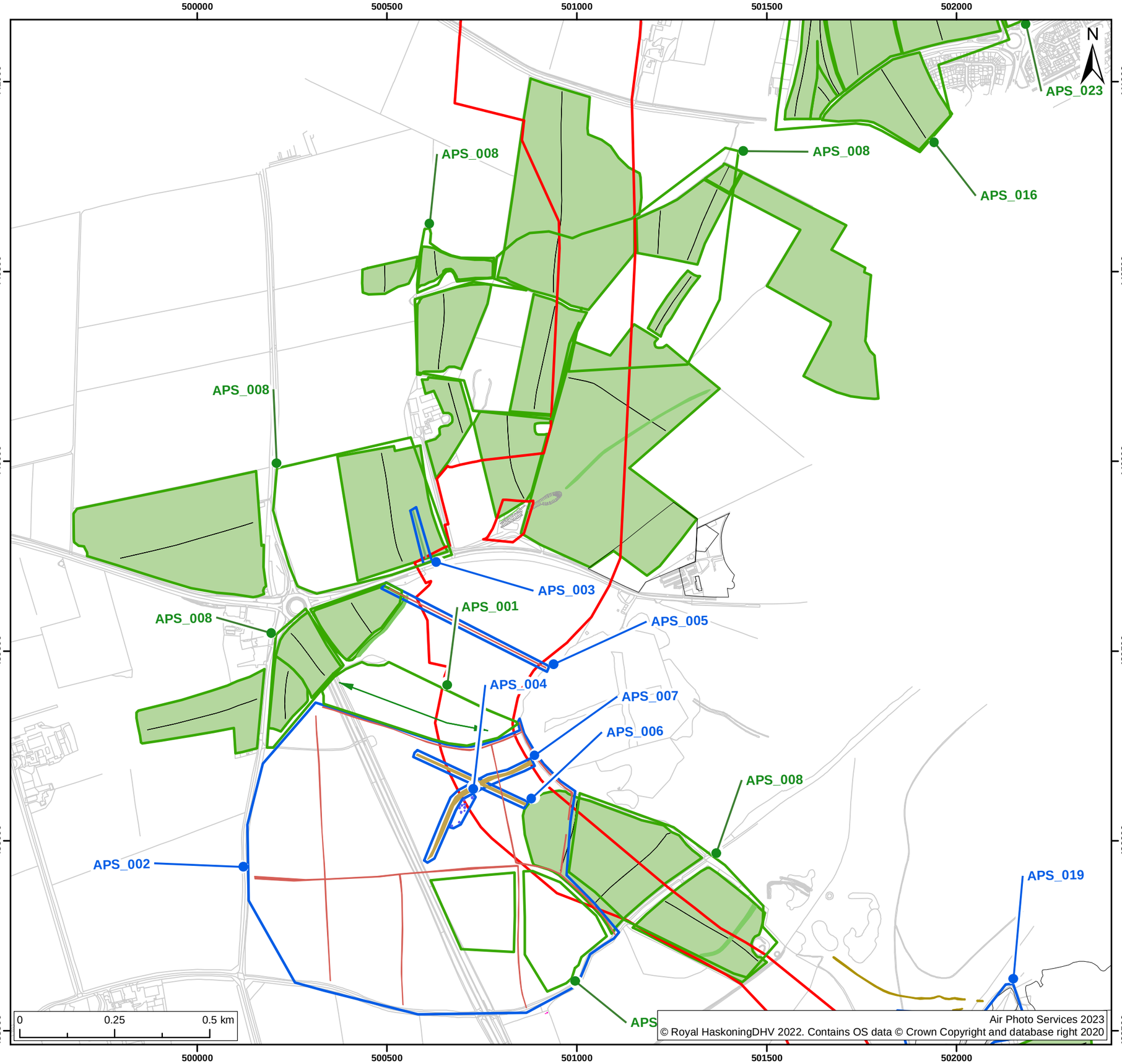

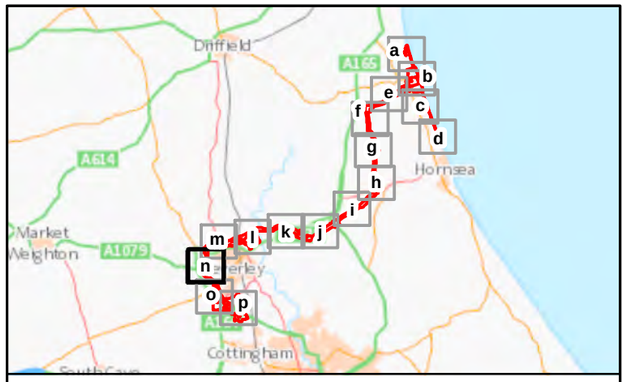

Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Bank
- Boundary
- Ditch
- Pit
- Ridge and Furrow Direction

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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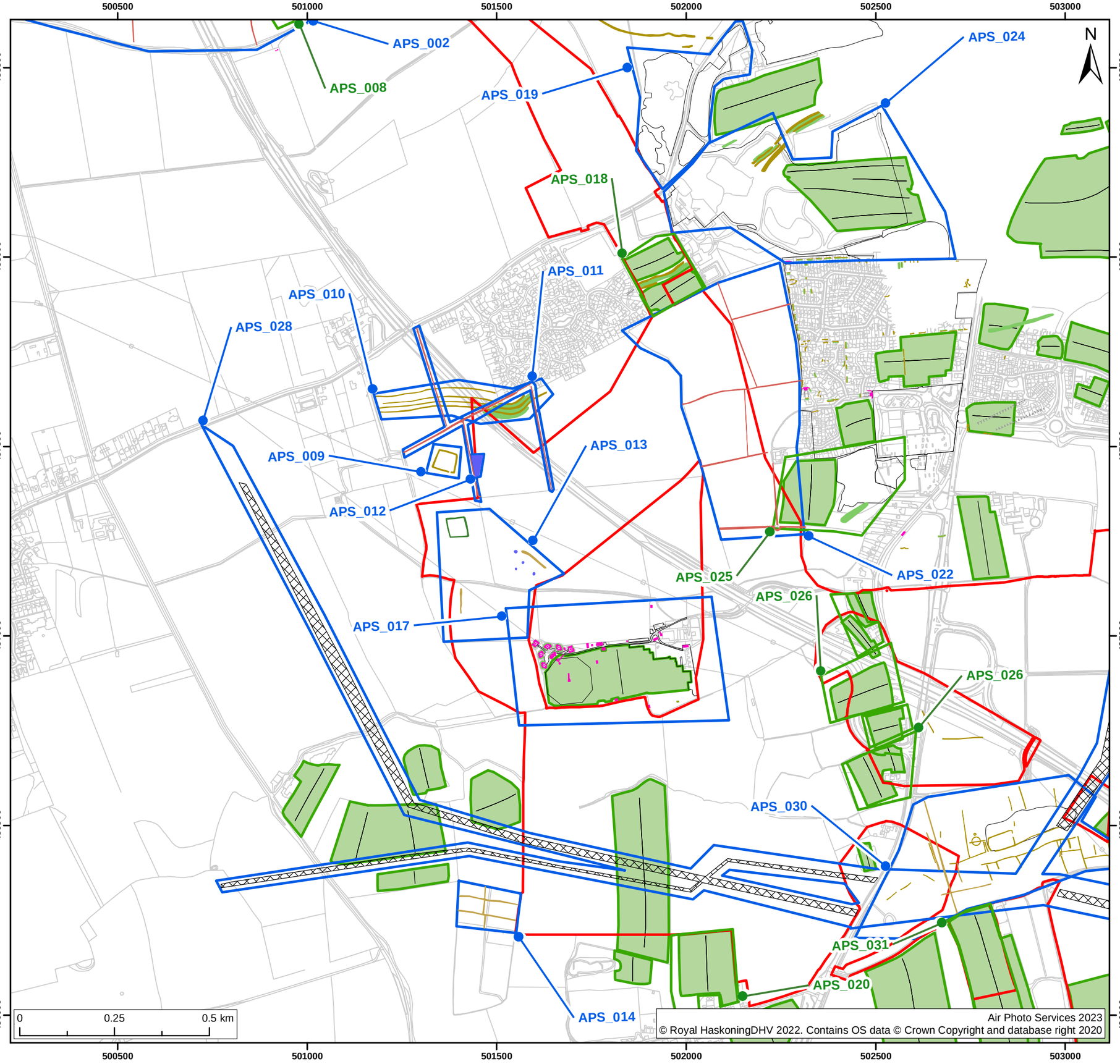
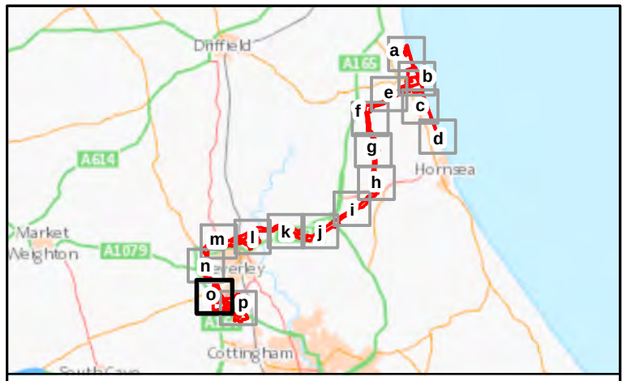
Figure: 22-2-10n	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Ditch
- Enclosure
- Modern Service
- Pit

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10o

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

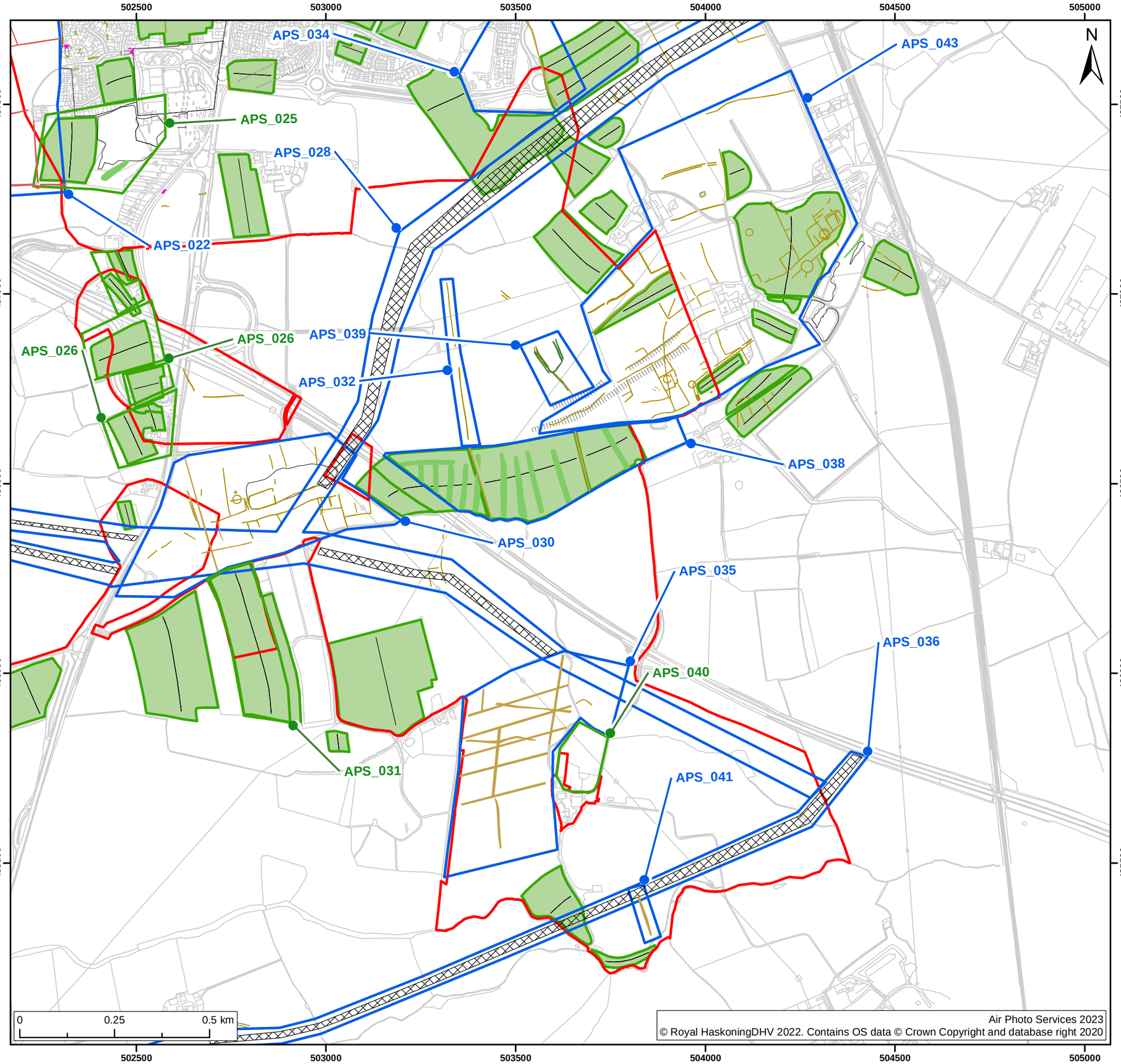
Page Size: A3

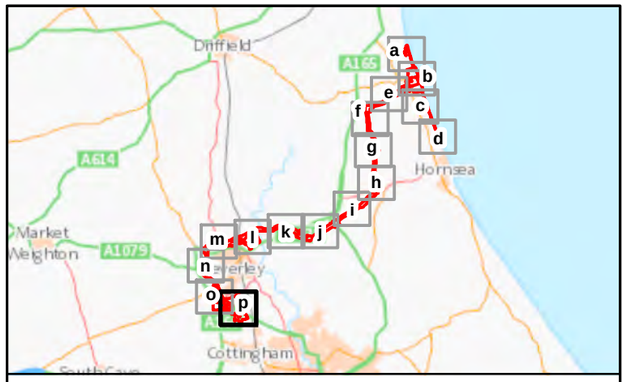
Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIR PHOTO SERVICES RWE





Legend:

- Assessment Study Area
- APS Site Extents
- Ridge and Furrow

APS Features

- Boundary
- Ditch
- Enclosure
- Modern Service

NMP Mapping

- Bank
- Ditch
- Extent of Feature
- Ridge and Furrow Alignment
- Ridge and Furrow Area
- Scarp Slope Edge
- Structure

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-10p

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0427

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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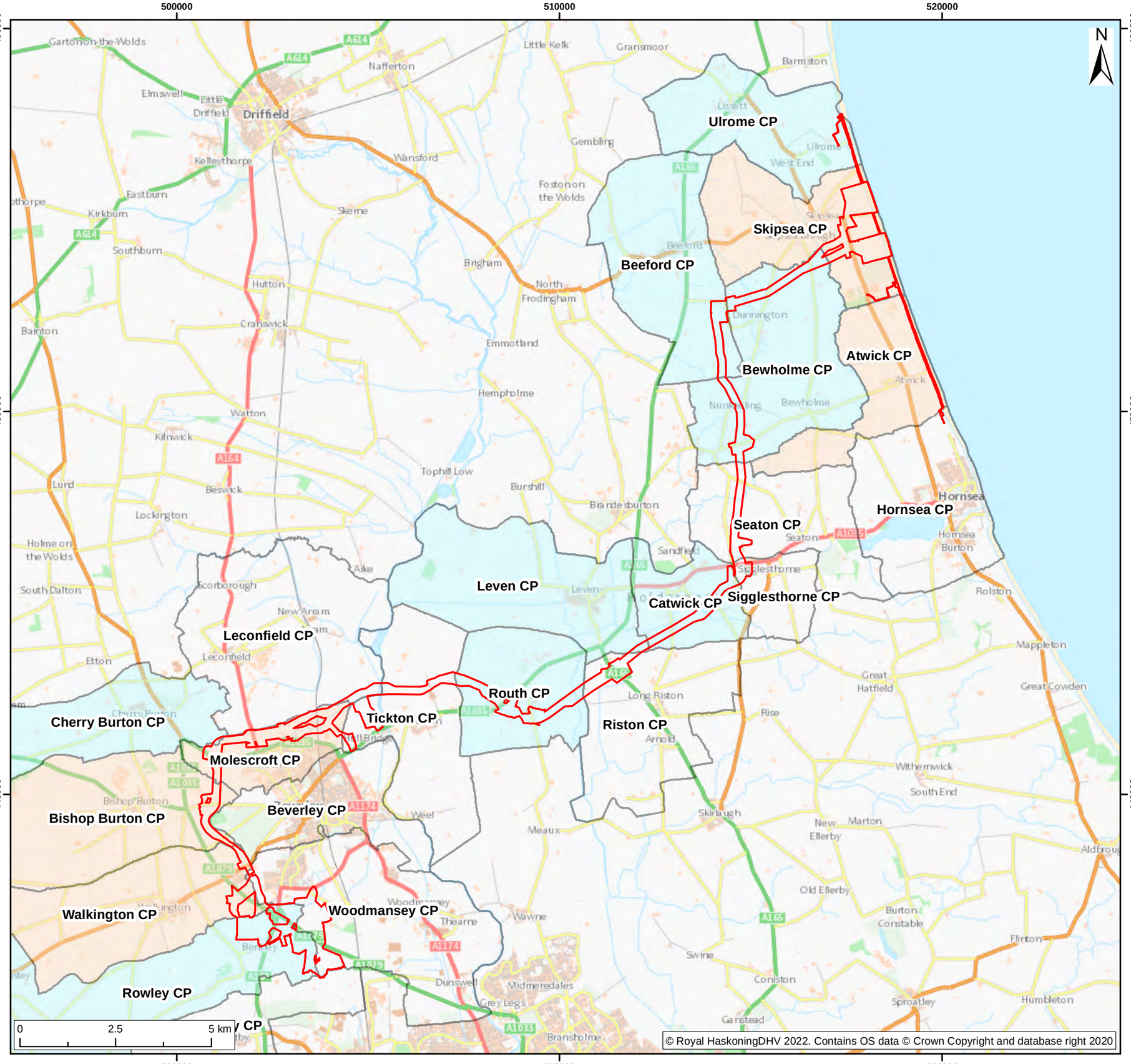


Legend:

- Assessment Study Area
- Inclosure
- Tithe
- None / Outside Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Parish Index for Tithe and Inclosure Maps

Figure: 22-3-11

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0428

Co-ordinate system: British National Grid

Page Size: A3

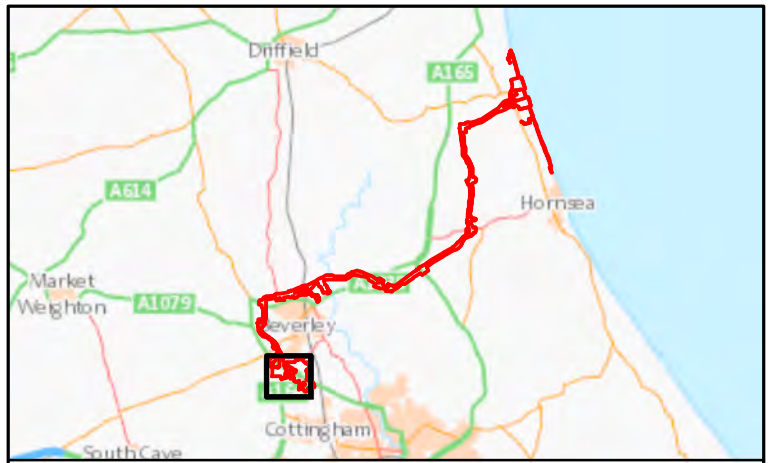
Scale: 1:100,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES

RWE



Legend:

Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Bentley Tithe Map 1838

Figure: 22-3-12 Drawing No: PC2340-APS-ON-ZZ-DR-Z-0429

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES

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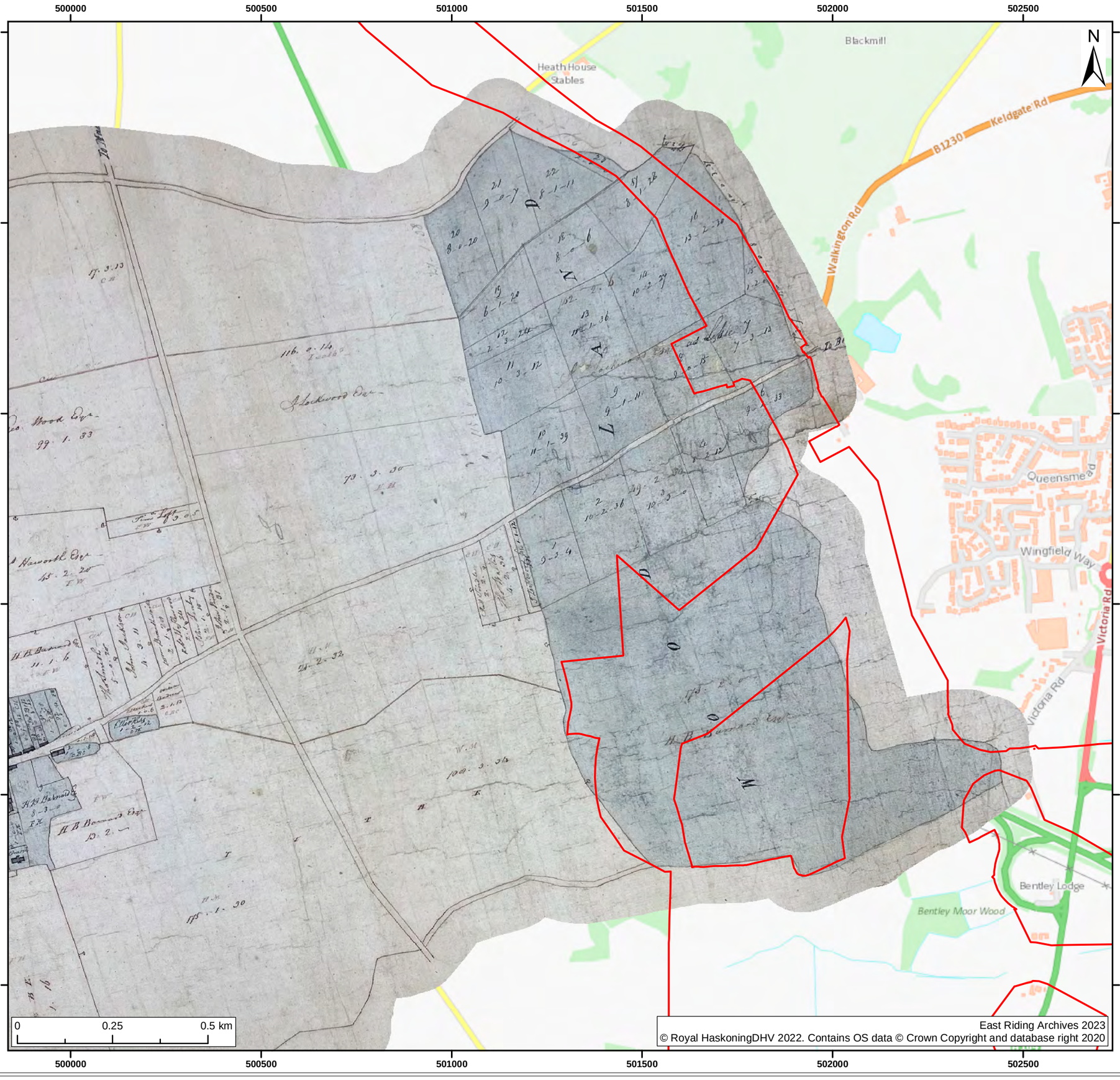

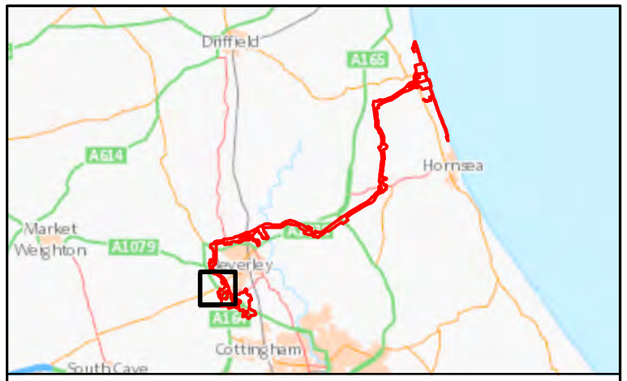

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Walkington Inclosure Map 1794

Figure: 22-3-13

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0430

Co-ordinate system: British National Grid

Page Size: A3

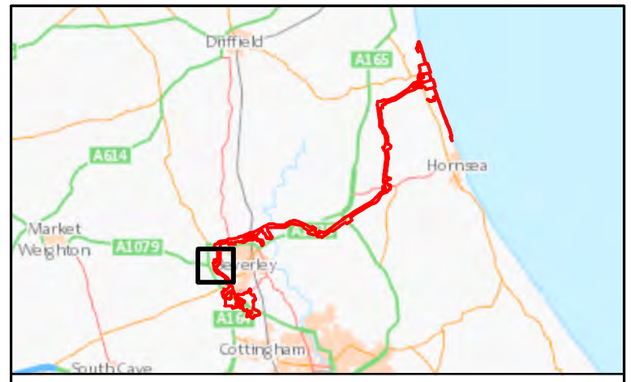
Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE



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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Bishop Burton Plan 1771 - 87

Figure: 22-3-14

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0431

Co-ordinate system: British National Grid

Page Size: A3

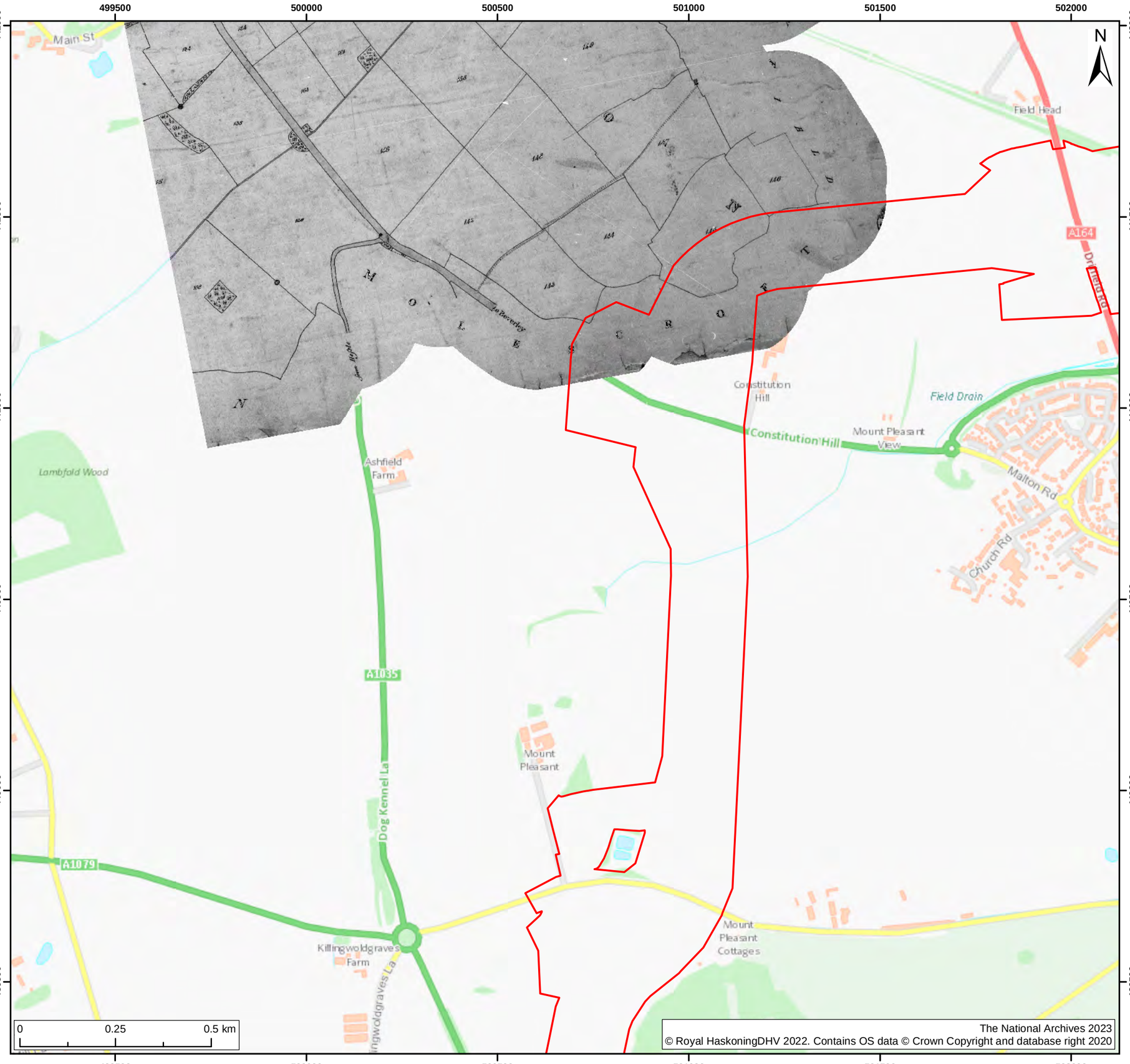
Scale: 1:10,000

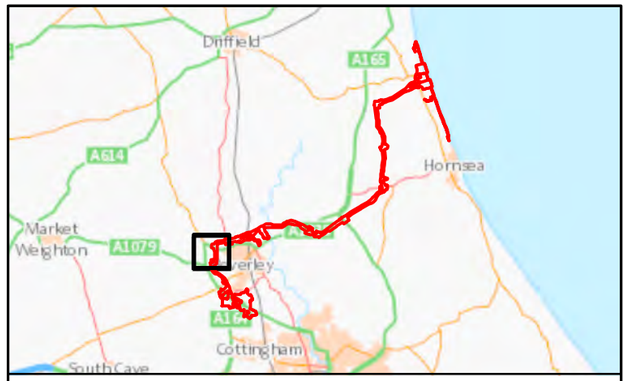
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Cherry Burton Tithe Map 1839

Figure: 22-3-15

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0432

Co-ordinate system: British National Grid

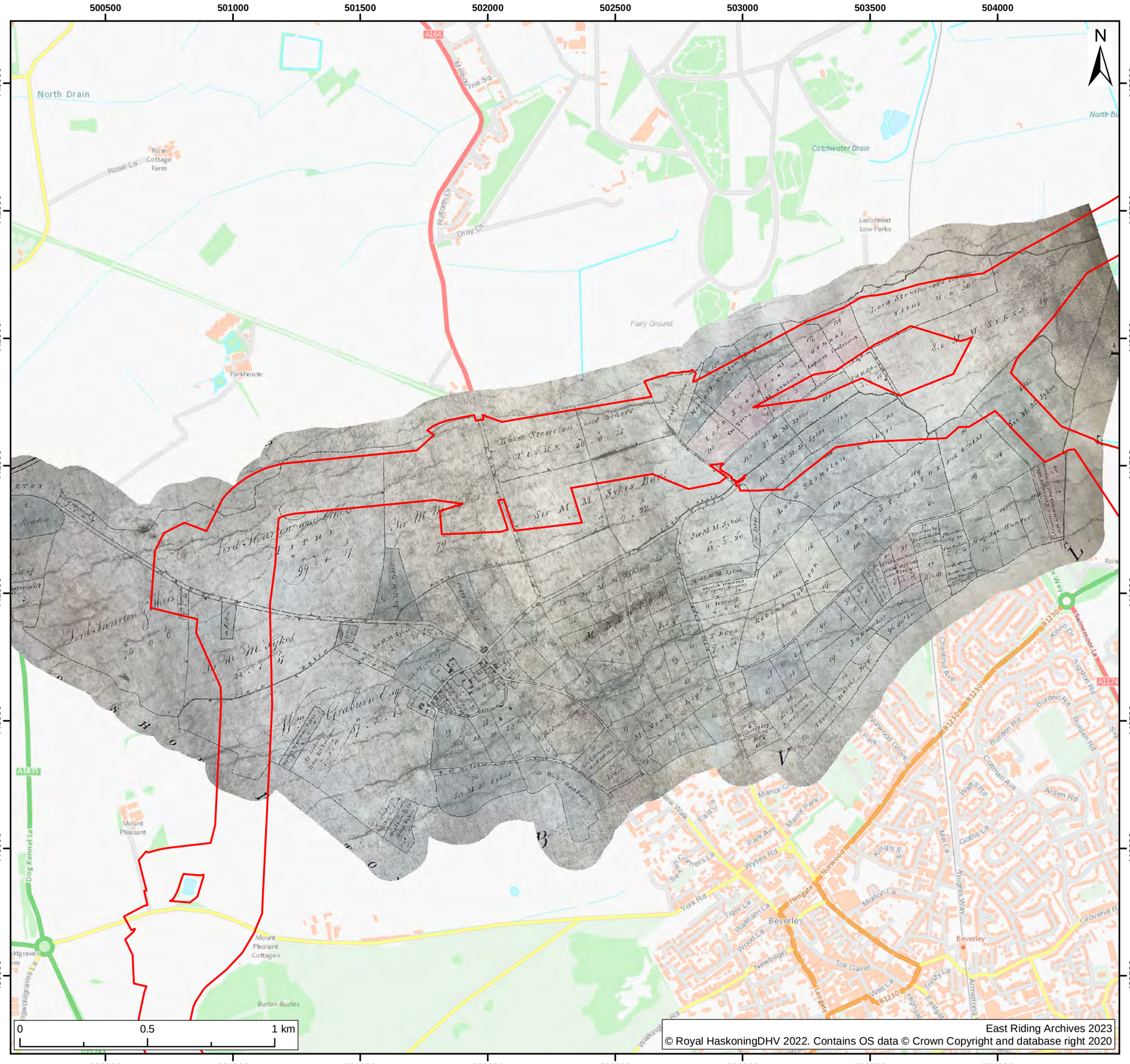
Page Size: A3

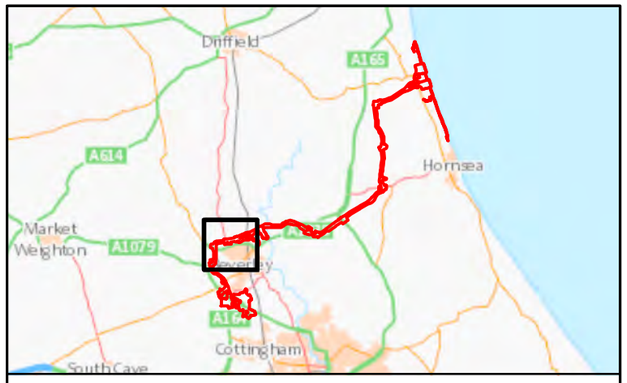
Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Molescroft Enclosure Map 1803

Figure: 22-3-16

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0433

Co-ordinate system: British National Grid

Page Size: A3

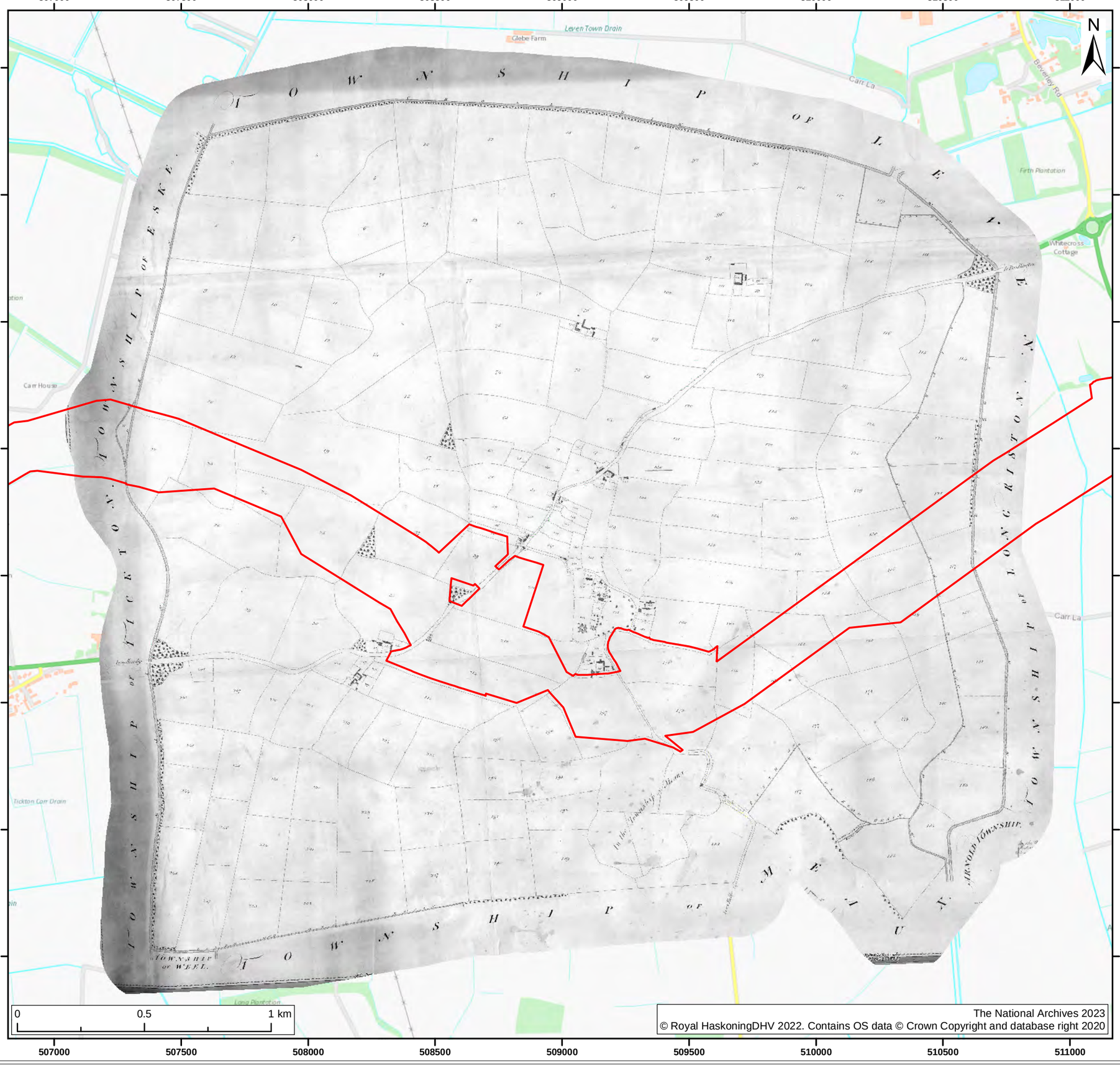
Scale: 1:15,000

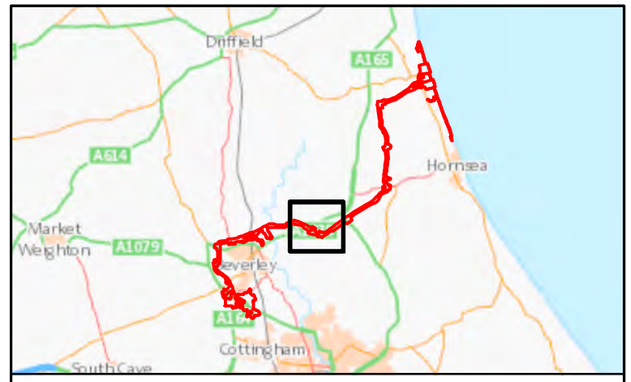
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





Legend:

Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Routh Tithe Map 1845

Figure: 22-3-17

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0434

Co-ordinate system: British National Grid

Page Size: A3

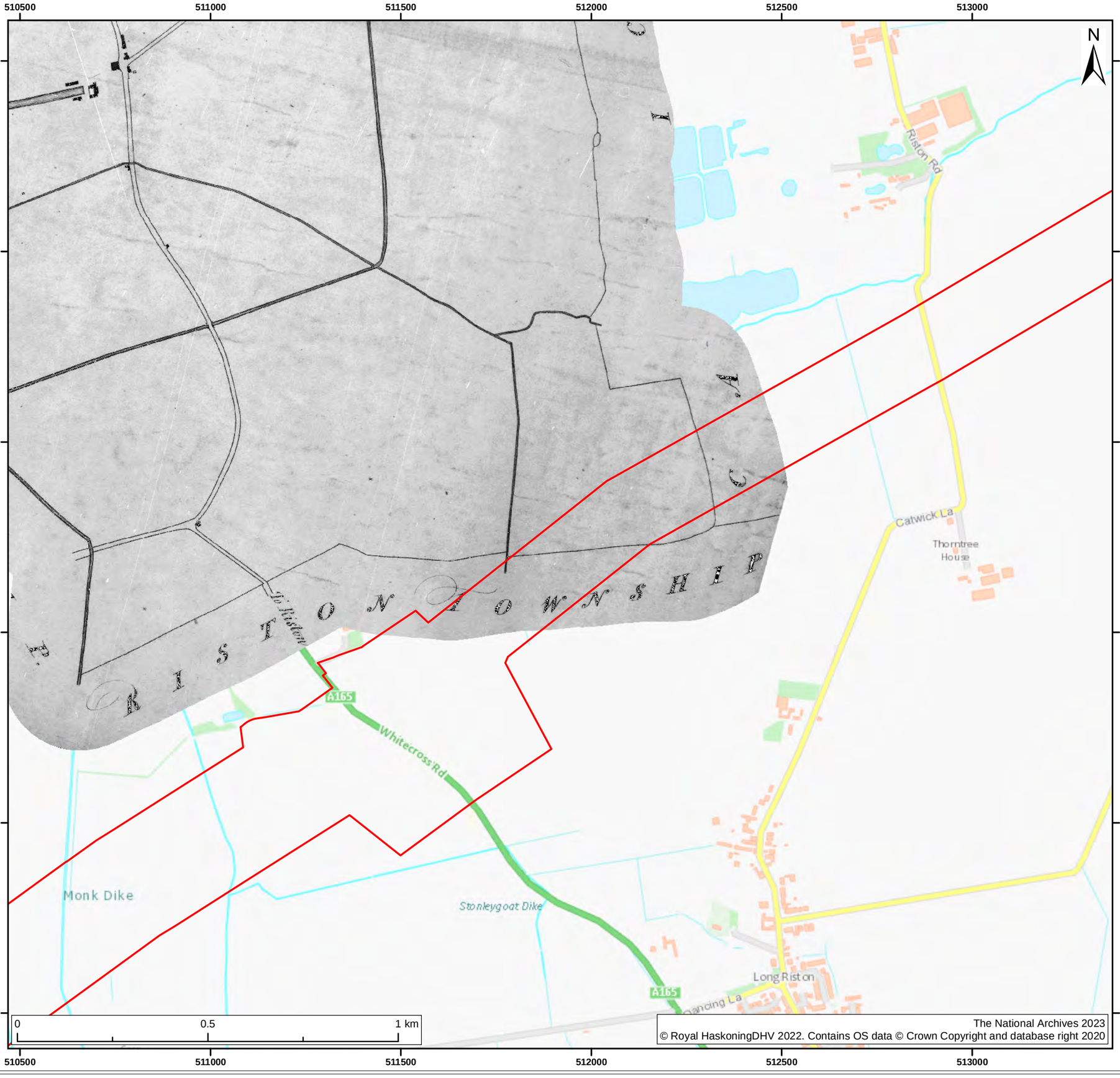
Scale: 1:15,000

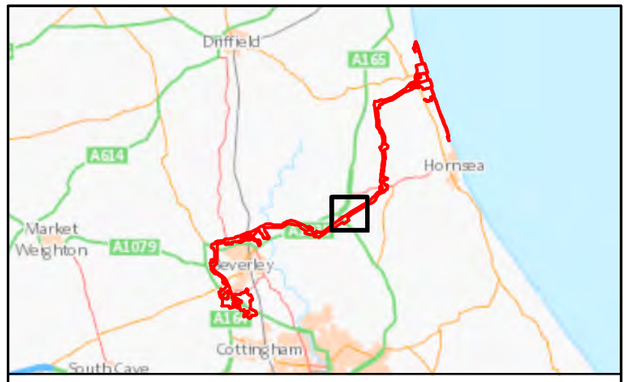
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Leven Tithe Map 1842

Figure: 22-3-18	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0435

Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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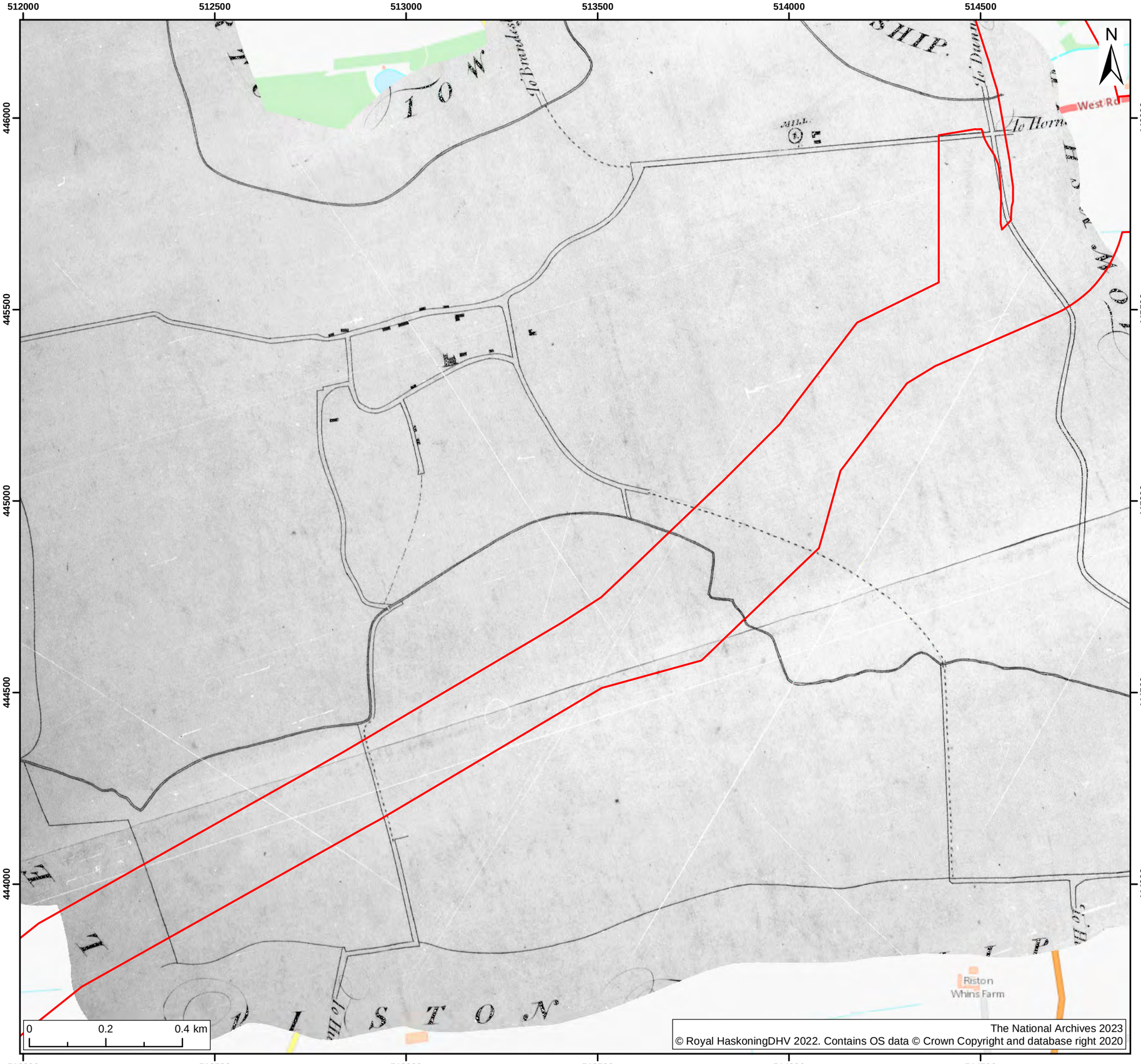

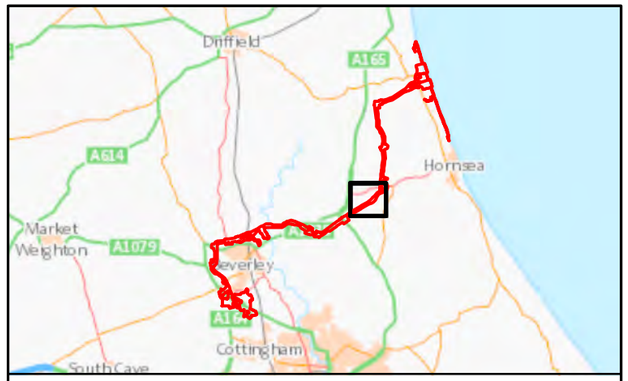

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Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Catwick Tithe Map 1844

Figure: 22-3-19

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0436

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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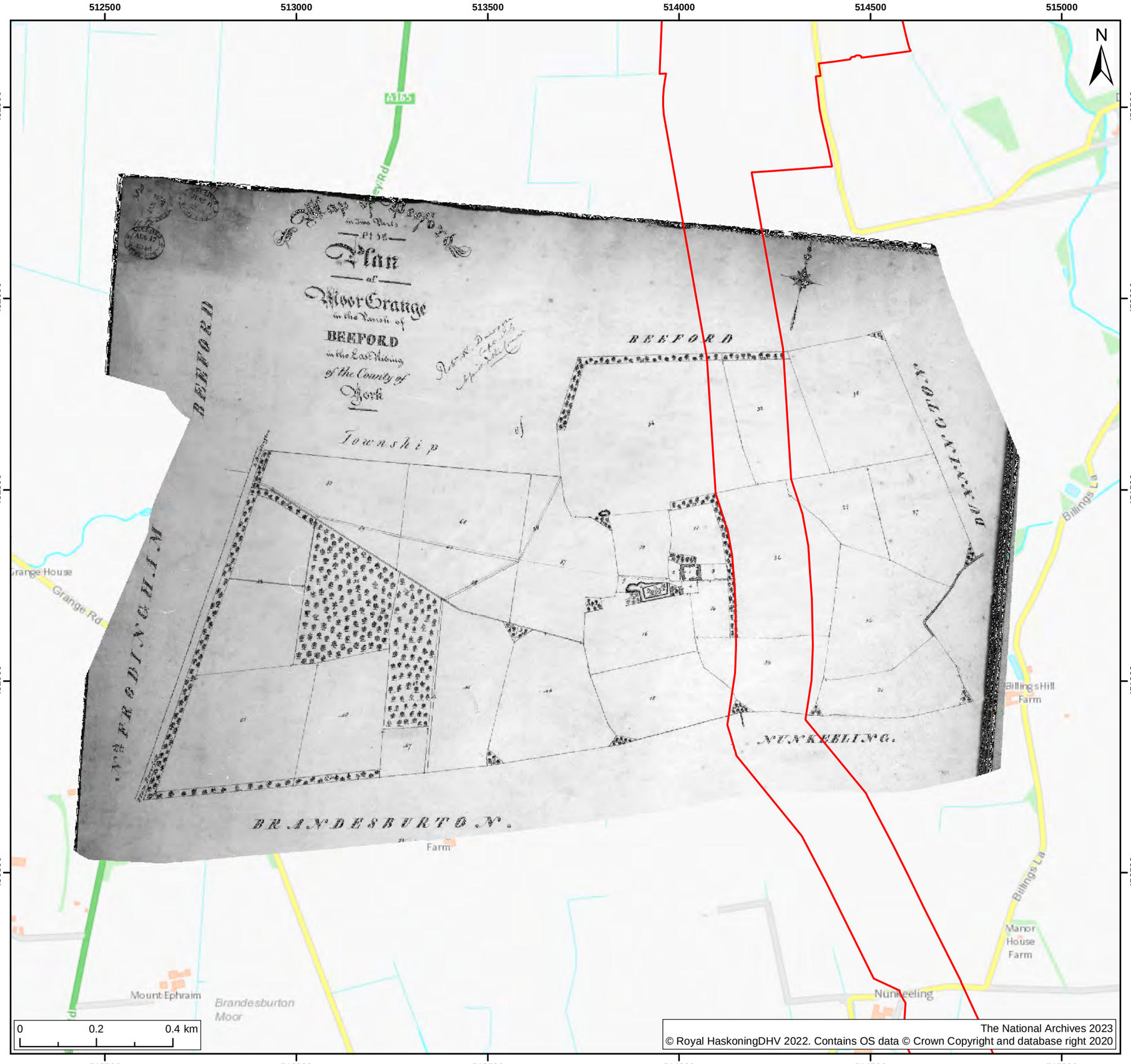

