

# Outer Dowsing Offshore Wind

## Environmental Statement

### Chapter 20 Onshore Archaeology and Cultural Heritage

#### Volume 3 Appendices

#### Appendix 20.1 Onshore Archaeology and Cultural Heritage Desk-Based Assessment

#### Part 4: Annex 17

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## **Annex 17: LiDAR Assessment and Aerial Photographic Review**





# Volume 3, Appendix 20.1, Annex 17: Lidar Assessment and Aerial Photography Review

**Outer Dowsing Offshore Wind Environmental Statement**

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## Acronyms and Abbreviations

BGS	British Geological Survey
DEFRA	Department for Environment, Food and Rural Affairs
DTM	Digital Terrain Model
ECC	Export Cable Corridor
ES	Environmental Statement
HER	Historic Environment Record
LIDAR	Light Detection and Ranging
RTV	Relief Visualisation Toolbox

## Terminology

Baseline	The status of the environment at the time of assessment without the development in place.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Regulations, including the publication of an Environmental Statement (ES).
Environmental Statement (ES)	The suite of documents that detail the processes and results of the EIA.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Onshore Export Cable Corridor (ECC)	The Onshore Export Cable Corridor (Onshore ECC) is the area within which, the export cables running from the landfall to the onshore substation will be situated.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Order Limits	The area subject to the application for development consent, The limits shown on the works plans within which the Project may be carried out.
Transition Joint Bay (TJB)	The offshore and onshore cable circuits are jointed on the landward side of the sea defences/beach in a Transition Joint Bay (TJB). The TJB is an underground chamber constructed of reinforced concrete which provides a secure and stable environment for the cable.



## 1.0 Introduction

1. This report presents the results of a review of the LiDAR data available for the Outer Dowsing Offshore WinFed (The Project) onshore Order Limits. The review has been undertaken to inform an assessment of archaeological potential for inclusion within the Environmental Statement (ES). This report forms an annex to Volume 3, Appendix 20.1: Archaeological Desk-Based Assessment.

### 1.1 Objective

2. The overall objective of the Light Detection and Ranging (LiDAR) analysis has been to provide a level of information and associated predictive modelling necessary to inform the Environmental Impact Assessment baseline assessment.

## 1.2 Methodology

### 1.2.1 LiDAR Datasets and Aerial Photographic Review

3. LiDAR Digital Terrain Model (DTM) data, at a minimum horizontal resolution of 1m, was sourced from the National LiDAR Programme, available via the Department of Environment Food & Rural Affairs (DEFRA) Data Services Platform.<sup>1</sup> Data was procured for the circa 300m-wide PEIR boundary (as published in June 2023) along a c. 70km length cable corridor and includes the entirety of the Order Limits which are defined in ES Chapter 3 Project Description (Figure 3.4 (document reference 6.2.3.4)).
4. The following aerial photographic sources were consulted for the Order Limits.
  - Google Earth imagery;
  - Historic England's Aerial Archaeology Mapping Explorer, for mapped archaeological earthworks and other features identified by the aerial investigation unit; and
  - Historic England's Aerial Photo Explorer, for digitised photographs from the Historic England archive.
5. In addition, recent 50cm LiDAR DTM data and aerial imagery collected by the Project has been viewed to supplement this report. No additional features were recorded in this recent data and imagery. Therefore, this report has focussed on the analysis of the 1m LiDAR data and the aerial photographic resources identified above.

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<sup>1</sup> <https://environment.data.gov.uk/DefraDataDownload/?Mode=survey>



6. To supplement the aerial photography assessment set out above and in lieu of a full aerial photographic assessment of historic aerial photographs for the whole Project, this report also includes a review of Historic England's aerial photographic collections for selected parts of the Order Limits.
7. This was undertaken for a section of ECC2 and a section extending between ECC11/ECC14 (inclusive) to inform the necessity for full aerial photographic assessment. The results of the review are considered by SLR to be a basis on which the consideration for a full aerial photographic assessment can be made.

### **1.2.2 LiDAR Data Processing**

8. The data was converted into a series of 20 mosaic raster outputs, one for each of the Order Limits segments. The data for each segment was then processed individually, using ArcGIS software, to draw out any detectable micro-topographic features.
9. Data processing included manipulation of a full range of variables, chiefly azimuth, altitude and Z-factor, and the production of a series of shaded relief models. As a minimum, the azimuth was rotated through 360o in 45o increments for each route segment. Altitude and Z-factor were varied as required; on aggregate, an altitude of 45 and a Z-factor of between 20 and 40 were found to be the optimum combination for revealing the micro-topography along the course of the route.
10. The data was also used to produce a series of Digital Elevation Models to feed into the analysis.