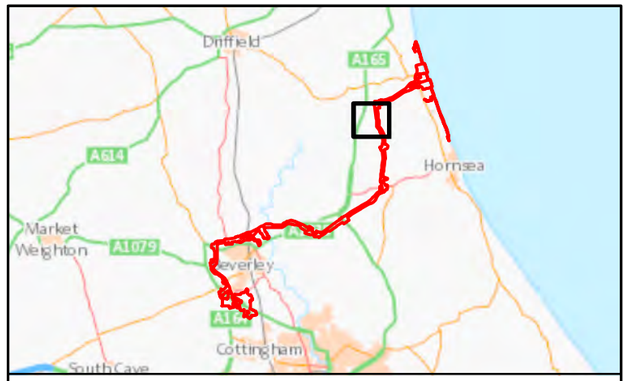

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Beeford Tithe Map 1845

Figure: 22-3-20

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0437

Co-ordinate system: British National Grid

Page Size: A3

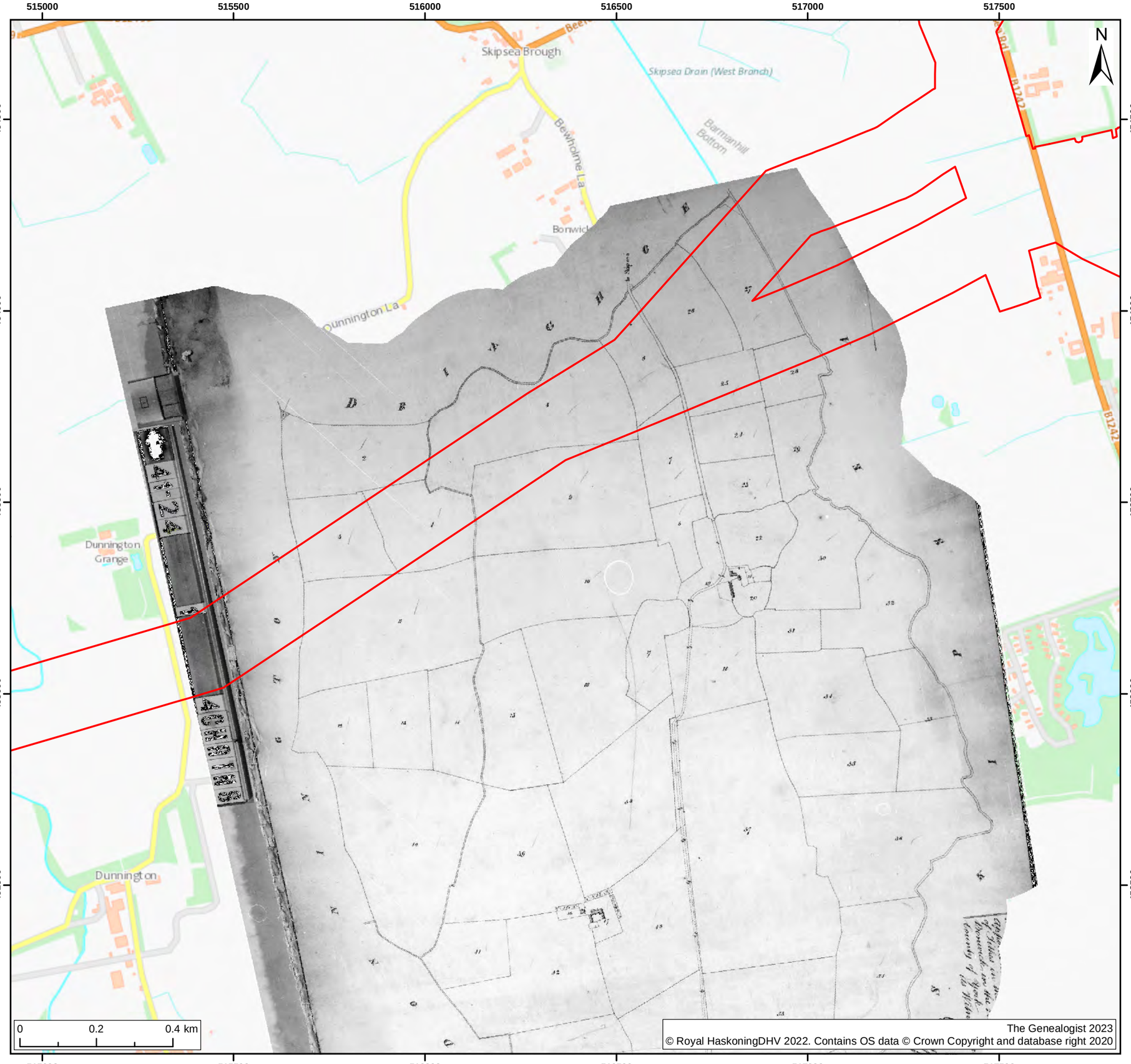
Scale: 1:10,000

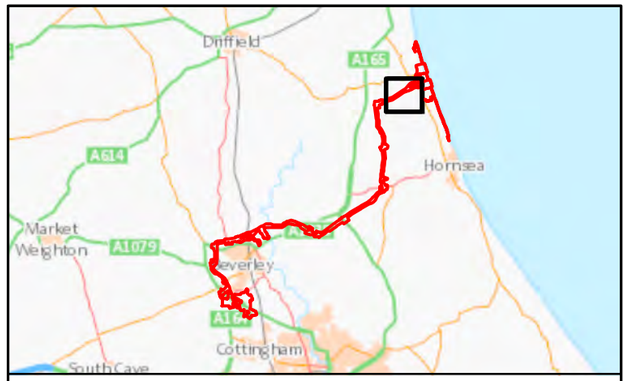
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Bonwick TIthe Map 1841

Figure: 22-3-21

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0438

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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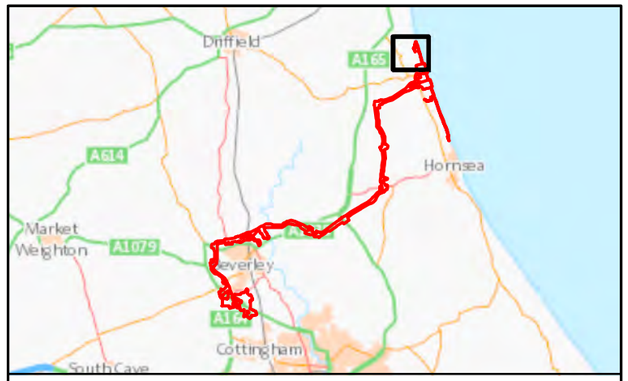

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ulrome Tithe Map 1843

Figure: 22-3-22

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0439

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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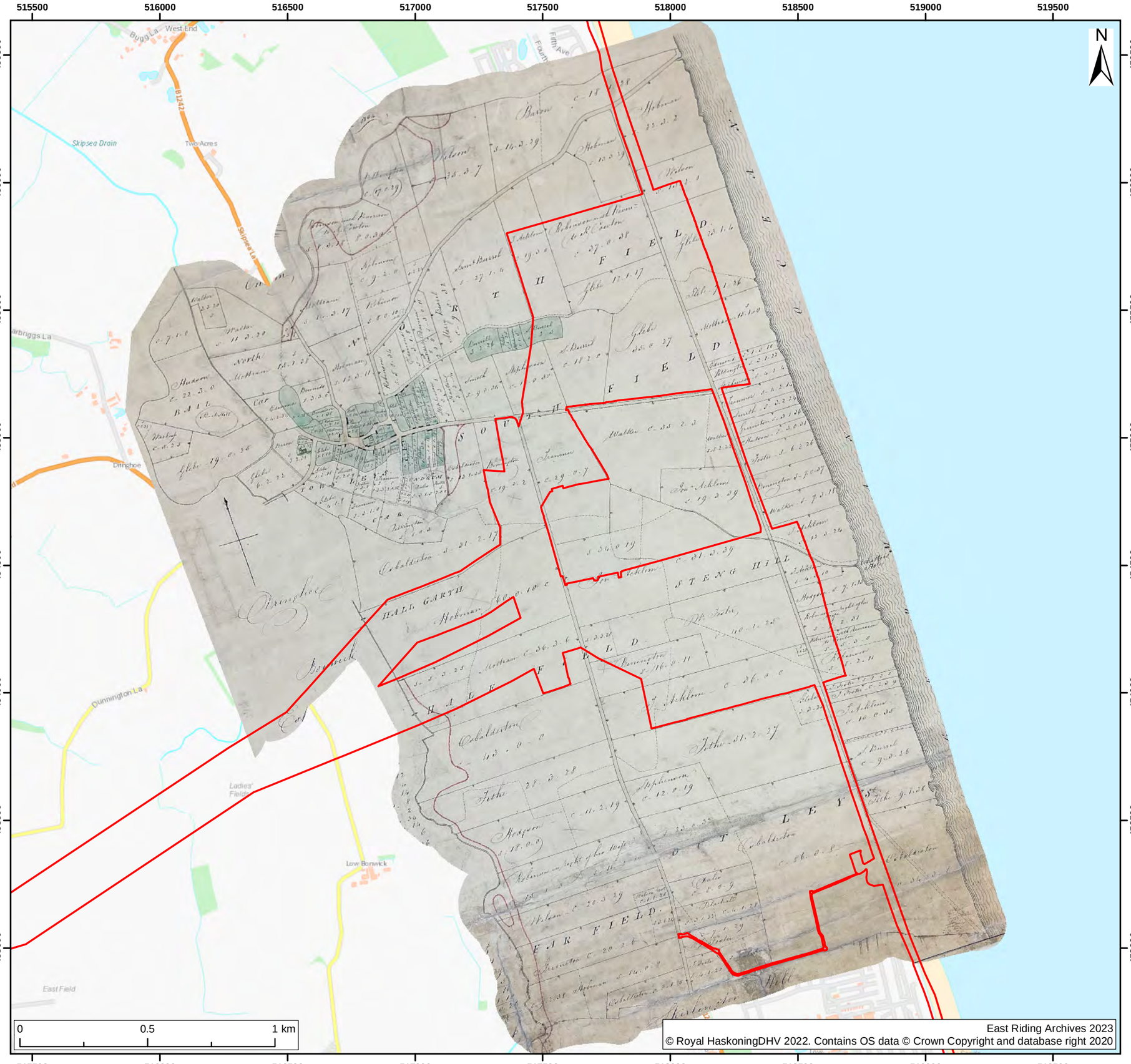

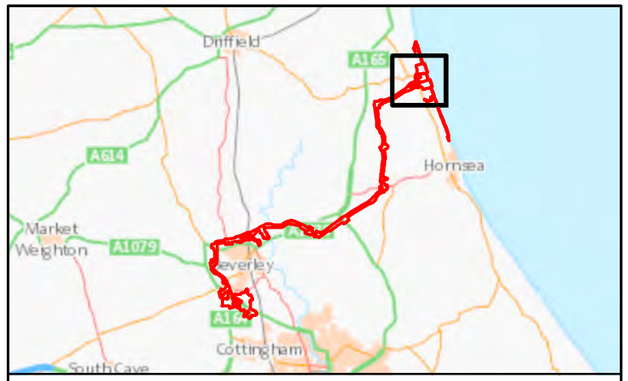

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Title:

Skipsea Enclosure Map 1764

Figure: 22-2-23

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0440

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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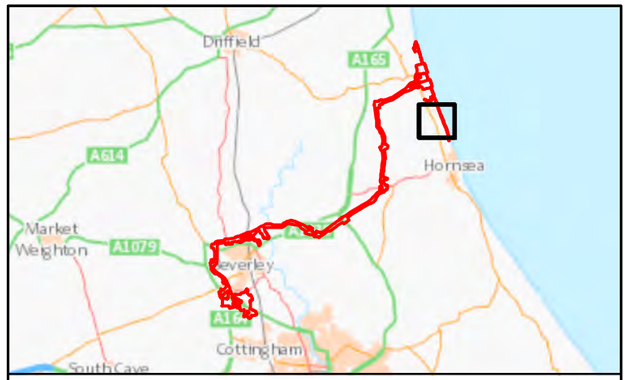

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Atwick as Inclosed 1709

Figure: 22.3-24

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0441

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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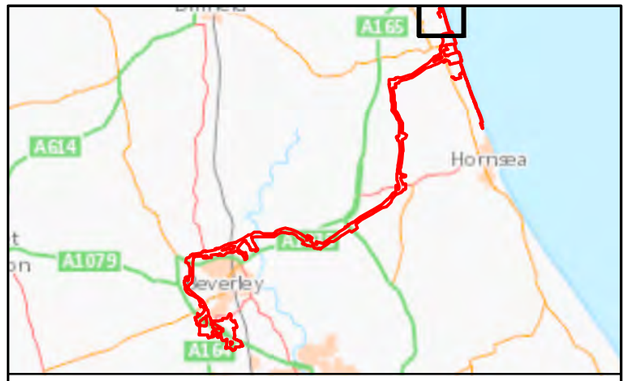

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-3-25a

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

Co-ordinate system: British National Grid

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Scale: 1:10,000

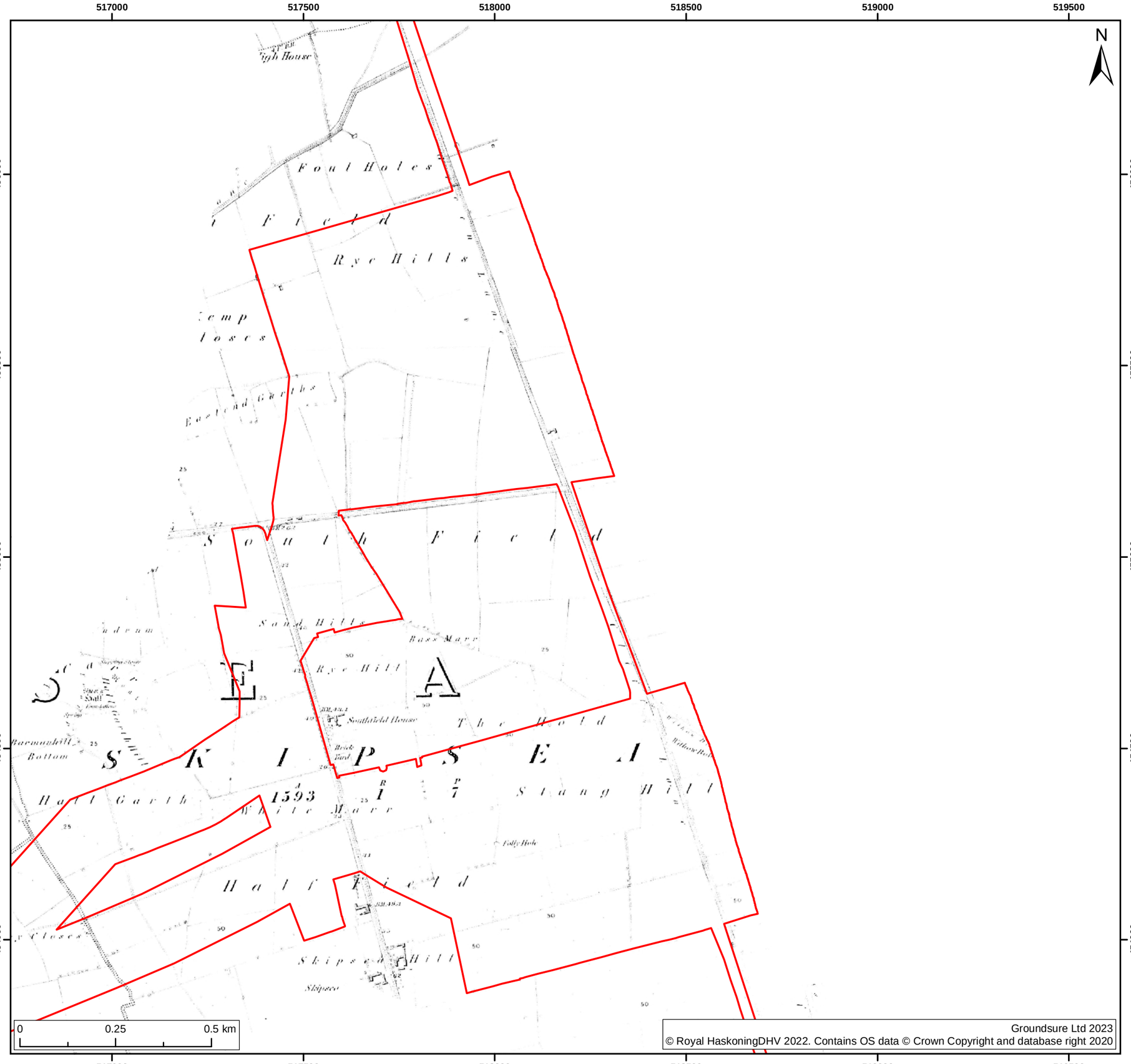
Project:

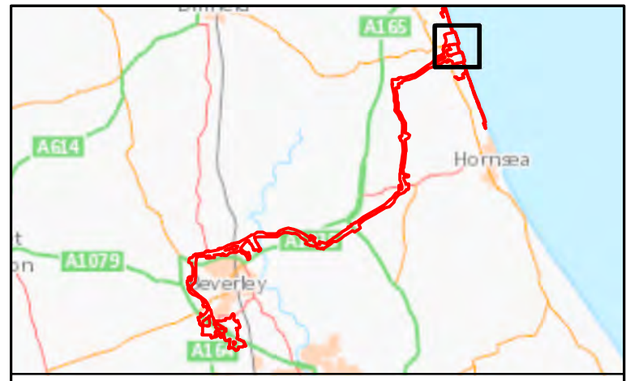
Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

0 0.25 0.5 km





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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25b

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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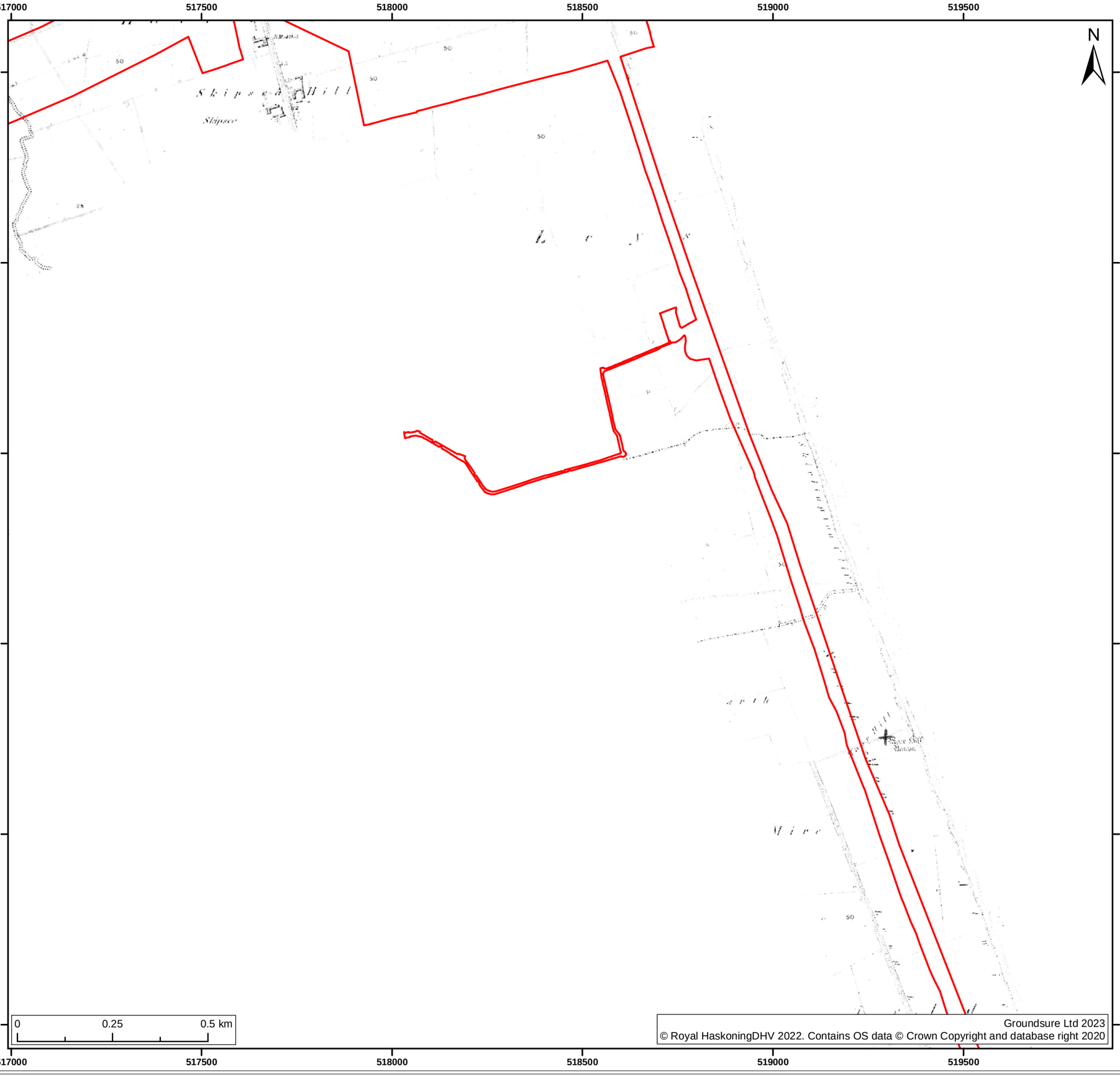

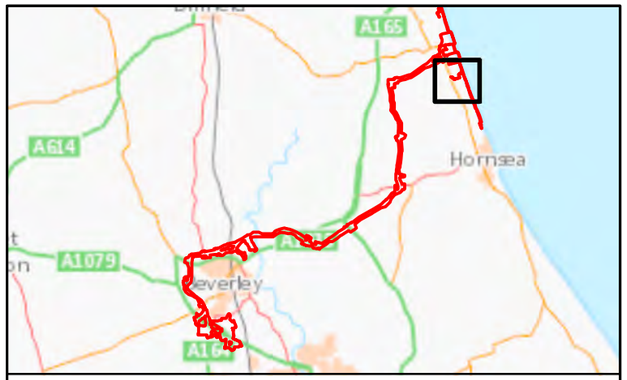

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25c

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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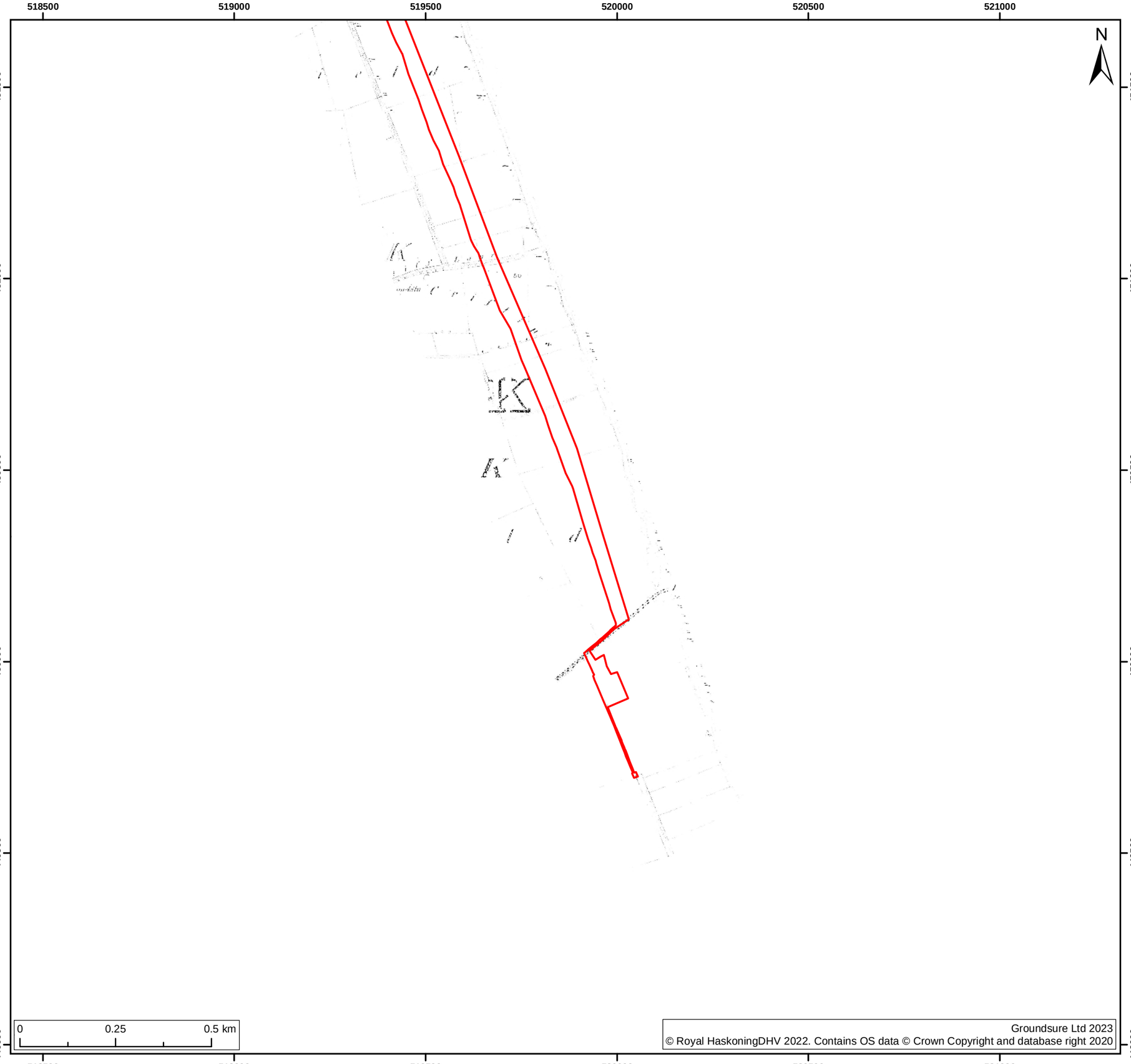

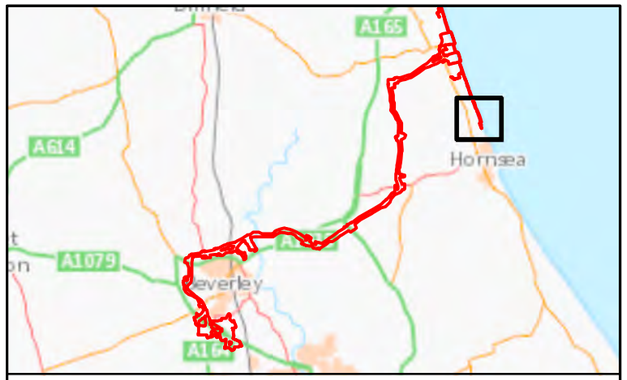

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25d

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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455000 454500 454000 453500 453000 452500

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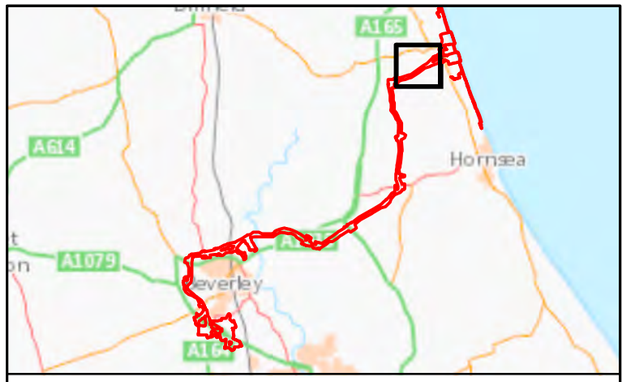

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25e

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

Co-ordinate system: British National Grid

Page Size: A3

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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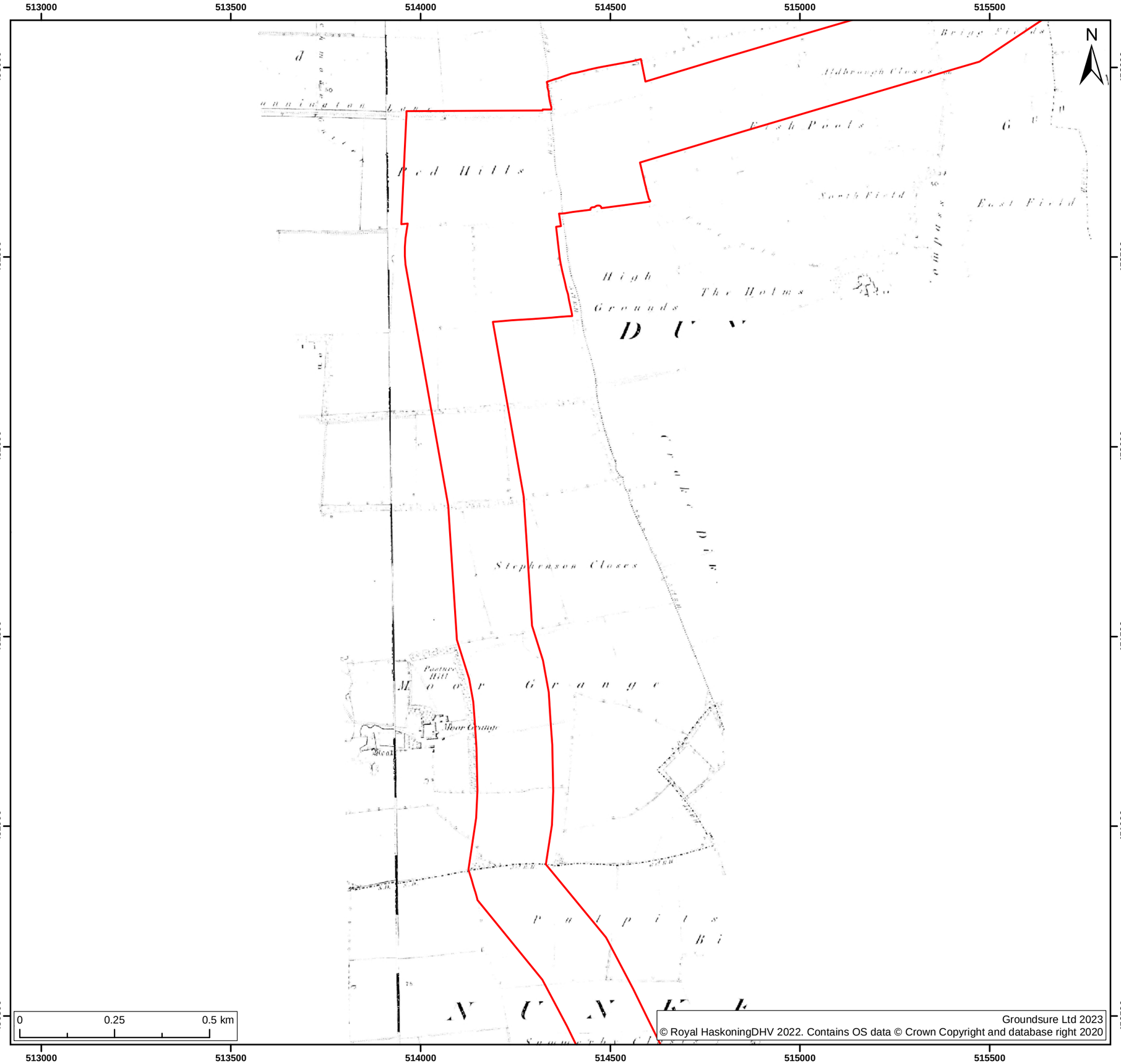

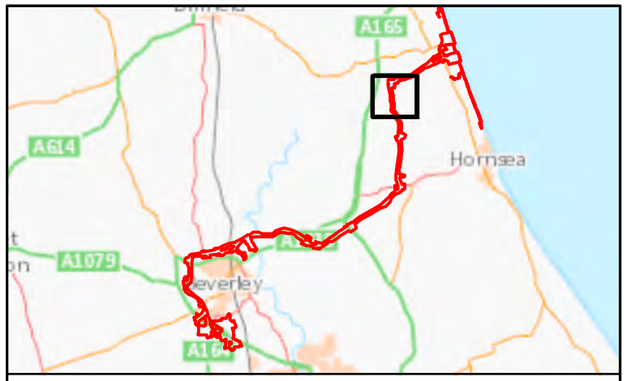

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25f

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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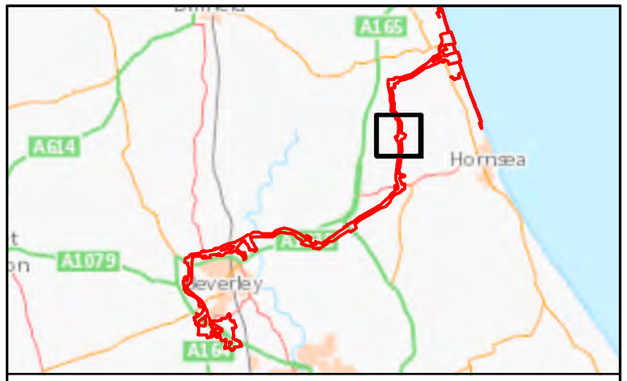

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25g

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project:

Dogger Bank South
Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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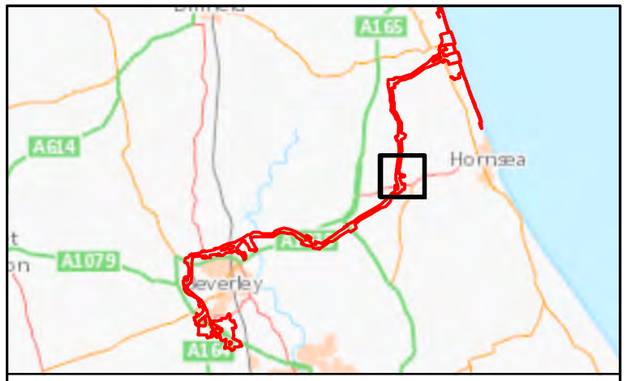

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25h

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

Co-ordinate system: British National Grid

Page Size: A3

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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511500 512000 512500 513000 513500 514000

445500 445000 444500 444000 443500

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Catwick Bridge

Catwick Brick & Tile Yards

Clay Pit

Foot Bridge

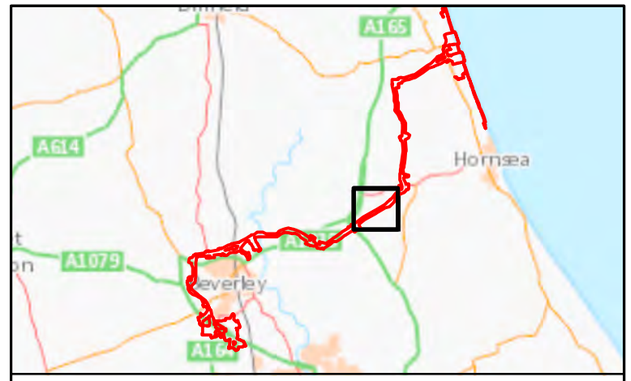
Clayfield Closes

Hold

Rowlams

Grange

0 0.25 0.5 km



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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25i

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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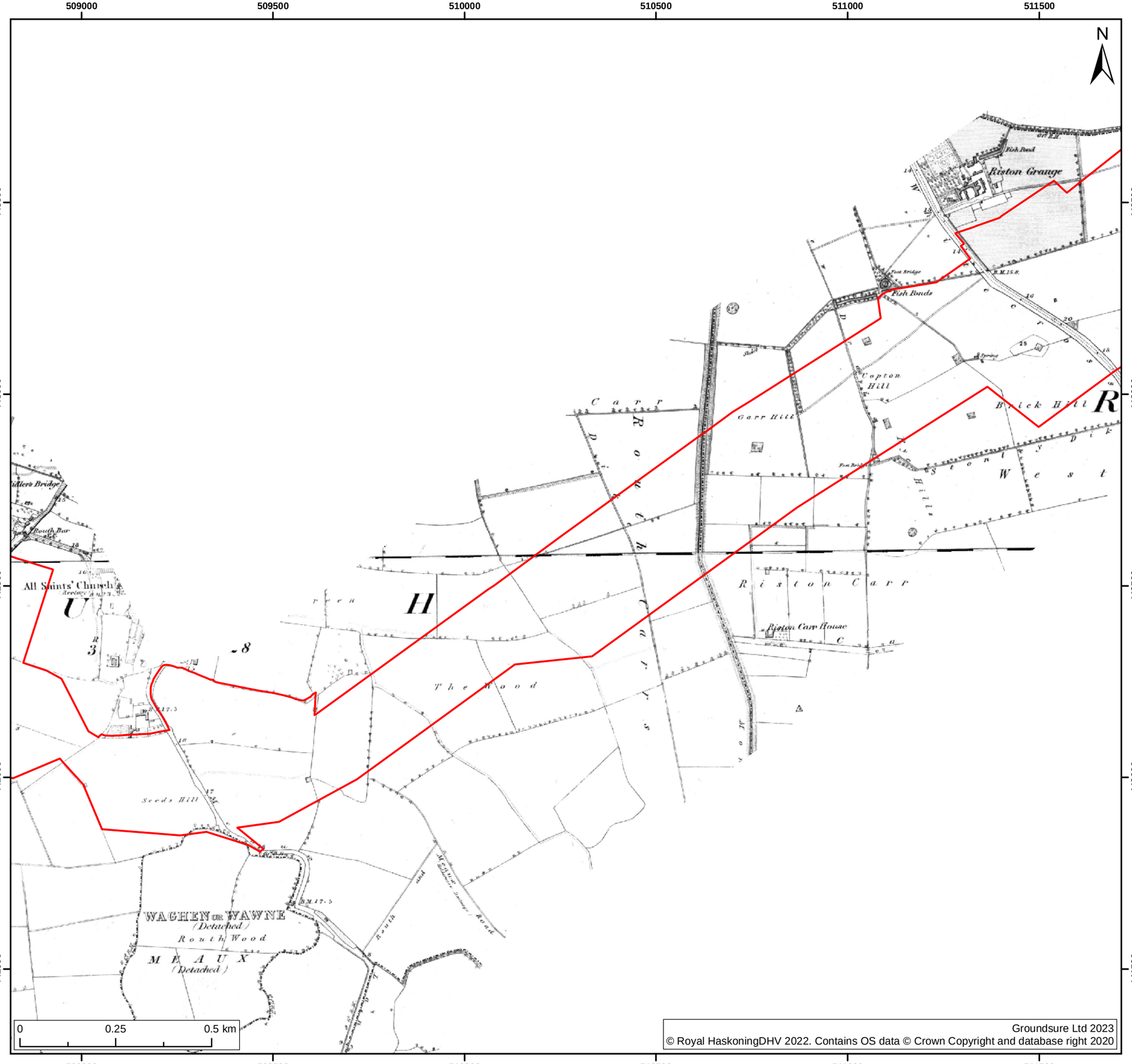

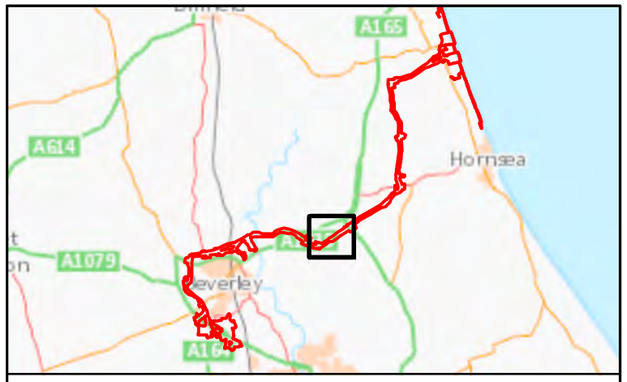

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25j

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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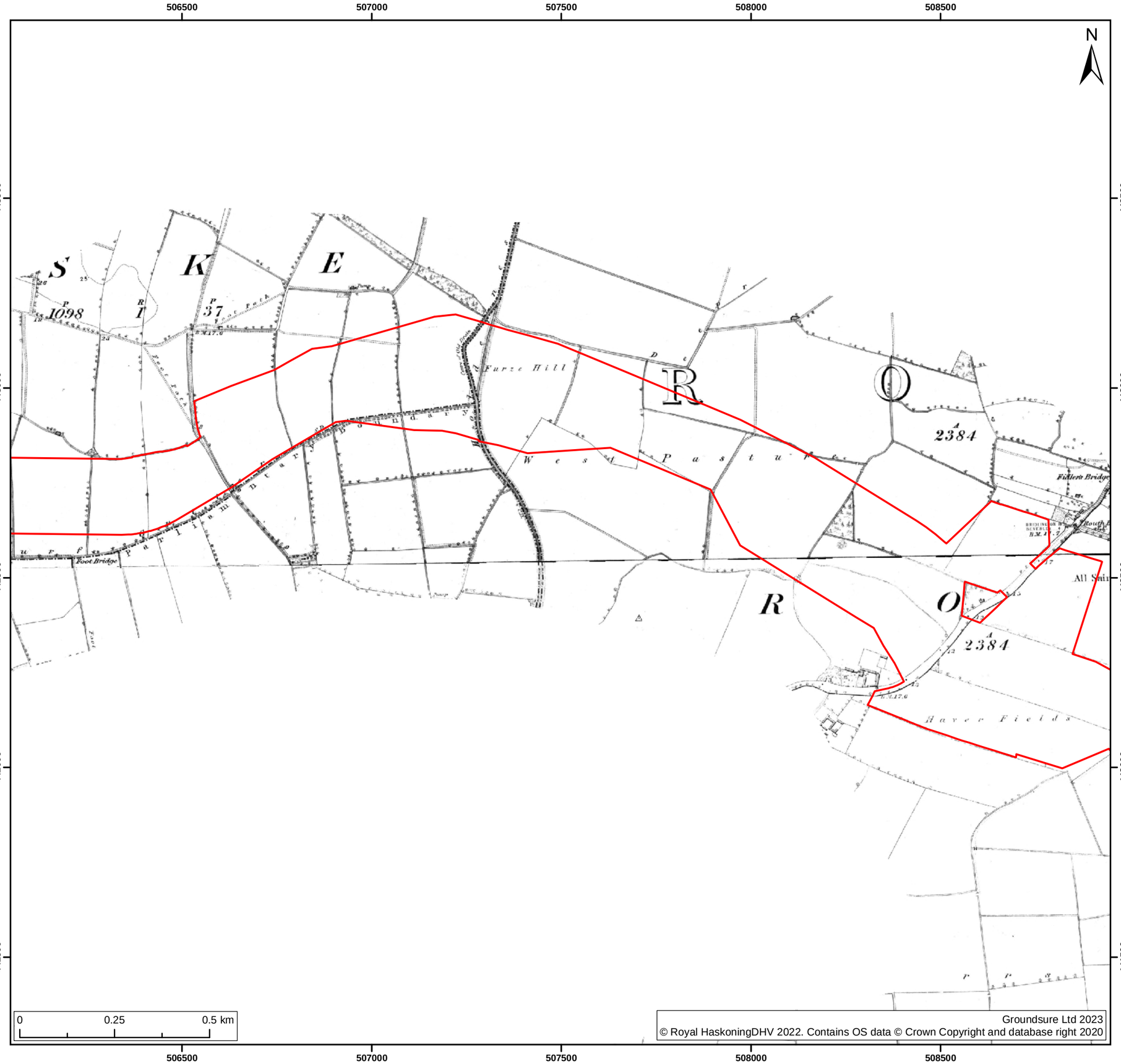

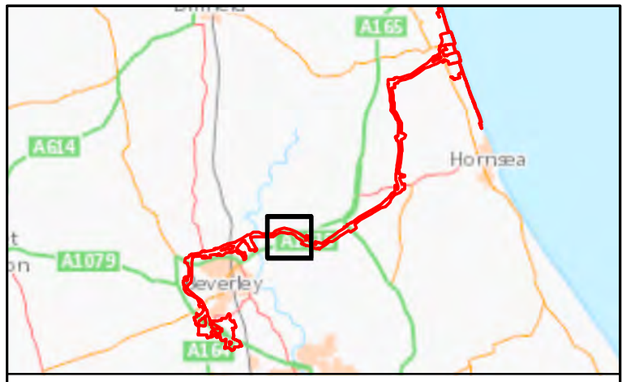

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25k

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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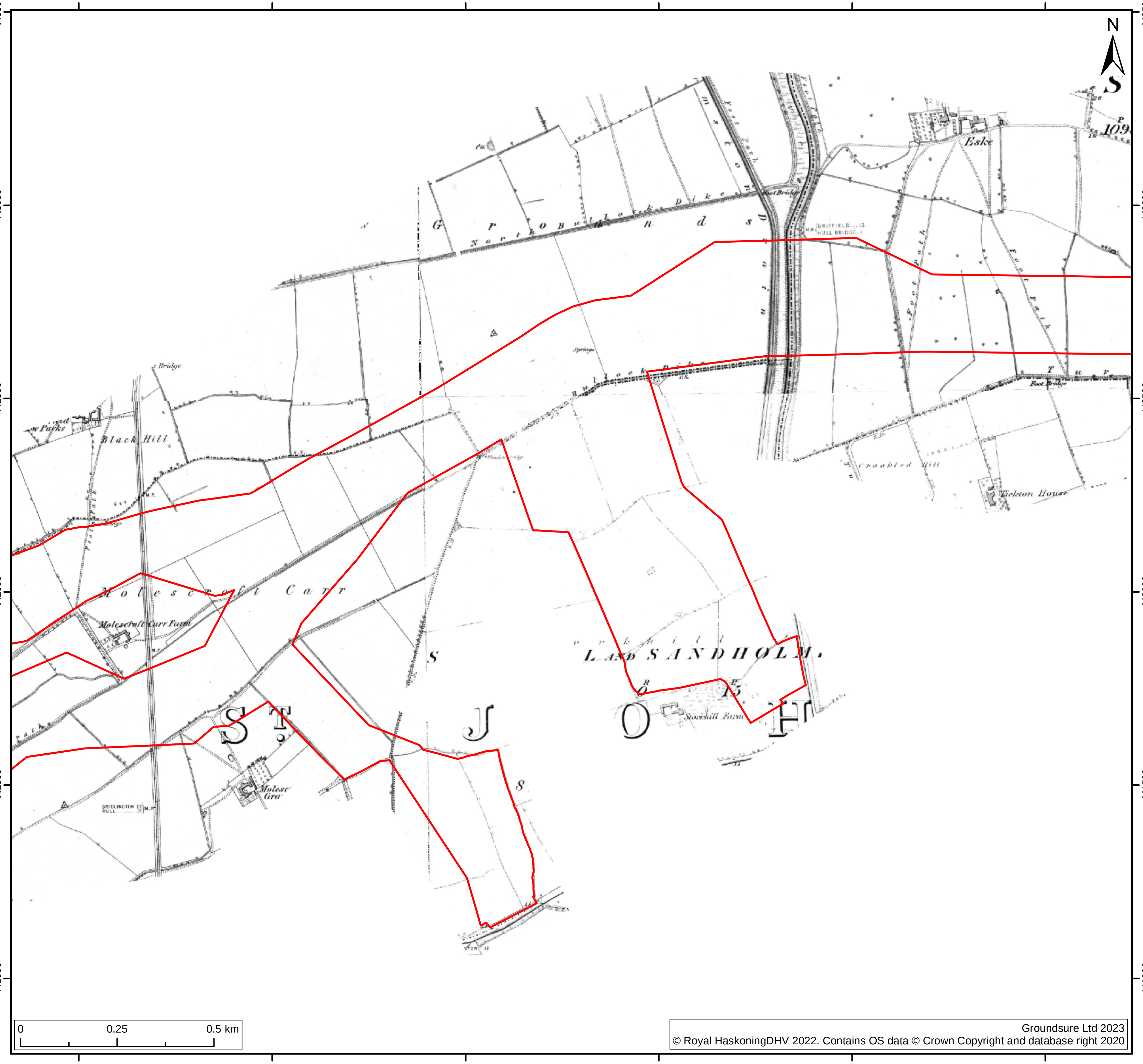

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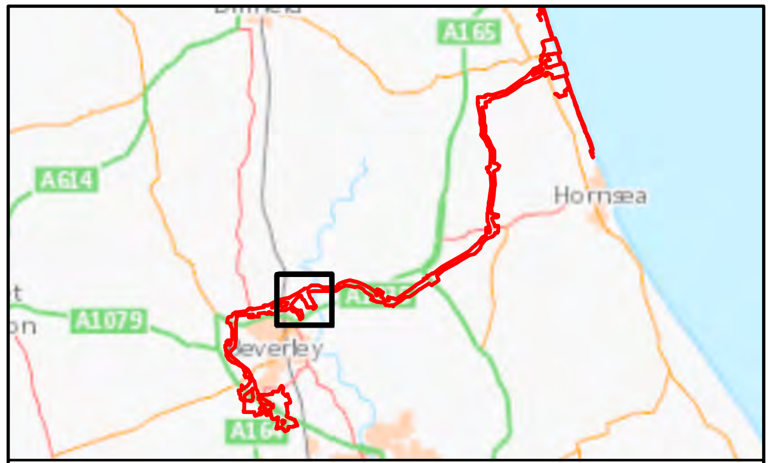

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25l | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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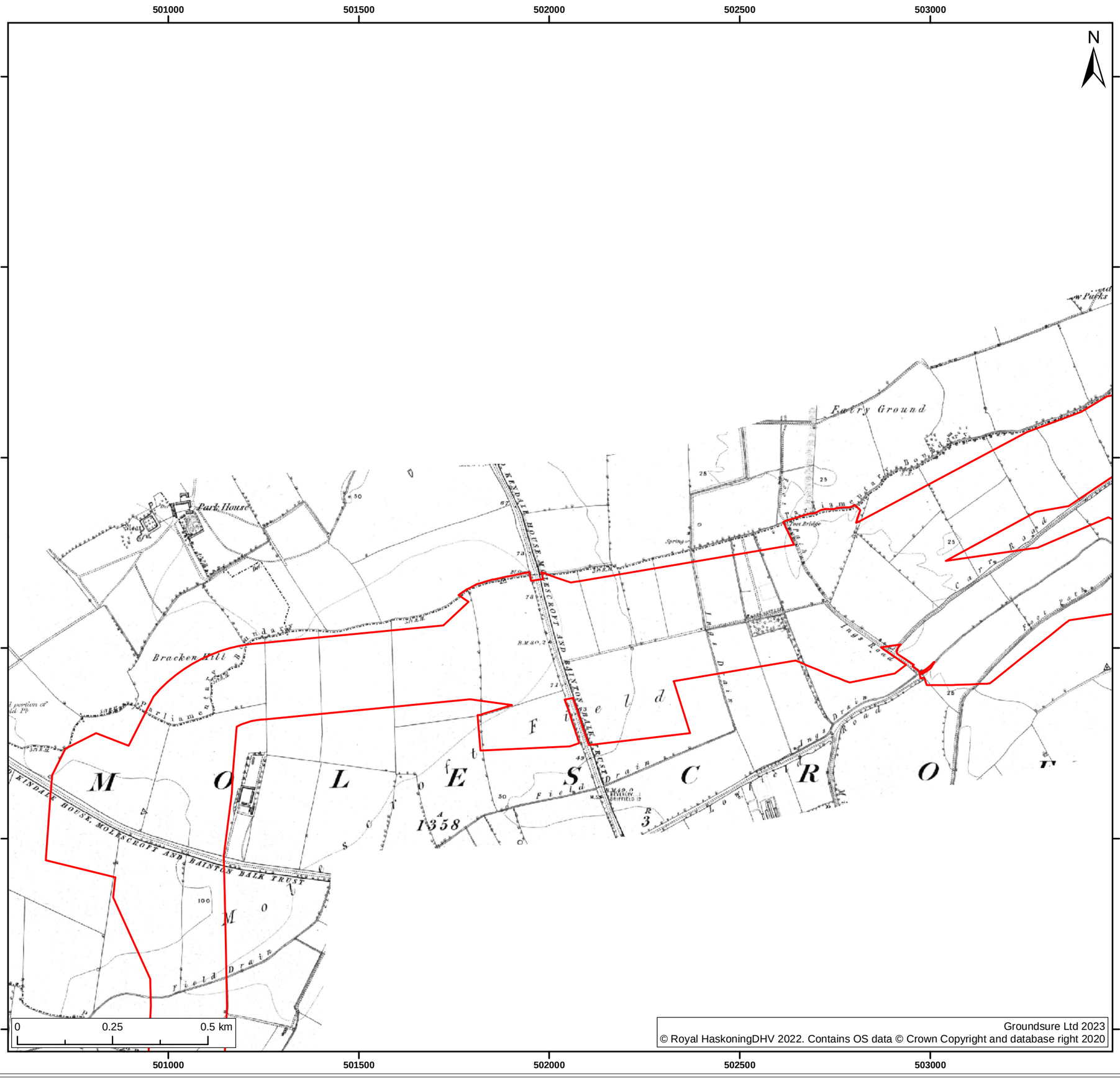

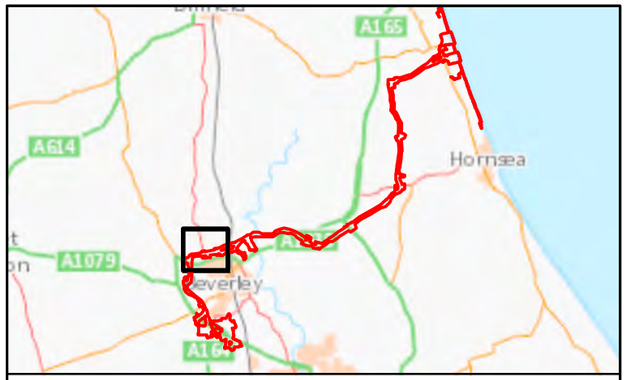

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25m

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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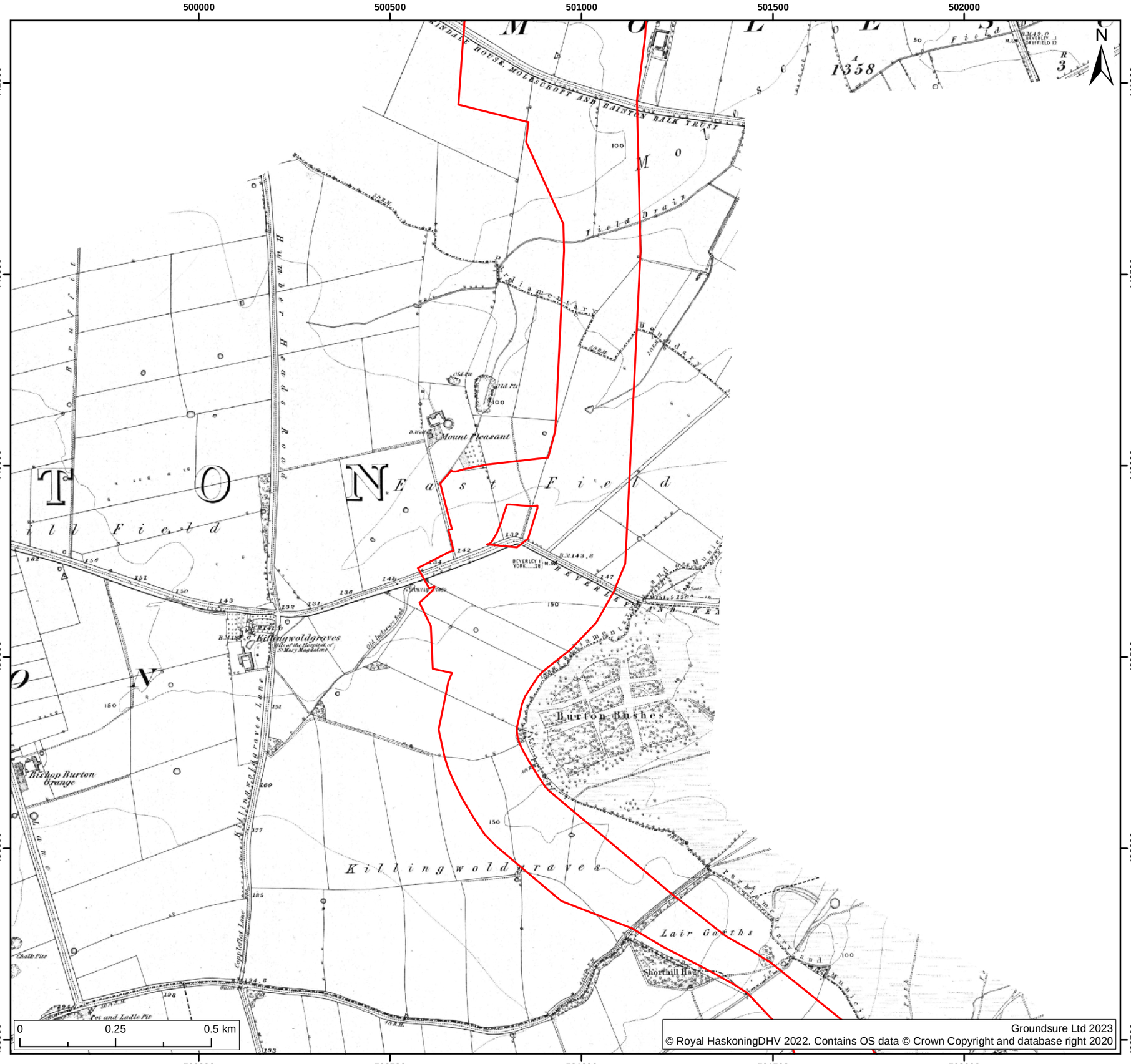

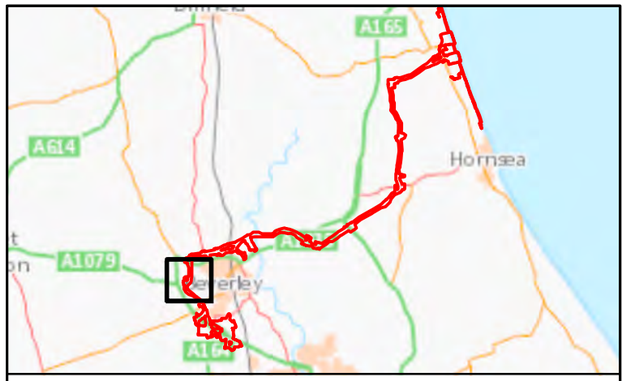

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Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25n	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442	
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Project:

Dogger Bank South
Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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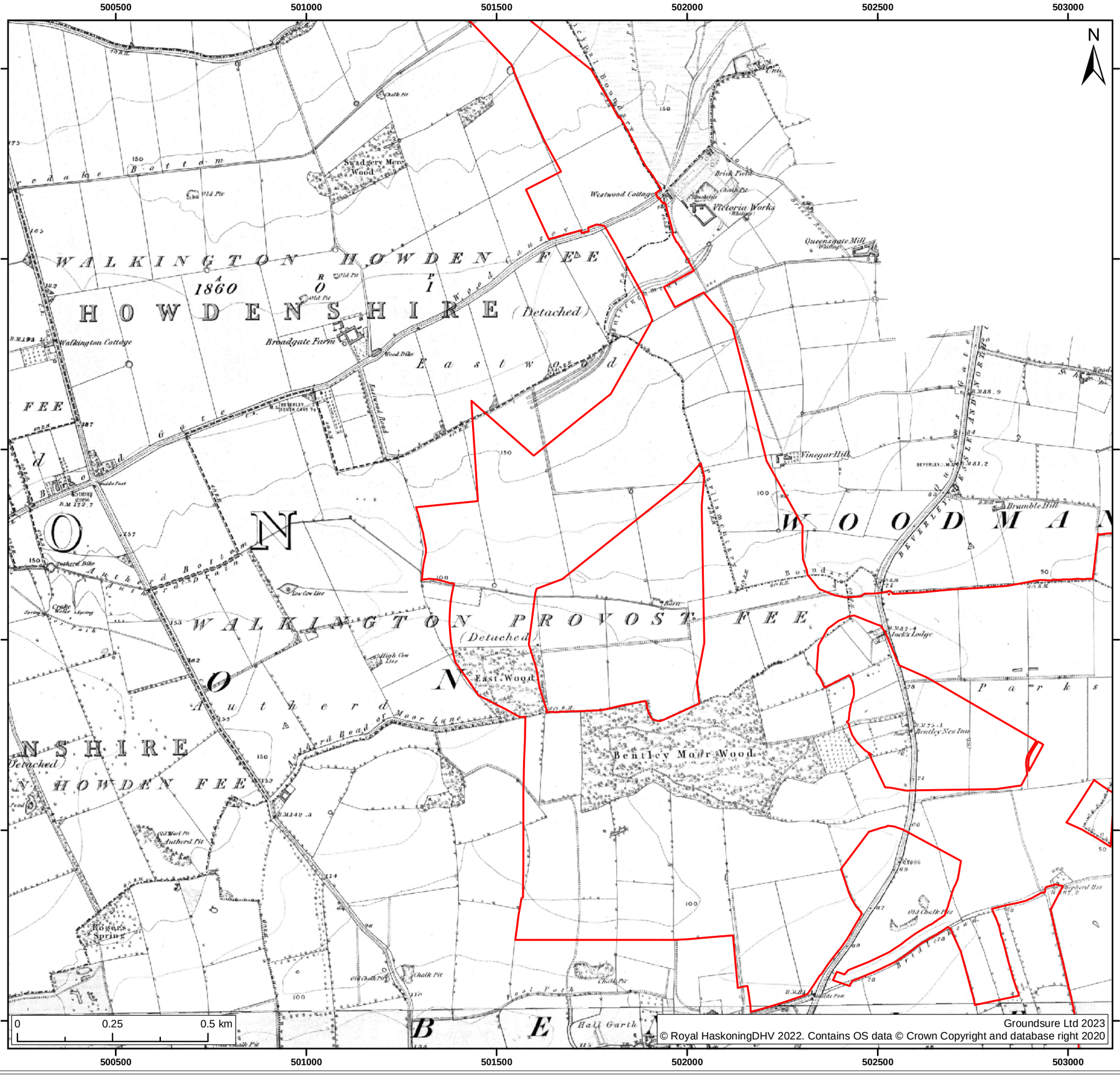

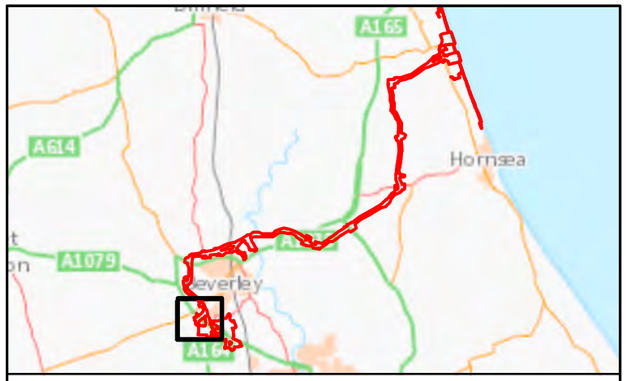

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Title:

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Figure: 22-2-25o	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442	
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Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology	

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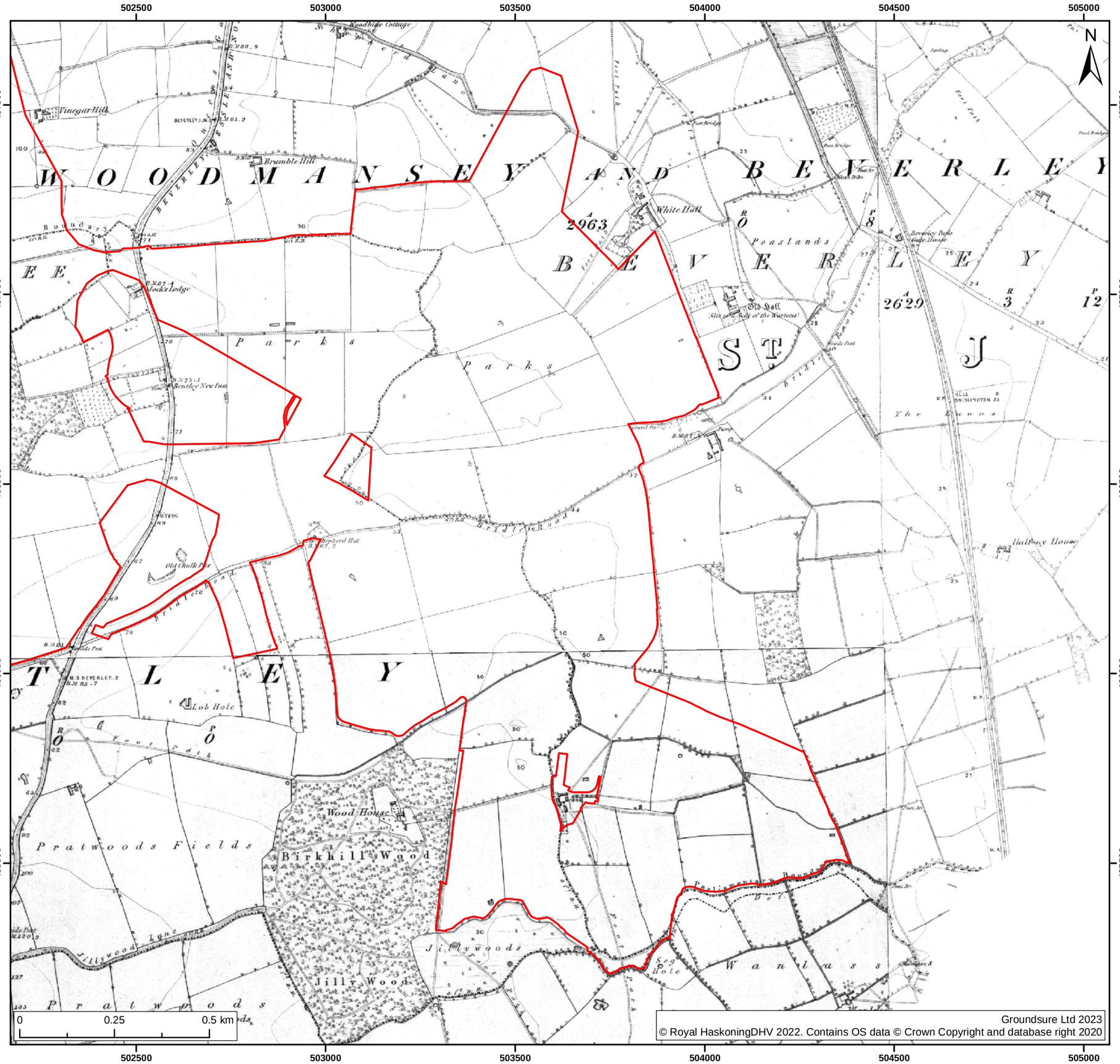

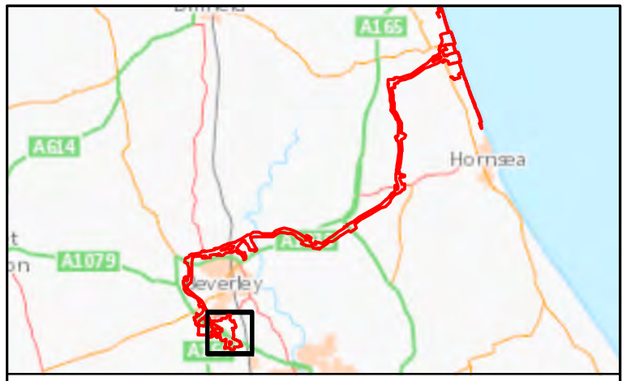

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1850 - 1855
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Figure: 22-2-25p

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0442

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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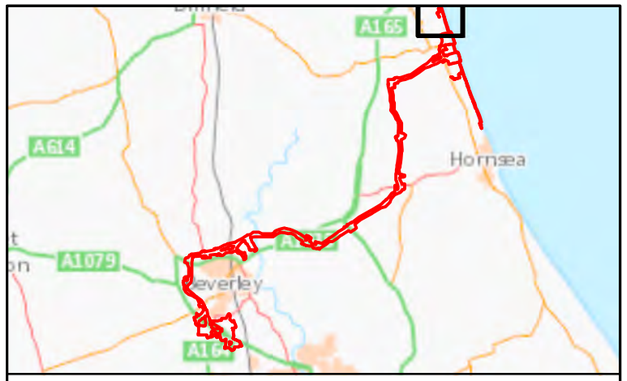

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Title:

Ordnance Survey Mapping 1889 - 1895
Page 1 of 16

Figure: 22-3-26a

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

Co-ordinate system: British National Grid

Page Size: A3

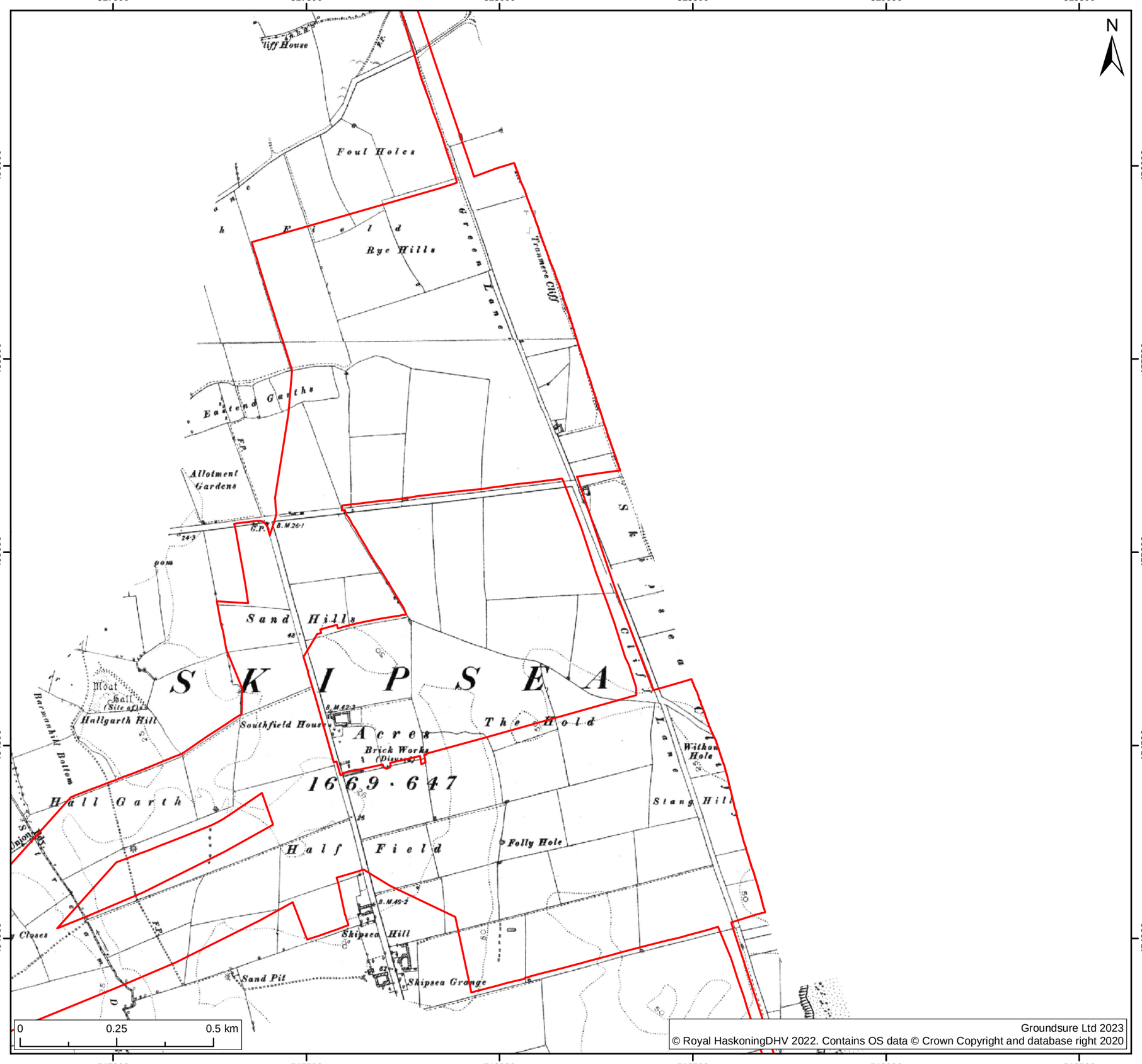
Scale: 1:10,000

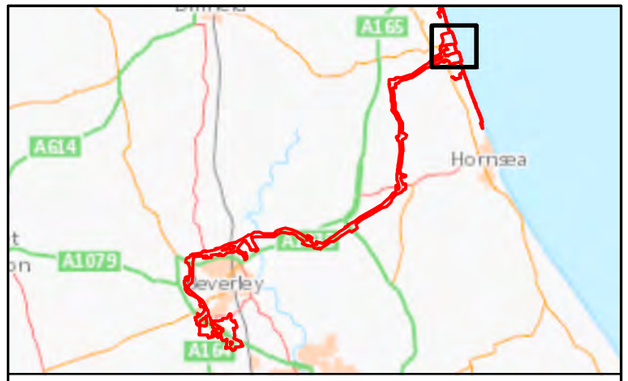
Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

0 0.25 0.5 km





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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26b

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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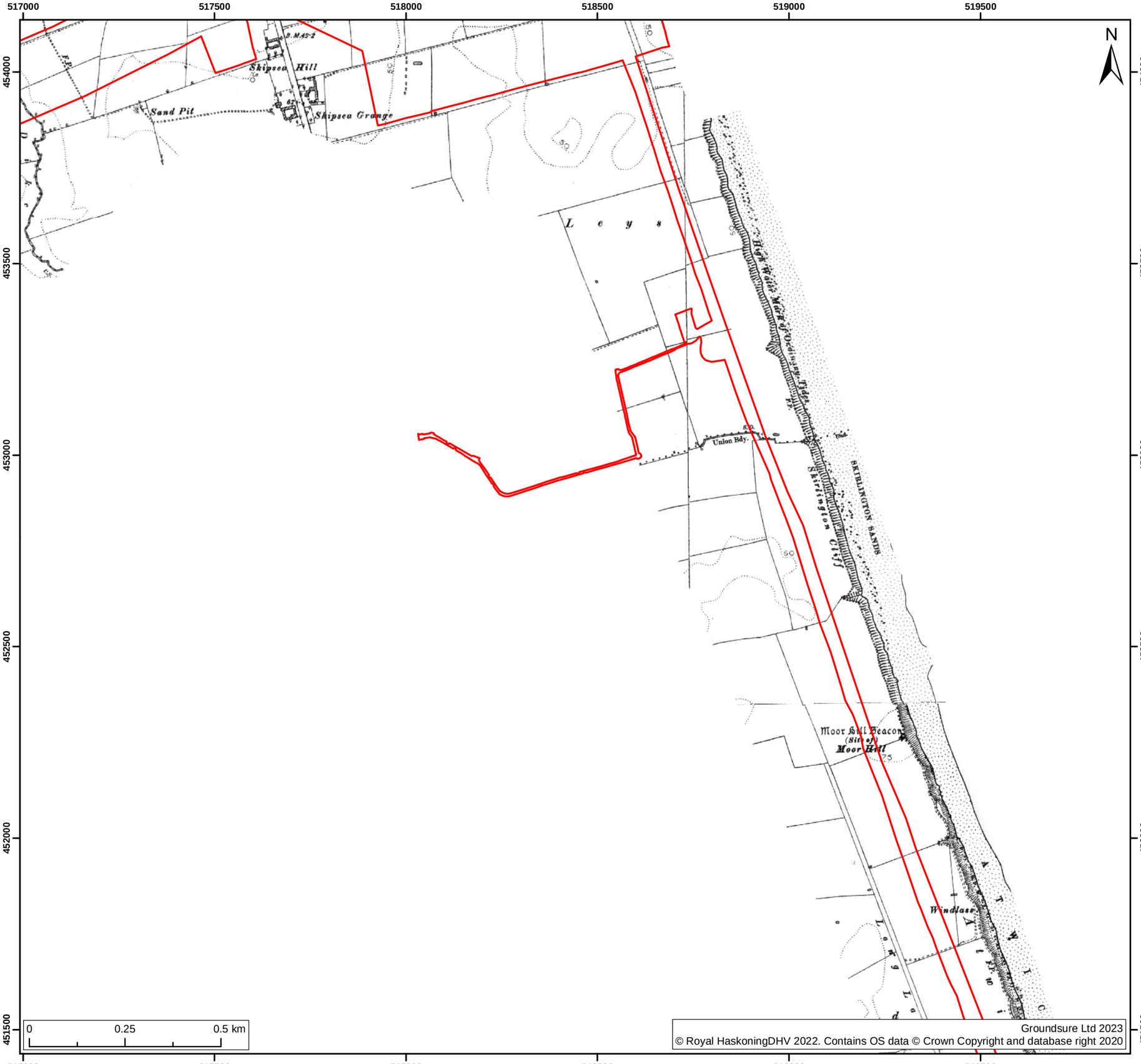

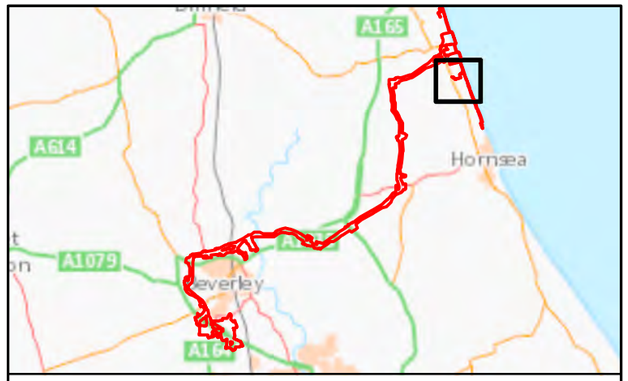

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Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26c	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

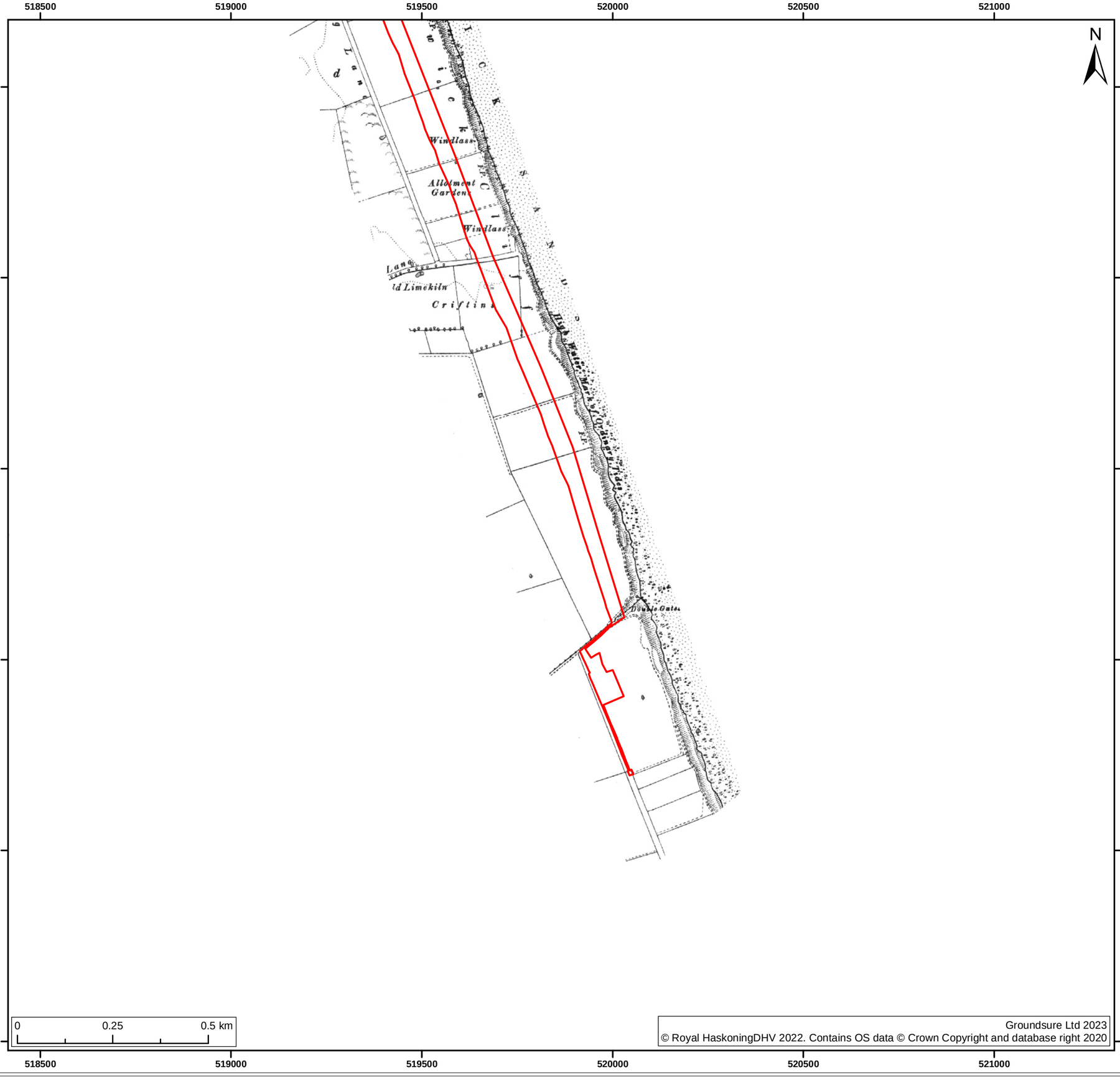
Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

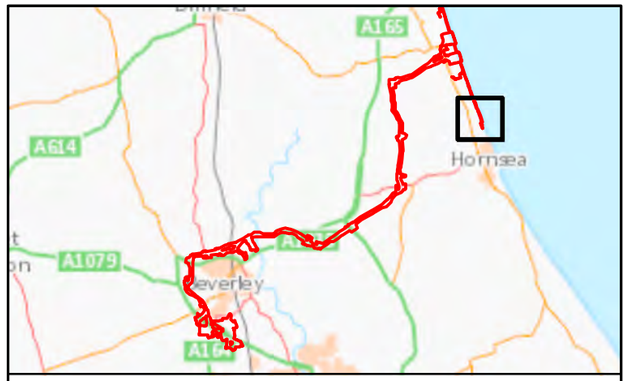
Project:

Dogger Bank South
Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26d

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

Co-ordinate system: British National Grid

Page Size: A3

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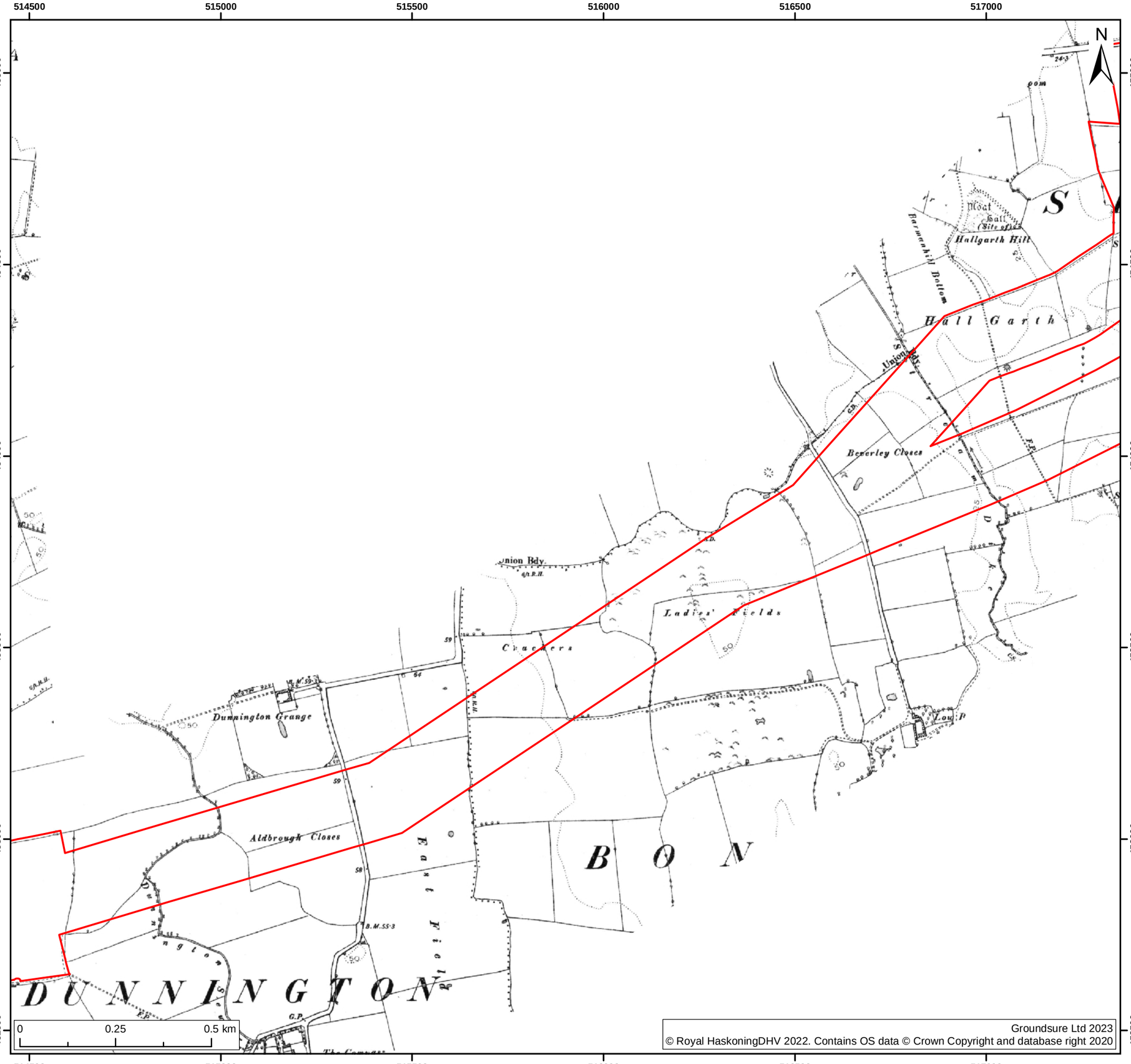
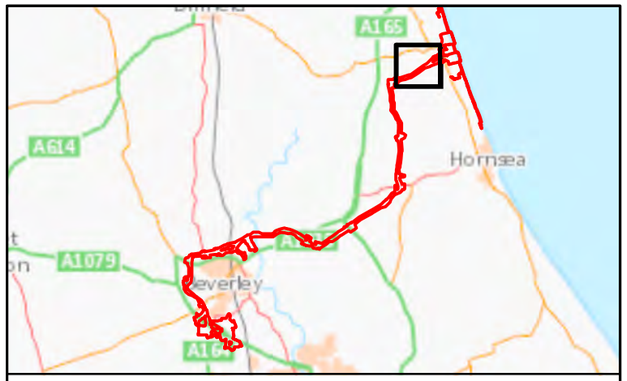
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26e	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443	
Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

513000 513500 514000 514500 515000 515500

453000 452500 452000 451500 451000 450500

N

DUNNINGTON

Aldbrough Closes

Dunnington Lane

Catchmoor Gutter

Stephenson Closes

Moor Grange

Moat

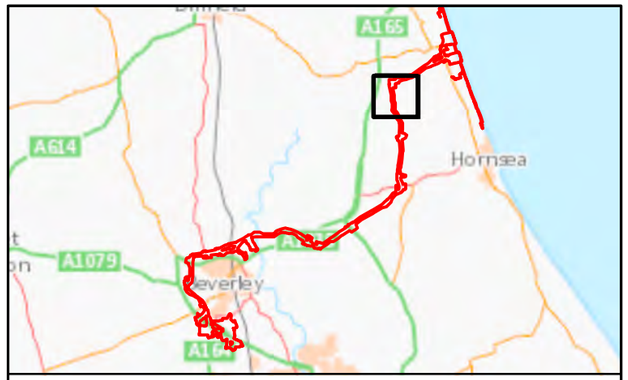
Pulpit

Manor House

The Compass

844·579 Acres

0 0.25 0.5 km



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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26f

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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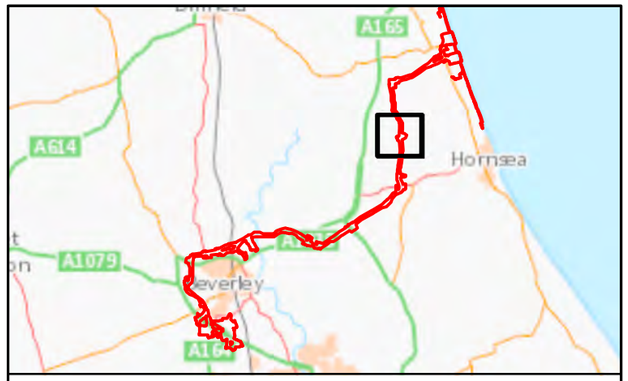
450500 450000 449500 449000 448500 448000

N

B E W H O L M

Mary Magdalene & St. Helen's Church (Vicarage)
Manor House
Nunkeeling
Mill Hill
Nunkeeling Cross
B.M.62·7
Hall Garth
Nunkeeling Drain
Nunkeeling Wood
Nunkeeling Whins (Fox Covert)
B.M.52·7
Acron Hill
B.M.54·3
Nunkeeling
B.M.60·3
B.M.53·1
Catfoss Grange
Catfoss Covert

0 0.25 0.5 km



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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26g	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443	
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Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology	

AIRPHOTO SERVICES RWE

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447500 447000 446500 446000 445500

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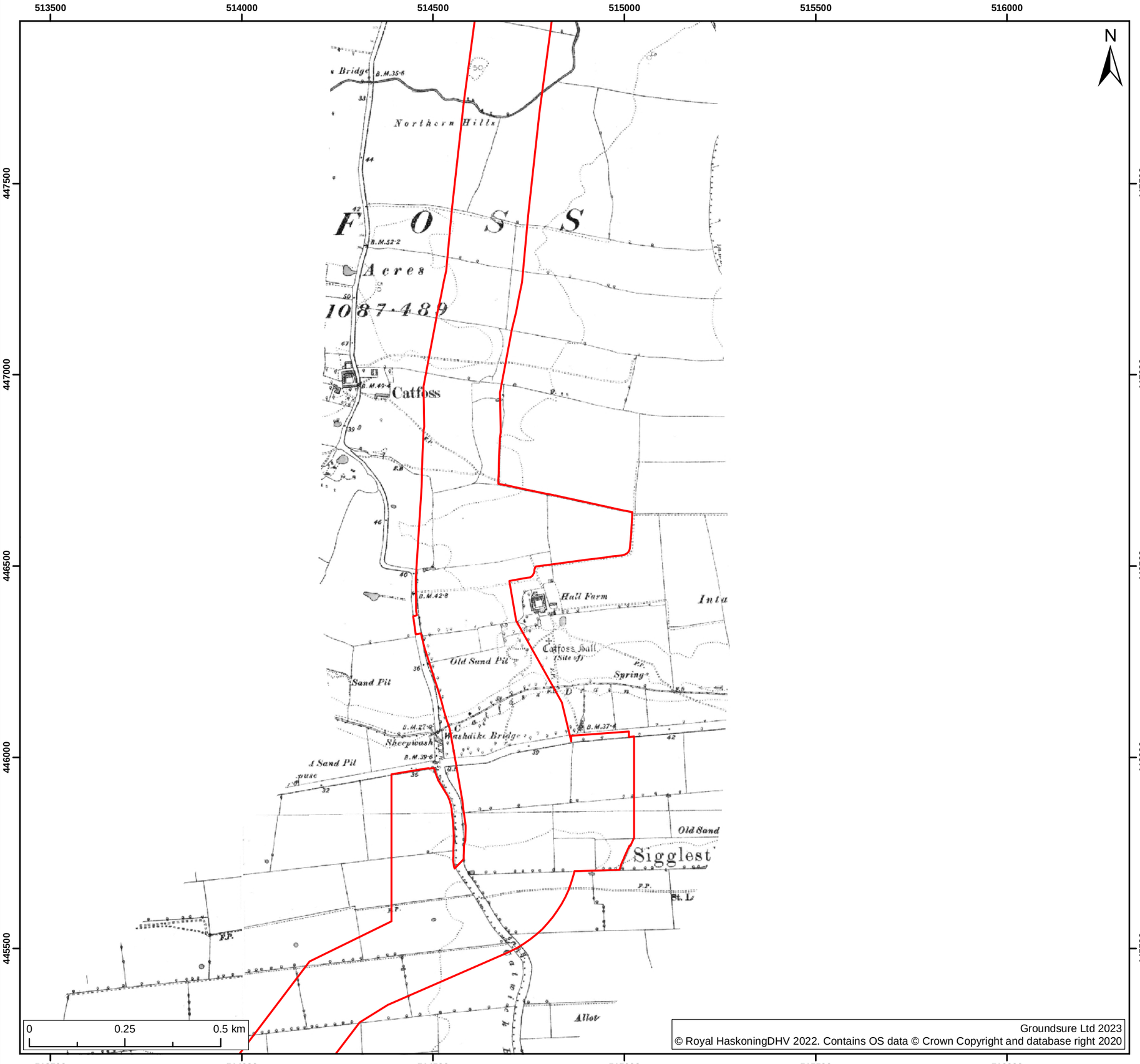

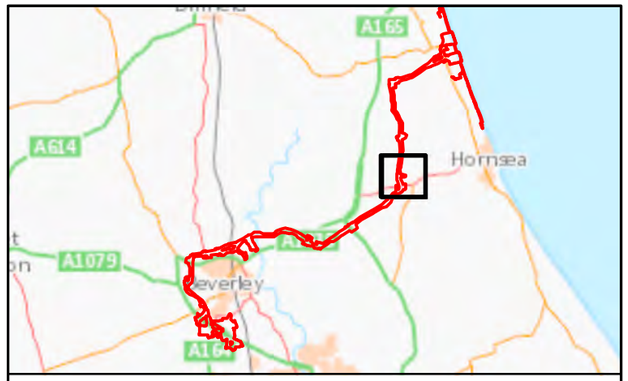

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APP

Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26h

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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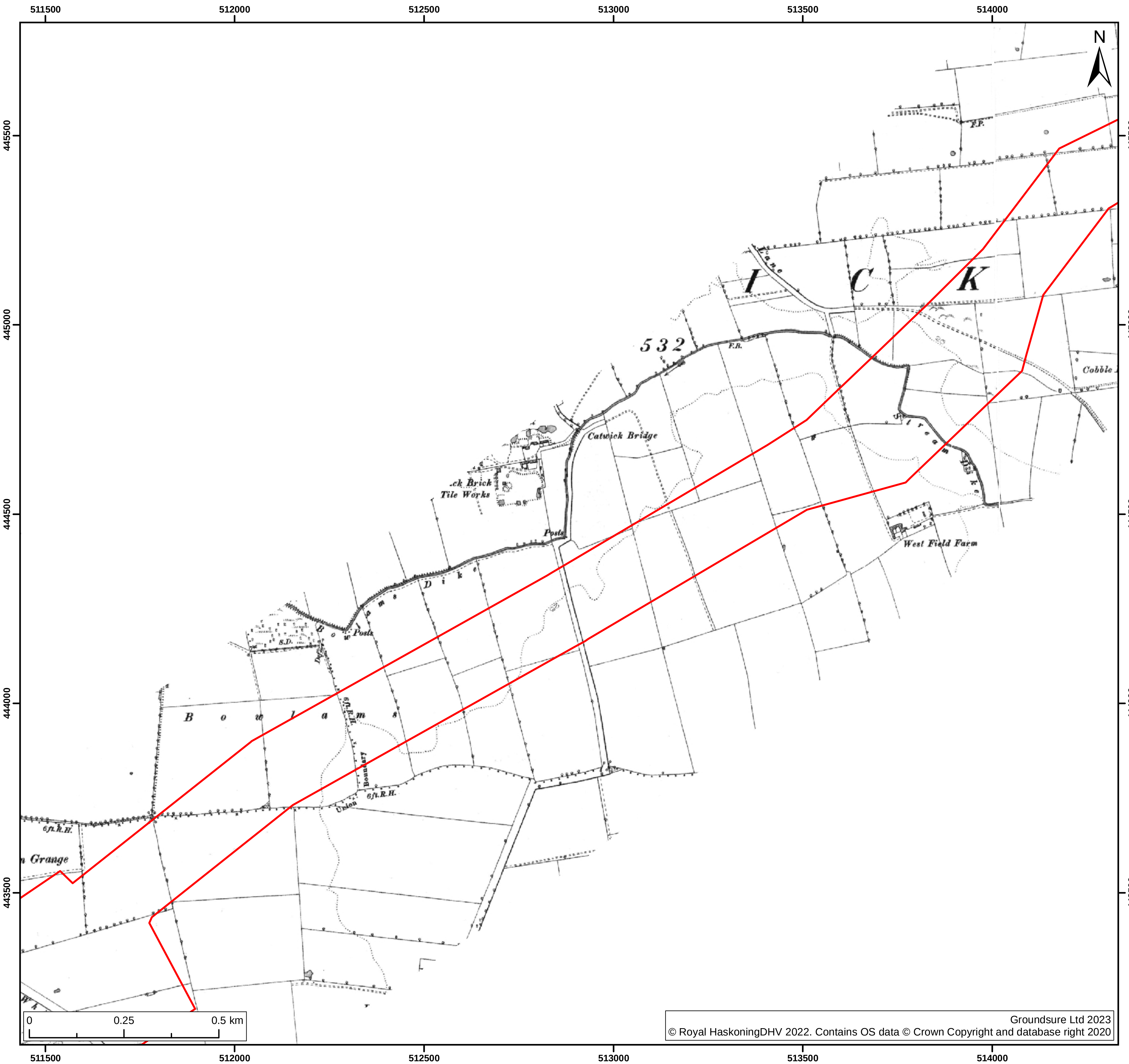

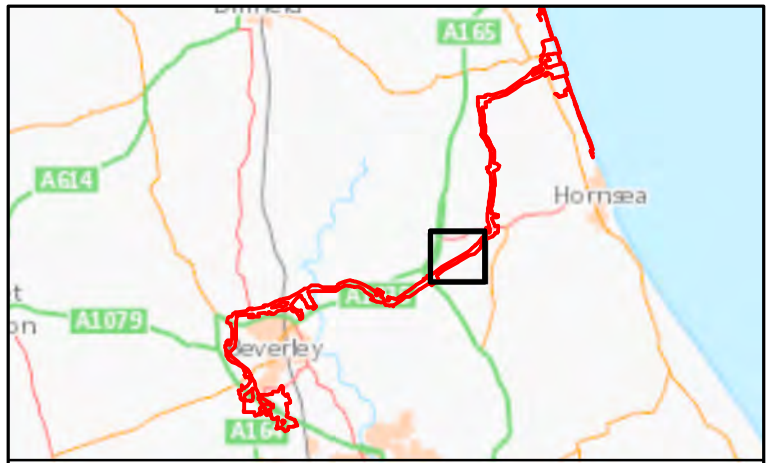

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26i

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

Co-ordinate system: British National Grid

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Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES

RWE

509000 509500 510000 510500 511000 511500

443500 443000 442500 442000 441500

N

Riston Grange

Riston Carr

Riston Carr House

Post Office

All Saints Church

Routh

Manor House

The Wood

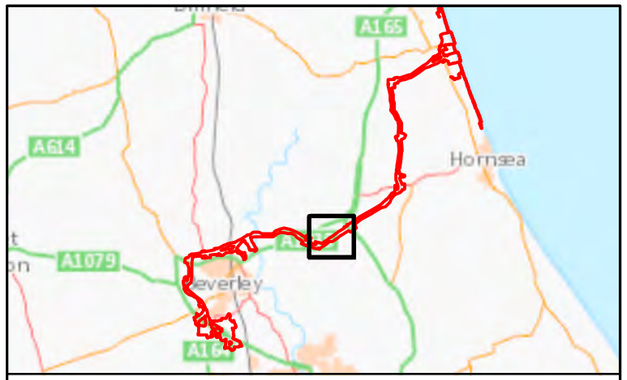
Routh Carrs

Routh Wood

Routh and Meaux Board Drain (Holderness Drainage)

Post

0 0.25 0.5 km



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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26j

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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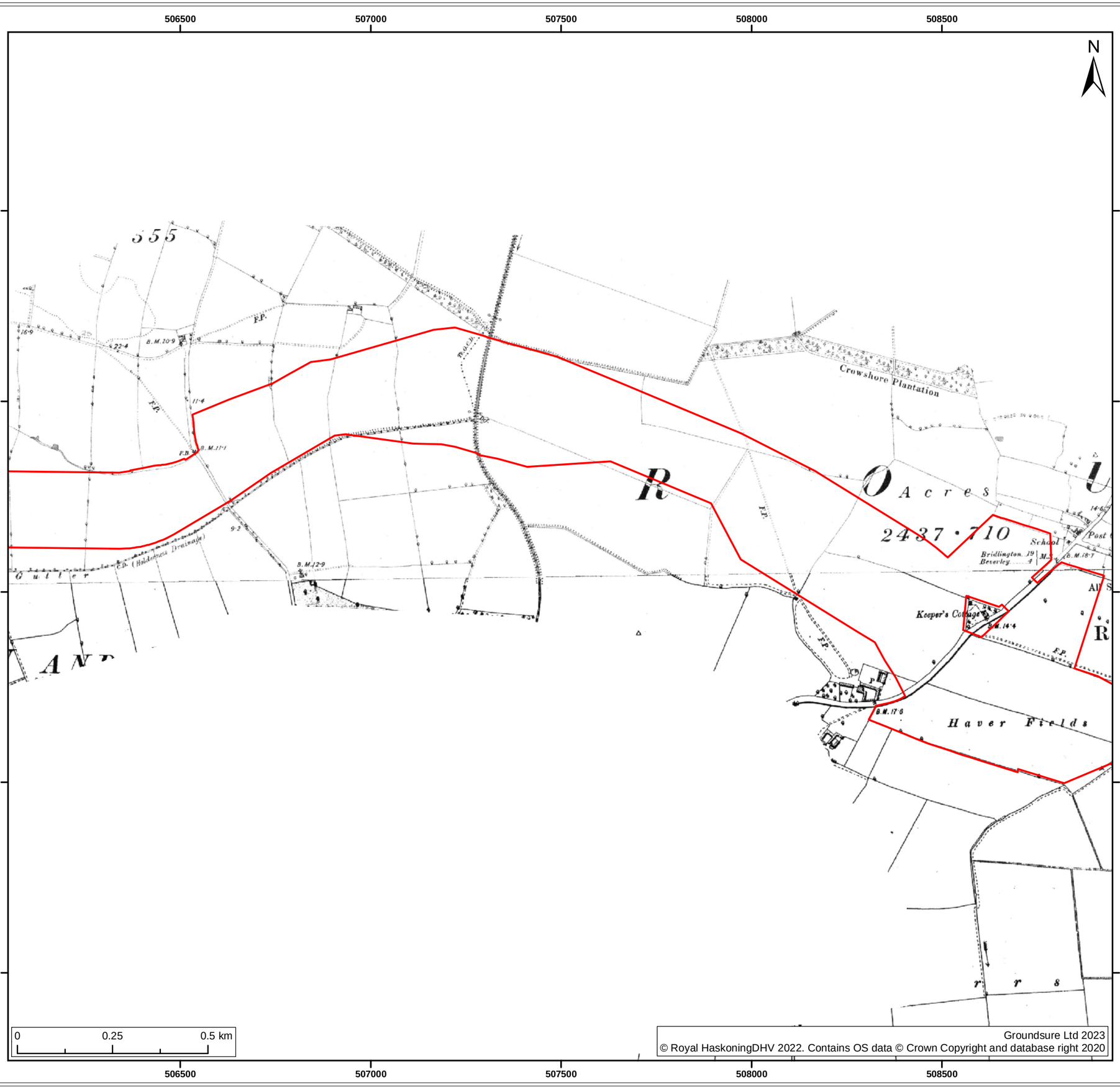

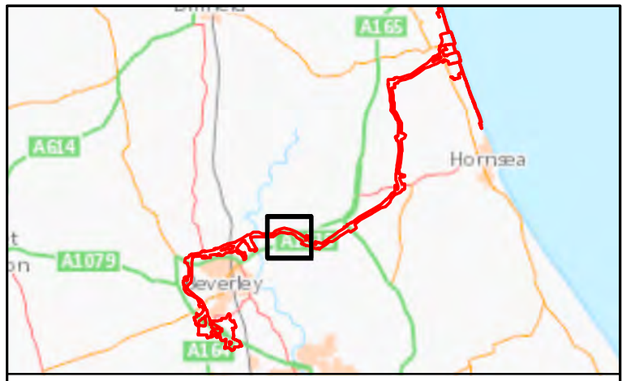

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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26k

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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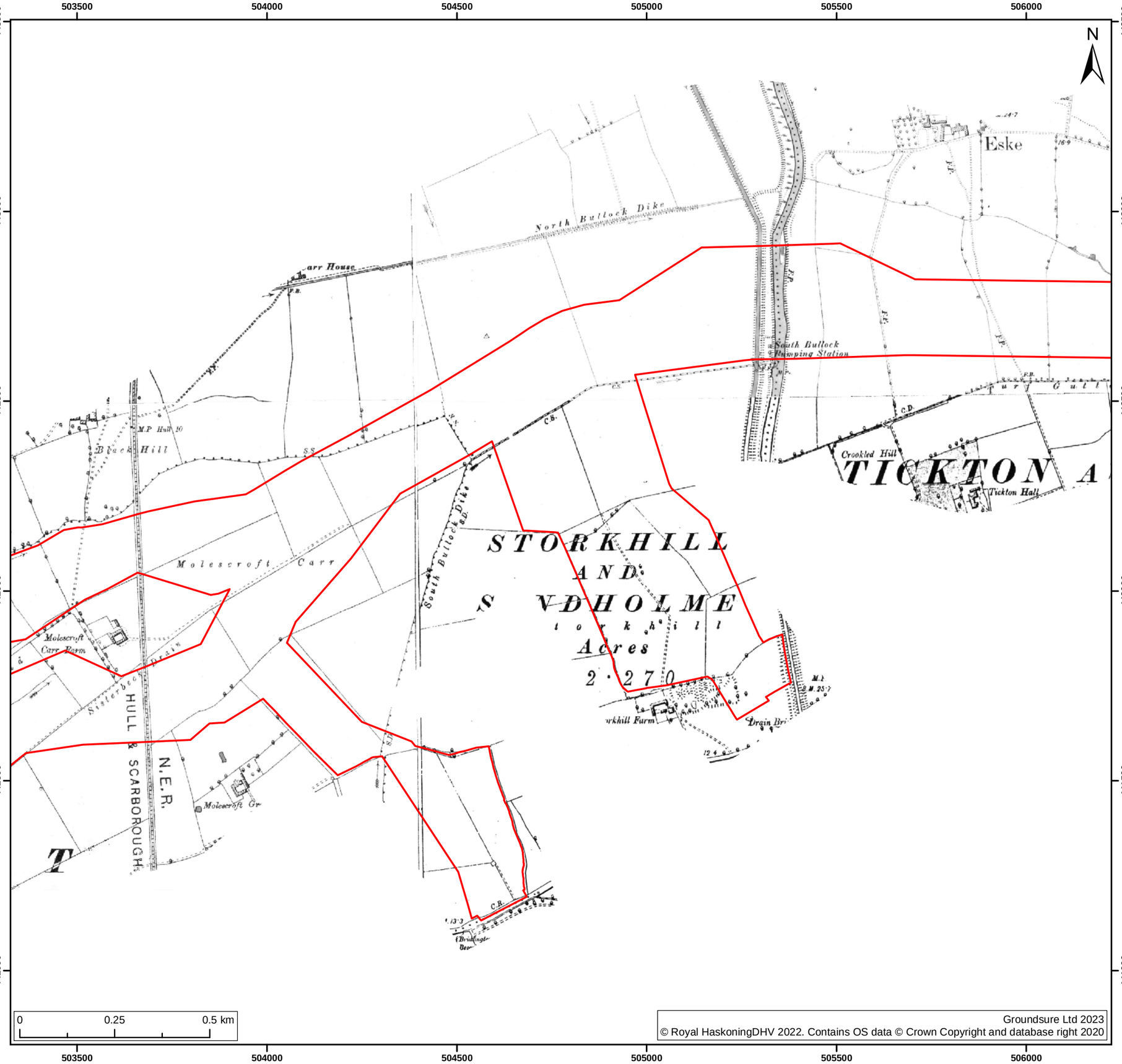

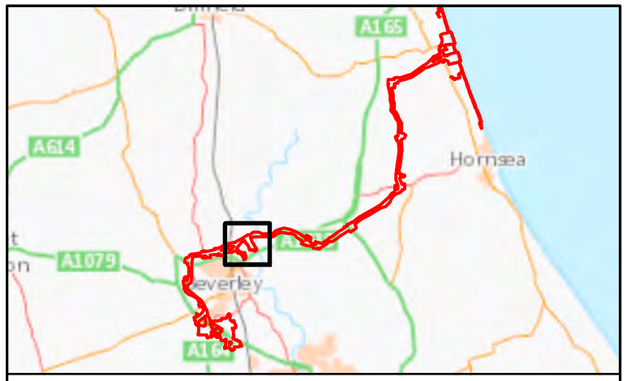

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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26l

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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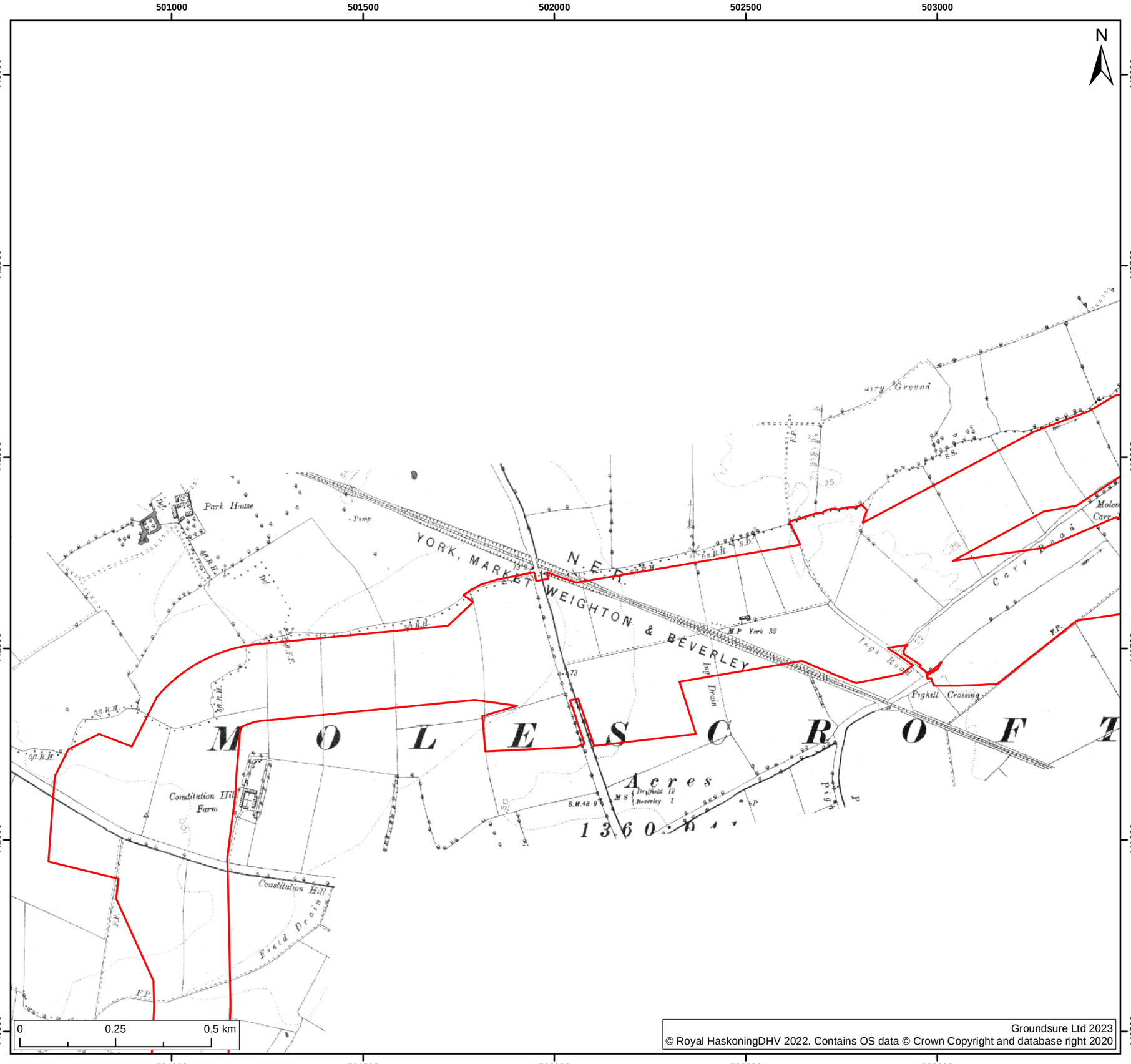

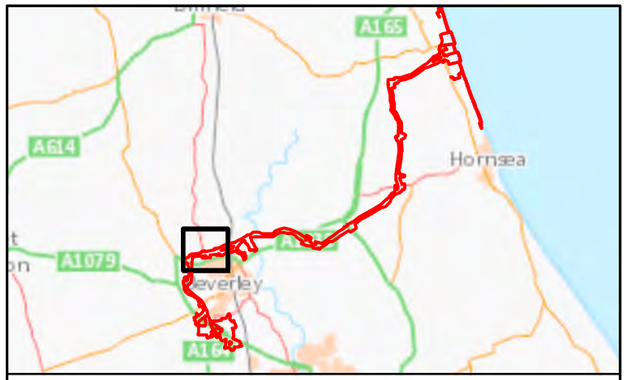

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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26m

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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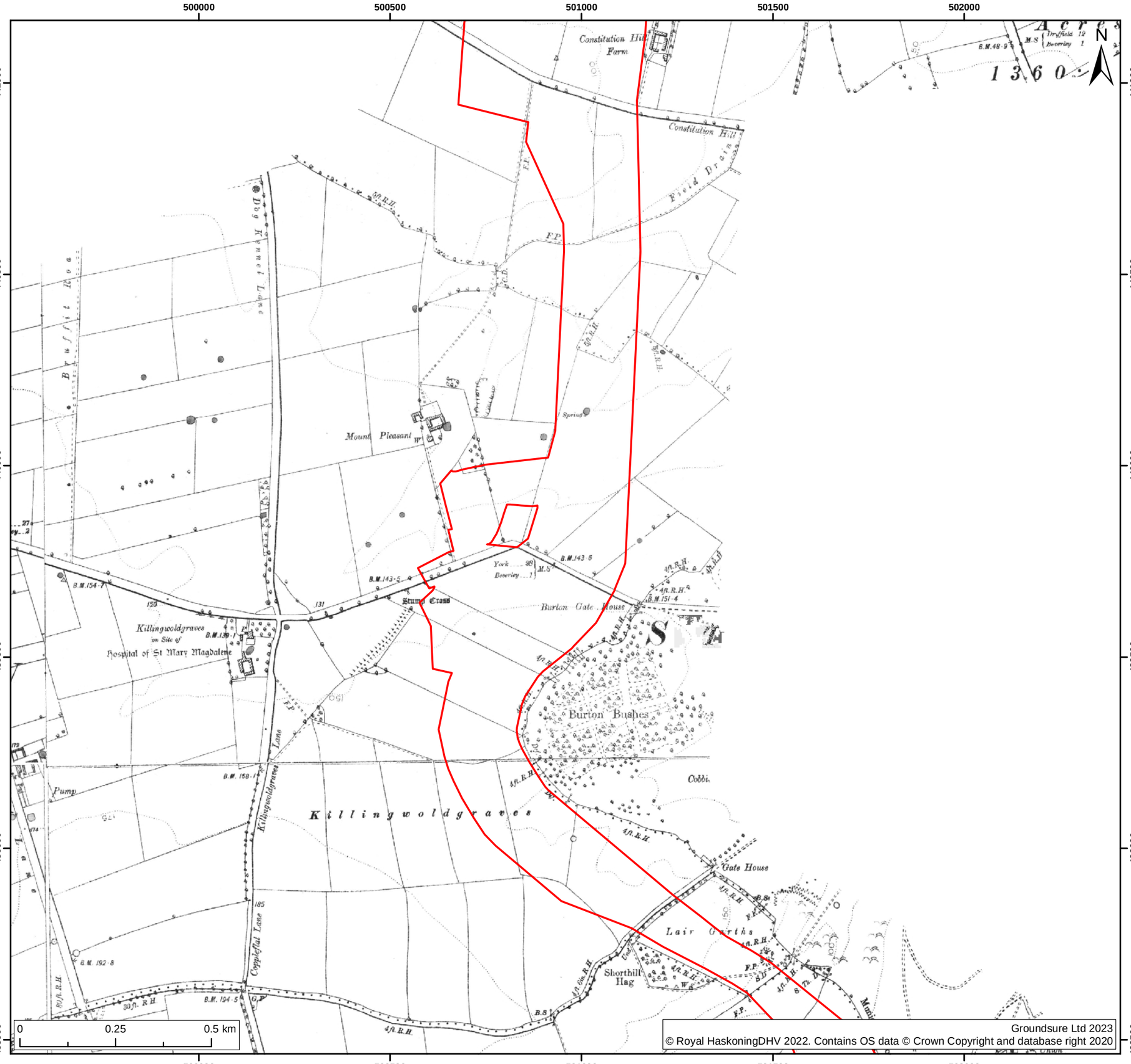

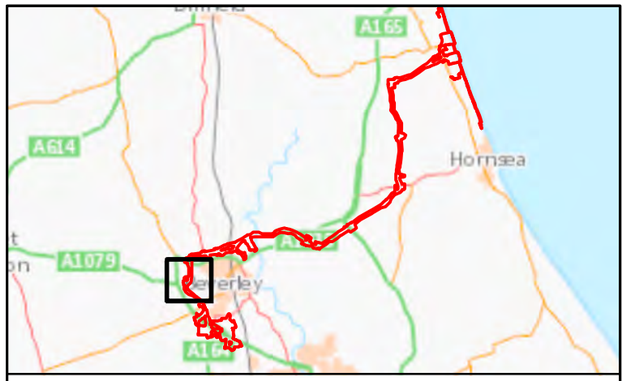

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Assessment Study Area

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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26n

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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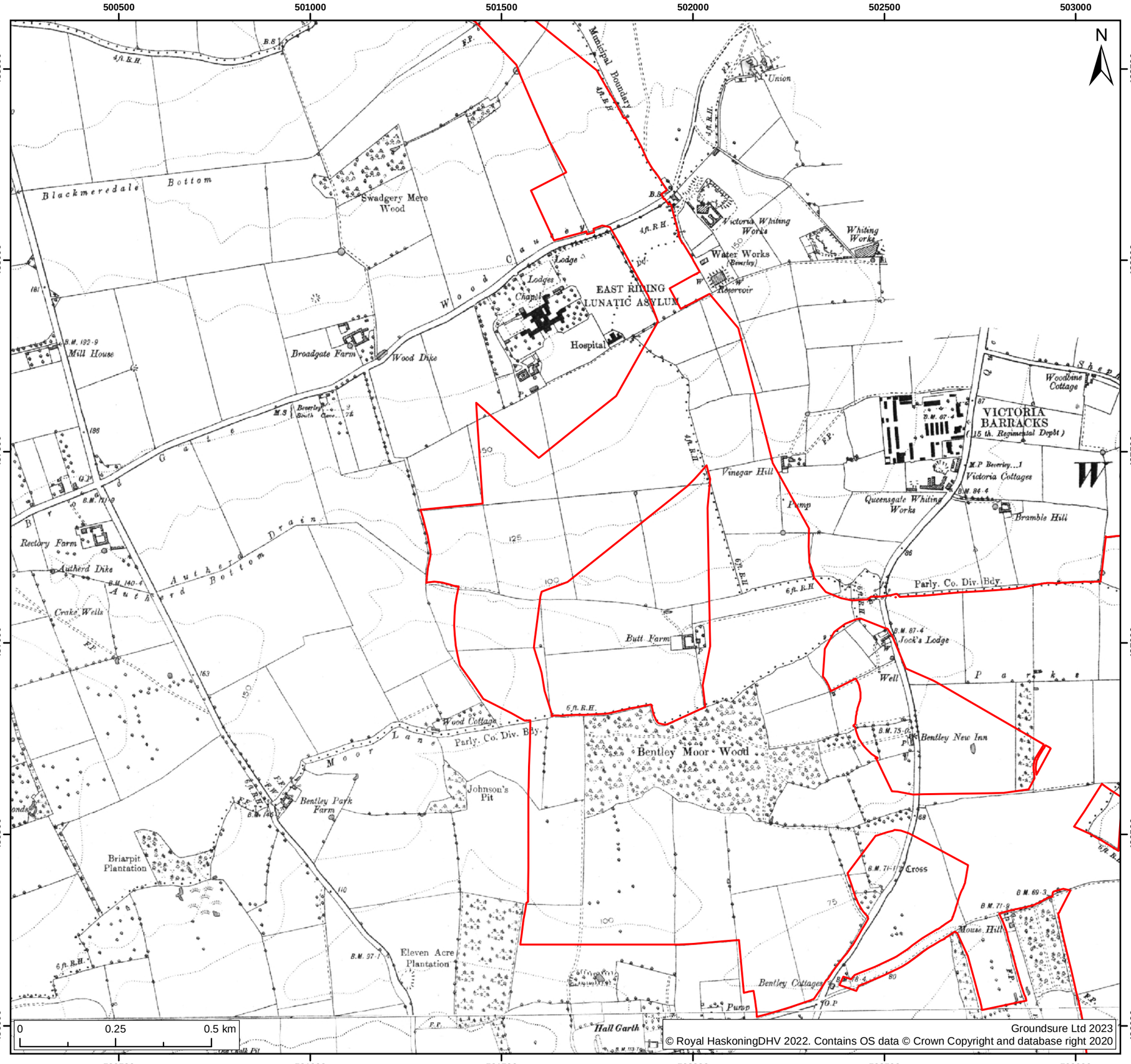

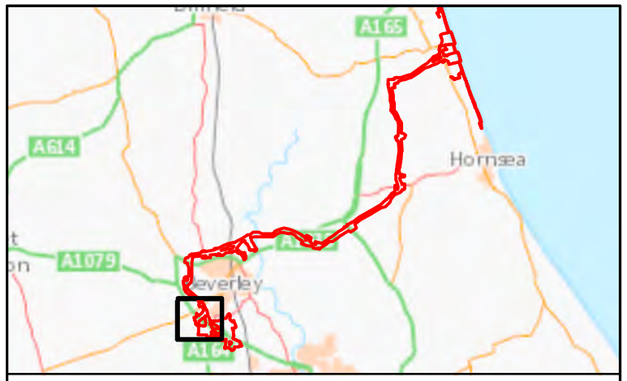

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Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26o	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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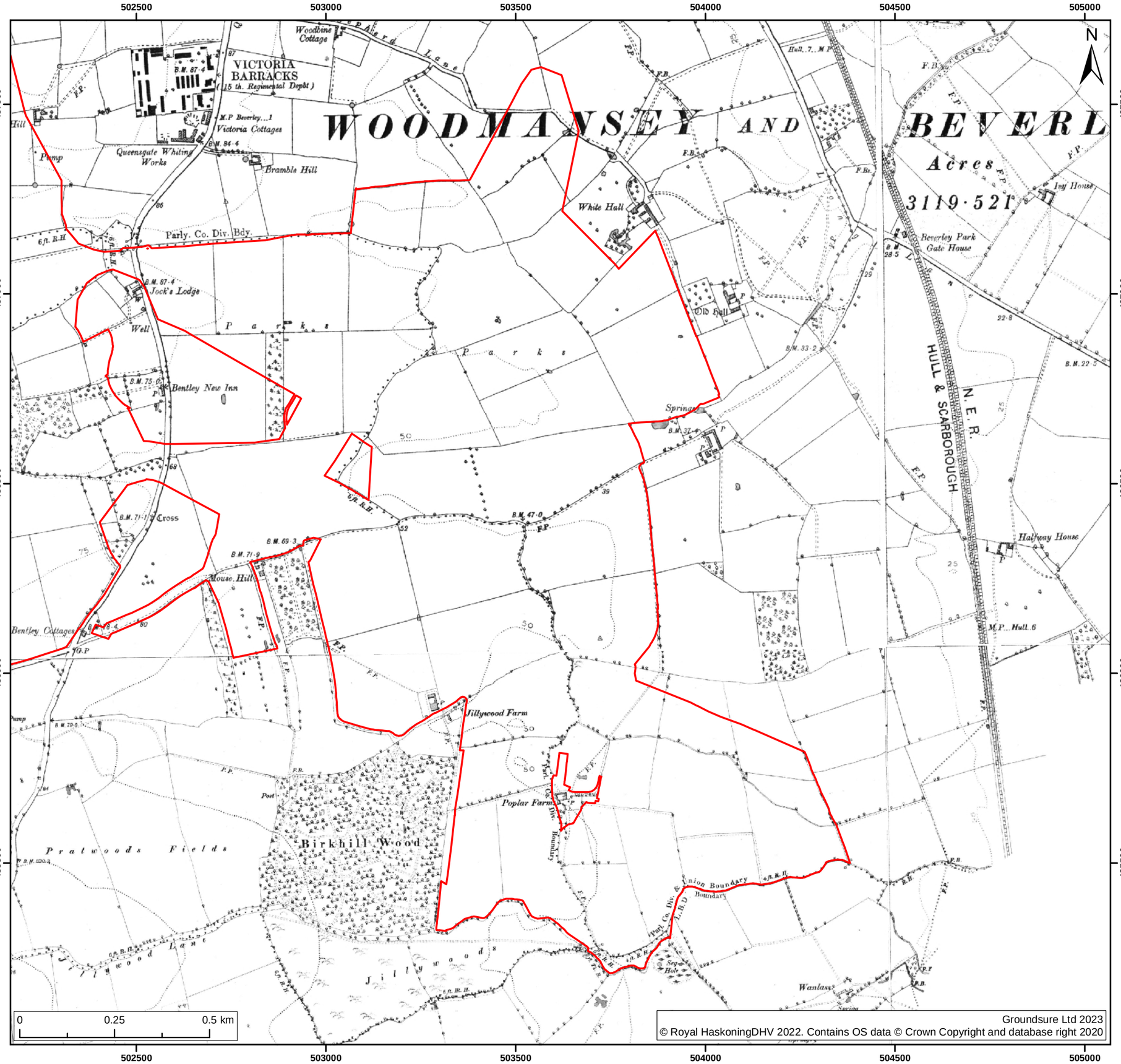

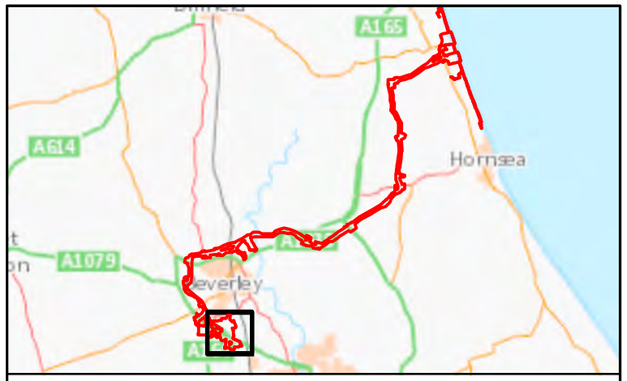

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1889 - 1895
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Figure: 22-2-26p

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0443

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Project:

Dogger Bank South Offshore Wind Farms

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AIRPHOTO SERVICES RWE

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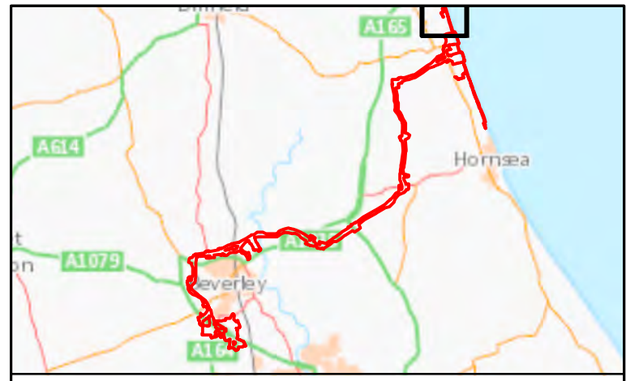

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-3-27a

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

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AIRPHOTO SERVICES RWE

0 0.25 0.5 km

Legend:

Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
Page 2 of 16

Figure: 22-2-27b

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

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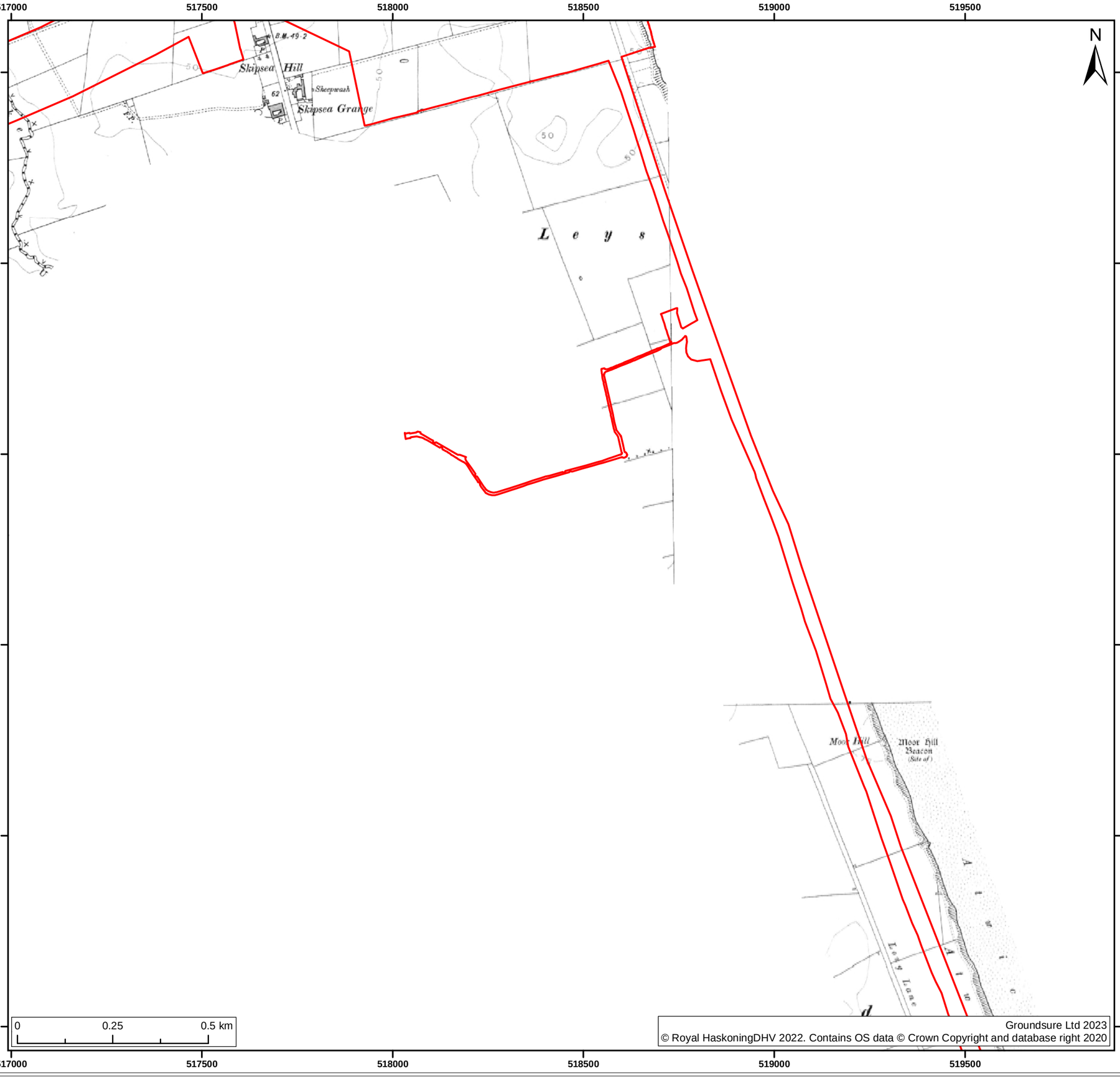
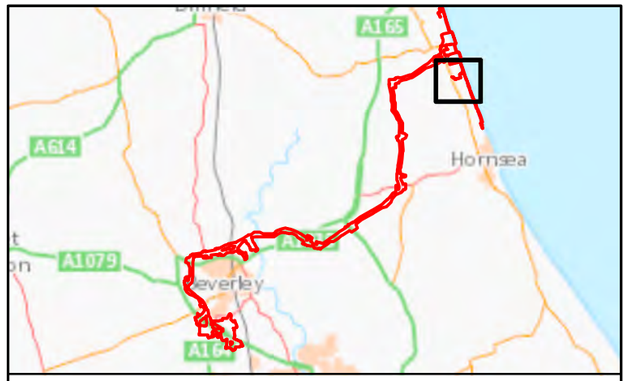
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27c

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

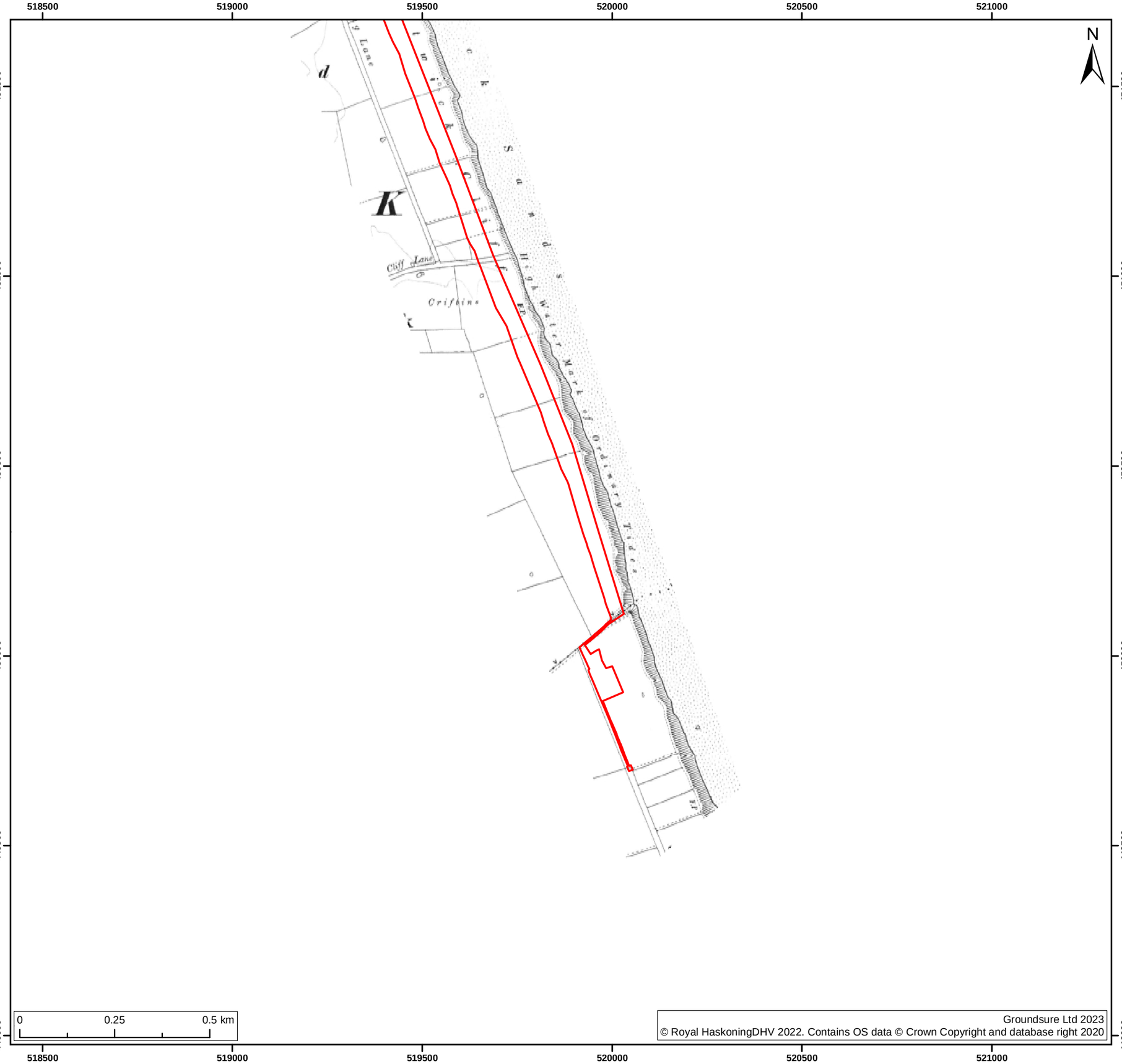
Page Size: A3

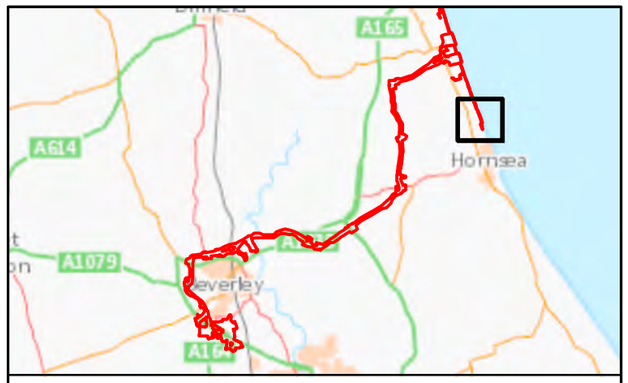
Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27d

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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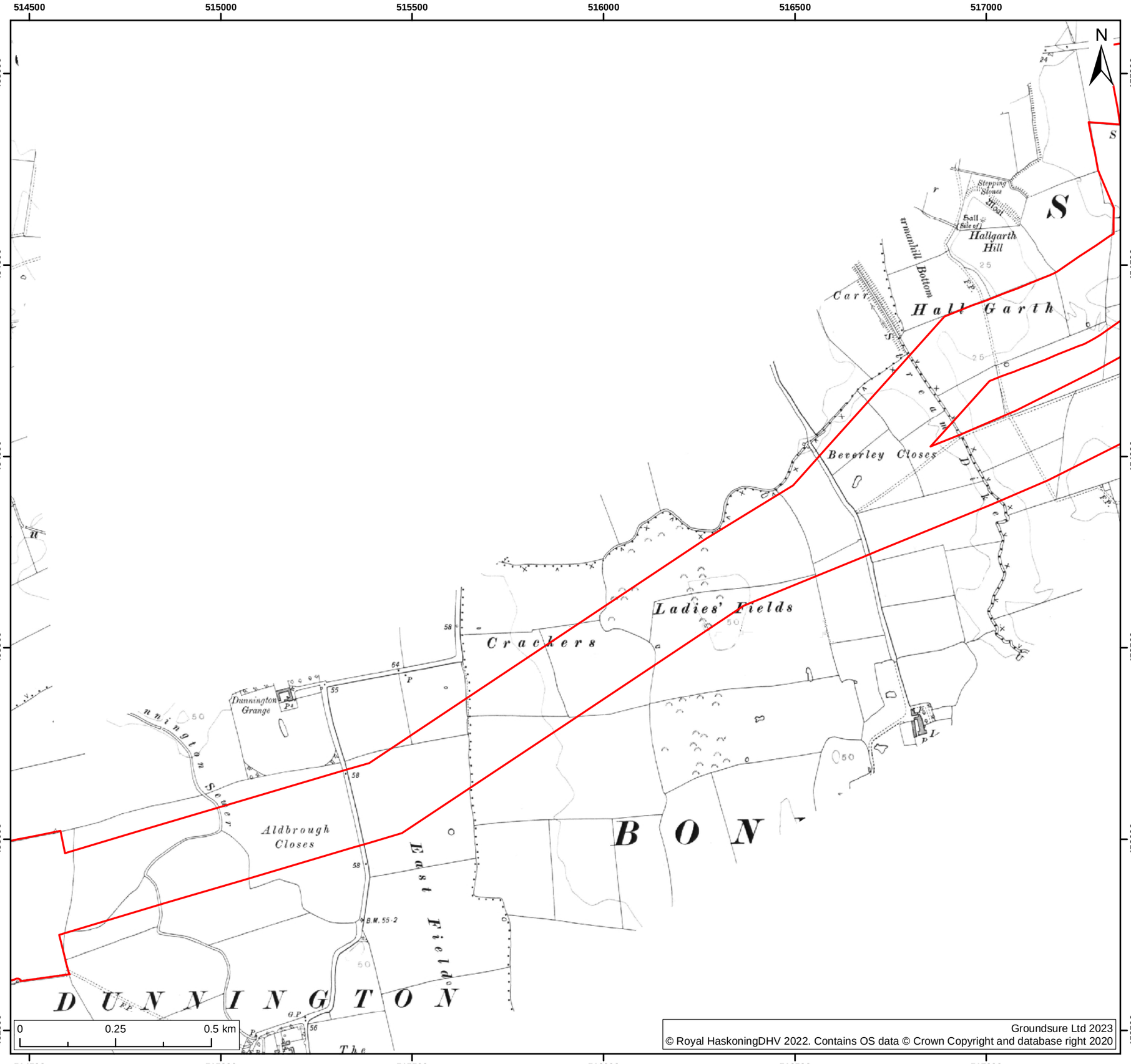

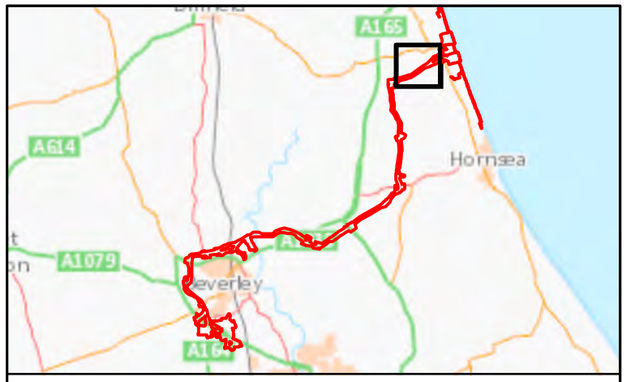

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Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27e

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

513000 513500 514000 514500 515000 515500

453000 452500 452000 451500 451000 450500

N

Aldbrough Closes

East Field

DUNNINGTON

Dunnington Lane

Catchmoor Gutter

B.M. 55·2

G.P.

Manor House

The Acres

Stephenson Closes

Parly. Co. Div. Union & R.D.By.