### **1.2.3 LiDAR Contextual Datasets**

11. The analysis was informed by a range of other available datasets including:
  - designated heritage assets, sourced from Historic England;
  - non-designated heritage assets, sourced from the Council's Historic Environment Record (HER);
  - geological data (bedrock and superficial), sourced from the British Geological Survey (BGS);
  - historic cartographic sources including, as a minimum, the 6" Ordnance Survey First Edition; and
  - satellite imagery, sourced from Google Earth.



12. These datasets were used both to guide the analysis and to inform interpretation of identified features.

#### **1.2.4 LiDAR Analysis**

13. For purposes of undertaking a proportionate level of analysis sufficient to inform the ES, the following methodology was followed:

##### **Earthwork features of potential archaeological origin**

- Earthwork features of potential archaeological origin have been transcribed and are presented on the series of figures appended to this report. A preliminary discussion of their likely nature and significance is presented within the text, as relevant.

##### **Areas of archaeological potential**

- Where areas of archaeological potential have been identified, focussed shaded relief/hill shade imagery has been produced to illustrate their discussion within the text.

##### **Historic field systems**

- Historic field system earthworks, including e.g., ridge and furrow, relict headlands etc., are widespread along the course of the proposed route. Their detailed transcription would be disproportionate for purposes of ES, and such earthworks have therefore been transcribed only in sufficient detail to demonstrate their likely surviving extent within the easement. Individual elements, e.g., discrete ridges/furrows, have been transcribed in detail only where relevant. Such historic field system earthworks have been given a proportionate level of discussion within this report, with reference made, as relevant, to any Priority Townships defined in Turning the Plough (Historic England 2012).

##### **Geological / palaeo-environmental features**

- Probable geological/palaeo-environmental features are comparatively widespread along the course of the c. 70km route, largely comprising palaeo-channels / relict water courses. These have been transcribed only in sufficient detail to demonstrate their likely surviving extent, with individual geological trends only mapped where directly relevant to discussions of archaeological potential. Such features have been given a proportionate level of discussion within this report.

##### **Historic drainage channels**

- Extant drainage channels have only been mapped where demonstrably of historic origin, i.e., they are recorded in the HER or present as principle named drains on historic mapping, or where otherwise directly relevant to discussions of archaeological potential. Historic drainage channels that are no longer extant have been mapped where visible in the LiDAR data or clearly shown on historic mapping sources.

##### **Modern / non-archaeological features**

- Demonstrably modern / non-archaeological features have not been mapped unless necessary to distinguish them from background archaeological traces, or for purposes of focussed discussion within the report.



## 1.3 Outputs

14. The key outputs of the LiDAR processing and analysis comprise:

- this report;
- the supporting Figures:
  - LiDAR Imagery;
  - 25K Base Mapping;
  - Superficial geology; and
  - Elevation model
- the digital data package, including the shapefile transcriptions and processed raster data.

## 1.4 Standards

15. The assessment has been undertaken, and the report prepared, by James Evans, ACIfA, Senior Archaeology and Heritage Consultant and Chris Morley, MCIfA, Technical Director – Archaeology & Heritage, SLR Consulting. This report has been reviewed by Charlotte Dawson, Principal Archaeology and Heritage Consultant, SLR Consulting.

## 2.0 Results

16. The onshore Order Limits has been split into segments as follows.

- ECC1 - Landfall to A52 – Hogsthorpe;
- ECC2 - A52 – Hogsthorpe to Marsh Lane;
- ECC3 - Marsh Lane to A158 - Skegness Road;
- ECC4 - A158 Skegness Road – Low Road;
- ECC5 – Low Road to Steeping River;
- ECC6 – Steeping River to Fodder Dike Bank/Fen Bank;
- ECC7 – Fodder Dyke Bank to Broadgate;
- ECC8- Broadgate to Ings Drove;
- ECC9 – Ings Drove to Church End Lane.
- ECC10 - Church End Lane to The Haven;
- ECC11 - The Haven to Marsh Road;
- ECC12 - Marsh Road to Fosdyke Bridge;
- ECC 13 - Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove OnSS; and
- ECC 14 - Surfleet Marsh OnSS/Marsh Drove to the Connection Area.



17. All features observed are provided with a reference number in **(bold)** and shown on the supporting Figures referenced above. Plates are provided for additional illustrative purposes at the end of this report.

## 2.1 ECC1

### 2.1.1 Historic England's Aerial Archaeology Mapping Explorer

18. One record is located within the segment. This comprises a transcription in the northern extremity of the transition joint bay footprint. The record depicts five linear anomalies over an area measuring c.80m by c.60m. Their arrangement may infer an enclosure, but the morphology is uncertain. This accords with the location of activity identified by the geophysical survey.