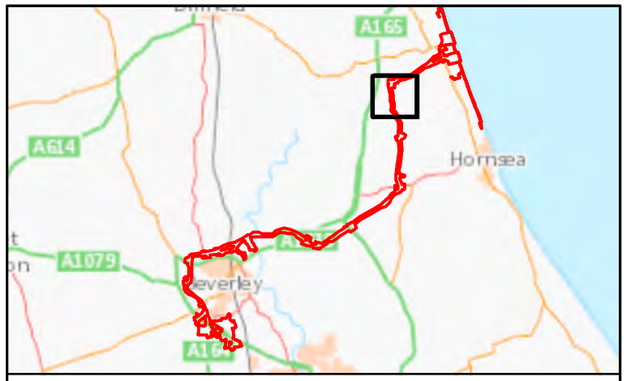
Moor Grange

Moat

Pulpits

FP

0 0.25 0.5 km



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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27f

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

513500 514000 514500 515000 515500 516000

450500 450000 449500 449000 448500 448000

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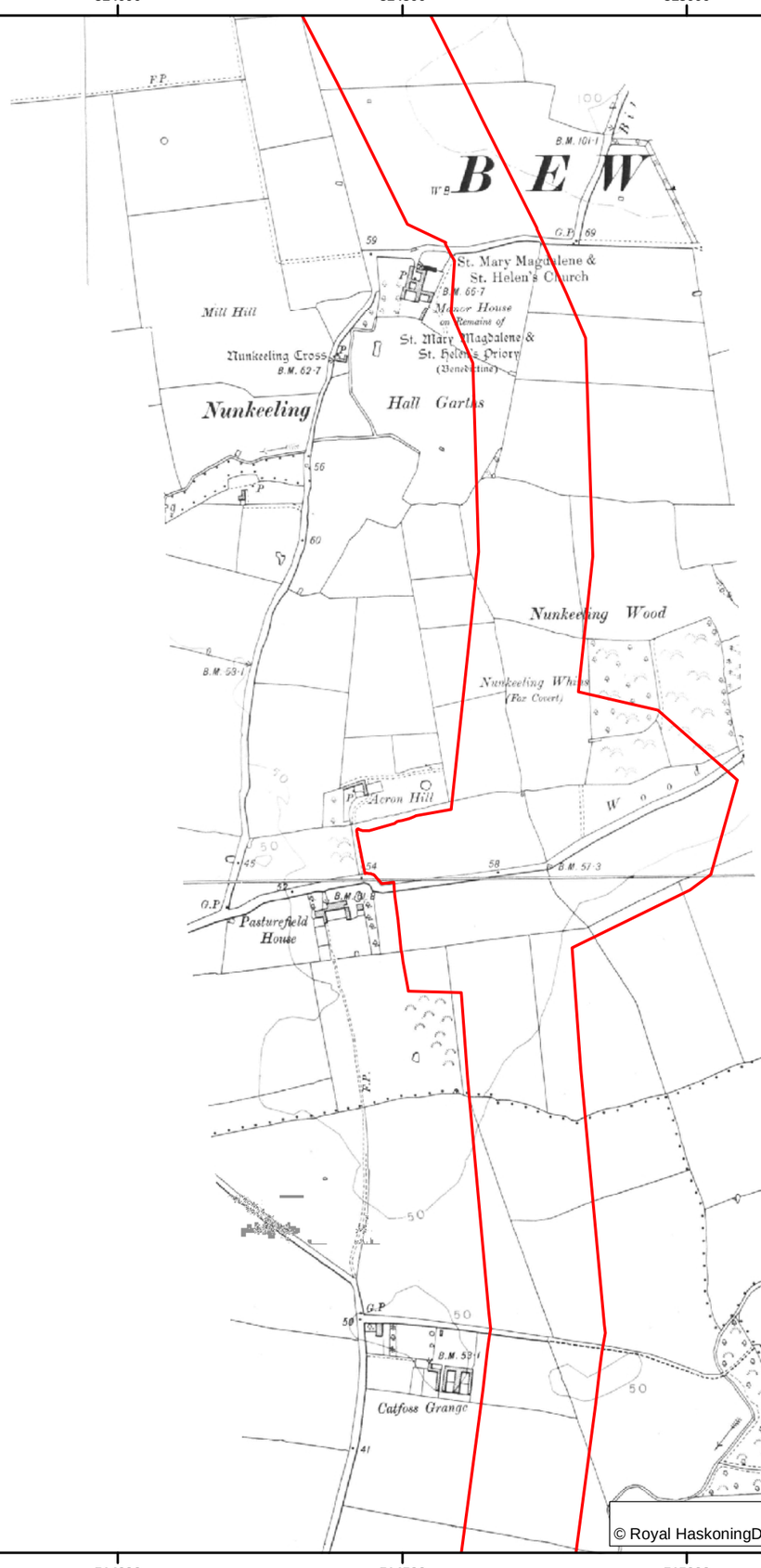

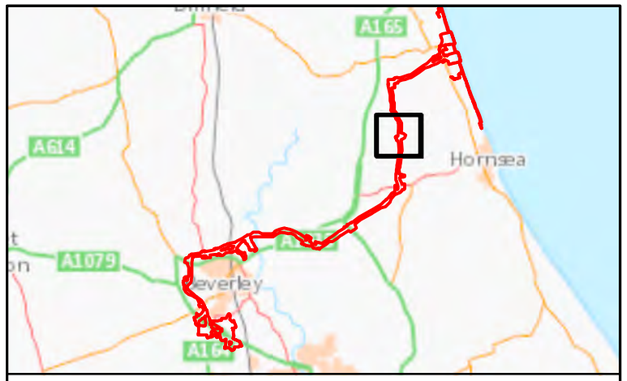

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27g

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

0 0.25 0.5 km

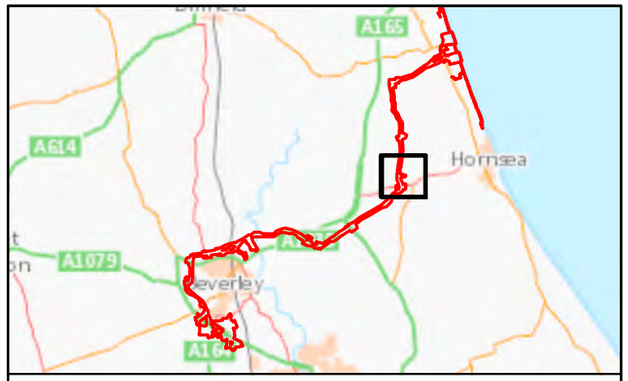
513500 514000 514500 515000 515500 516000

447500 447000 446500 446000 445500

N

Catfoss Bridge
Northern Hills
CATFOSS
Acres 1087·489
Catfoss
Hall Farm
Old Sand Pit
Catfoss Hall (Site of)
Catfoss Drain
Tashdike Bridge
Mills
Sigg

0 0.25 0.5 km



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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27h

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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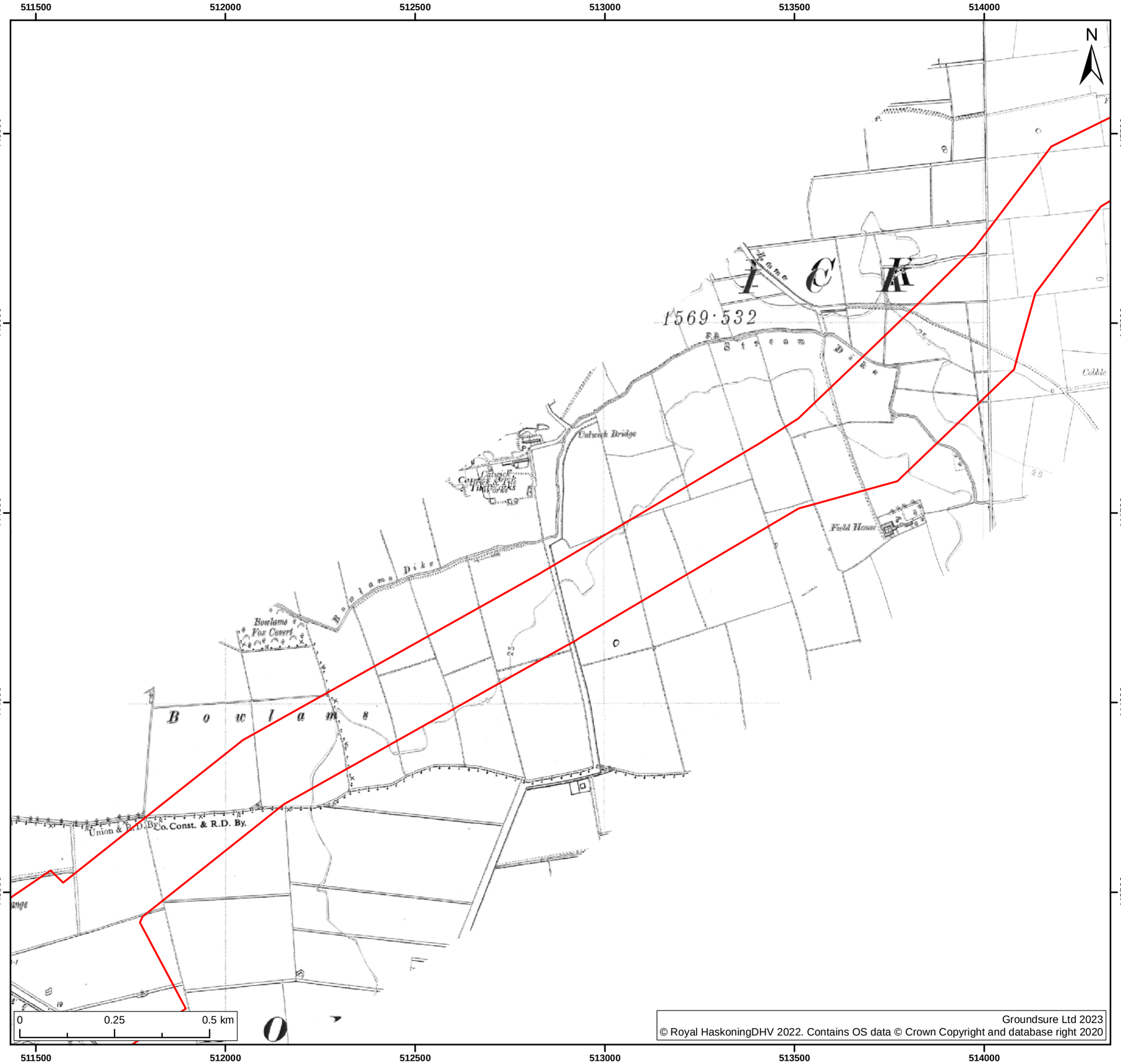

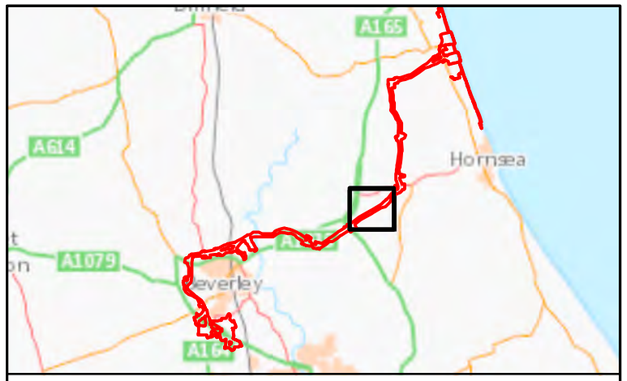

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27i	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

Project:

Dogger Bank South Offshore Wind Farms

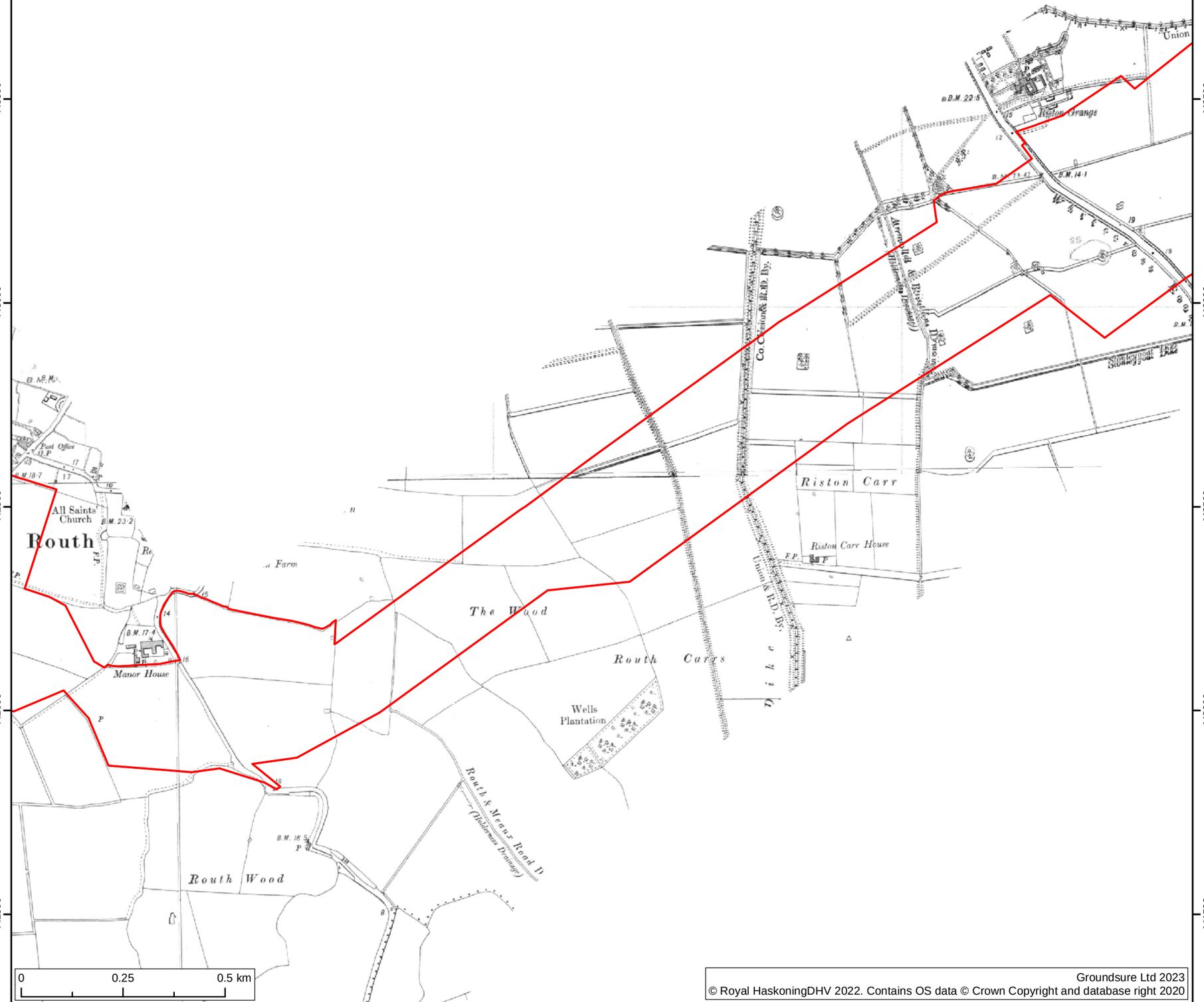
Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

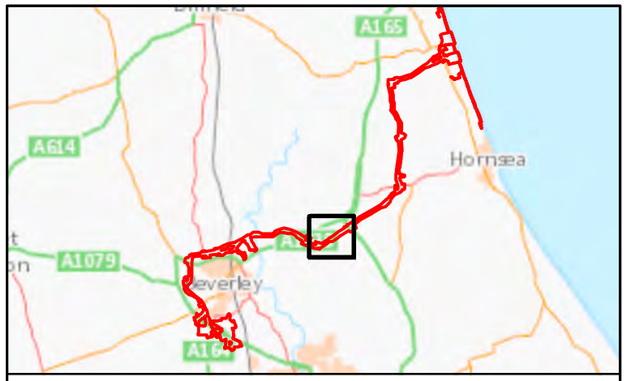
509000 509500 510000 510500 511000 511500

443500 443000 442500 442000 441500

N



0 0.25 0.5 km



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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27j

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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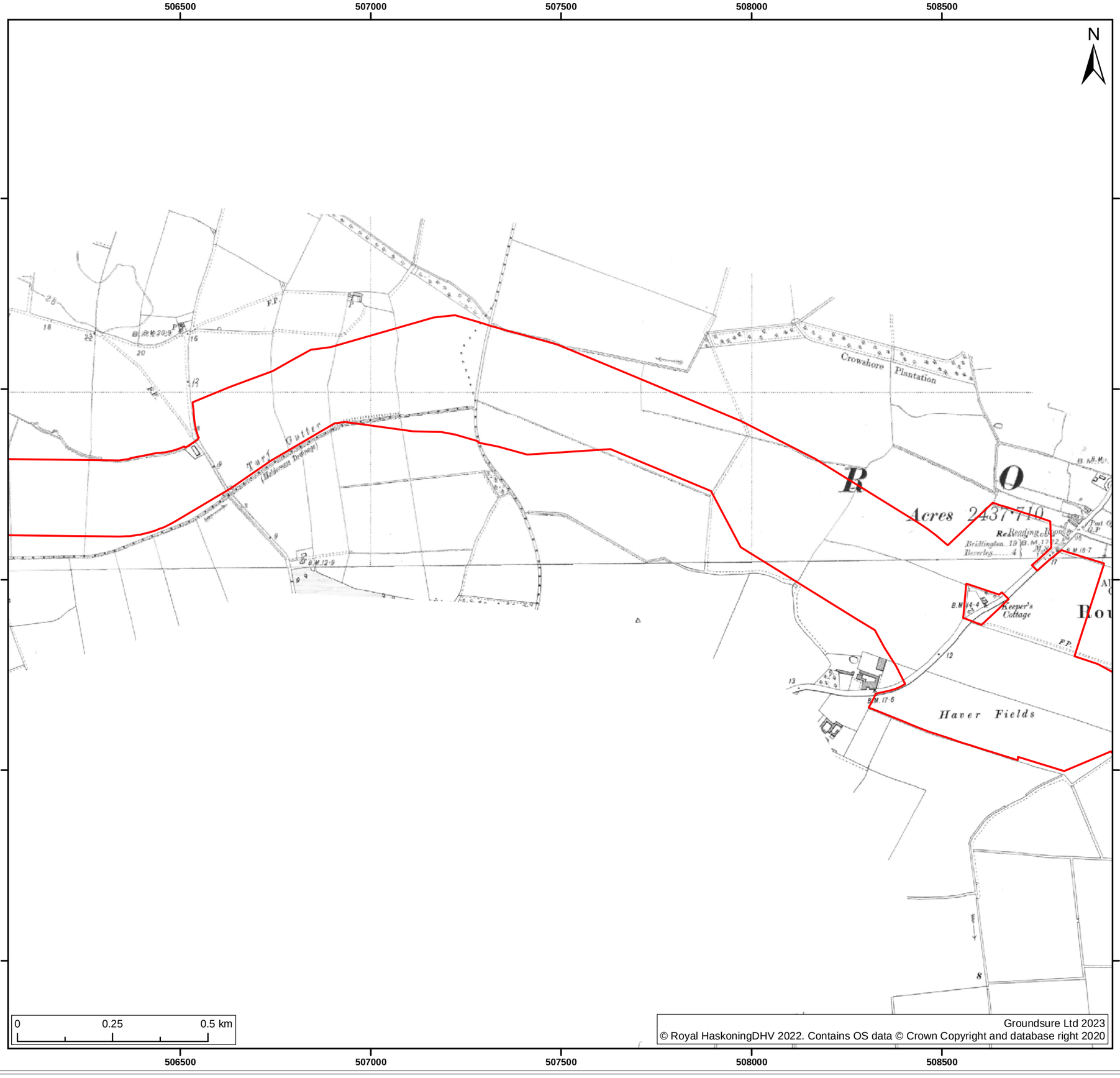

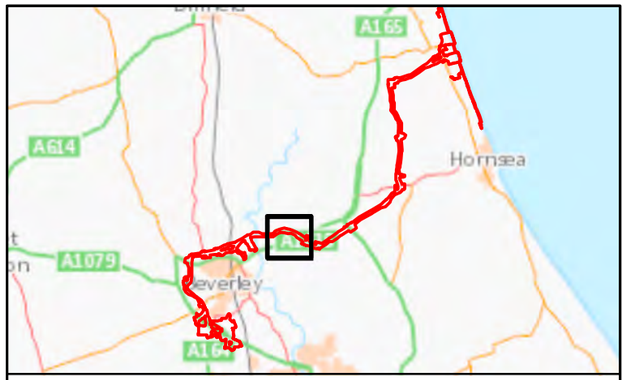

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27k

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid

Page Size: A3

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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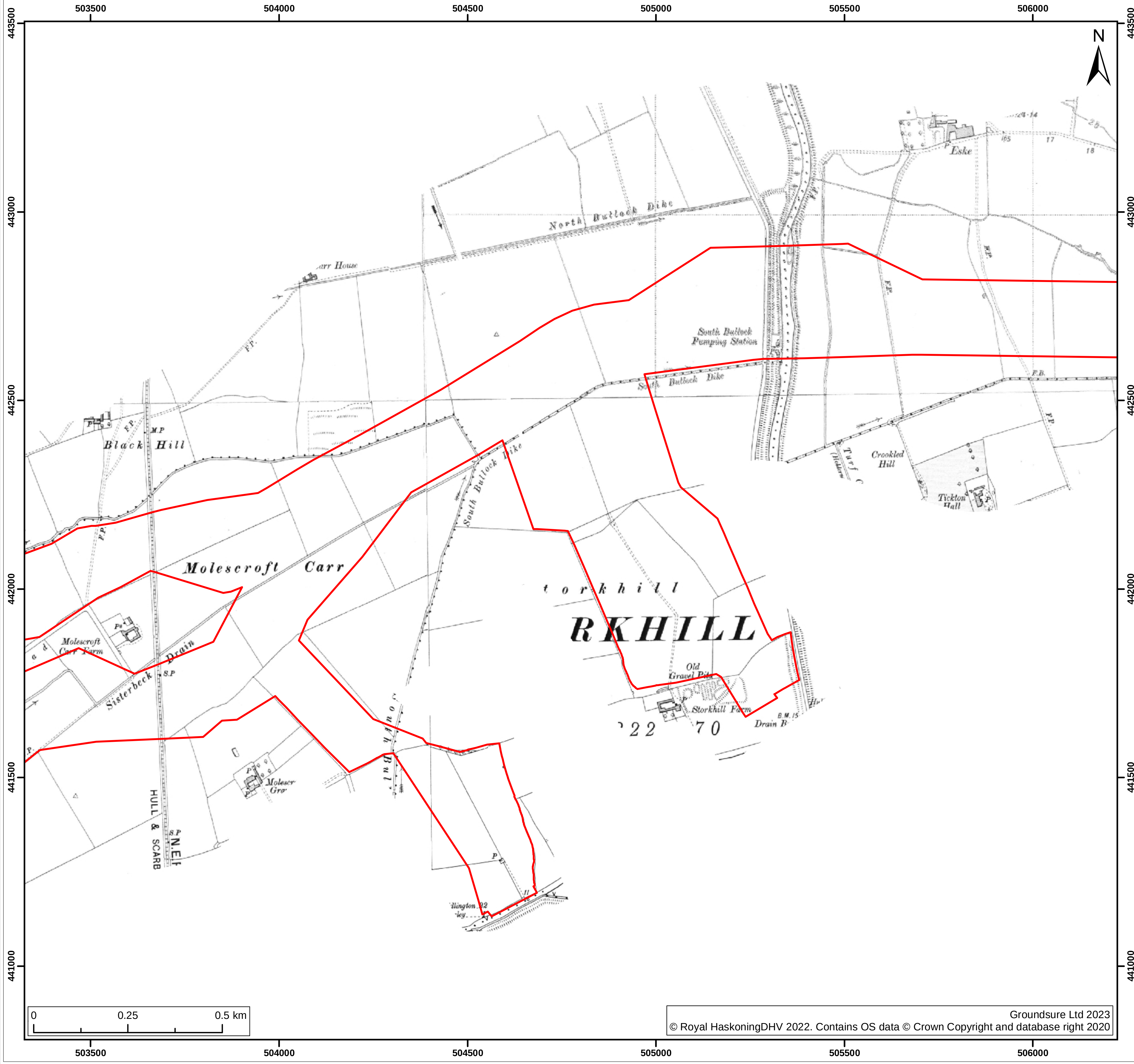

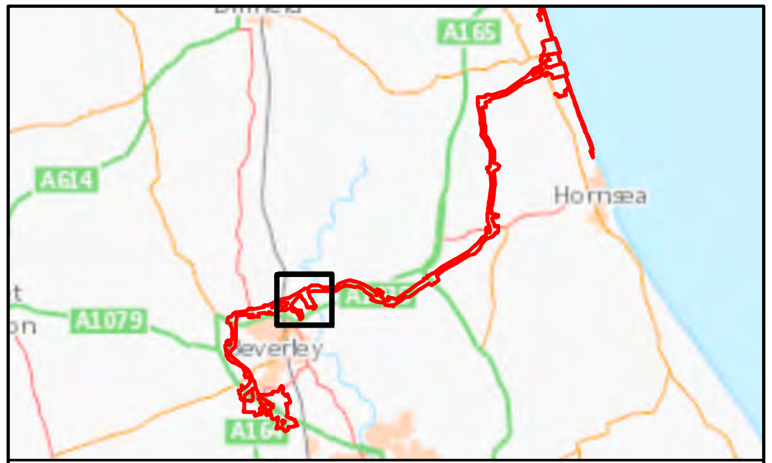

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27l | Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

Co-ordinate system: British National Grid | Page Size: A3 | Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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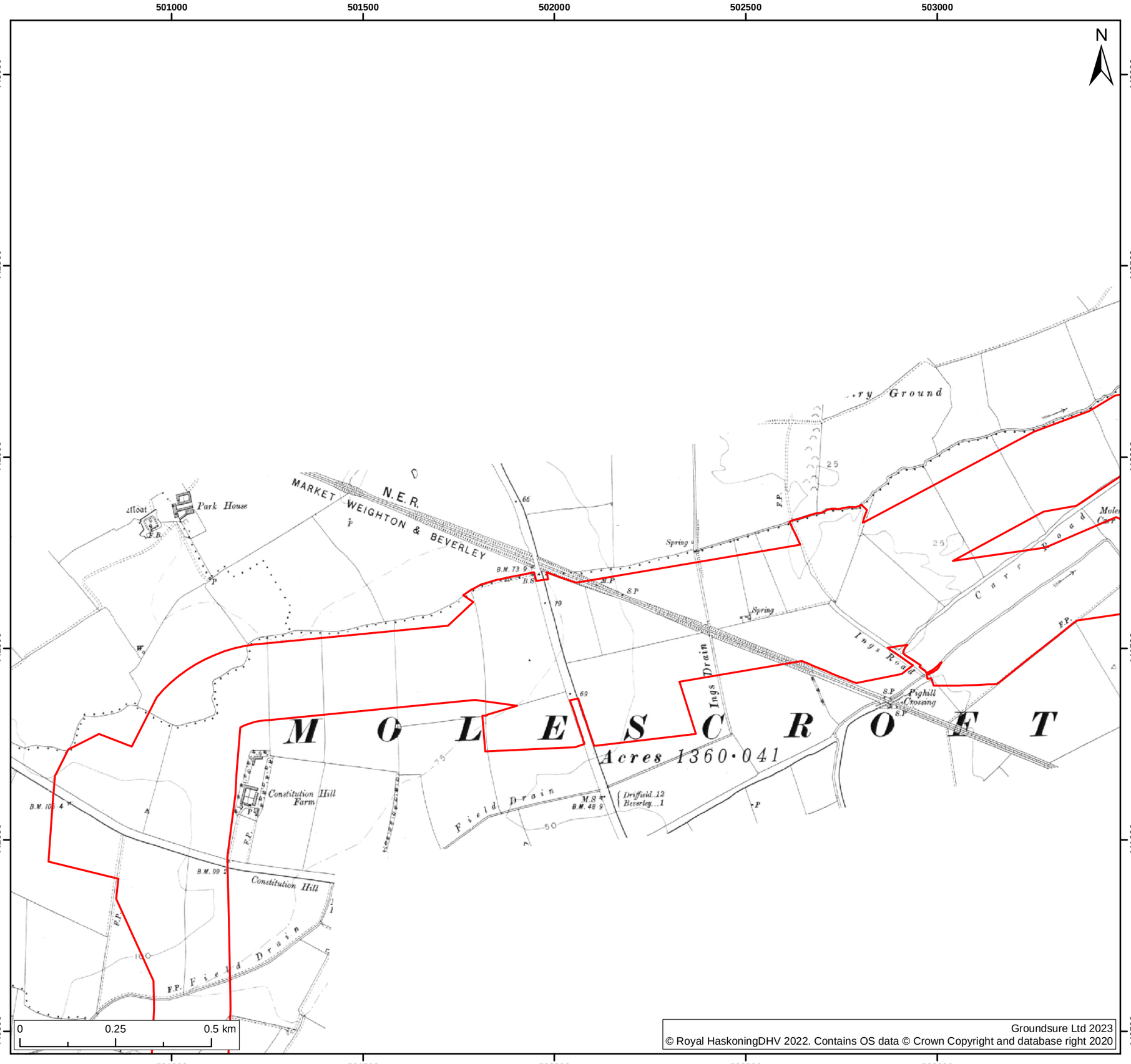

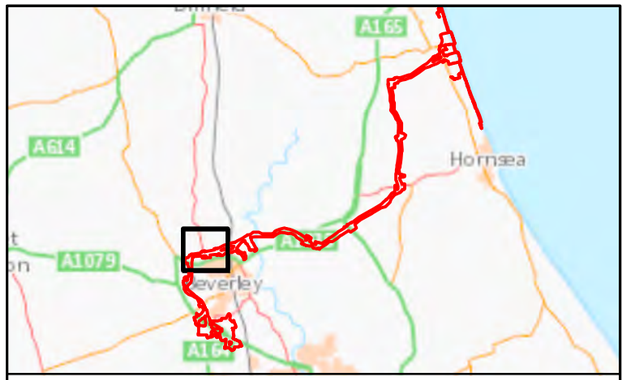

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Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27m

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

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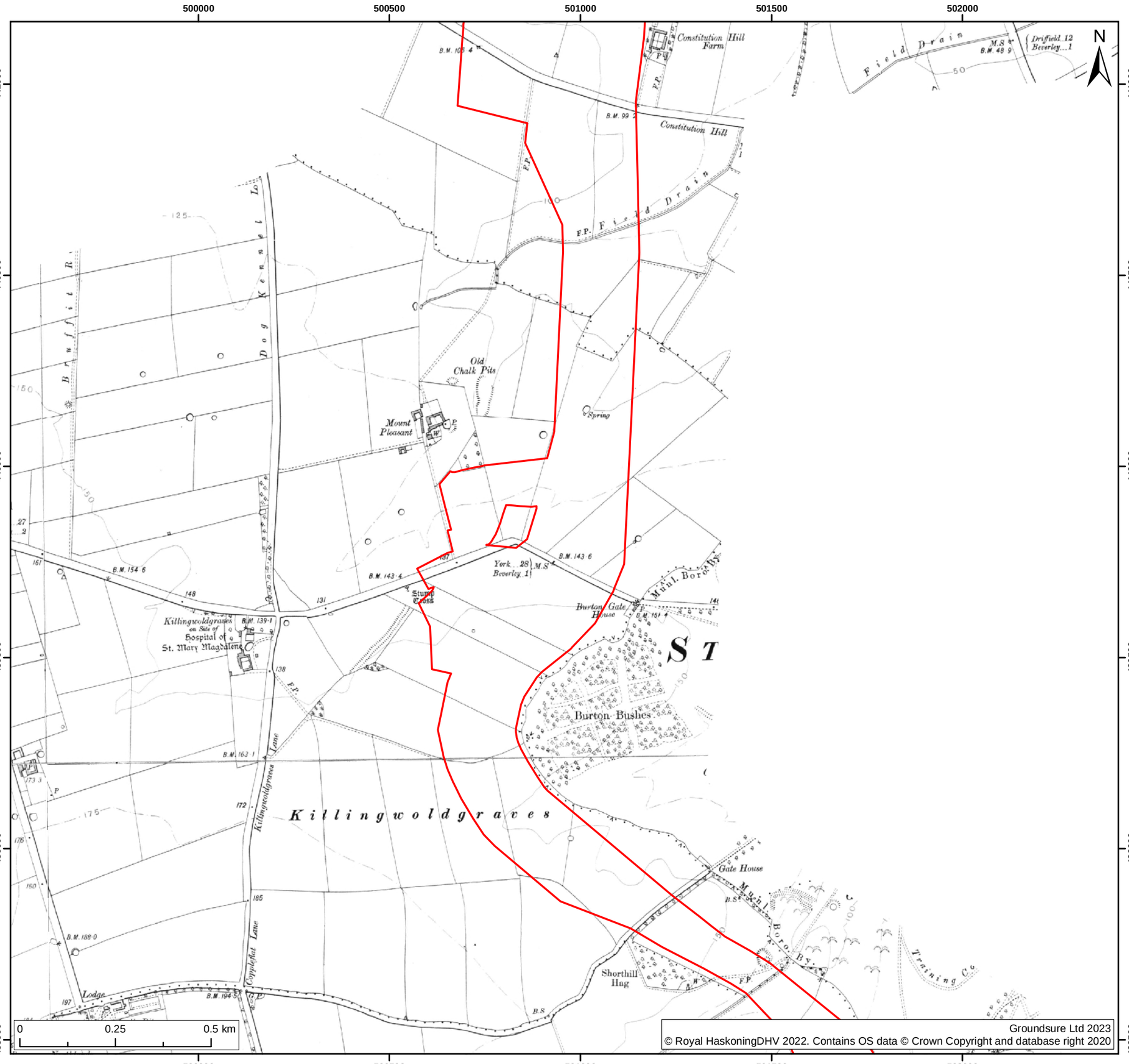
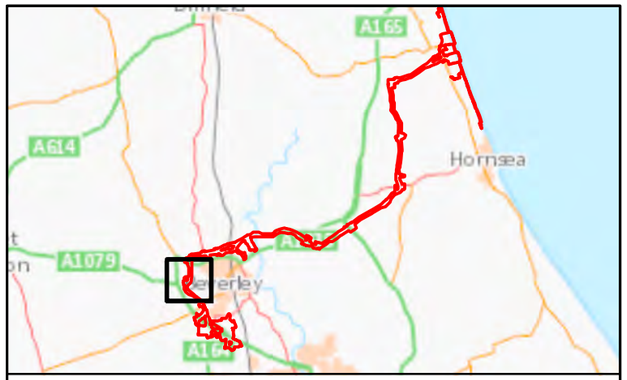
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27n	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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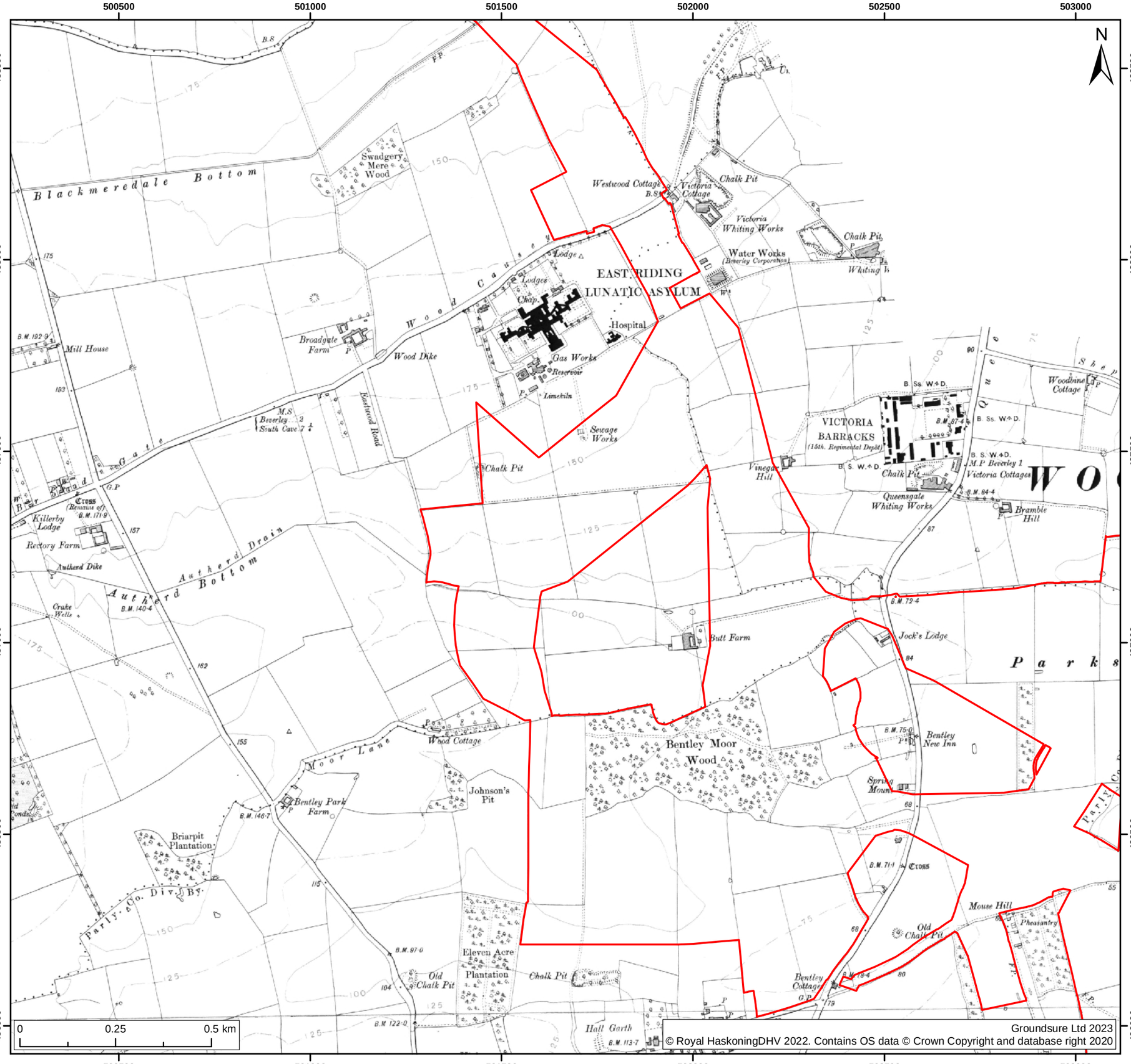

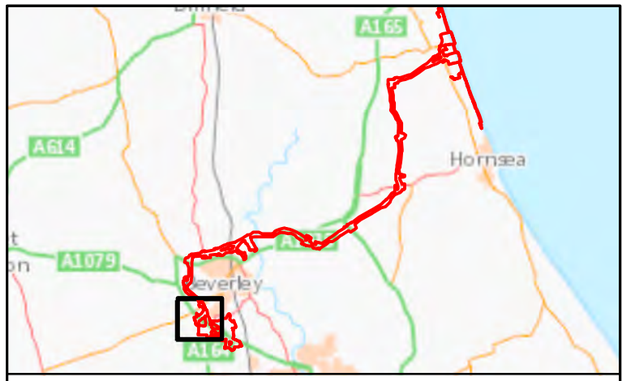

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Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27o	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444	
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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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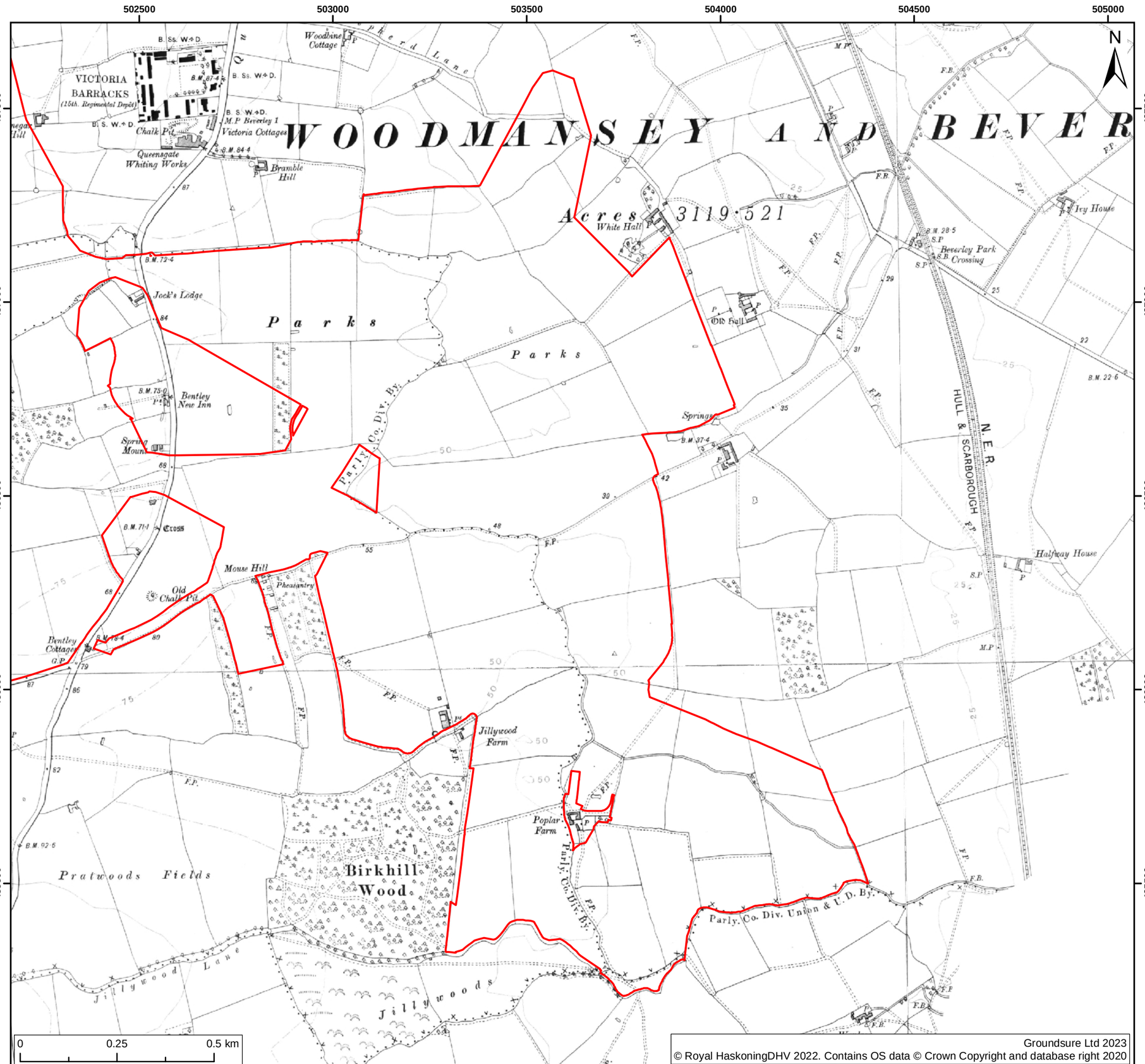

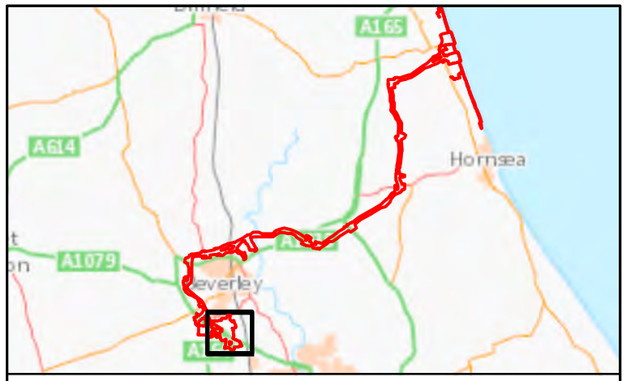

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Title:

Ordnance Survey Mapping 1908 - 1911
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Figure: 22-2-27p

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0444

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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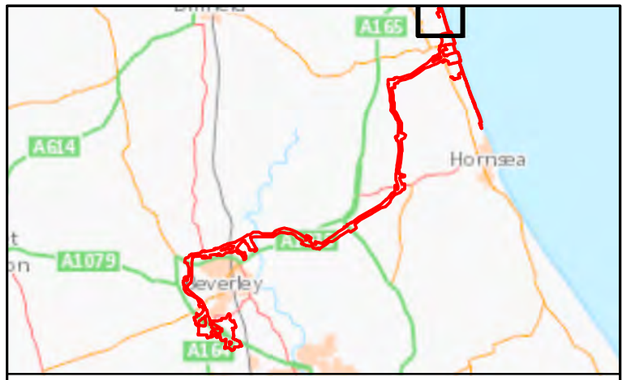

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-3-28a

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

Co-ordinate system: British National Grid

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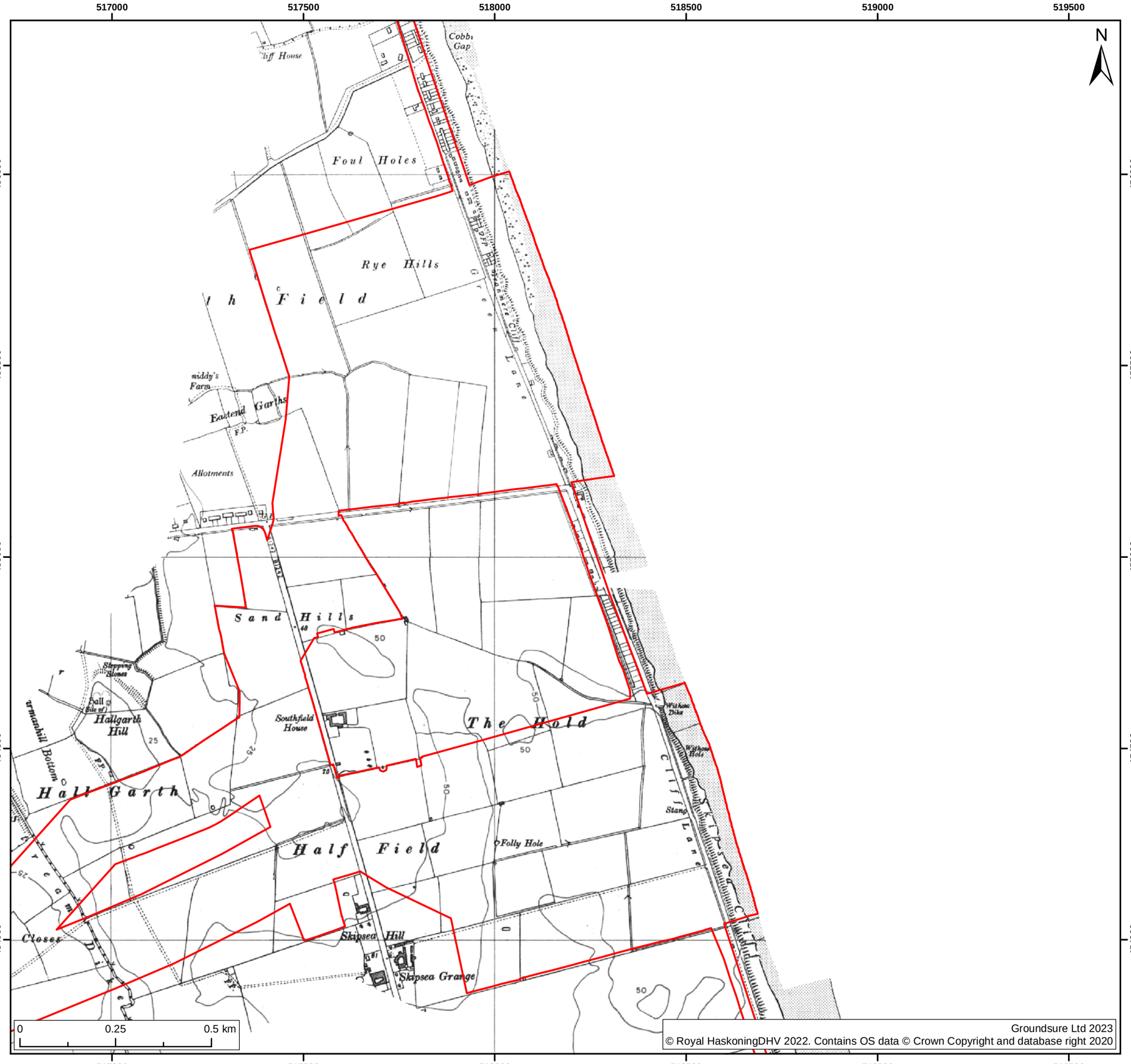
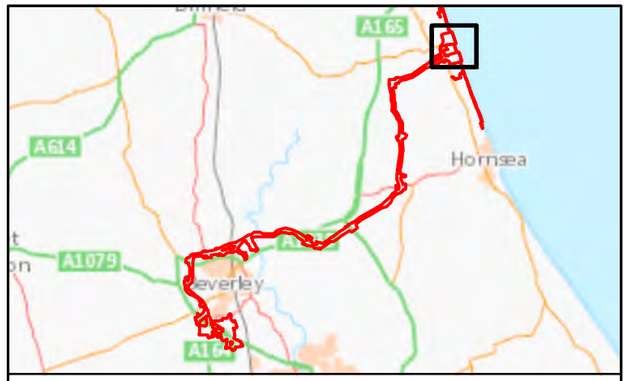
Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Assessment Study Area

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Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28b

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Project: Dogger Bank South Offshore Wind Farms

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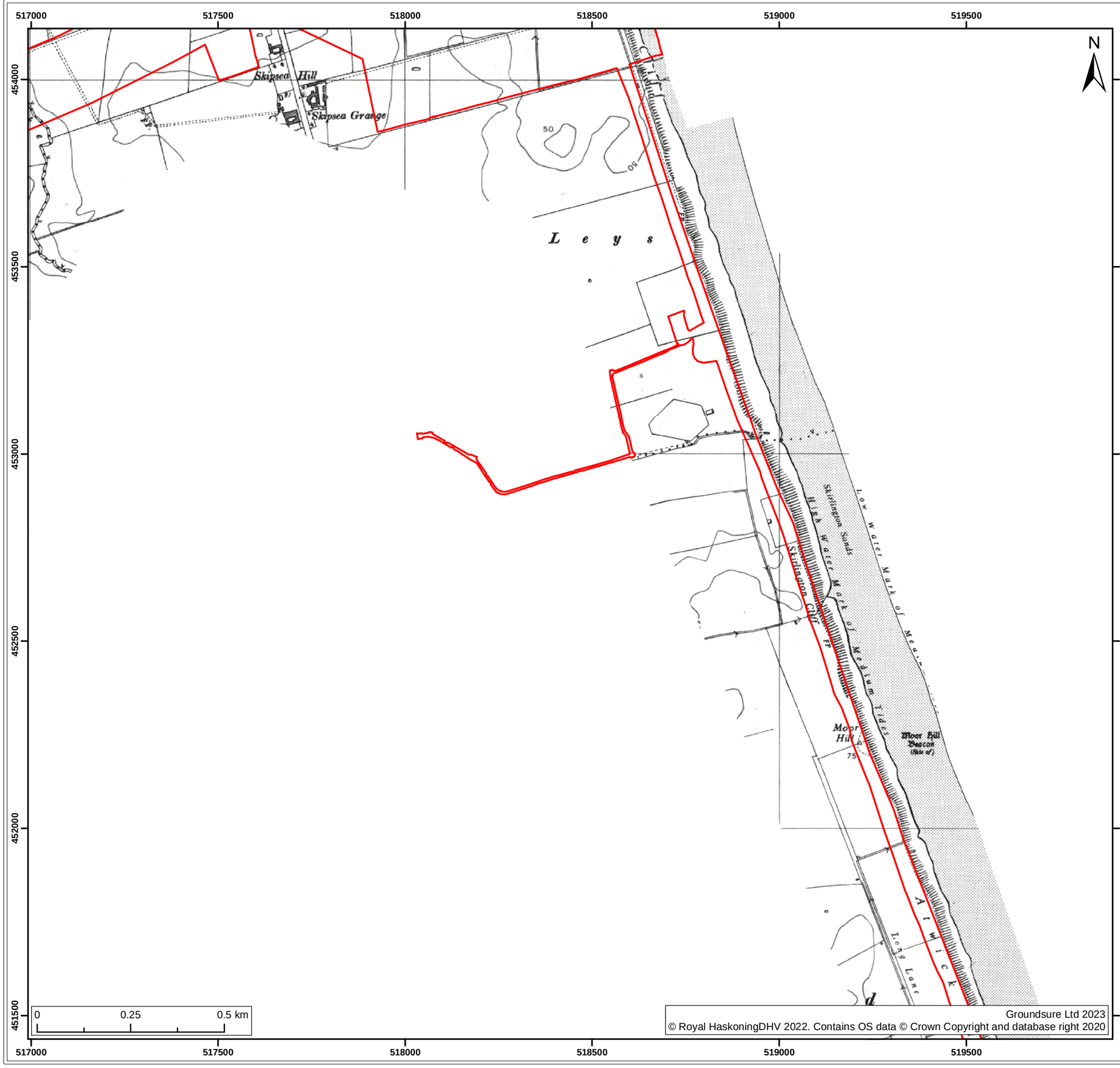

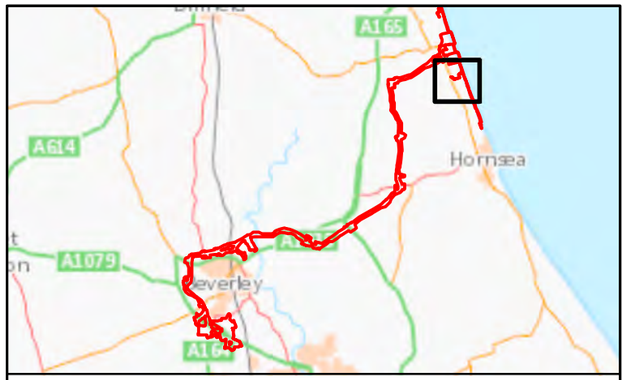

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Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28c

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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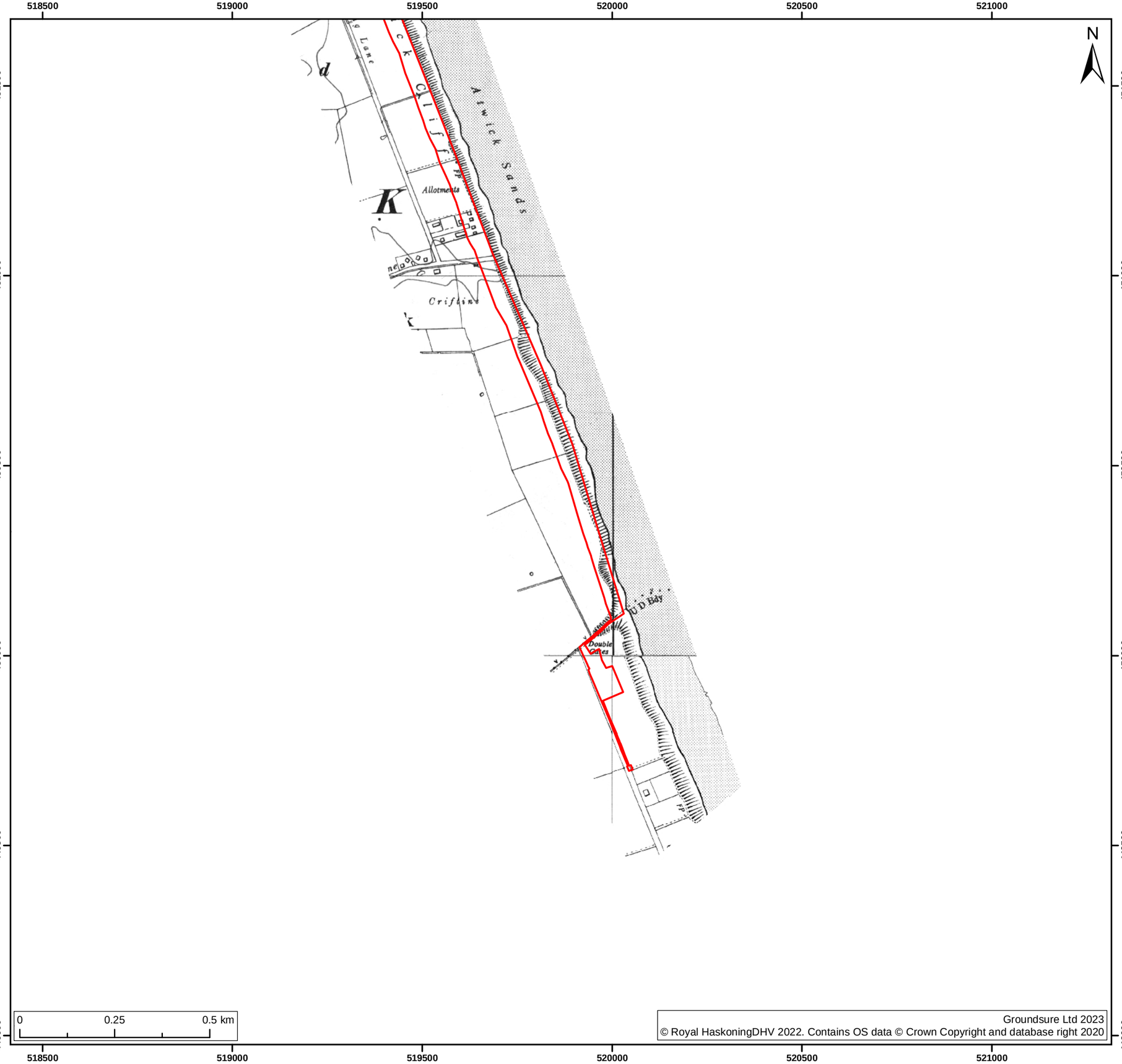