19. A cropmark is also shown to the east of the segment at Quaker Hill. This accords with a HER entry for a possible medieval earthwork enclosure (MLI88775). This is outside the segment footprint.

### 2.1.2 Historic England's Aerial Photo Explorer

20. A 2012 image shows cropmarks to the west of the segment at Quakers Hill. These accord with field boundaries shown on the 1888 Ordnance Survey map.

### 2.1.3 LiDAR/Project Aerial Imagery - Historic buildings / settlement

21. Former Cowslip Cottage, of probable post-medieval date, is located south of Anderby (1) within the boundary of the ES (MLI118799).

22. Based upon the local historic settlement pattern, the higher ground around Quaker's Hill (2), may have been conducive to historic occupation.

### 2.1.4 LiDAR/Project Aerial Imagery - Sea banks

23. The following sea banks have been identified:

- a section of Roman Bank passes NNW-SSE through the north-eastern part of the route segment parallel to the coastline (3). This is thought to be of medieval origin ((HER MLI88782); and
- Wolla Bank, which adjoins Roman Bank to the east (4).

### 2.1.5 LiDAR/Project Aerial Imagery - Uncertain earthworks

24. There are no uncertain earthworks recorded within the ES boundary.



25. A sub-oval earthwork is located to the east of Mickleberry Hill and south-west of Quakers Hill (5; **Figure 20.1.2.3**). This earthwork may be associated with the Historic Environment Record (HER Ref: MLI88777), which recorded the possible feature through the study of aerial photography as part of the National Mapping Programme (NMP). The earthwork has been characterised as a potential medieval earthwork enclosure and is located 120m east of the ES boundary. This anomaly may be associated.
26. There is a possible mound / platform on a raised area to the south of Lowgate Road (6), 90m north of the ES boundary.

### **2.1.6 LiDAR/Project Aerial Imagery - Spring House**

27. There are several fishponds and a series of associated field system earthworks to the immediate north-west of Spring House north of Lowgate Road (7). These are crossed by the ES boundary.

### **2.1.7 LiDAR/Project Aerial Imagery - Drains**

28. The Four Hundred Acre Drain passes to the west of Hogsthorpe (8) and abuts the segment at its southern end. This then runs on into ECC 2.

## **2.2 ECC2**

### **2.2.1 Historic England's Aerial Archaeology Mapping Explorer**

29. Two records are located within the segment. These include a HER reference for a medieval enclosure (HER reference 98636); PAS entries referencing medieval and post medieval finds. Geophysical anomalies concur with activity at this location. Another area of medieval enclosure/fieldsystems are recorded (HER reference MLI98639) crossed by the segment.

### **2.2.2 Historic England's Aerial Photo Explorer**

30. Oblique aerial photographs available on Historic England's Aerial Photo Explorer verify the enclosure recorded by the NMP above (MLI98636). This is verified by the results of the geophysical survey.
31. An oblique photo dated to 2012 records cropmarks to the east of Malt Farm and north of Slackholme. These accord with field boundaries shown on historic mapping.





### 2.2.3 Historic England Archives – Swindon

32. At the request of the Lincolnshire Historic Environment Officer a sample assessment of aerial photographs held by the Historic England archives was undertaken for a section of Segment ECC2 around Slackholme village. A cover search of Historic England's oblique and vertical collections was undertaken in August 2023. This returned 27 vertical photographs and 3 oblique photographs. All available photographs were viewed at the Historic England archives.
33. The section reviewed comprised the part of segment ECC2 between Sloothby High Lane and South Ings Lane, see Plate 1. Cropmarks according with historic field boundaries are not plotted. Ridge and furrow earthworks were recorded within the HER reference for the deserted medieval village (HER reference MLI99418). Possible holloways are recorded to the north either side of the segment footprint. Other anomalies of potential enclosures are recorded to the north and the south of the DMV. A palaeochannel is recorded to the north of South Ings Lane. No other cropmarks which did not accord with historic field boundaries were observed to cross the segment.
34. For the purposes of highlighting if a full historic aerial photographic for assessment is necessary for the entire Project footprint, the geophysical survey has confirmed activity at the location of all of the cropmarks recorded by the sample assessment of historic aerial photographs held by the Historic England archives. The geophysical survey provided more detailed evidence of activity at the sample location than was visible on the aerial photographs.