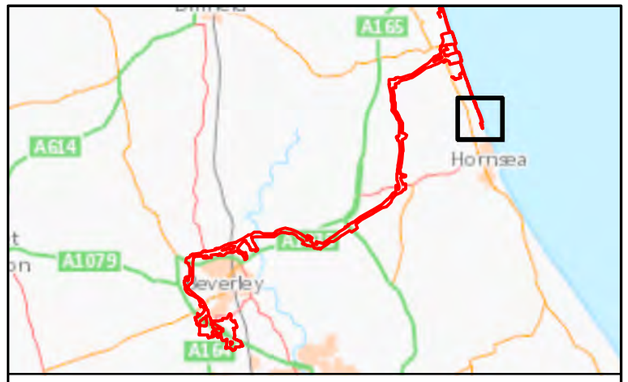

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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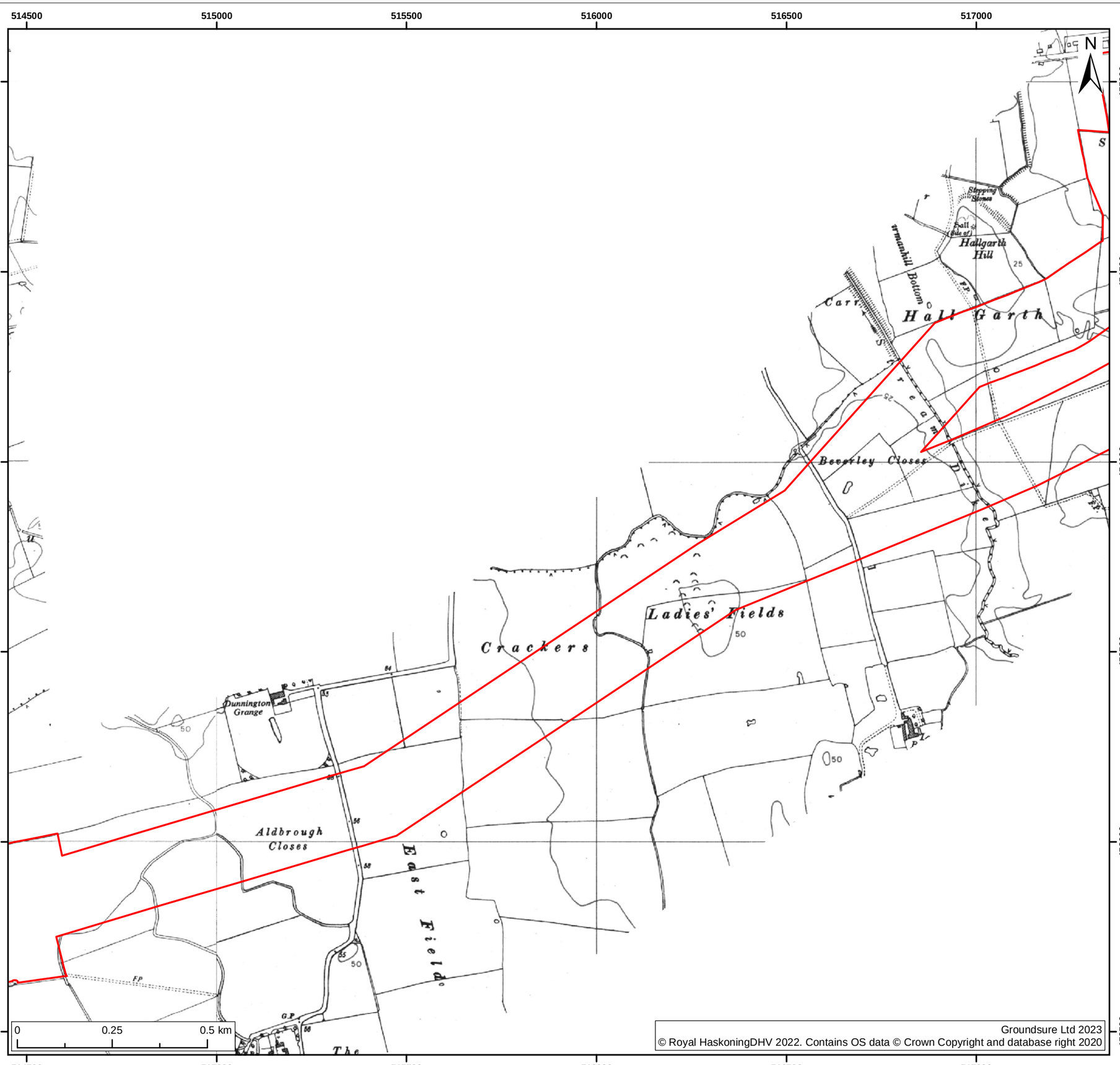

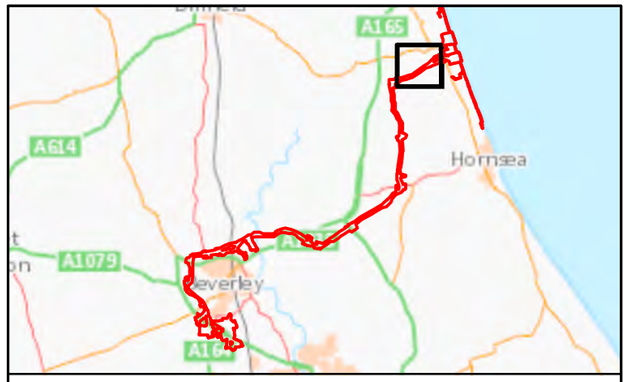

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Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

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Figure: 22-2-28e

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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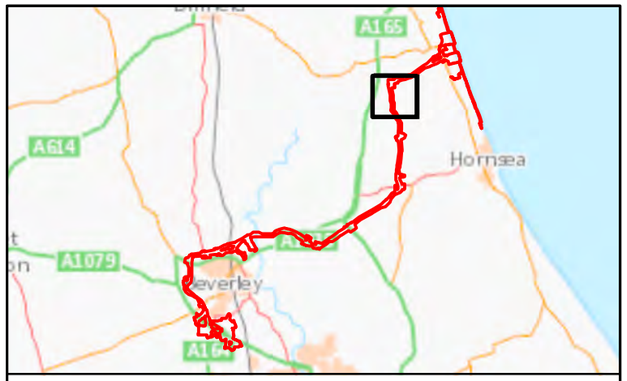
453000 452500 452000 451500 451000 450500



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Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28f

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

513500 514000 514500 515000 515500 516000

450500 450000 449500 449000 448500 448000

N

Mill Hill

Nunkeeling

Hall Garths

The Woodlands

Nunkeeling Wood

Nunkeeling Whins (Fox Covert)

Acron Hill

Wood Nook

Pasturefield House

Catfoss Grange

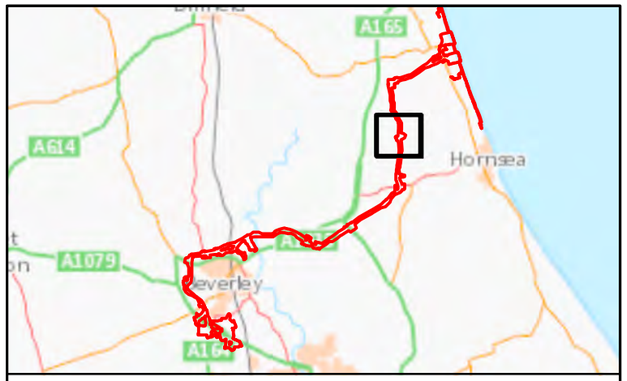
The Manor House on remains of Priory (Benedictine Nuns Founded AD 1152)

W B

G.P

100

0 0.25 0.5 km



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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28g

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

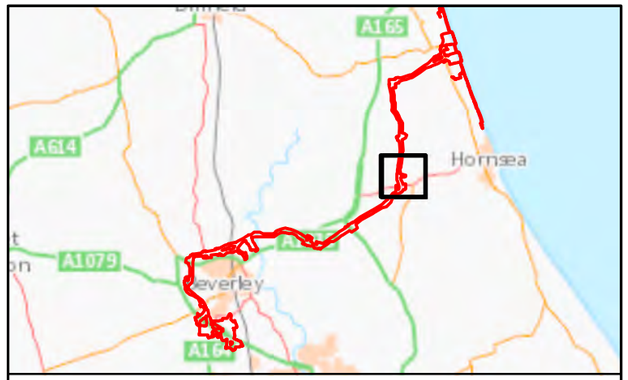
513500 514000 514500 515000 515500 516000

447500
447000
446500
446000
445500

N

Catfoss Bridge
Northern Hills
Hall Farm
Catfoss Hall (Site of)
Windpump
Washdike Bridge
Drain
Allotme

0 0.25 0.5 km



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Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28h

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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445500 445000 444500 444000 443500

N

I C K

Lane

25

Stream Dike

Cobble

Catwick Bridge

Field House

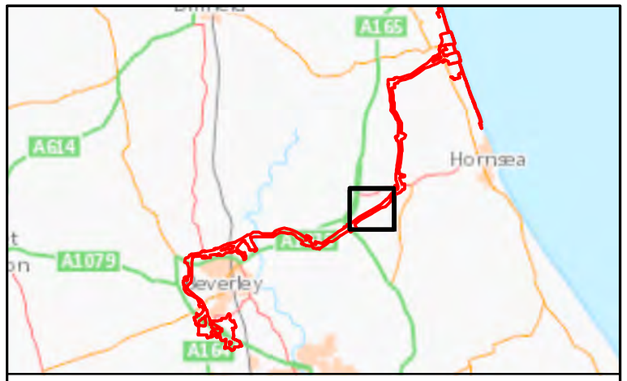
Bowlams Dike

Bowlams Fox Covert

B o w l a m s

FP

0 0.25 0.5 km



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Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28i

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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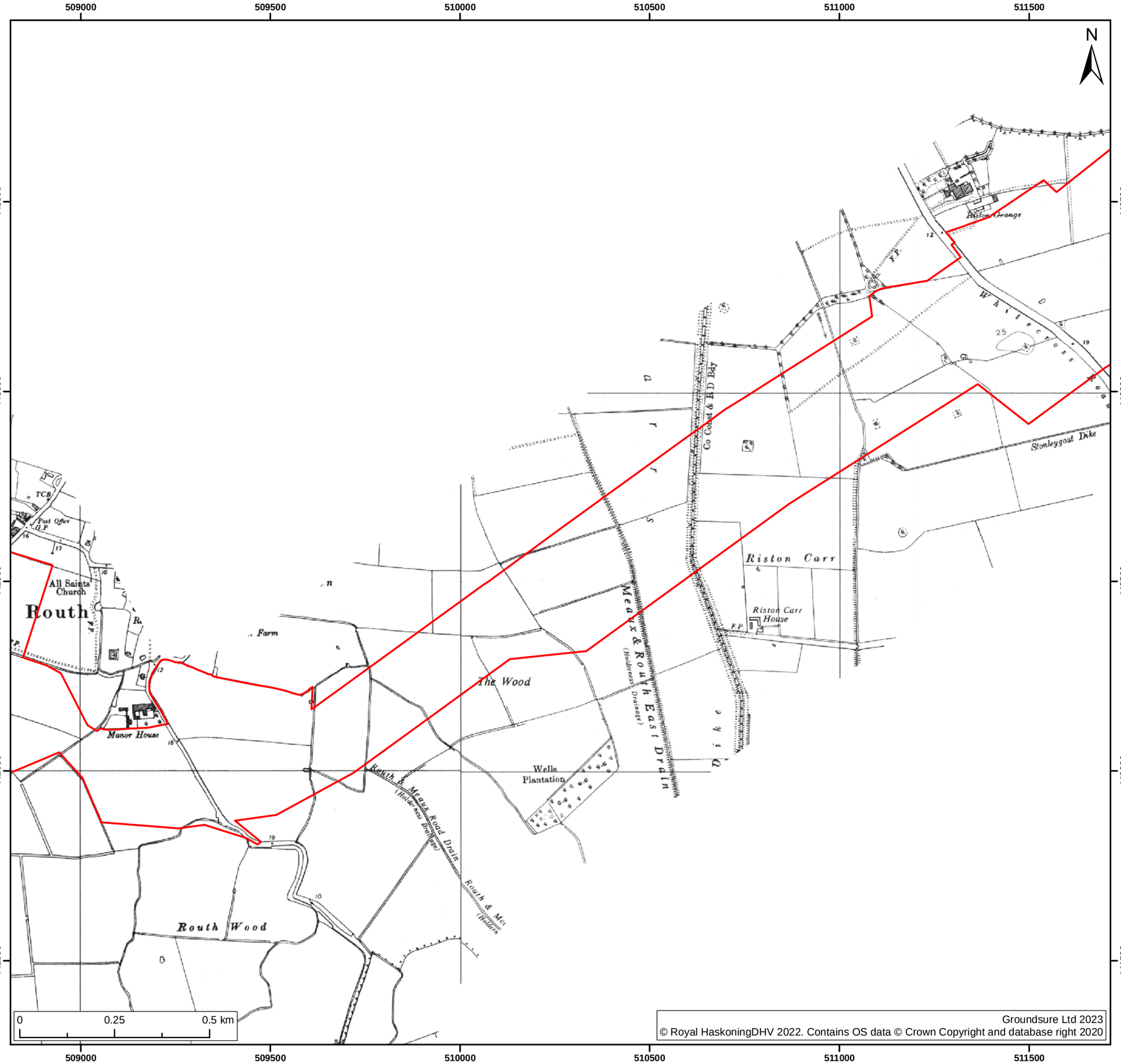

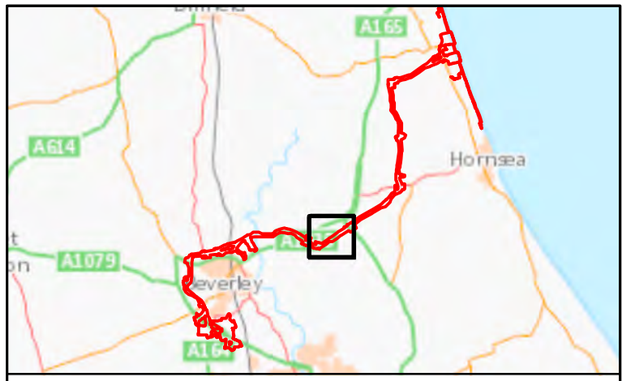

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Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28j

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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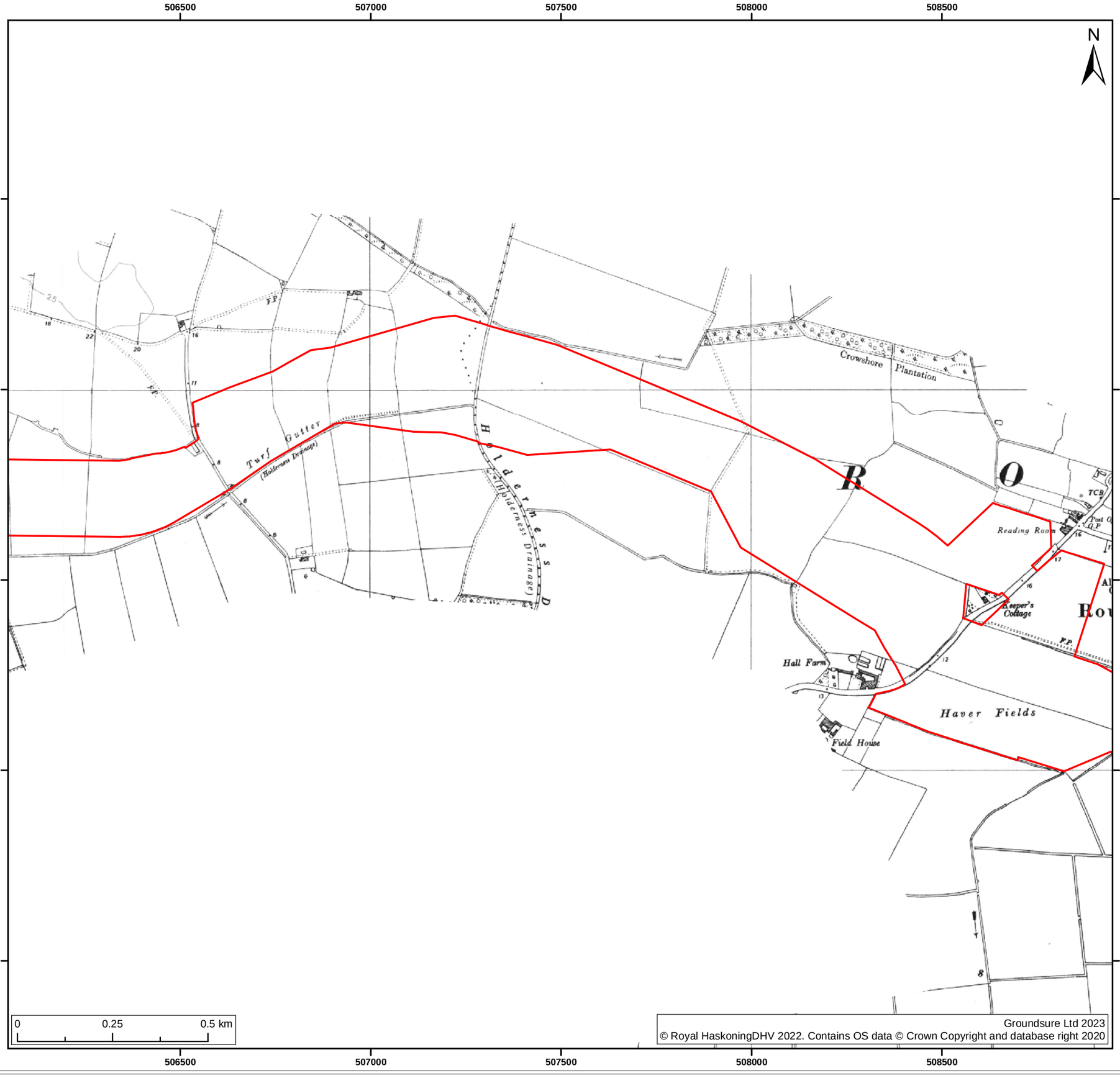

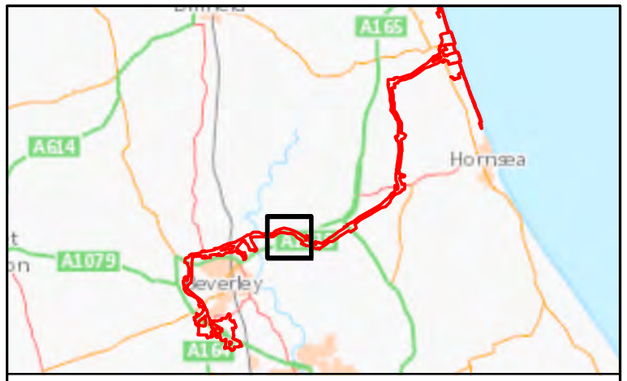

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Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28k

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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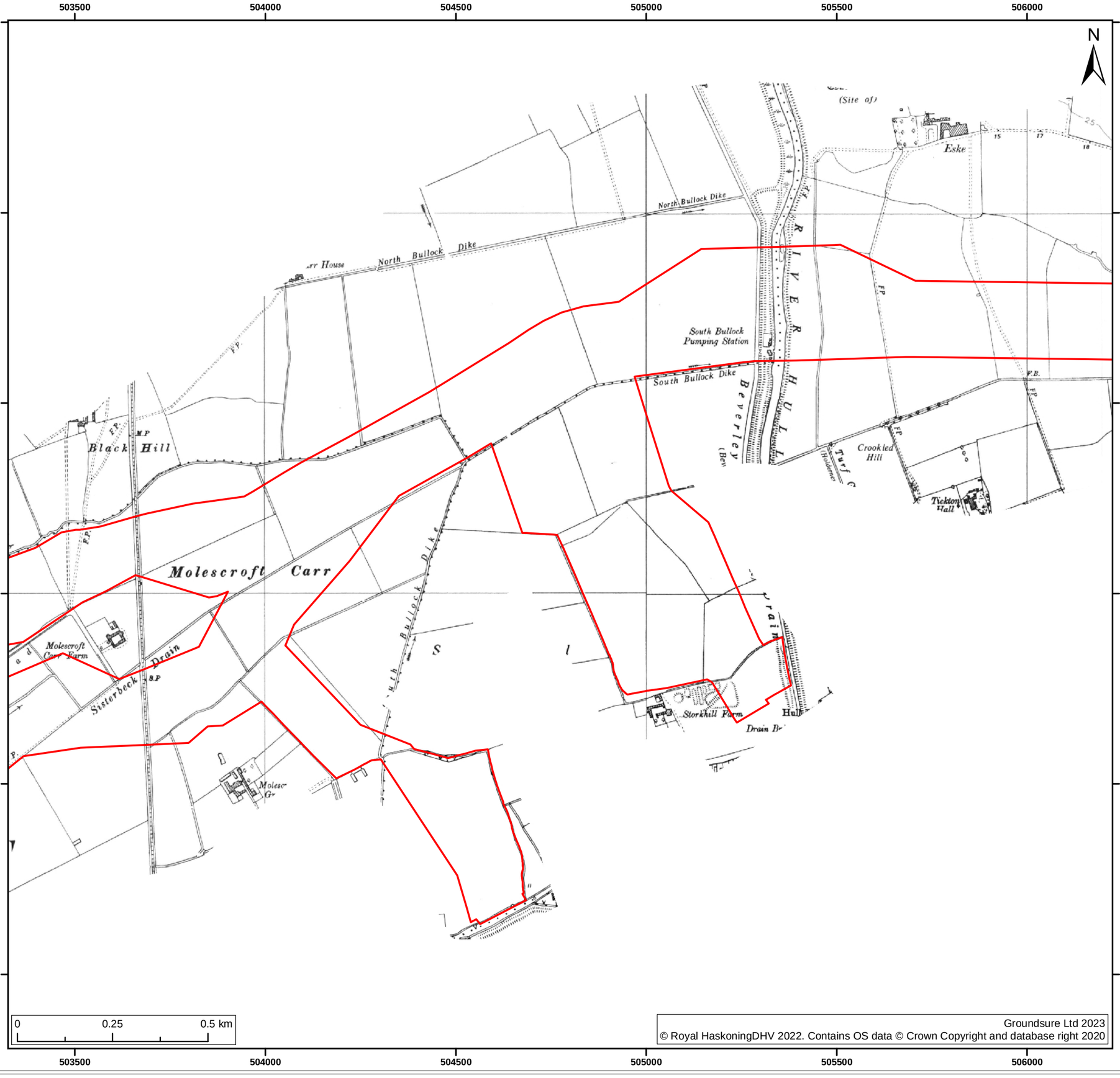

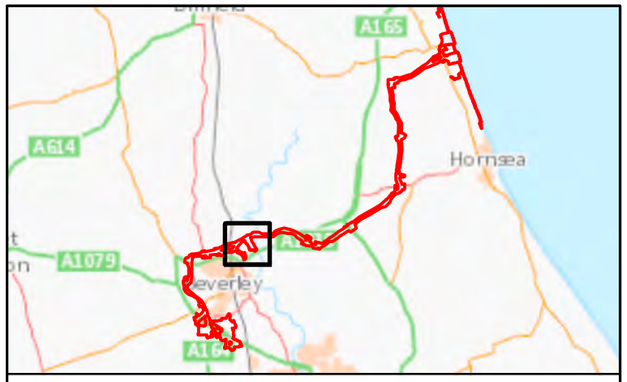

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Title:

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Figure: 22-2-28l

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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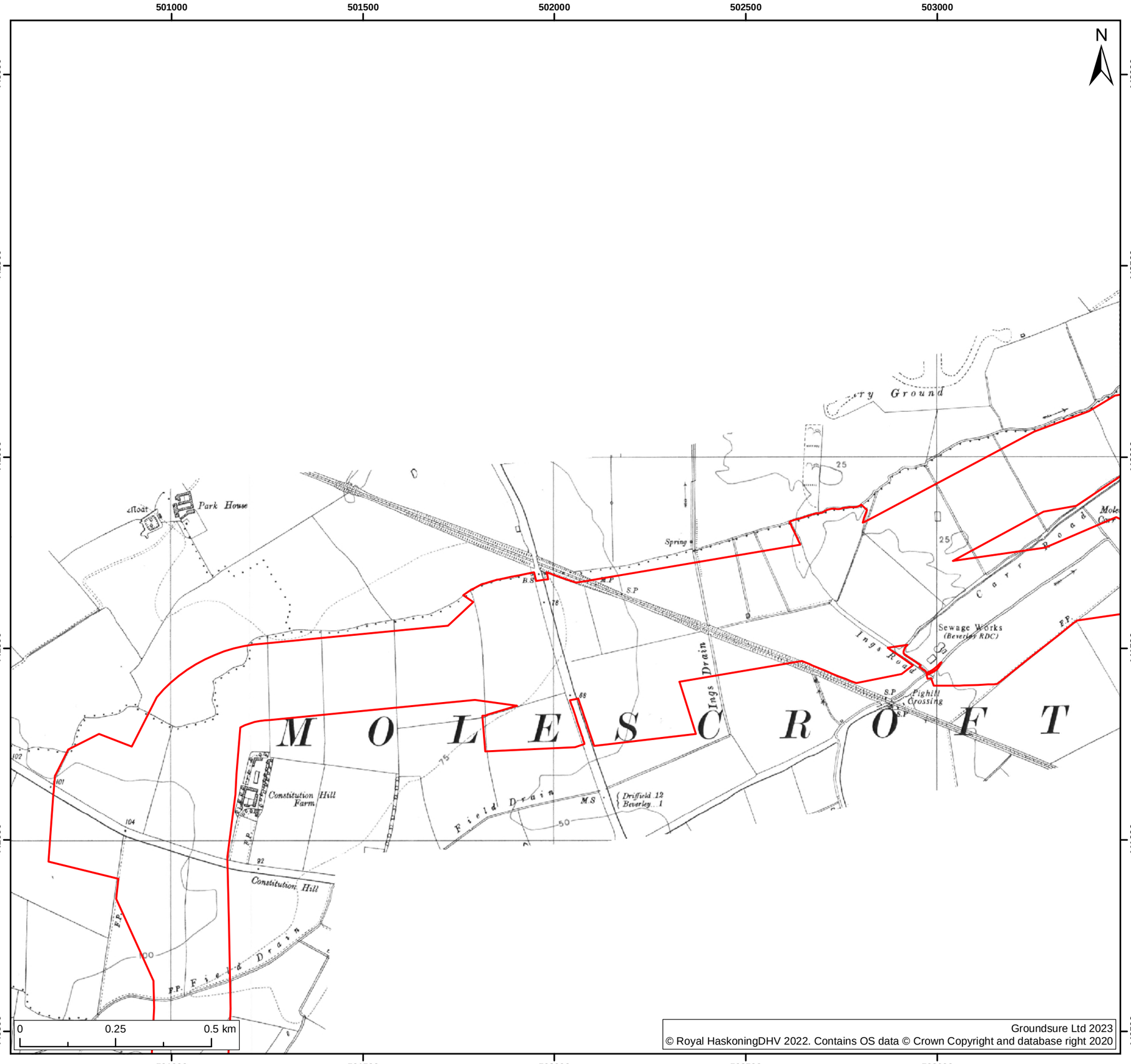

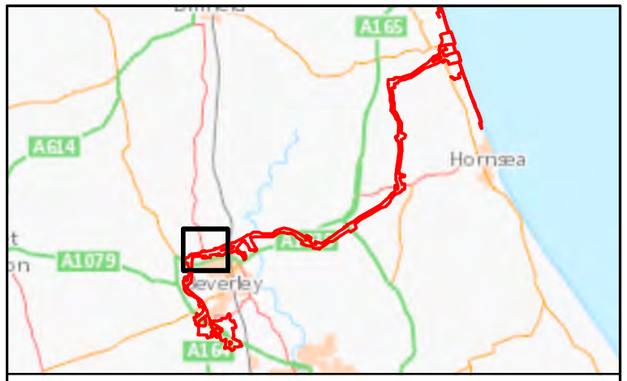

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Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28m

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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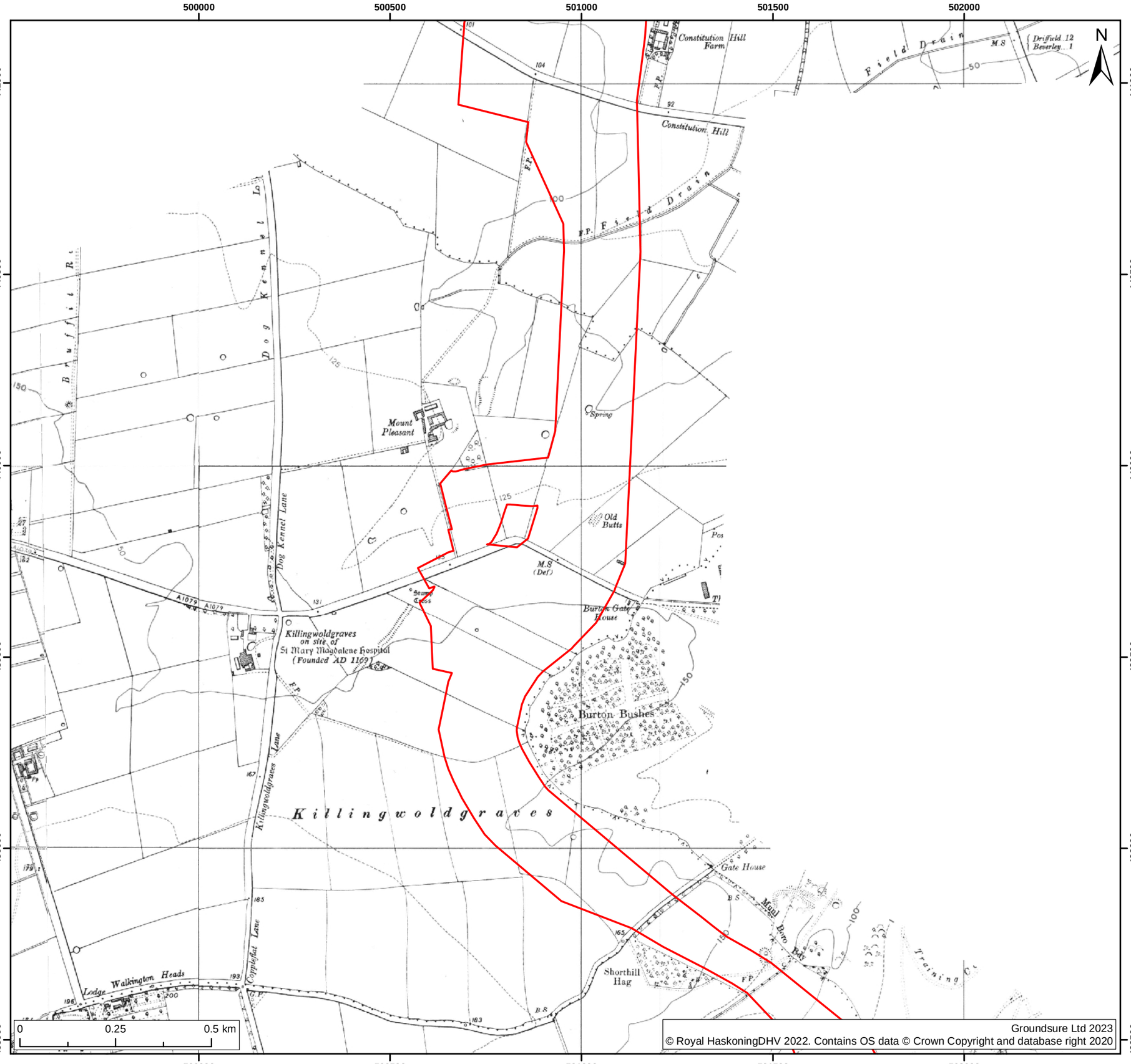

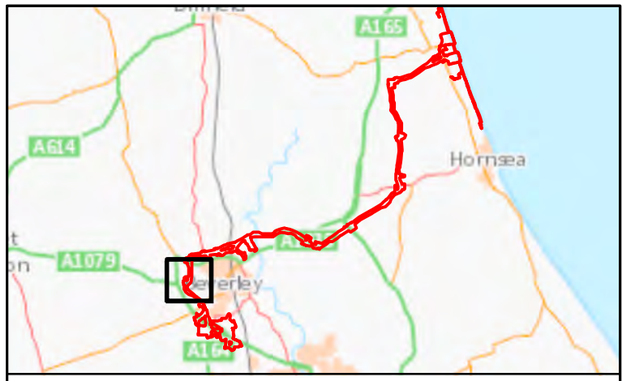

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Title:

Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28n

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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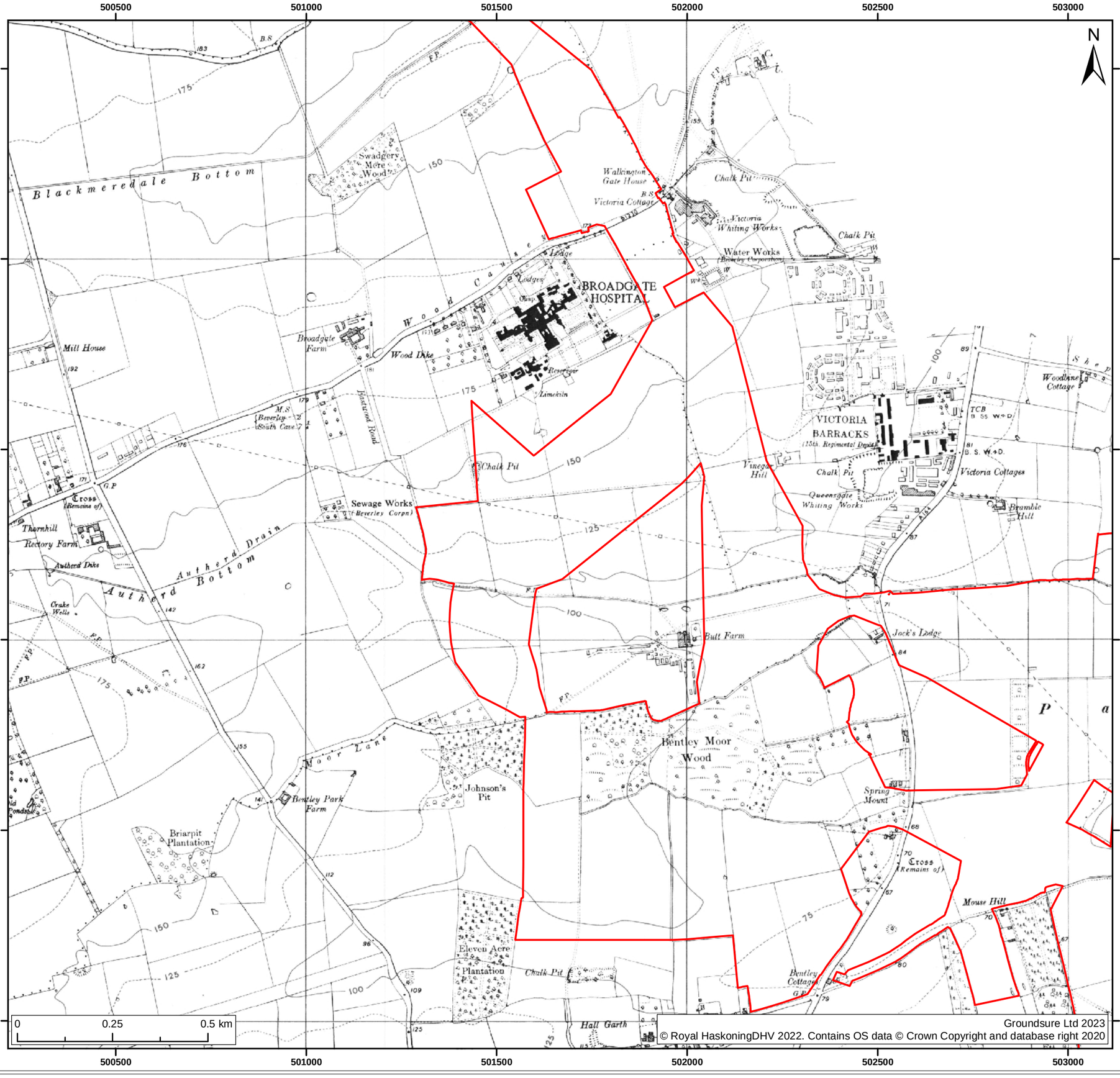

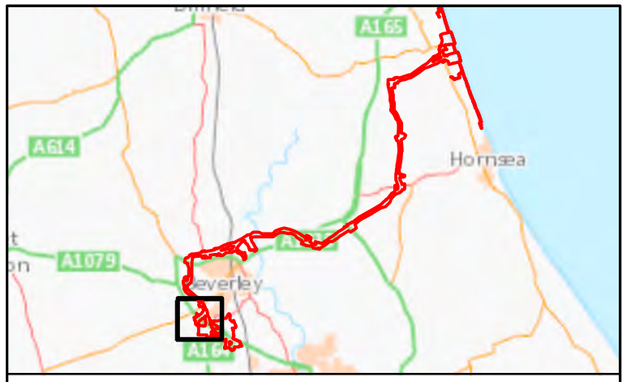

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Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-280	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445	
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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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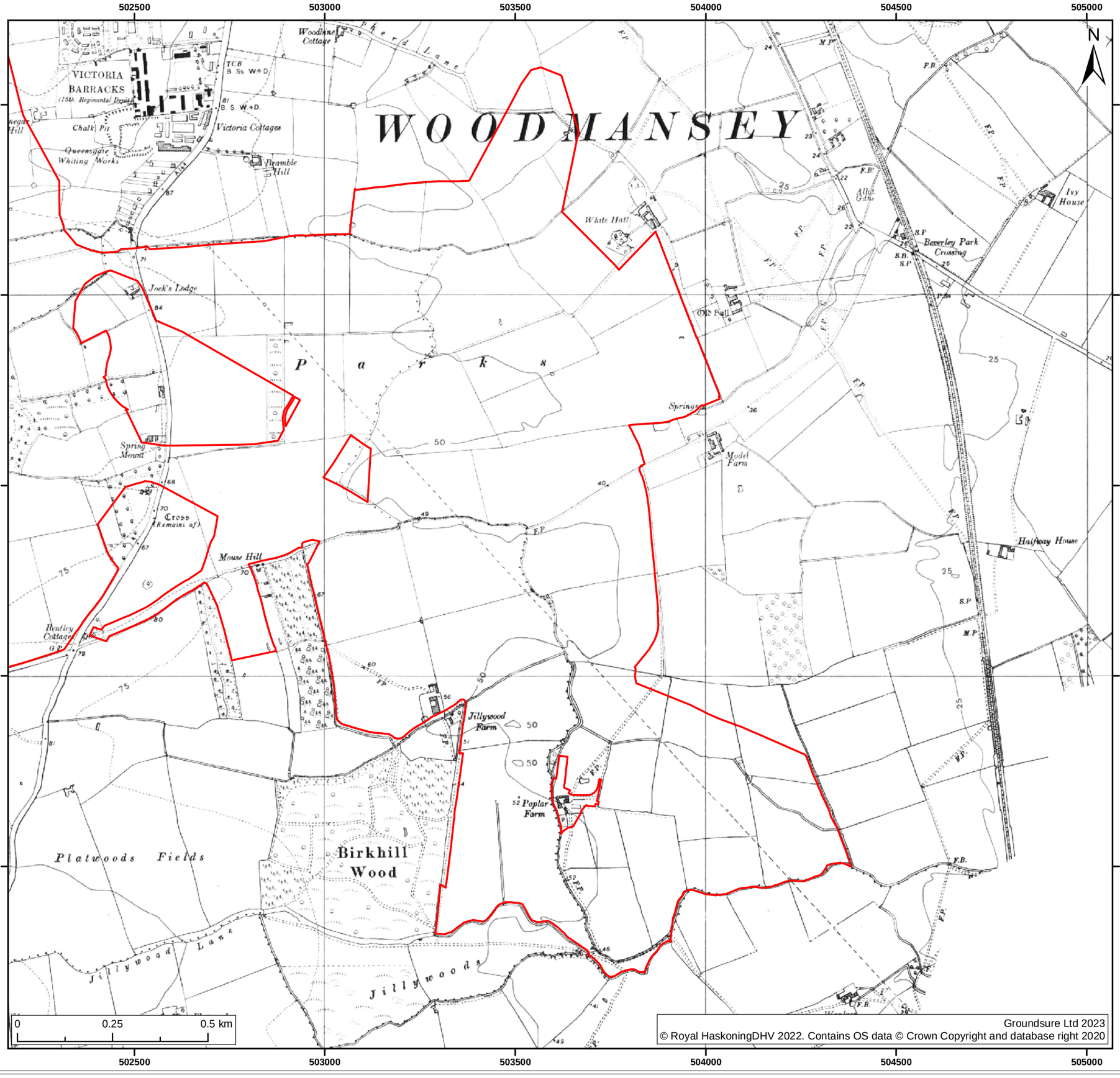

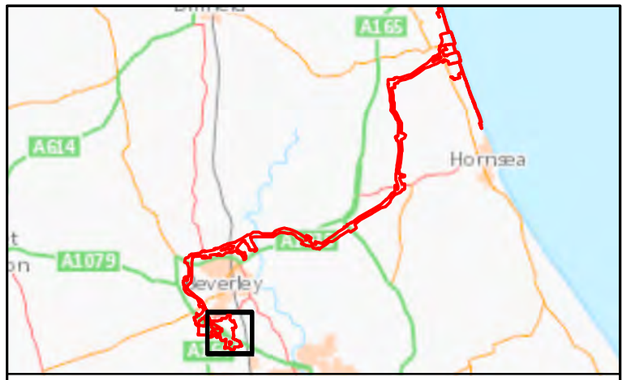

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Ordnance Survey Mapping 1950 - 1956
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Figure: 22-2-28p	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0445

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Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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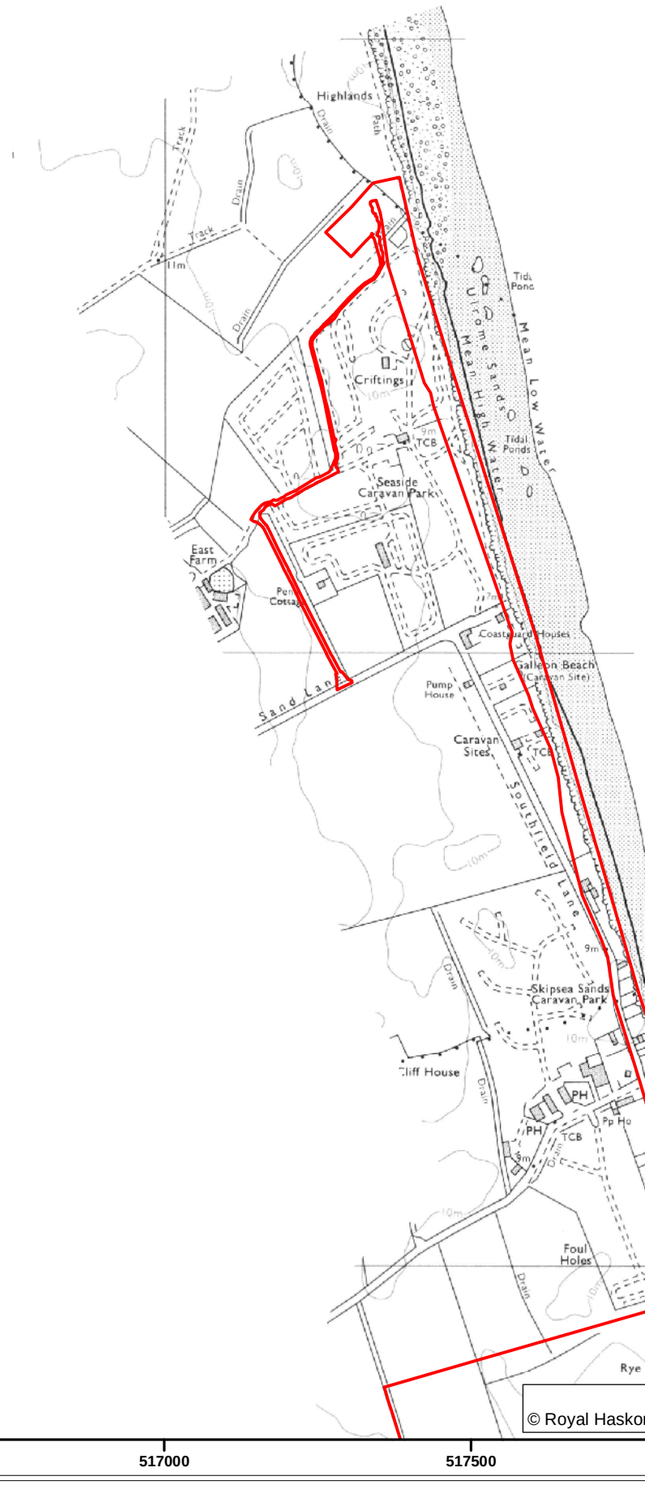

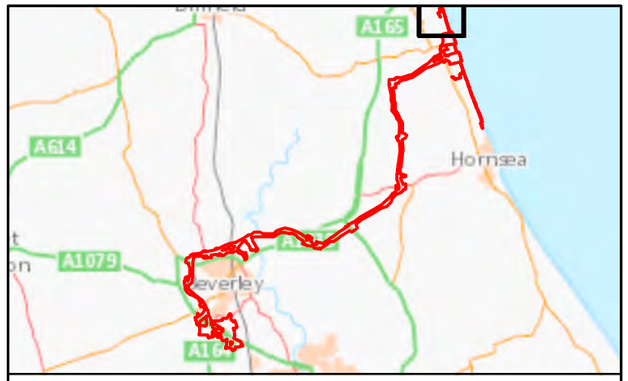

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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-3-29a	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

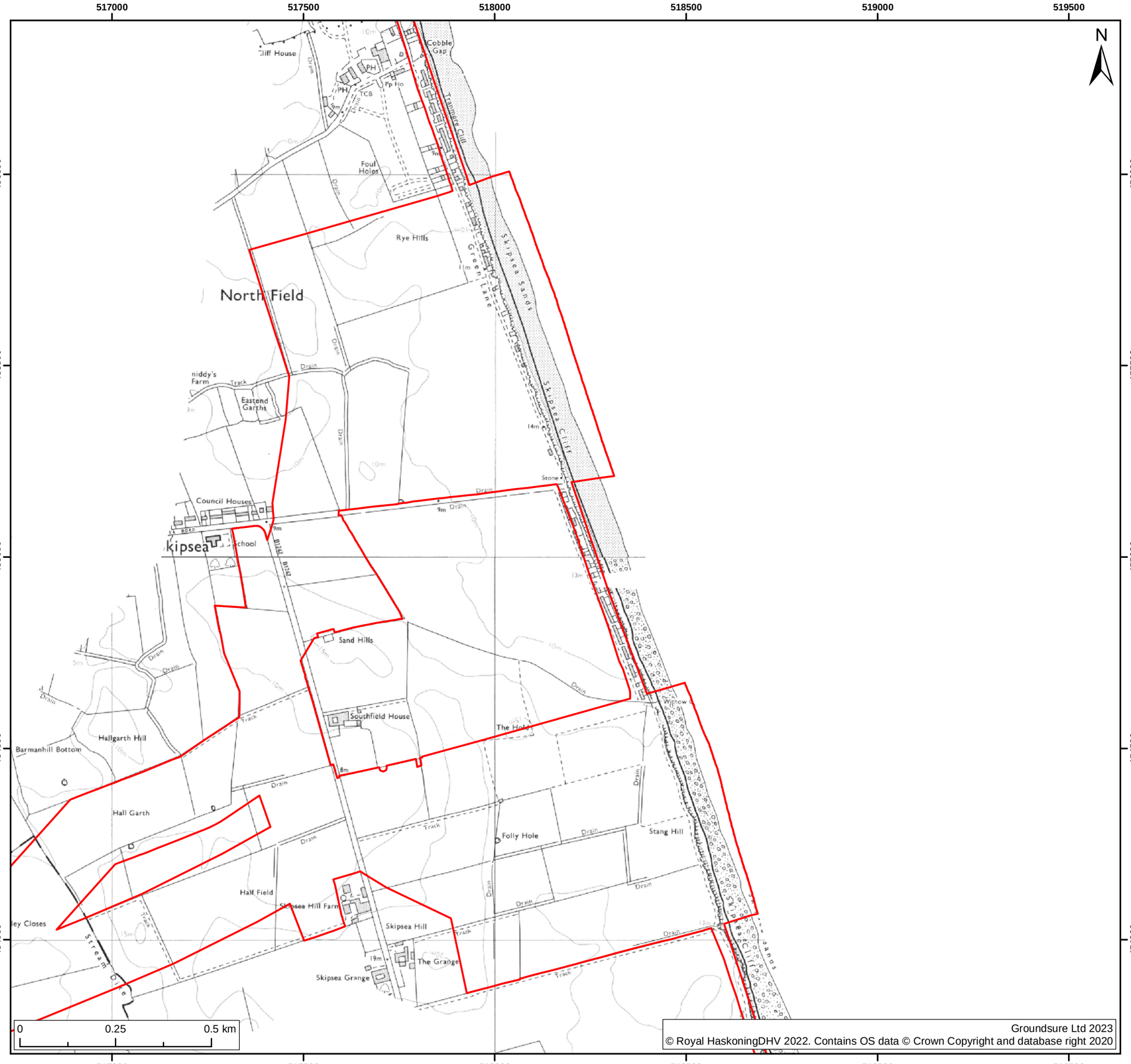
AIRPHOTO SERVICES RWE

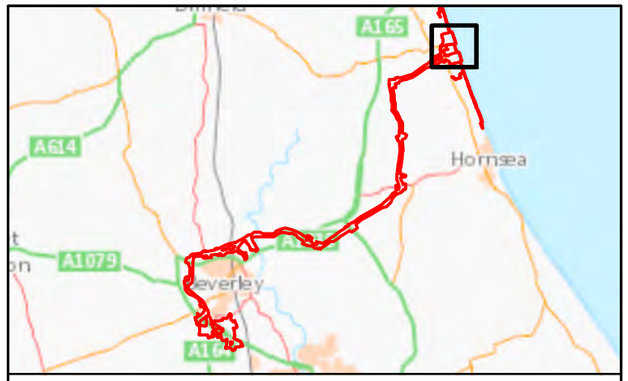
516000 516500 517000 517500 518000 518500

458000 457500 457000 456500 456000

N

0 0.25 0.5 km





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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29b