### 2.2.4 LiDAR/Project Aerial Imagery - Historic buildings

35. Two small former historic buildings are located just south of the return length of the Willoughby High Drain (9), outside of the ES boundary.
36. A small former farmstead and associated plot is located to the north of Slackholme End, outside of the ES boundary, with a possible associated former field system to the east (10). A small former farmstead and associated plot is located to the south of Slackholme, east of South Ings Lane (11) (HER reference MLI118881), outside of the ES boundary. Slackholme Village A large concentration of field system earthworks is located to the east of Slackholme End House. These earthworks primarily comprise plot boundaries and ridge and furrow, as well as a possible lane, all relate to the known former medieval settlement of Slackholme (12; **Figure 20.1.3.4**). The name Slackholme is thought to



mean 'raised land amidst the marsh'. The earliest reference to the name locally dates to AD 1220.

37. The LiDAR data in this area was subjected to further analysis using the Relief Visualization Toolbox (RVT) 2.2.1 (2019). The output images from the RVT software were then imported into ArcMap 10.5.1 where further settings manipulation was undertaken to enhance the visualization for archaeological feature detection. The LiDAR data (using a hill shade model visualisation) appears to show several square / rectangular earthworks to the north-west of the route segment (**Figure 20.1.3.4**). These earthworks suggest that they are remnants of former buildings associated with the medieval settlement of Slackholme, located either side of the road to the current farmstead at Slackholme.

38. The LiDAR data suggests that the former medieval village was located to the north-west / west of the route segment and located close to the current farmstead. Medieval settlements were typically surrounded by an agricultural hinterland associated with the settlement. This agricultural hinterland is also shown in the LiDAR, in the form of ridge and furrow, to the east, south-east, and south-west of the former village (**Figure 20.1.3.4**). Therefore, the route segment appears to encroach upon the agricultural hinterland of the medieval settlement of Slackholme, rather than encroaching upon the village and its structures.

### **2.2.5 LiDAR/Project Aerial Imagery - Uncertain earthworks**

39. A semi-oval earthwork, possibly related to drainage, is located between Willoughby High Drain and Sloothby High Lane (**13**). This extends into the ES boundary and correlates to an area of geophysical anomalies but with a different morphology.

40. Four NW-SE oriented linear earthworks are located to the east of South Ings Lane (**14**). These may extend into the ES boundary.

41. A concentration of possible enclosures, platforms and banks are located north of the Marsh Lane/Orby Road intersection (**15**; **Figure 20.1.3.5**). The scale and definition of these features suggests that they may be comparatively modern. However, there is no evidence for activity within this area in recent years, and the HER records them as a series of medieval / post-medieval enclosures / field systems (MLI98639). These extend into the ES boundary.



## **2.2.6 LiDAR/Project Aerial Imagery - Drains**

42. The following principal drains have been identified:

- the Four Hundred Acre Drain, a large length of which passes through the northern part of this route segment;
- Willoughby High Drain, which passes W-E through the route segment to flow under Loft's Bridge southwest of Hogsthorpe. A second length of this drain passes through the route segment a short distance further to the south; and
- the North Drain, which forks and passes through the route segment north of Marsh Lane.

## **2.2.7 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

43. Concentrations of possible relict watercourses are identifiable in the following locations:

- either side of the Willoughby High Drain; and
- north and south of the North Drain.

44. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in those areas.

## **2.3 EEC3**

### **2.3.1 Historic England's Aerial Archaeology Mapping Explorer**

45. The project recorded earthwork enclosures and ridge and furrow referenced on the HER (MLI88895) and a possible earthwork enclosure (HER reference MLI87795).

Geophysical survey has confirmed activity within the footprint of MLI88895 including agricultural anomalies. No geophysical anomalies were recorded in the footprint of MLI87795.

### **2.3.2 Historic England's Aerial Photo Explorer**

46. The photo explorer does not hold any oblique photographs of this segment.

### **2.3.3 LiDAR/Project Aerial Imagery - Historic buildings**

47. There is a possible former building located immediately south of South Drain (16) within the ES boundary. This is not recorded by the HER or shown on the Orby 1843 Tithe map.

48. The site of a former small rectangular agricultural building is in Burgh Le Marsh (17) outside of the ES boundary.



### **2.3.4 LiDAR/Project Aerial Imagery - Marsh Farm**

49. A former farmstead known as Marsh Farm (MLI119883) and its surrounding plot, is located outside of the ES boundary. Its possibly associated surrounding field system area is located to the south of Chalk Lane (18) within the ES boundary. However this may also relate to medieval settlement recorded in this vicinity (HER MLI88895).

### **2.3.5 LiDAR/Project Aerial Imagery - Uncertain earthworks**

50. A possible mound is located to the north of Wedland's Drain (19). This may have resulted from the surrounding geological /palaeo-channel activity but potentially concurs with an undetermined geophysical anomaly.

### **2.3.6 LiDAR/Project Aerial Imagery - Drains**

51. The South Drain passes south of Marsh Lane.

### **2.3.7 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

52. Concentrations of possible relict watercourses are identifiable in the following locations:

- south of South Drain (Marsh Lane Drain), north of Ingoldmells Road; and
- north and south of Younger's Lane.