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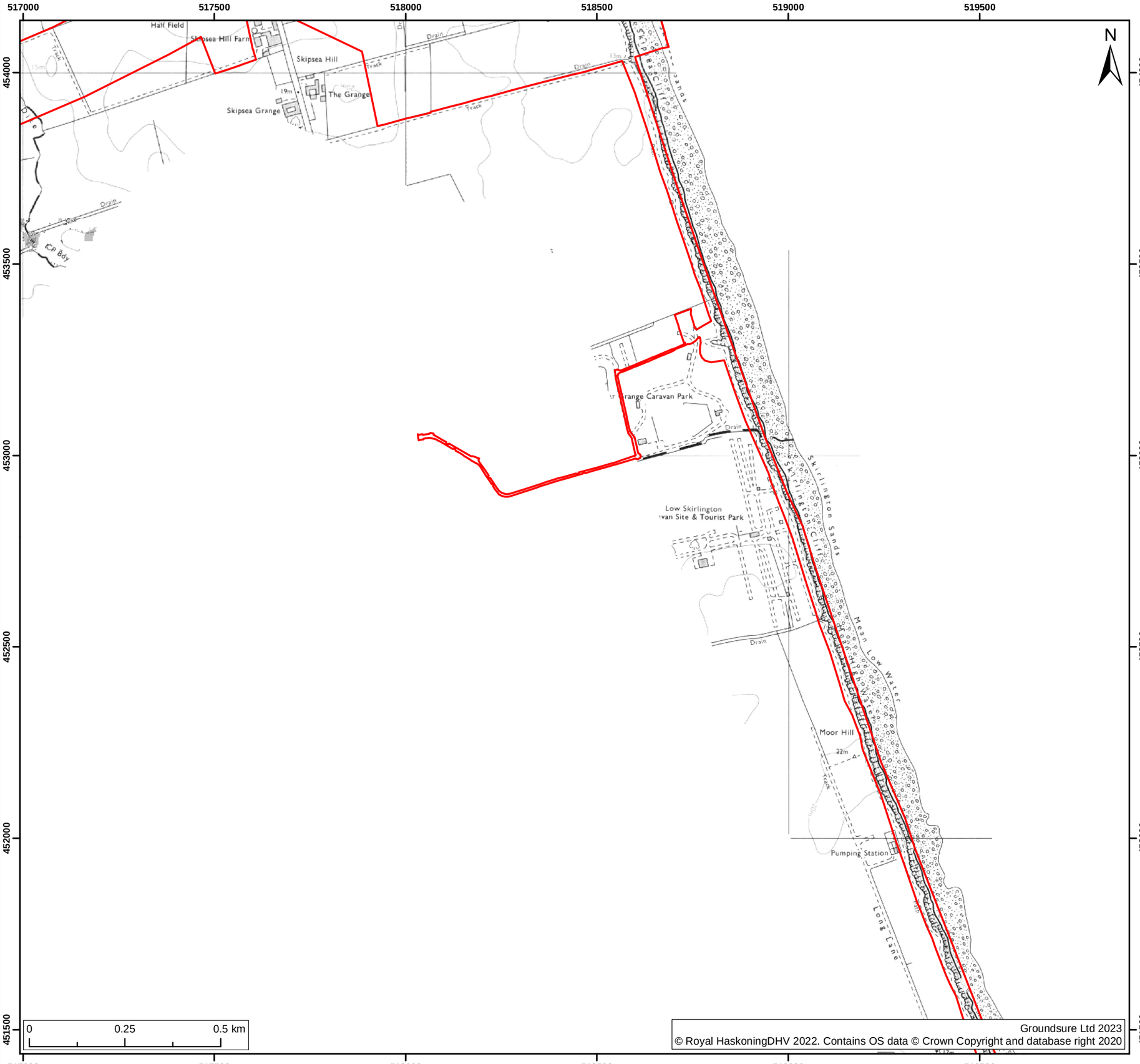
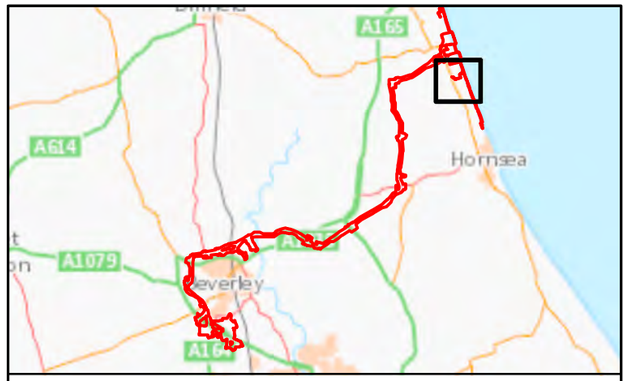
Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE





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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29c

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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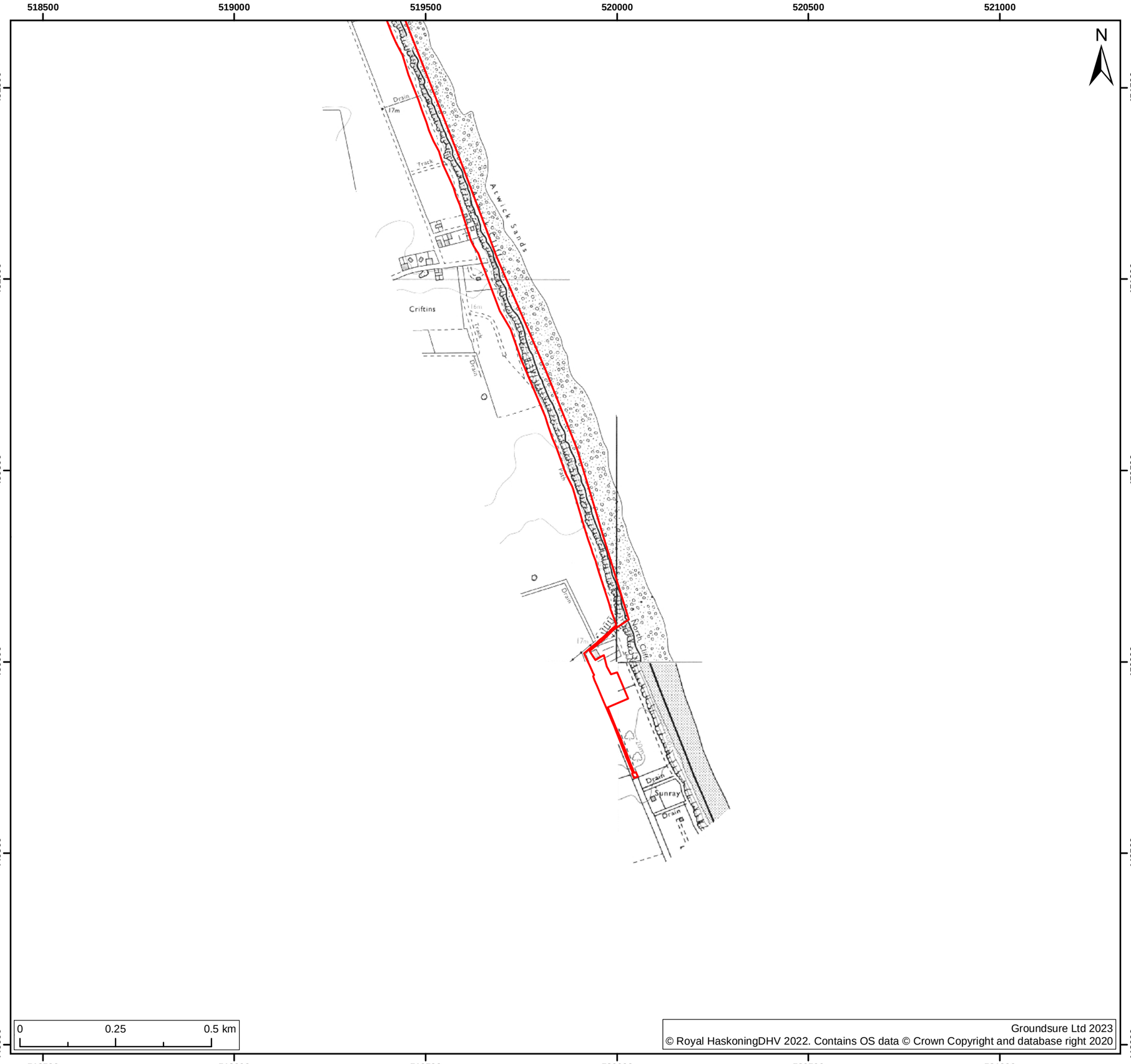

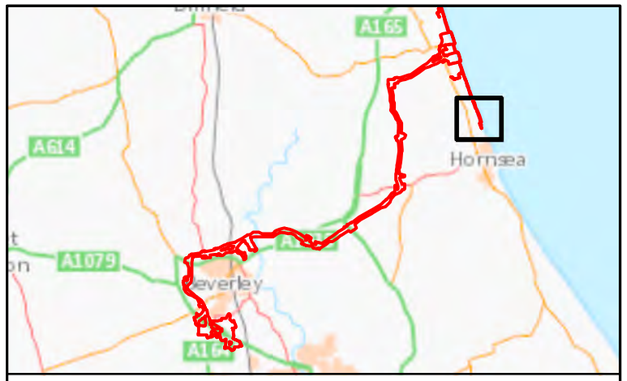

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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29d

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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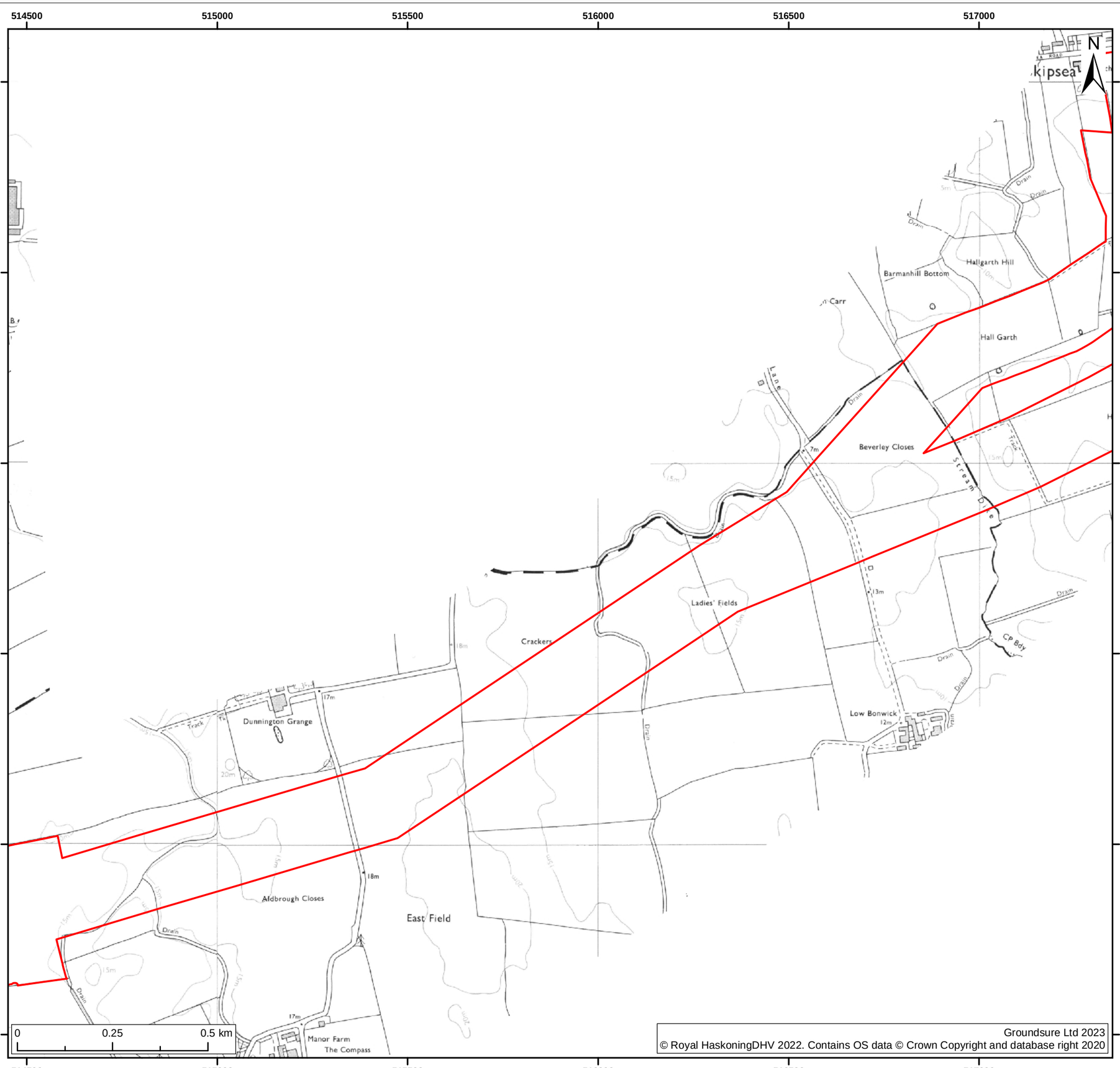

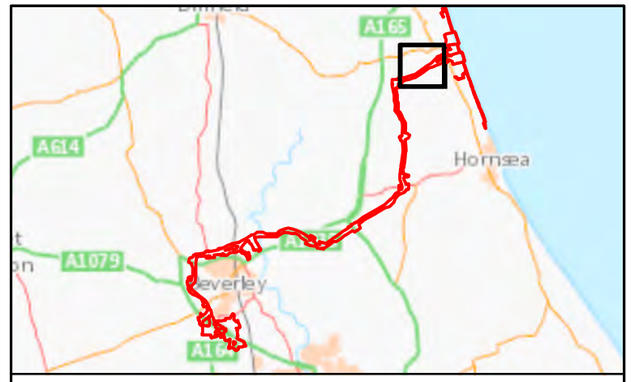

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Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29e

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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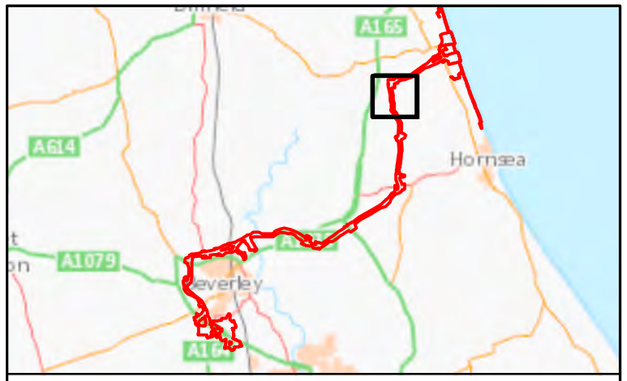

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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29f

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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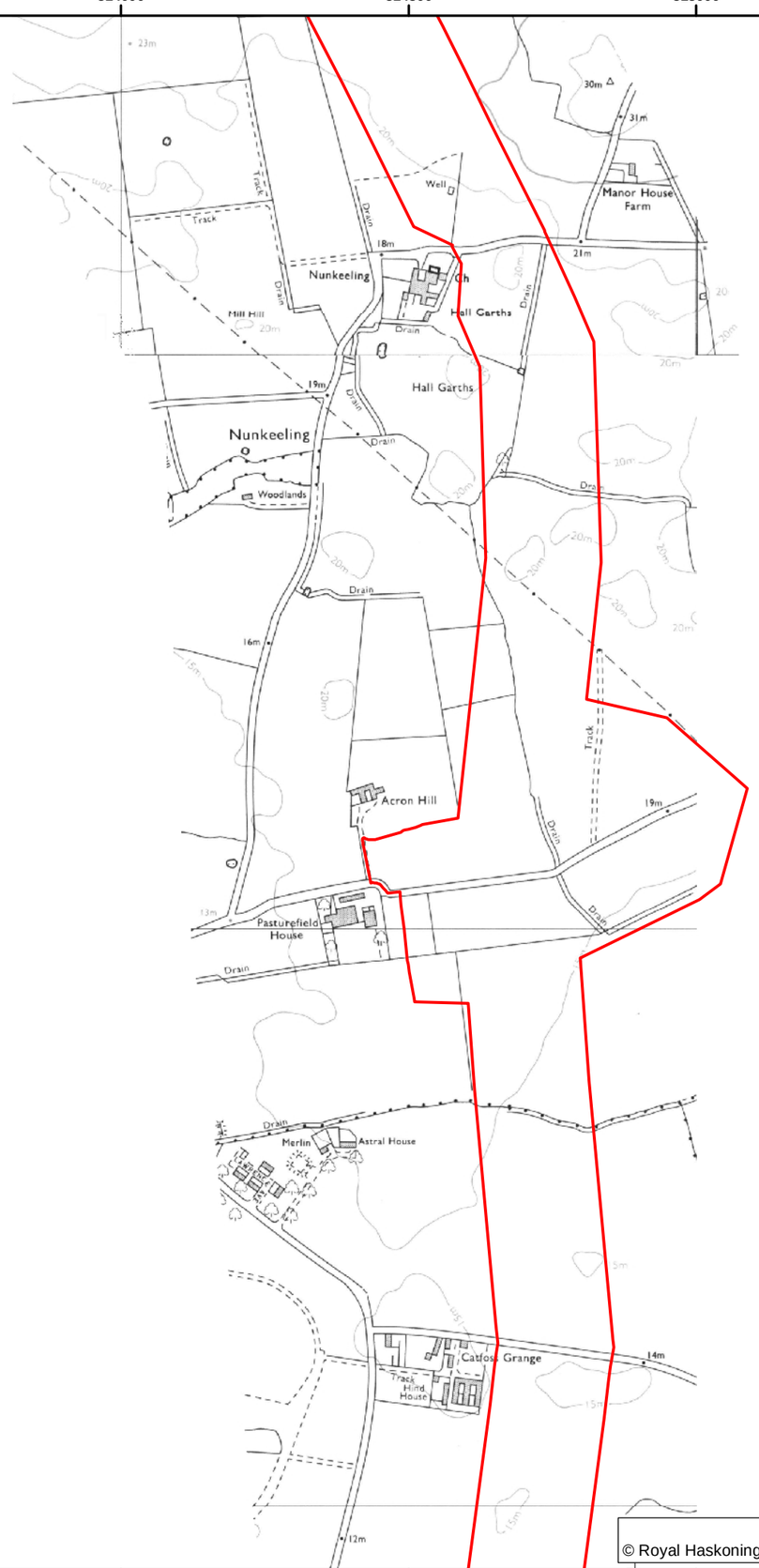

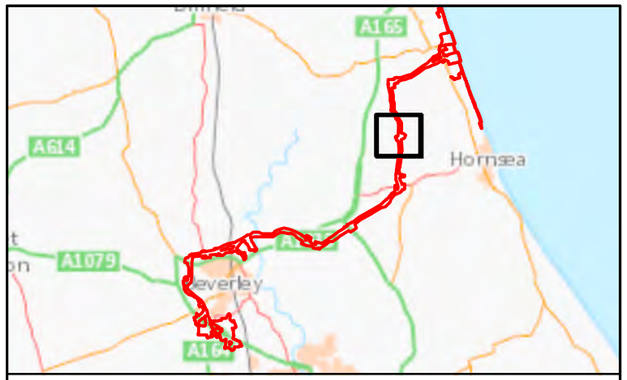

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Figure: 22-2-29g

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Project:

Dogger Bank South
Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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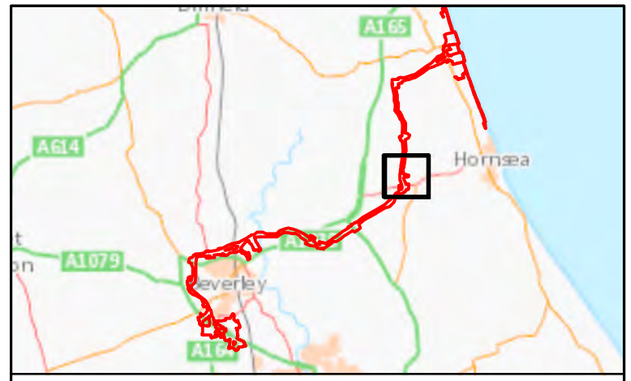

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Assessment Study Area

S2	P01	21/03/2023	Suitable for Information	ASJ	CC	CC
SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29h

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid

Page Size: A3

Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

511500 512000 512500 513000 513500 514000

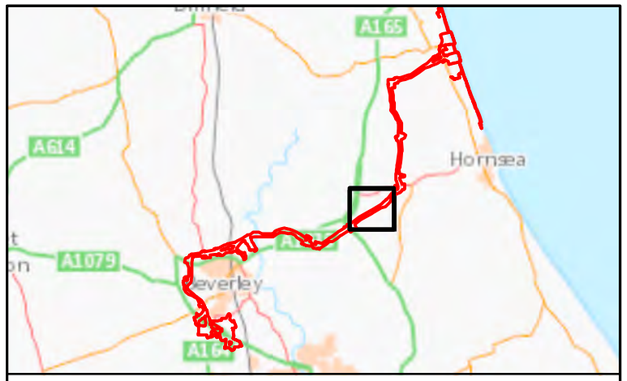
445500 445000 444500 444000 443500

N

WICK CP

Track
Drain
Drain
Lane
Drain
Stream Dike
Cobble Farm
Catwick
Catwick Bridge
Brickyard Farm
Field House
Track
Bowlams Dike
Bowlams Fox Covert
Joint & CP Bdy
Bowlams
Drain
Drain
Drain
Track
The Poplars
Drain
Drain
Cottage
Grange
Track
Prospect House
Track

0 0.25 0.5 km



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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29i

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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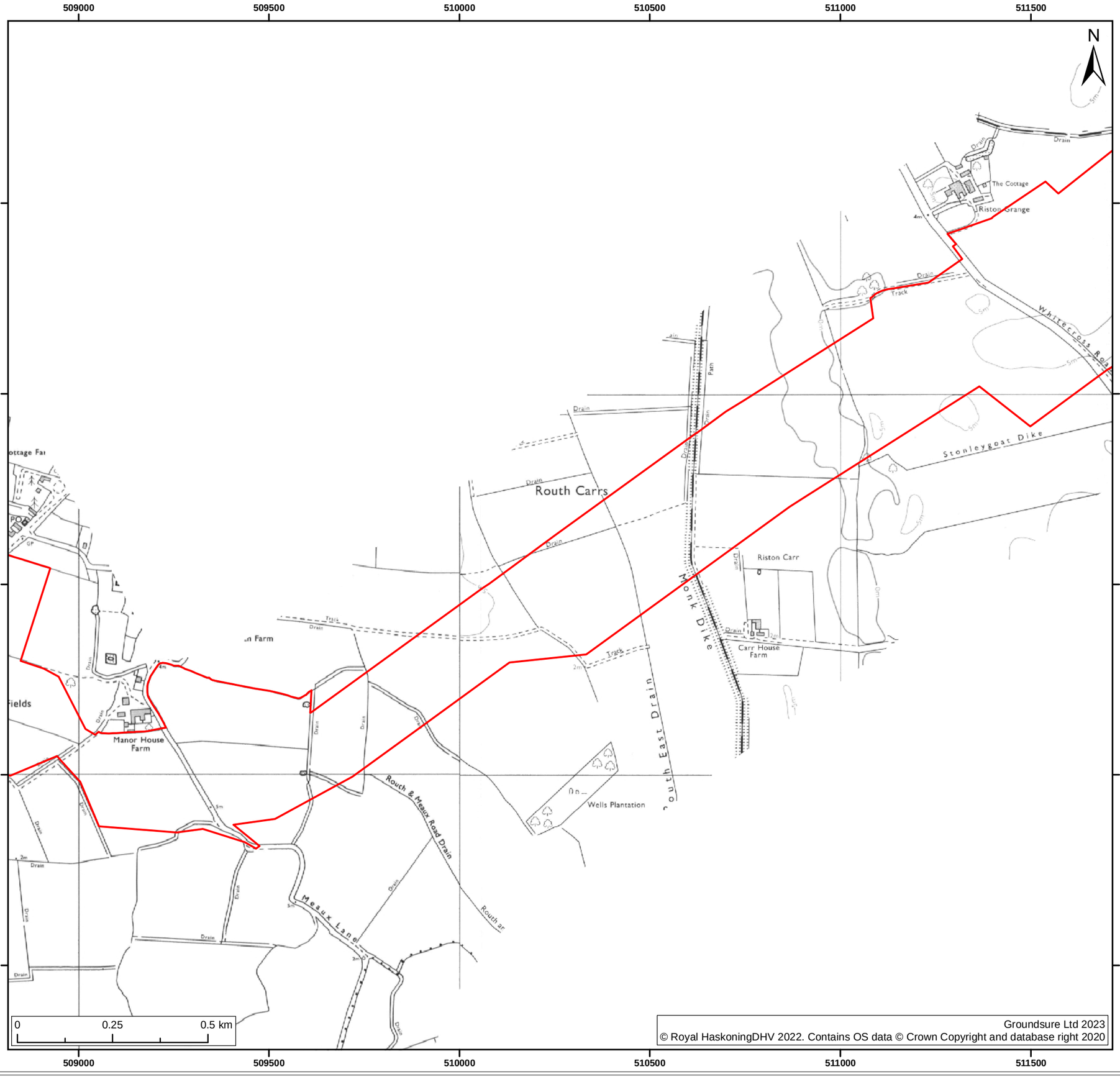

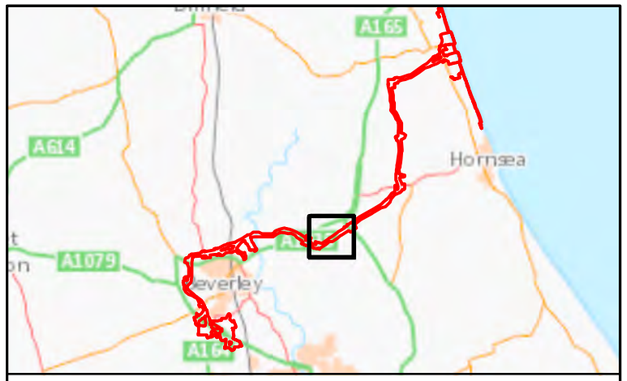

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29j

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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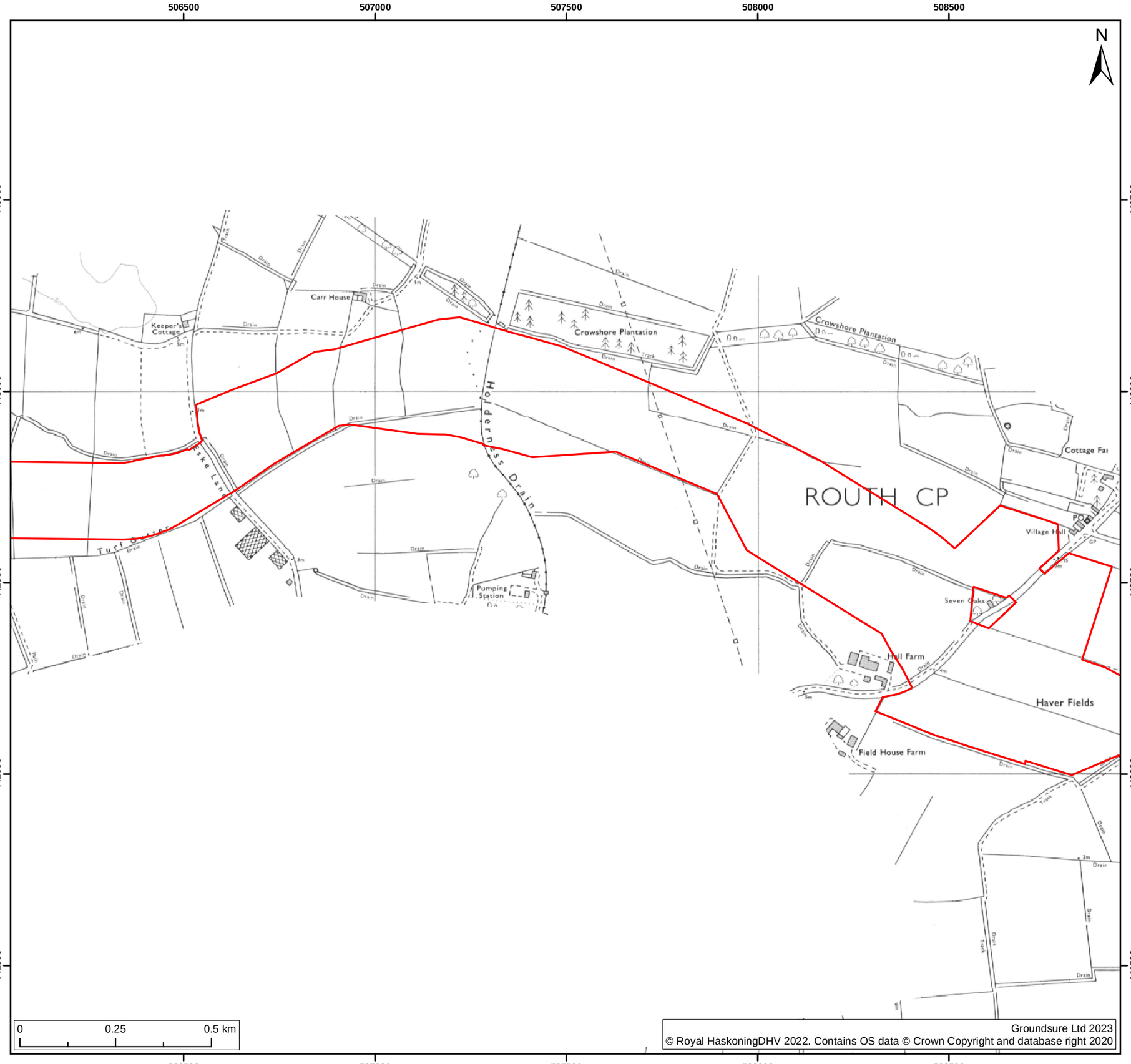

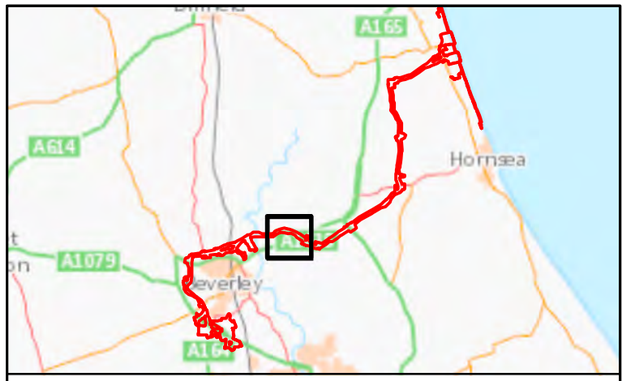

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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29k

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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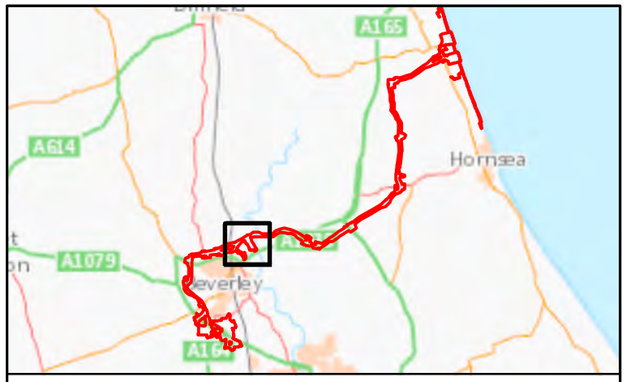

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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29l

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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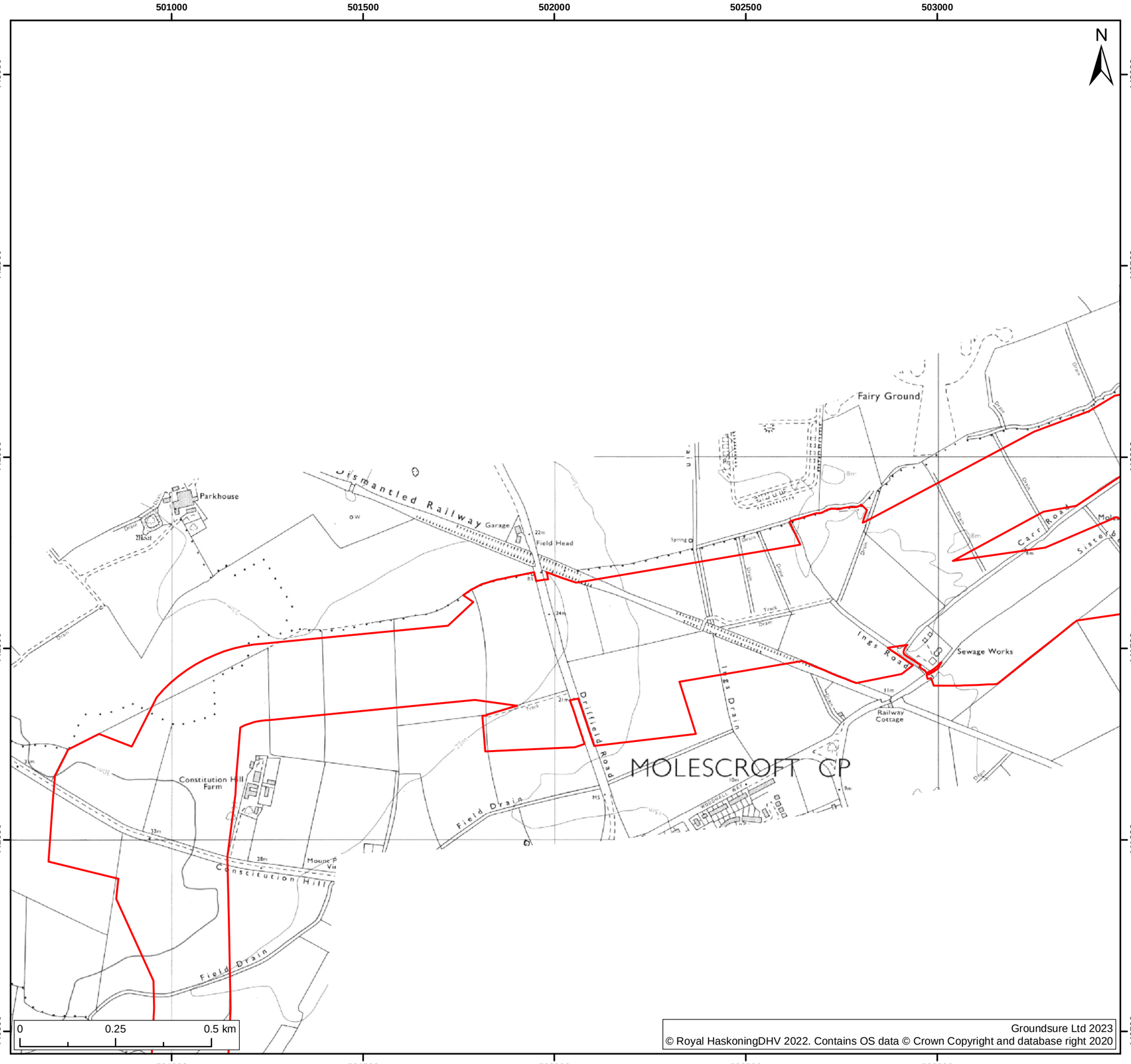

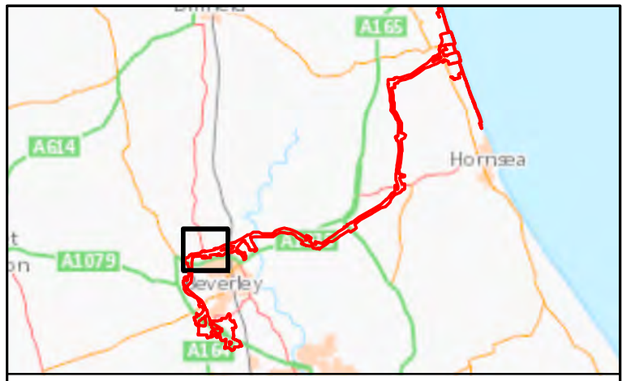

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Assessment Study Area

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Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29m

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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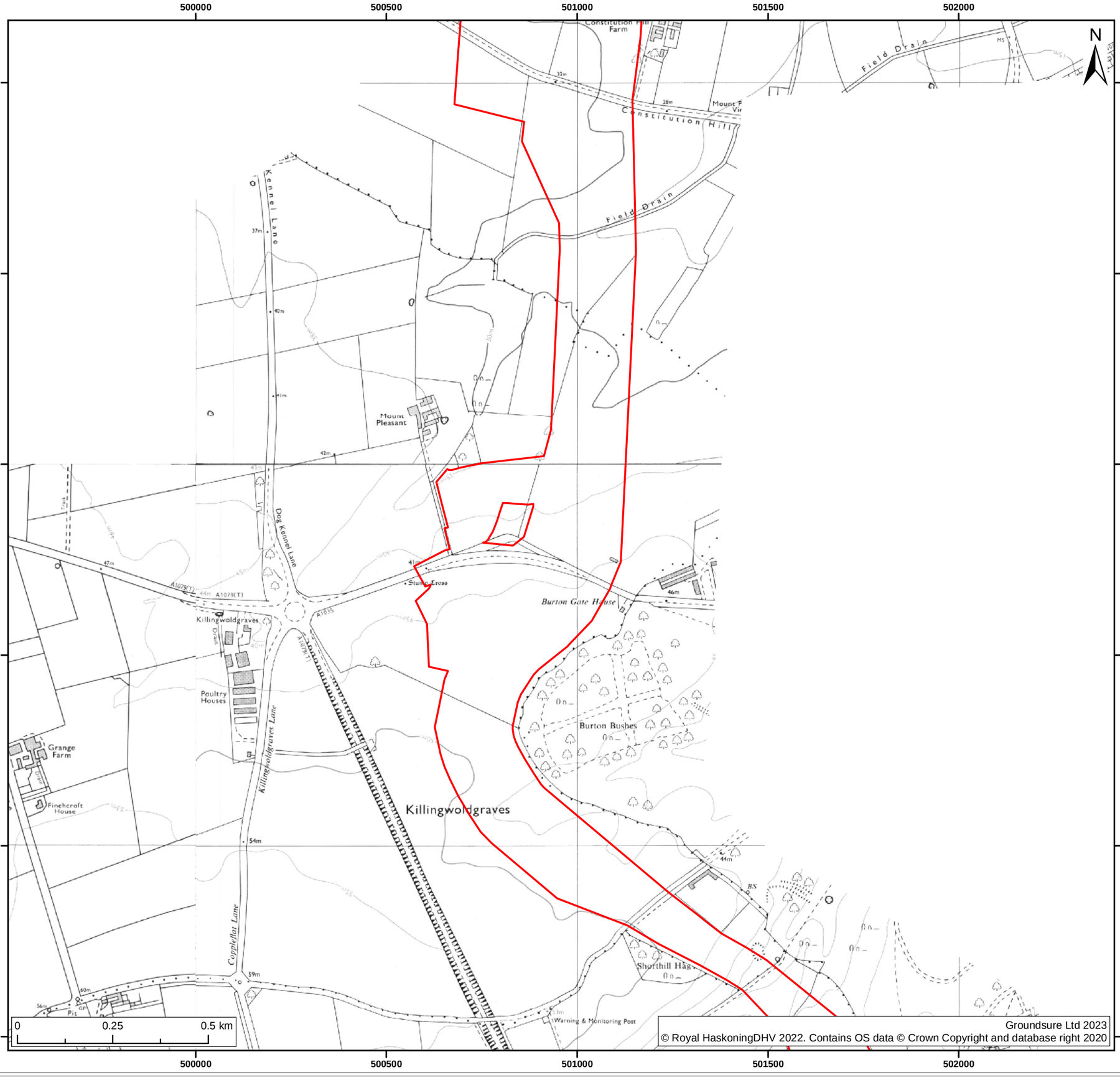

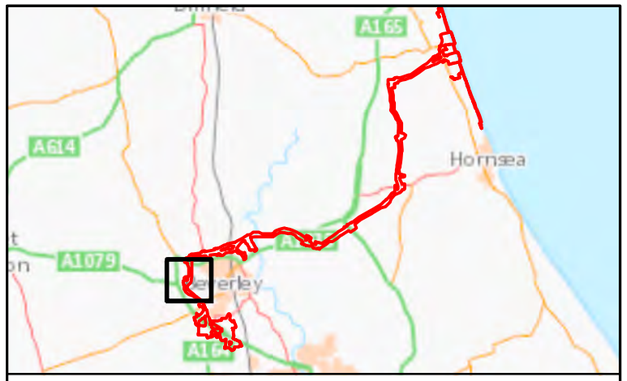

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29n

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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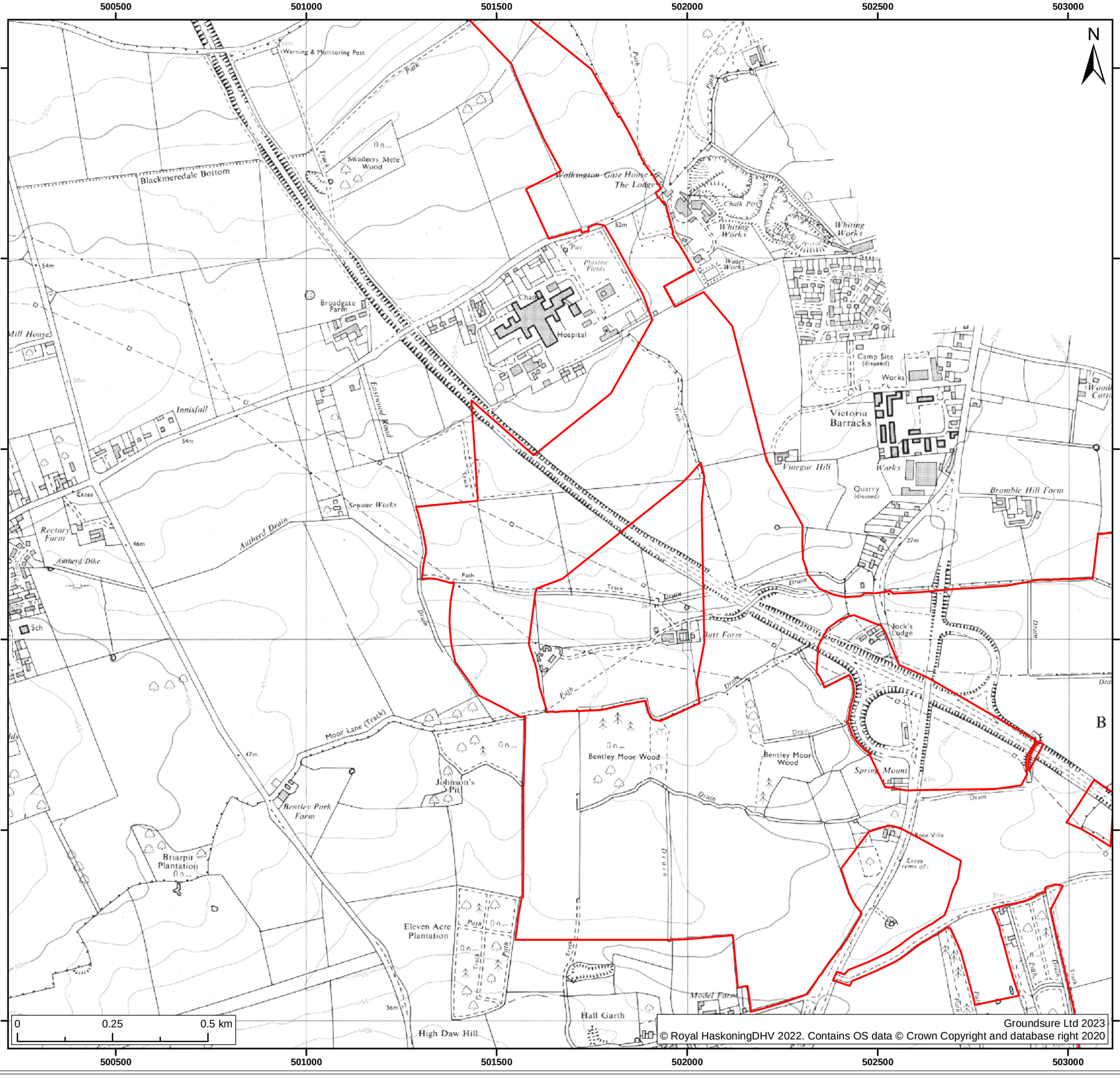

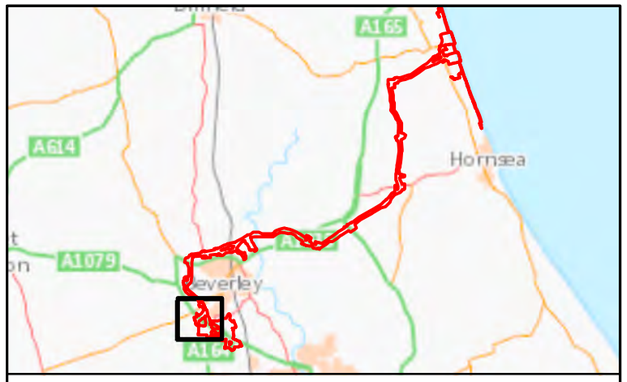

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Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29o	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446	
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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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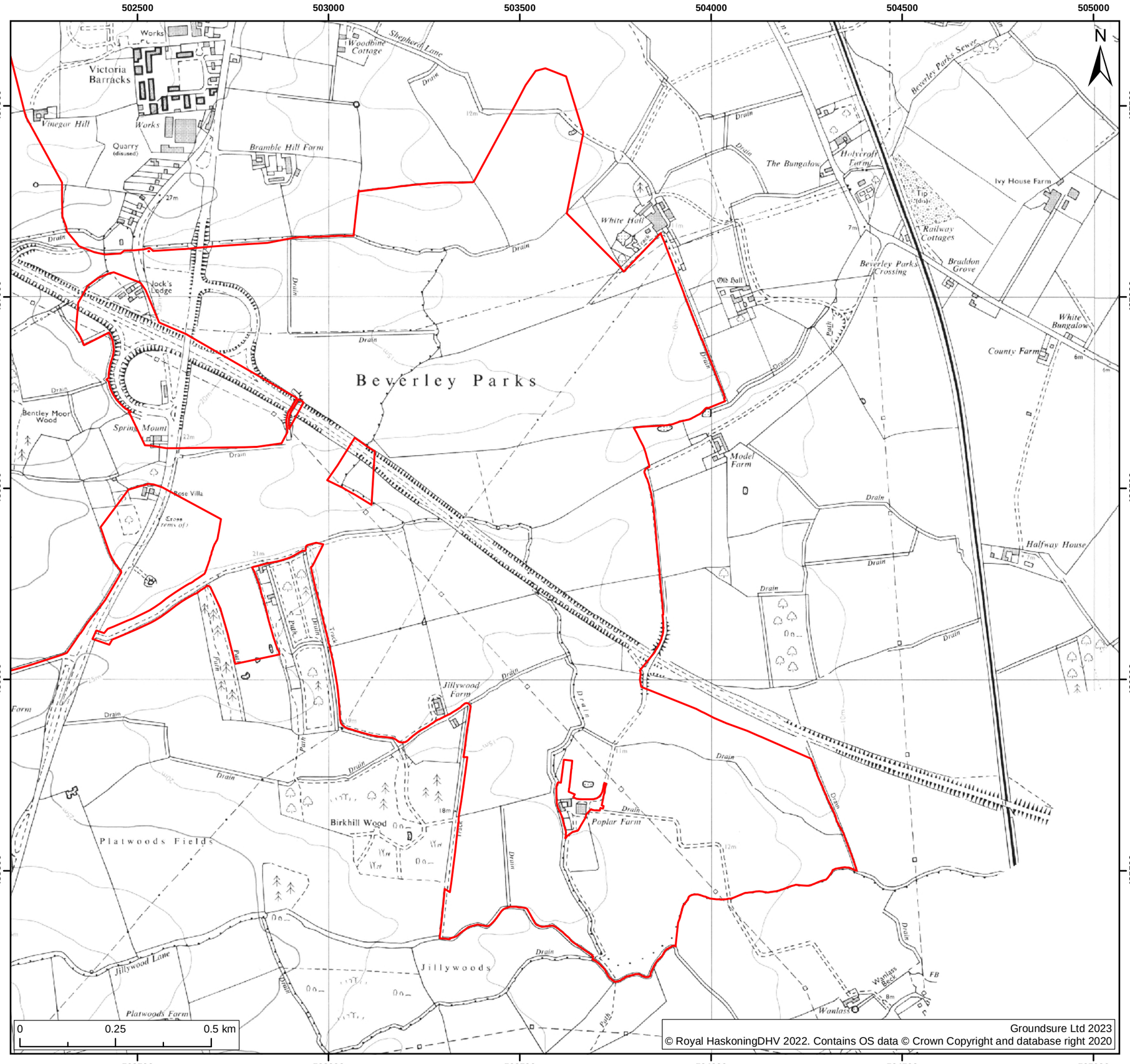

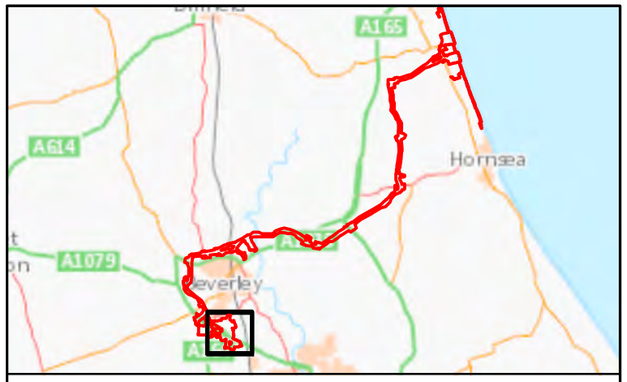

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1973 - 1982
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Figure: 22-2-29p	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0446