53. The presence of these features may suggest a heightened palaeo-environmental/geoarchaeological potential in those areas.

## **2.4 ECC4**

### **2.4.1 Historic England's Aerial Archaeology Mapping Explorer**

54. The former presence of ridge and furrow earthworks are recorded by the National Mapping Programme and shown on Historic England's Map Explorer in the northern half of the segment (MLI98096). This is recorded by the geophysical survey as an agricultural trend.

### **2.4.2 Historic England's Aerial Photo Explorer**

55. The photo explorer does not hold any oblique photographs of this segment.

### **2.4.3 LiDAR/Project Aerial Imagery - Drains**

56. The following principal drains have been identified:



- Wedland's Drain, which passes W-E through Burgh Marsh; and
- Catchwater Drain, which passes W-E to the north of Rookery Farm.

#### **2.4.4 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

57. Concentrations of possible relict watercourses are identifiable in the following locations:

- south of Wedland's Drain; and
- north and south of Low Road.

58. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in those areas.

## **2.5 ECC5**

### **2.5.1 Historic England's Aerial Archaeology Mapping Explorer**

59. Areas of ridge and furrow are recorded in the vicinity of and extending into the eastern end of the segment. These are shown on Historic England's Aerial Mapping Explorer (MLI98166). Activity is recorded by the geophysical survey at this location, but this is clearly archaeology that was not visible on the aerial photographs, being earlier in date.

### **2.5.2 Historic England's Aerial Photo Explorer**

60. The photo explorer does not hold any oblique photographs of this segment.

### **2.5.3 LiDAR/Project Aerial Imagery - Historic buildings**

61. The site of a former rectangular agricultural building – possibly an outfarm – is located to the south of Pinchbeck Lane within the ES boundary (**20**) (HER reference 120254).

62. A former historic agricultural building (**21**) is located to the south of Croft. This is outside of the ES boundary.

### **2.5.4 LiDAR/Project Aerial Imagery - Uncertain earthworks**

63. There appears to be five sub-oval features located within this ECC Segment, c. 660m south-east of Thorpe St. Peter and to the south of Weir Dyke (**22**; **Figure 20.1.3.10**). These features also appear as cropmarks in modern Google Earth satellite imagery. Further such cropmarks were located c. 300m south-west of the sub-oval features within the route corridor, and post-medieval pottery was recovered from the soils overlying them (HER Ref: MLI41904).



64. In the above context, it is likely that the sub-oval features within the route corridor are also post-medieval in origin. Such features could represent post-medieval marling pits, with such marling activity documented elsewhere within this part of Lincolnshire. Such agricultural features would be of limited archaeological significance.

### **2.5.5 LiDAR/Project Aerial Imagery - Sea banks**

65. Several sections of Croft Bank pass SW-NE to the south of Pinchbeck House (23).

### **2.5.6 LiDAR/Project Aerial Imagery - Drains**

66. The following principal drains have been identified:

- Croft Drain, which passes W-E from Pinchbeck Lane; and
- Weir Dike (24; Figure 20.1.3.9), which passes south of Thorpe St. Peter.

### **2.5.7 LiDAR/Project Aerial Imagery - Ridge and furrow**

67. There is a concentration of ridge and furrow earthworks in several areas to the south of Croft (25; Figure 20.1.3.9). These earthworks are of probable medieval date and one area in particular extends into the ES footprint.

68. Remnants of former field boundaries are also present within these areas.

### **2.5.8 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

69. Concentrations of possible relict watercourses are identifiable in the following locations:

- to the south of Weir Dike;
- to the north of Weir Dike; and
- to the south-west of Croft.

70. The presence of these features may suggest a heightened palaeo-environmental/geoarchaeological potential in those areas.

## **2.6 ECC6**

### **2.6.1 Historic England's Aerial Archaeology Mapping Explorer**

71. The NMP did not extend to the footprint of this segment.

### **2.6.2 Historic England's Aerial Photo Explorer**

72. The photo explorer does not hold any oblique photographs of this segment.



### **2.6.3 LiDAR/Project Aerial Imagery - Uncertain earthworks**

73. A concentration of possible earthworks (**26**; **Figure 20.1.3.12**) is located c. 700m south of Wainfleet Bank. The earthworks are to the west and south of the Grade II\* Listed Church of St. Mary (NHLE Ref: 1224403), a church with 12th century origins. The earthworks in this area have also been identified as cropmarks on aerial photography and they have been interpreted as potential medieval settlement remains (HER Ref: MLI90648). Geophysical anomalies also concur with this LiDAR anomaly.