Co-ordinate system: British National Grid	Page Size: A3	Scale: 1:10,000

Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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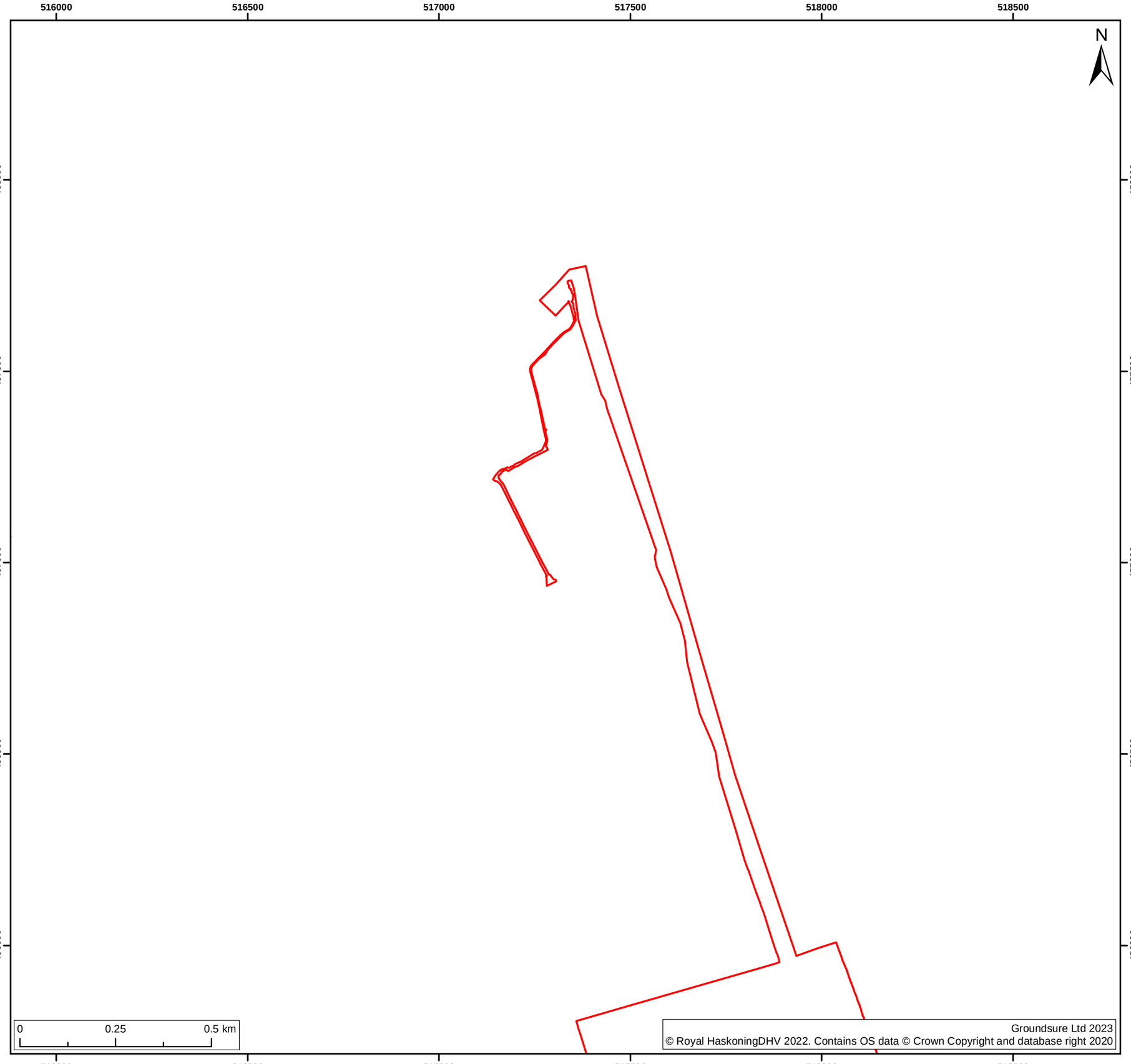

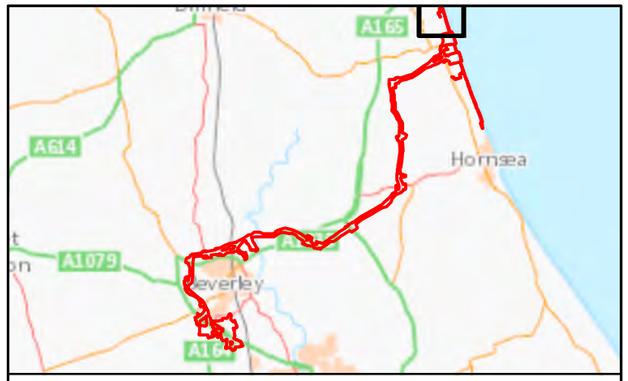

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-3-30a

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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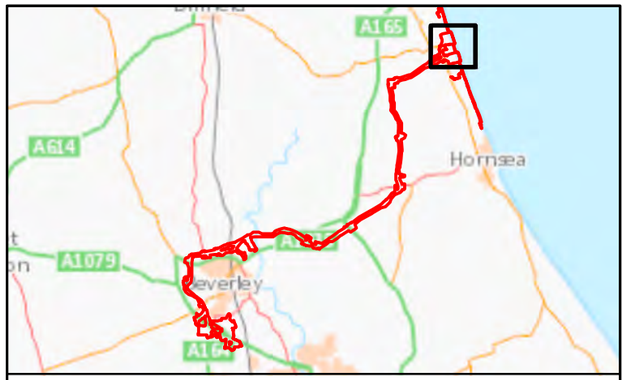

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Assessment Study Area

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30b

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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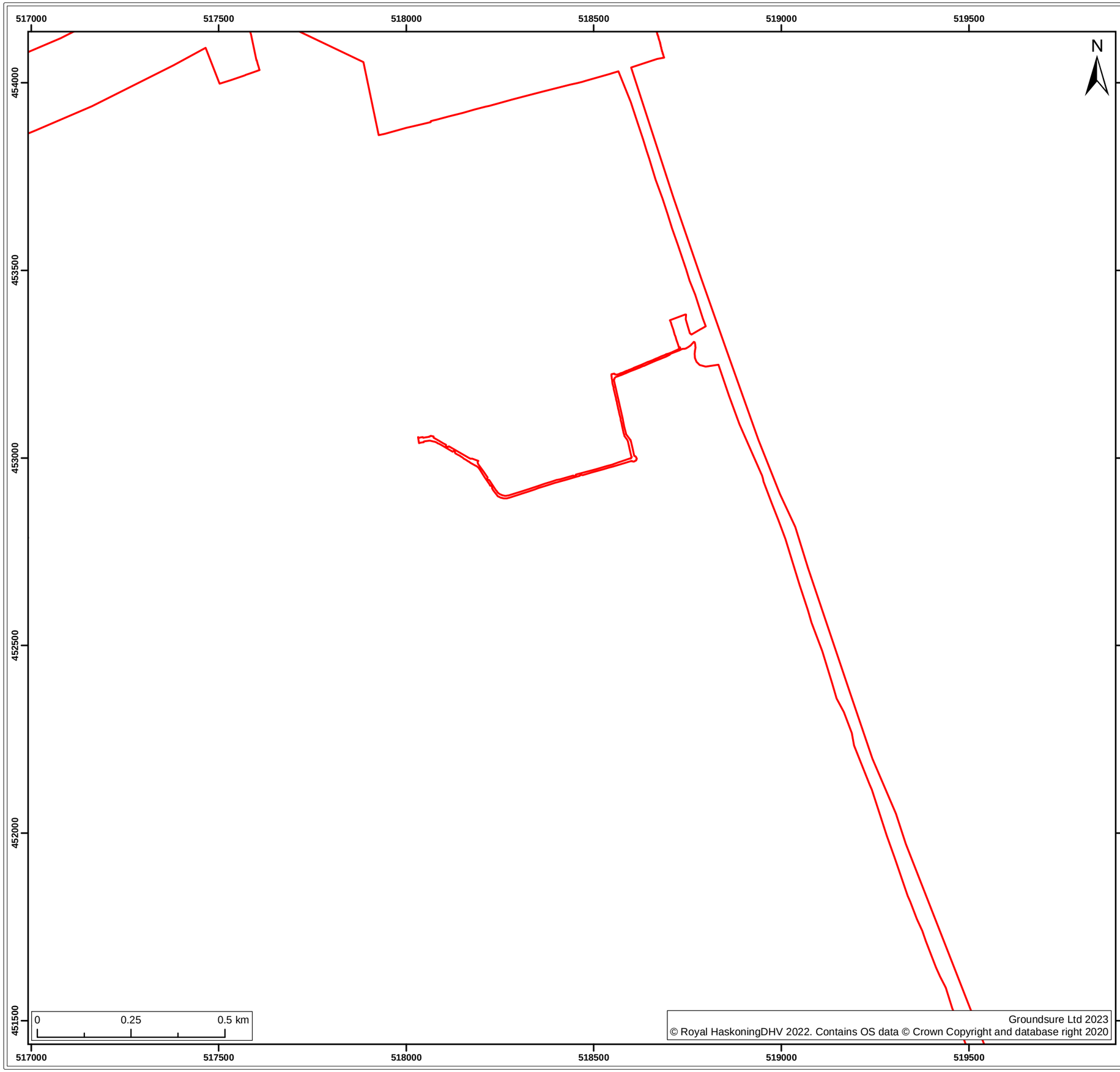

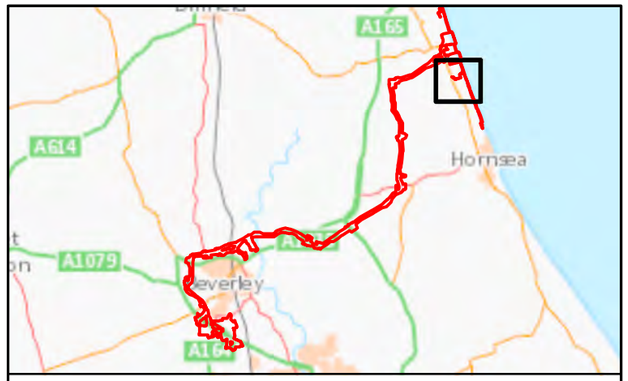

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Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30c

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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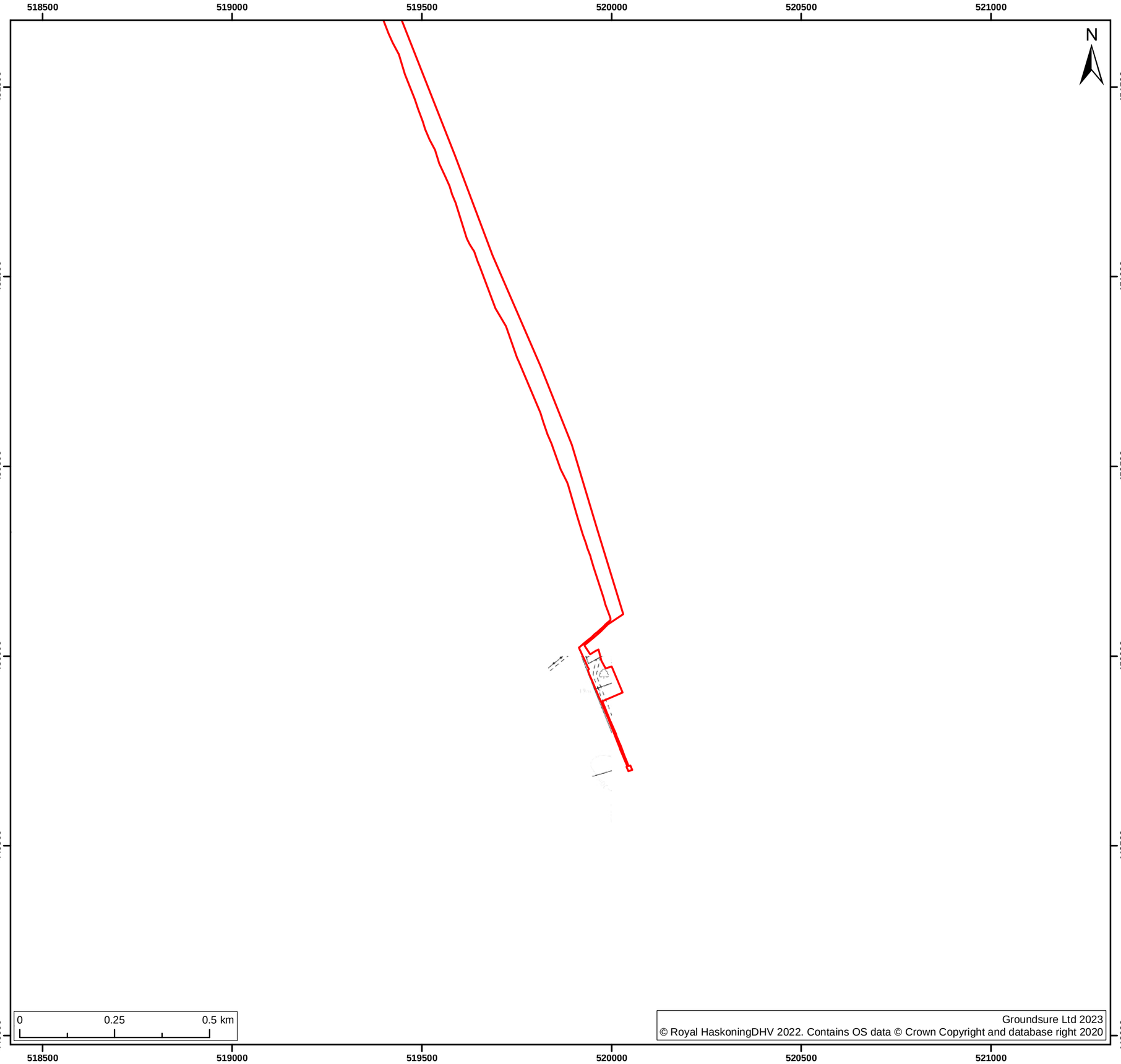

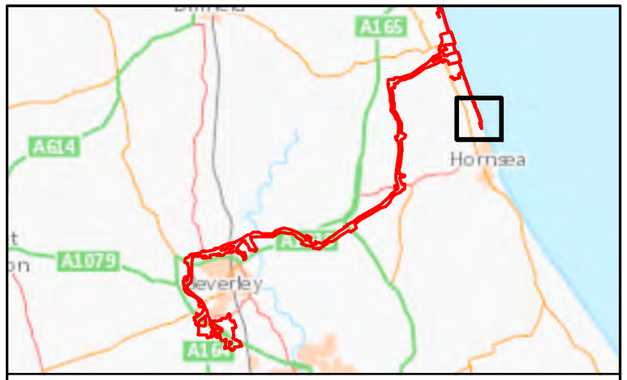

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Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30d

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

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Page Size: A3

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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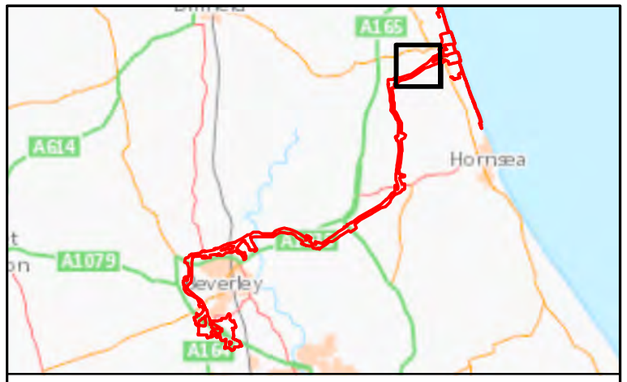

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Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30e

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

Co-ordinate system: British National Grid

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2
Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

AIRPHOTO SERVICES RWE

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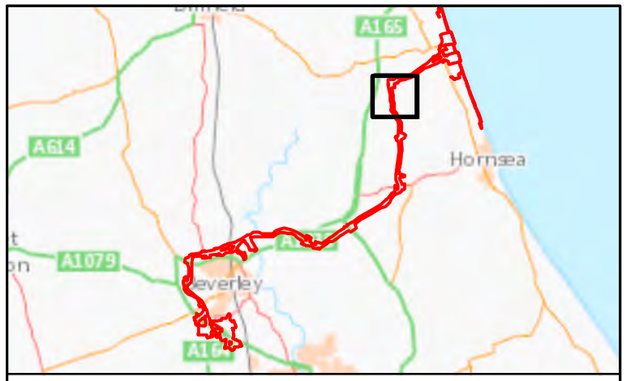

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Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30f

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Project: Dogger Bank South Offshore Wind Farms

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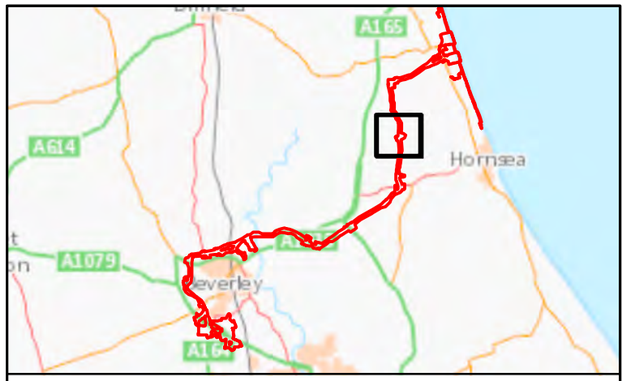

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Assessment Study Area

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Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30g

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

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Project: Dogger Bank South Offshore Wind Farms

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AIRPHOTO SERVICES RWE

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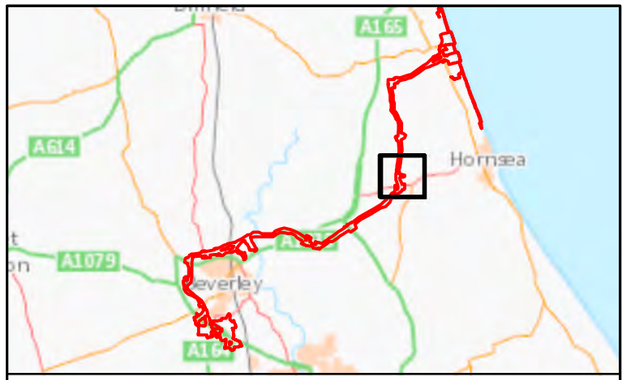

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Figure: 22-2-30h

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Co-ordinate system: British National Grid

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Project: Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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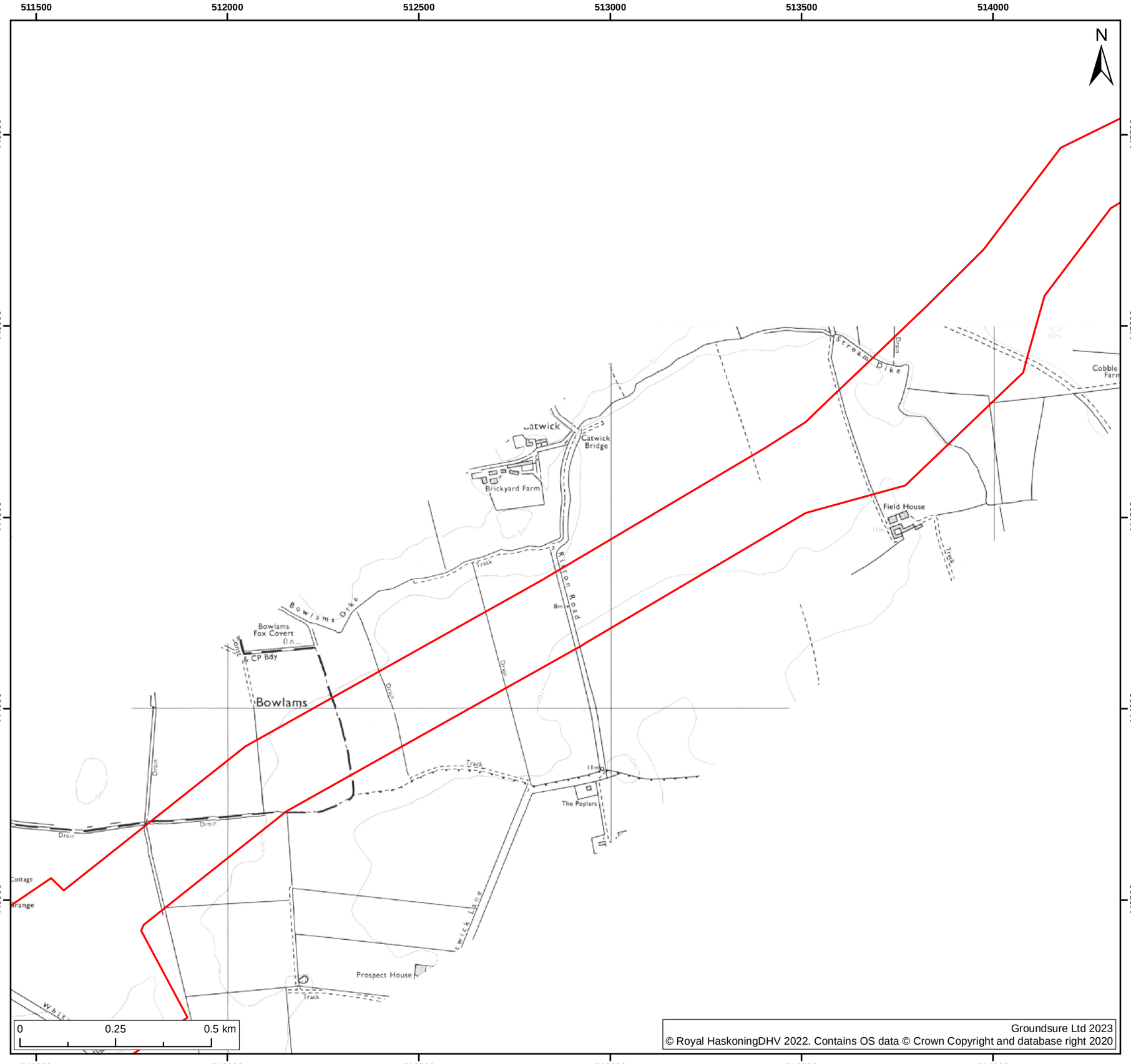

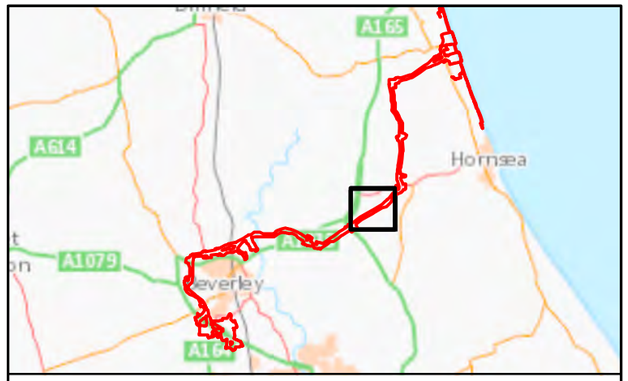

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Title:

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Figure: 22-2-30i

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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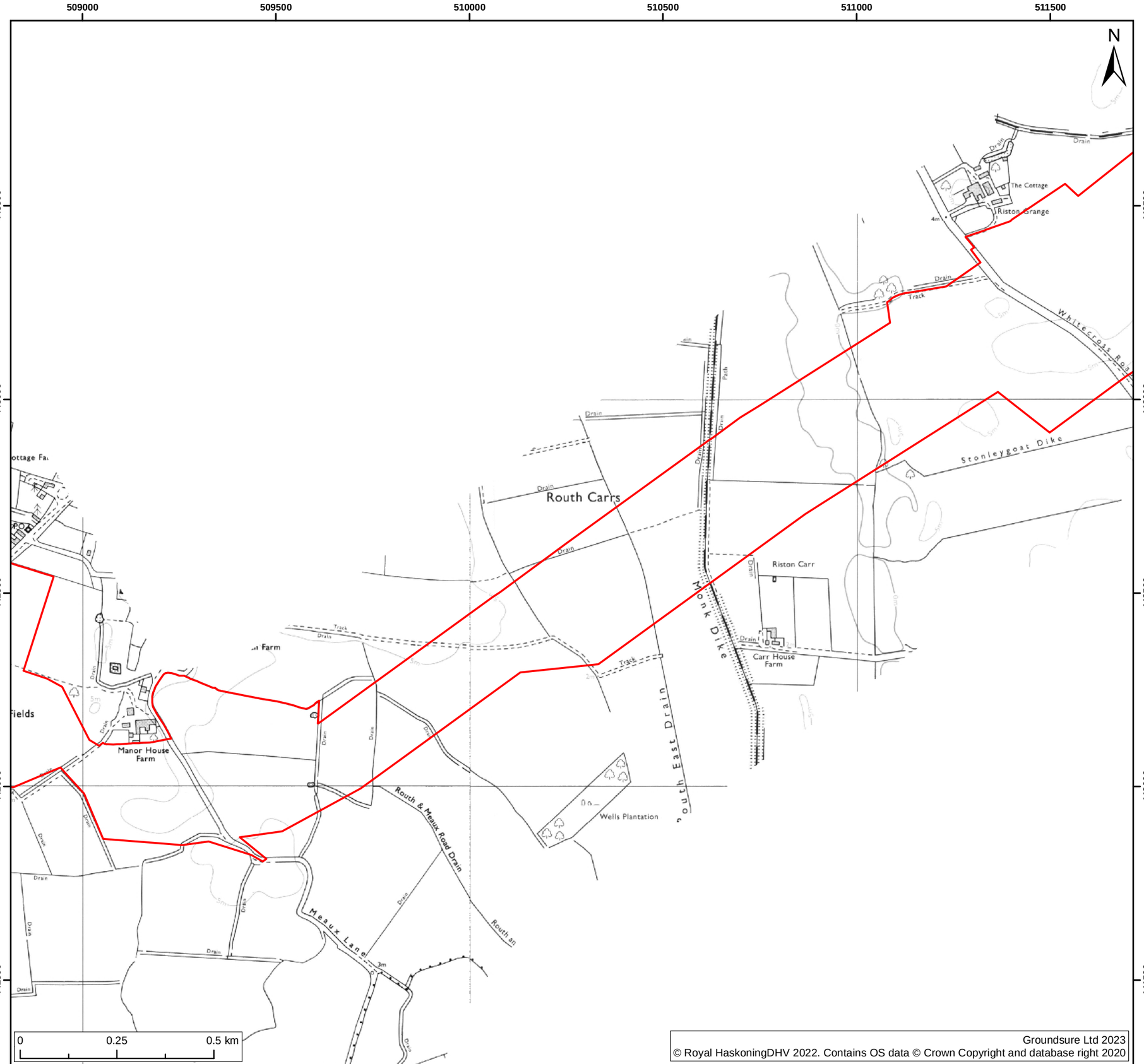

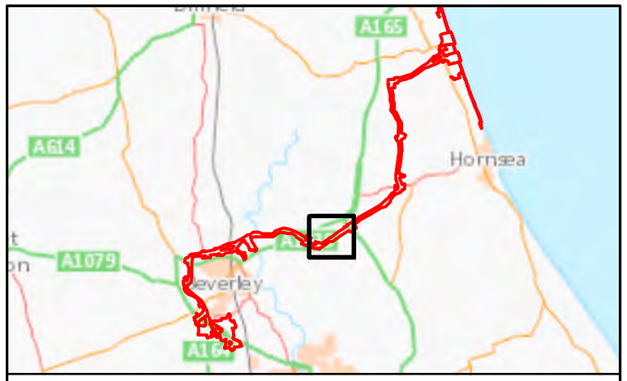

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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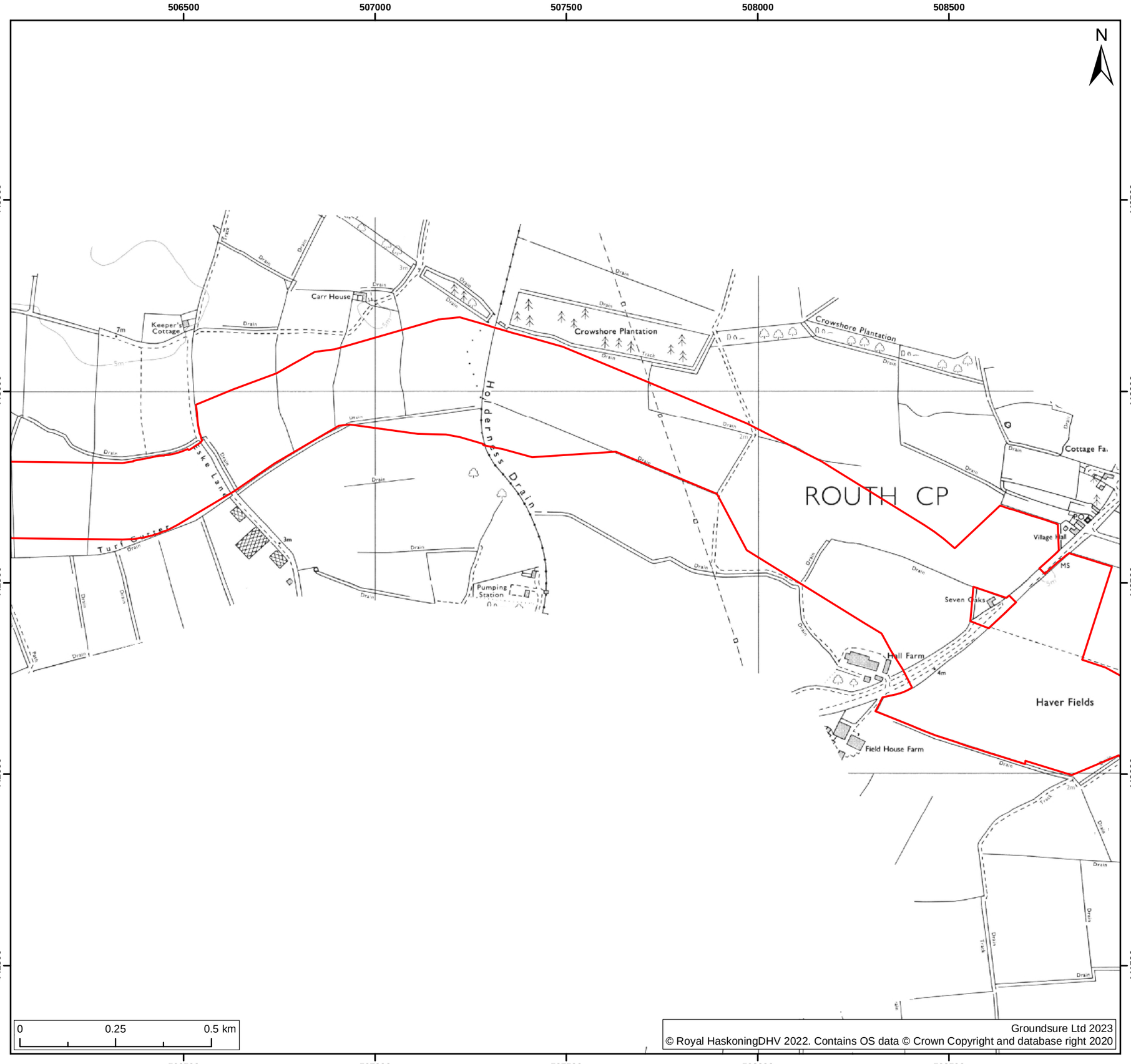

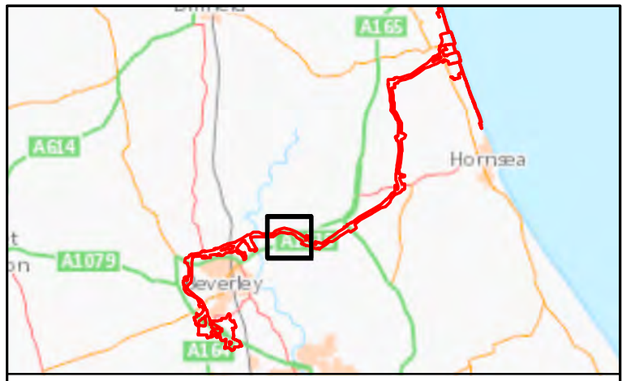

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Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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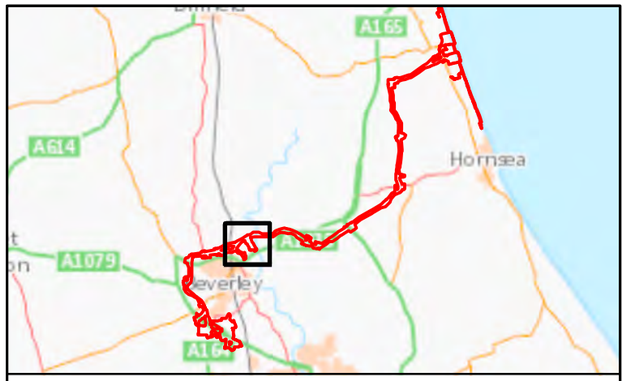

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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:

Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30l

Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447

Co-ordinate system: British National Grid

Page Size: A3

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Project:

Dogger Bank South Offshore Wind Farms

Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology

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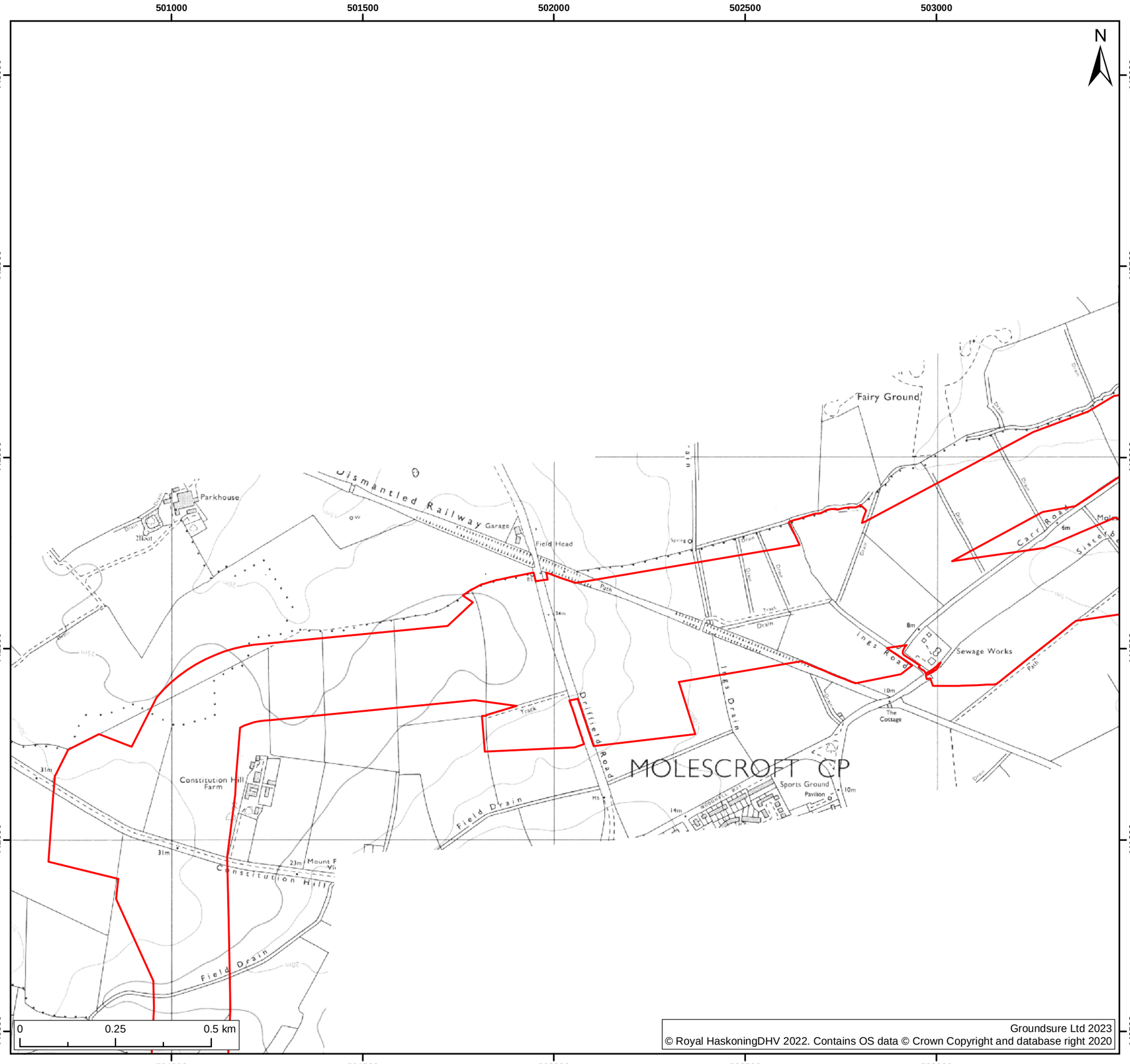

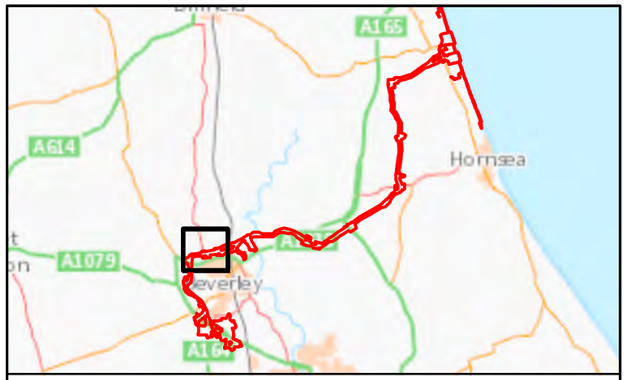

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Figure: 22-2-30m	Drawing No: PC2340-APS-ON-ZZ-DR-Z-0447	
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Project: Dogger Bank South Offshore Wind Farms	Report: Appendix 22.2 Assessment of Airborne and Satellite Remote Sensing Data and Map Regression Analysis for Archaeology	

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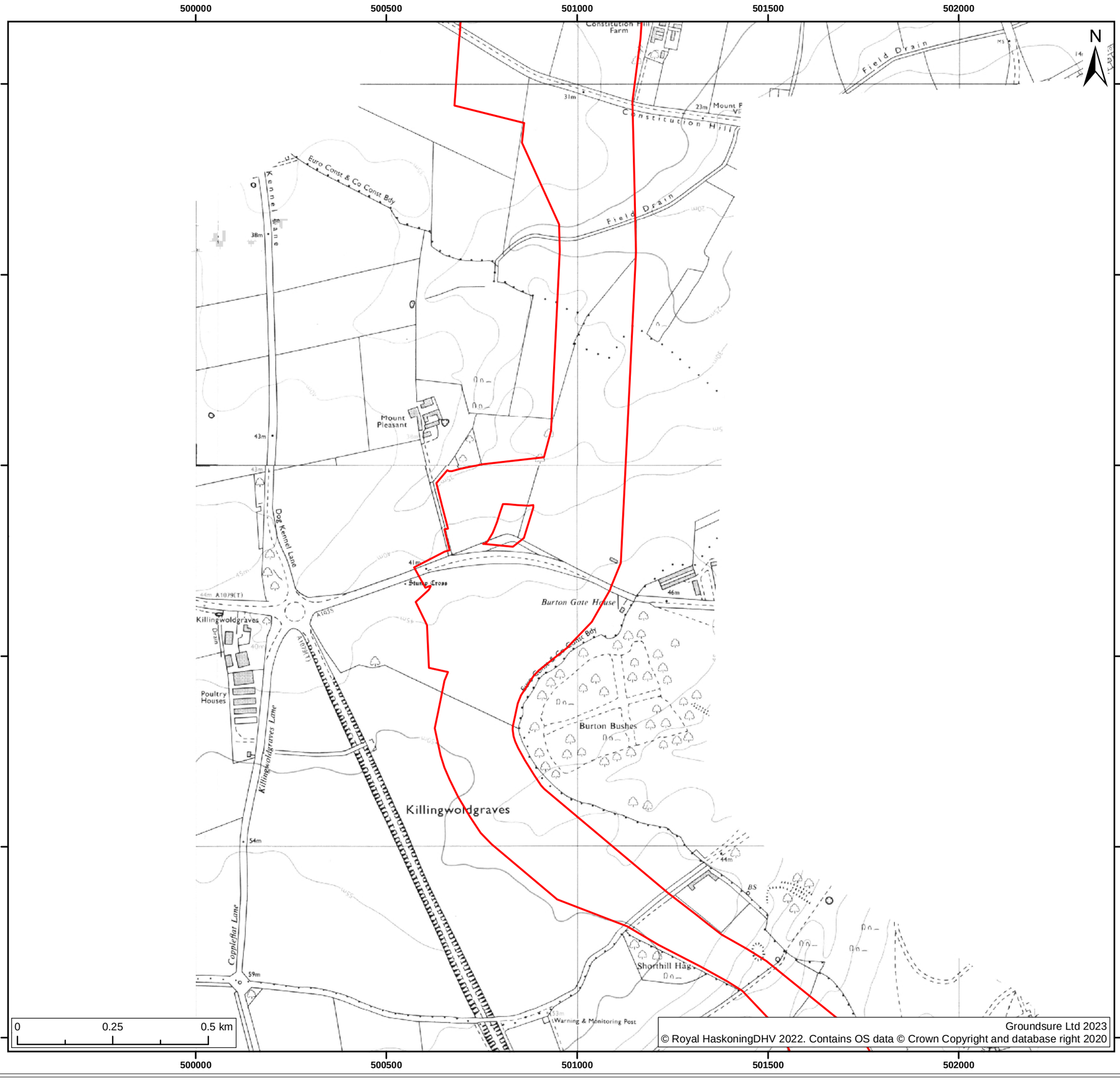

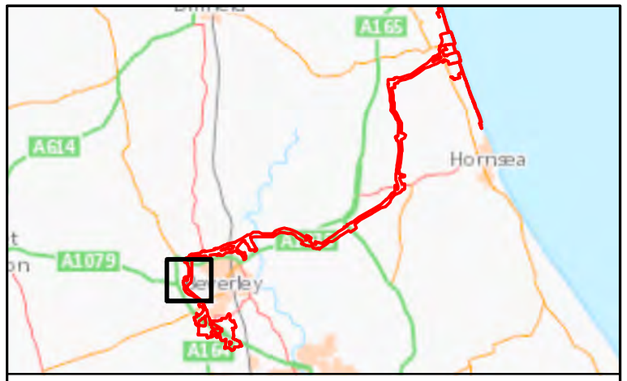

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Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30n

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Project: Dogger Bank South Offshore Wind Farms

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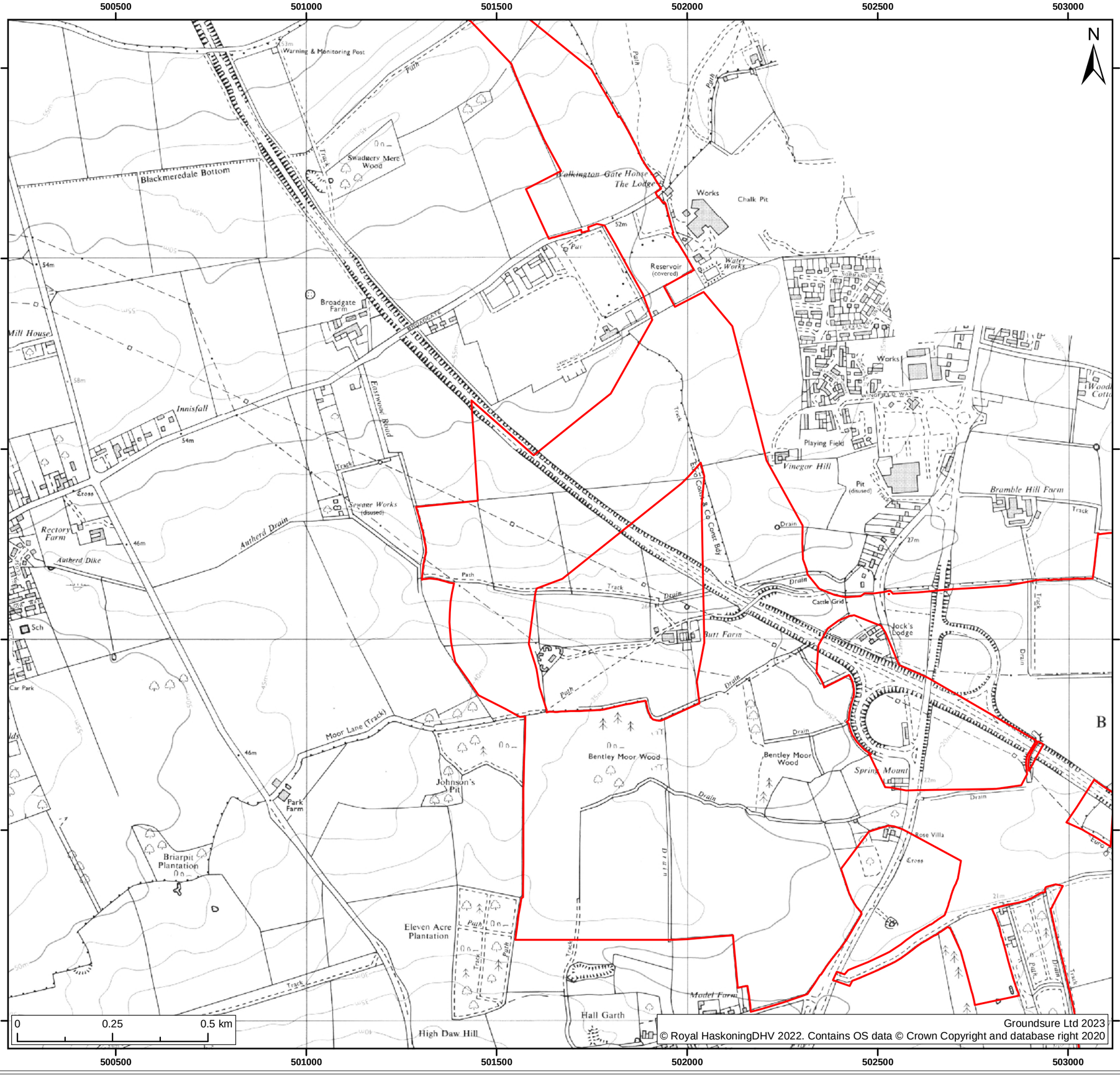

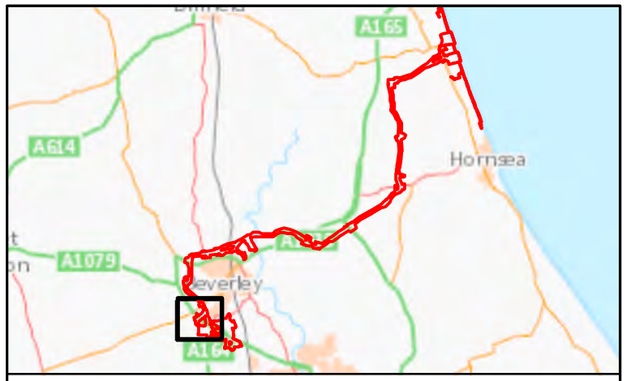

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Ordnance Survey Mapping 1988 - 1993
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Figure: 22-2-30o

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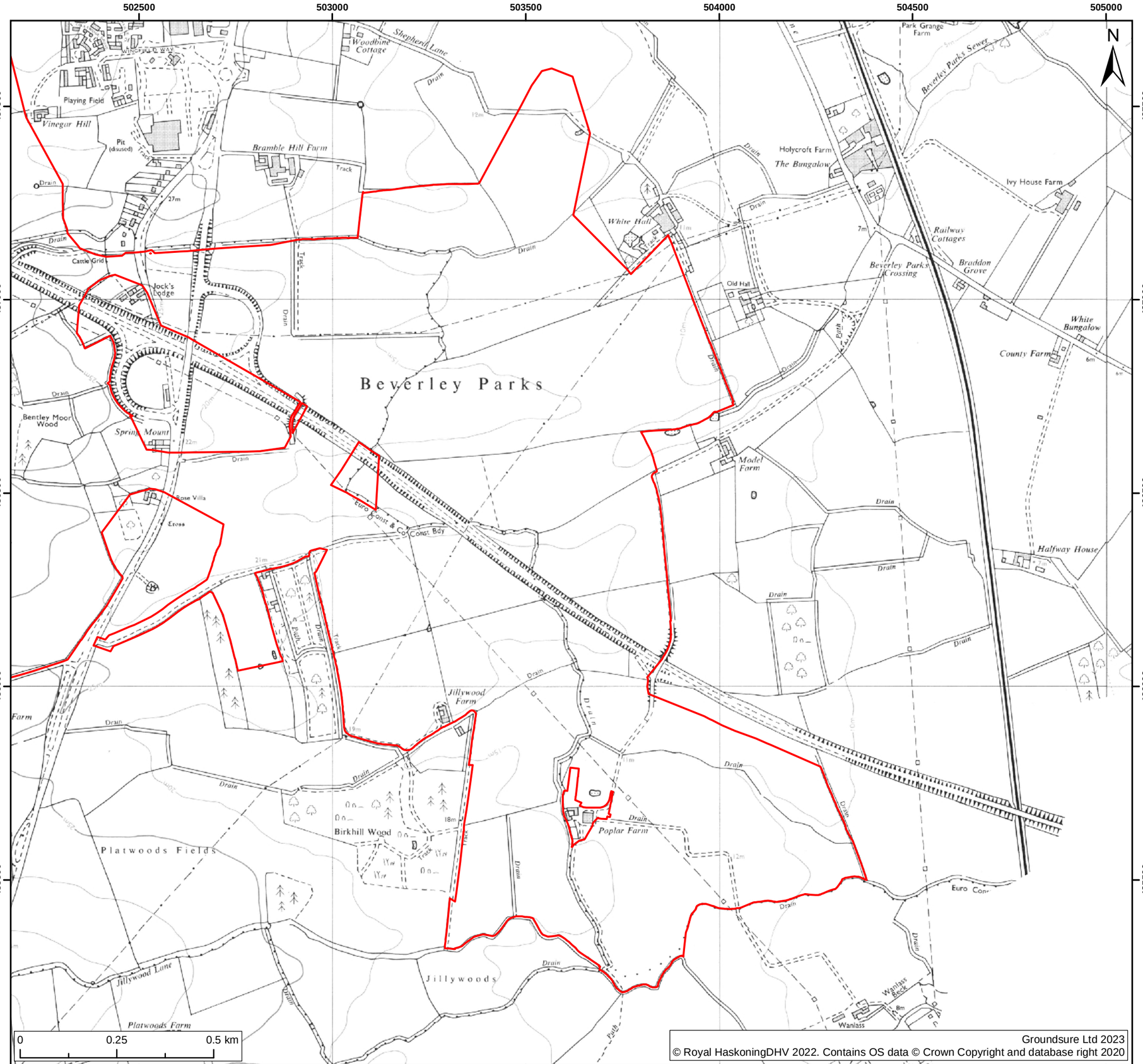

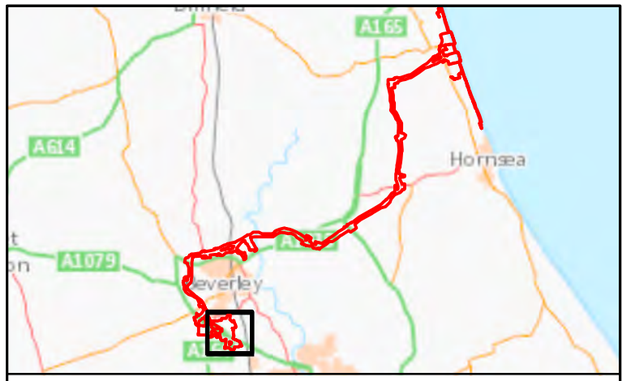

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