74. Additionally, large amounts of Saxo-Norman and later medieval pottery have been unearthed in this area during ploughing (HER Ref: MLI41742). This pottery included a part of the handle and top of an early medieval curfew fire cover, along with sherds of Toynton or similar ware.

### **2.6.4 LiDAR/Project Aerial Imagery - Historic buildings**

75. There are six former historic agricultural buildings within this segment. Two of these are in proximity to one another (**27**) c. 450m south-west of Wainfleet Bank and relate to HER reference MLI124352. These buildings are no longer extant and are not visible within the LiDAR data. All former buildings are depicted on historic Ordnance Survey mapping and are unlikely to be any earlier than post-medieval in date.

### **2.6.5 LiDAR/Project Aerial Imagery - Ridge and furrow**

76. There is an area of remnant ridge and furrow (**28**) located c. 1.2km south of Wainfleet Bank but this is outside of the segment. These earthworks are of probable medieval date, and there is also evidence of former field boundaries in this area.

### **2.6.6 LiDAR/Project Aerial Imagery - Drains**

77. No principal drains / dykes are present within this segment, but remnants of former drainage channels are present throughout the segment.

### **2.6.7 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

78. Concentrations of possible relict watercourses are identifiable in the following locations:

- to the north-east of Old Fen Road; and
- to the south-west of Old Fen Road.

79. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in these areas.



## **2.7 ECC7**

### **2.7.1 Historic England's Aerial Archaeology Mapping Explorer**

80. The NMP did not extend to the footprint of this segment.

### **2.7.2 Historic England's Aerial Photo Explorer**

81. The photo explorer does not hold any oblique photographs of this segment.

### **2.7.3 LiDAR/Project Aerial Imagery - Historic building**

82. There is one former historic agricultural building (29) just outside of this segment, just to the south of Fodder Dike Bank. This building is no longer extant and is not visible within the LiDAR data. The former building is depicted on historic Ordnance Survey mapping and is unlikely to be any earlier than post-medieval in date.

### **2.7.4 LiDAR/Project Aerial Imagery - Ridge and furrow**

83. There is one small area of remnant ridge and furrow just outside of the segment (30) c. 370m east of the junction of Bull Drove and Wrangle Bank. These earthworks are of possible medieval date, and there is also evidence of former field boundaries in this area.

### **2.7.5 LiDAR/Project Aerial Imagery - Drains**

84. The following principal drains have been identified:

- Fodder Dike Bank; and
- Gold Fen Dike (31).

The remnants of former drainage channels and ponds are present throughout the segment.

### **2.7.6 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

85. Concentrations of possible relict watercourses are identifiable throughout this segment. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in those areas.

## **2.8 ECC8**

### **2.8.1 Historic England's Aerial Archaeology Mapping Explorer**

86. The NMP did not extend to the footprint of this segment.





### **2.8.2 Historic England's Aerial Photo Explorer**

87. The photo explorer does not hold any oblique photographs of this segment.

### **2.8.3 LiDAR/Project Aerial Imagery - Historic buildings**

88. There are two possible former farmsteads and an isolated agricultural building within this segment. These buildings are no longer extant and are not visible within the LiDAR data. All former buildings are depicted on historic Ordnance Survey mapping and are unlikely to be any earlier than post-medieval in date.

### **2.8.4 LiDAR/Project Aerial Imagery - Historic field systems**

89. There are concentrations of former field boundaries throughout this segment. These are illustrated on historic Ordnance Survey mapping and are likely to be post-medieval in date.

### **2.8.5 LiDAR/Project Aerial Imagery - Drains**

90. No principal drains / dykes are present within this segment, and very few former drainage channels are present throughout the segment. There are, however, several ponds located throughout this segment.

### **2.8.6 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

91. Concentrations of possible relict watercourses are identifiable throughout this segment. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in those areas.

## **2.9 ECC9**

### **2.9.1 Historic England's Aerial Archaeology Mapping Explorer**

92. The NMP did not extend to the footprint of this segment.

### **2.9.2 Historic England's Aerial Photo Explorer**

93. The photo explorer does not hold any oblique photographs of this segment.

### **2.9.3 LiDAR/Project Aerial Imagery - Poynton Hall**

94. Poynton Hall (HER Ref: MLI124217) located to the east of the ES boundary comprised a 19th century farmstead (32; Figure 20.1.3.16), arranged around a regular courtyard in an 'F' plan. The farmhouse was detached from the other buildings located within the



courtyard. The former farmstead was located c. 550m east of Freiston and c. 800m south-west of Butterwick.

#### **2.9.4 LiDAR/Project Aerial Imagery - Historic buildings**

95. Two small former historic agricultural buildings (**33**) are located just to the east of Poynton Hall. These buildings are the detached outbuildings within the farmstead's courtyard, discussed above, and are also likely to be of 19th century date. These are outside of the ES boundary.

96. There are three other small former historic agricultural buildings (**34**) located within the central part of the segment. These buildings are located within the ES boundary c. 400m east of Hobhole Drain and correspond to HER reference MLI124196.

97. Two further buildings are known in the north of the segment. There is an anomaly in the LiDAR data around one of these (**35**). This building is located c. 245m east of Ings Road, and modern Google Earth satellite imagery appears to show a small rectangular parcel of land measuring c. 24m x 32m that is separated from the rest of the modern field system. No standing structure is visible but there may be the remains of the former building present below ground. This is not shown on historic mapping.

#### **2.9.5 LiDAR/Project Aerial Imagery - Frieston Park**

98. A series of possible former boundaries and ponds are located within Frieston Park, possibly associated with former landscaping (**36**). These are located outside of the ES boundary to the east.

#### **2.9.6 LiDAR/Project Aerial Imagery - Uncertain earthworks**

99. A raised area / series of mounds is located west of Shore Road just clipping the ES boundary; it seems probable that these relate to the construction of the modern property now located in the corner of the same field, possibly a platform (**37**).

#### **2.9.7 LiDAR/Project Aerial Imagery - Historic field systems**

100. There are several concentrations of former field boundaries located within this segment. Examples of these former field boundaries can be found to the south of Poynton Hall and are likely to have been associated with the former farmstead.



101. There is one small area of remnant ridge and furrow in this segment (**38; Figure 20.1.3.16**), c. 400m south-west of Butterwick, and these earthworks are of possible medieval date. There is also further evidence of former field boundaries in this area.

### **2.9.8 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

102. Concentrations of possible relict watercourses are identifiable throughout this segment. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in those areas.

## **2.10 ECC10**

### **2.10.1 Historic England's Aerial Archaeology Mapping Explorer**

103. The NMP did not extend to the footprint of this segment.

### **2.10.2 Historic England's Aerial Photo Explorer**

104. The photo explorer does not hold any oblique photographs of this segment.

### **2.10.3 LiDAR/Project Aerial Imagery - Church End Road**

105. Former buildings, possible former buildings and building plots, associated field systems and ponds, are located to the west of Church End Road (**39; Figure 20.1.3.17**) (HER reference 124228). The northern most of these was a large 19th century residence known as Caythorpe House. Two other buildings were located to the south of this. In combination, the associated earthworks suggest a pattern of former building plots to the west of Church End Road. All of these seem to have been removed and the land put to agricultural use.

### **2.10.4 LiDAR/Project Aerial Imagery - Historic buildings**

106. Two former historic properties, each within a discrete plot, alongside associated field systems and ponds, are located immediately east of The Haven within the ES boundary, west of Hobhole (**40**).

### **2.10.5 LiDAR/Project Aerial Imagery - Uncertain earthworks**

107. A large sub-triangular depression – possible a pond / reservoir – is located to the south of Clampgate Road within the segment (**41**).



## **2.10.6 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

108. Concentrations of possible relict watercourses are identifiable throughout this segment. The presence of these features may suggest a heightened palaeo-environmental / geoarchaeological potential in those areas.

## **2.11 ECC11**

### **2.11.1 Historic England's Aerial Archaeology Mapping Explorer**

109. The NMP did not extend to the footprint of this segment.

### **2.11.2 Historic England's Aerial Photo Explorer**

110. A photograph showing part of the southern end of the segment shows cropmarks of sinuous boundaries within a field which are thought to reference post medieval drainage, later ploughed out as the fields dried and were able to be amalgamated.

### **2.11.3 Historic England Archives – Swindon**

111. To supplement an area of the Order Limits not subject to wholesale geophysical survey a cover search of Historic England's oblique and vertical collections including the southern end of the segment was undertaken in August 2023.

112. An area of cropmarks at the southern extremity of the segment are interpreted as field boundaries. These are not shown on the 1888 Ordnance Survey map but concur with boundaries shown on the 1839 map of Kirton parish (Volume 3, Appendix 20.1 Plate 30). Cropmarks according with historic field boundaries shown on historic maps and palaeochannels are not plotted.

### **2.11.4 LiDAR/Project Aerial Imagery - West of The Haven**

113. An area of possible earthworks follows the western bank of The Haven, albeit these seem likely to relate to natural saltings (42).

### **2.11.5 LiDAR/Project Aerial Imagery - Multon Hall**

114. Multon Hall medieval moated site (a Scheduled Monument) is located c. 115m west of this route segment, north of Sandholme. Just to the east of the scheduled area there is a possible earthwork that passes roughly N-S to the east of the hall, possibly associated with the moat (43; **Figure 20.1.3.20**). This is outside of the ES boundary.



115. On the opposite side (east) of the route from Multon Hall is a concentration of possible earthworks, within a fork in the former watercourse (**44**; **Figure 20.1.3.20**). These extend into the footprint of the ES boundary but may be natural, relating to a possible former channel that adjoins them to the east. Alternatively, the proximity of these earthworks to Multon Hall, and their morphological similarity suggest that they may relate to human activity, possibly salt working.

### **2.11.6 LiDAR/Project Aerial Imagery - Roads Plantation**

116. A sub-triangular area of former woodland surrounded by a former historic field system are located to the north of Frampton Road (**45**).

### **2.11.7 LiDAR/Project Aerial Imagery - Uncertain earthworks**

117. A possible mound is located south of Willoughby Lane possibly the result of surrounding former water courses (**46**). This is located outside of the ES boundary.

### **2.11.8 LiDAR/Project Aerial Imagery - Sea banks**

118. Roman Bank passes through the route segment to the south-west of The Haven, east of Skeldyke Geological / palaeo-channel activity

119. Concentrations of possible relict watercourses are identifiable in the following locations:

- to the west of The Haven;
- to the west of Roman Bank;
- to the south of Frampton Road; and
- to the north of Marsh Road.

120. The presence of these features may suggest a heightened palaeo-environmental/geoarchaeological potential in those areas.

## **2.12 Wyberton (Detached) Compound, West of ECC11**

### **2.12.1 Historic England's Aerial Archaeology Mapping Explorer**

121. The NMP did not extend to the footprint of this segment.

### **2.12.2 Historic England's Aerial Photo Explorer**

122. The photo explorer does not hold any oblique photographs of this segment.



### **2.12.3 LiDAR/Project Aerial Imagery - Drains**

123. No principal drains / dykes are present within this proposed compound area, but remnants of former drainage channels are present within it.

### **2.12.4 LiDAR/Project Aerial Imagery - Historic field systems**

124. Remnant field boundaries are present within the proposed compound, but no extant ridge and furrow, etc. is evident.

125. No other earthwork features are present within the proposed compound.

## **2.13 ECC12**

### **2.13.1 Historic England's Aerial Archaeology Mapping Explorer**

126. The NMP did not extend to the footprint of this segment.

### **2.13.2 Historic England's Aerial Photo Explorer**

127. The photo explorer does not hold any oblique photographs of this segment.

### **2.13.3 Historic England Archives – Swindon**

128. To supplement an area of the Order Limits not subject to wholesale geophysical survey a cover search of Historic England's oblique and vertical collections including the southern end of the segment was undertaken in August 2023.

129. Cropmarks were limited to seawalls known from LiDAR and historic map regression.

### **2.13.4 LiDAR/Project Aerial Imagery - Ireland's Farm**

130. A large farmstead, within a sub-oval plot, surrounded by remnants of a possibly associated field system, is located outside of the ES boundary to the south of Clough Lane (47). Two former buildings were associated with the farmstead, alongside the remains of an associated field system. All outside of the ES boundary.

### **2.13.5 LiDAR/Project Aerial Imagery - Earlmars Farm**

131. A former outbuilding is located to the north-east of Earlmars Farm, north-east of Thompson's Lane (48). This is outside of the ES boundary.



### **2.13.6 LiDAR/Project Aerial Imagery - Lane Acre House and Fosdyke Cottage**

132. A small farm and well is located within a small plot, east of Pot Lane (49). This is outside the ES boundary. Fosdyke Cottage, which has its origins in the 19th century, is located a short distance to the east within the ES boundary (50) (HER reference MLI123126).

### **2.13.7 LiDAR/Project Aerial Imagery - Historic buildings**

133. A former un-named farm, within a rectangular plot, is located to the south of Marsh Road (51).

### **2.13.8 LiDAR/Project Aerial Imagery - Uncertain earthworks**

134. A possible boundary runs NE-SW parallel to Roman Bank, to the east, through New Marsh (52; Figure 20.1.3.22). This may be related to sea defence, possibly an earlier iteration of Roman Bank. It runs from Ireland's Farm to Fosdyke Cottage, with certain lengths marked by agricultural boundaries. A series of possible former boundaries are located north of the coastguard station (53). These are located outside of the ES boundary.

135. There is a possible mound located to the south of Puttock Gate, west of Pullover Lane (54). This is located outside of the ES boundary.

### **2.13.9 LiDAR/Project Aerial Imagery - Sea banks**

136. Roman Bank passes NE-SW through the route segment, to the east of Pot Lane.

137. A discrete bank runs immediately north of the saltings on the northern bank of the River Welland.

### **2.13.10 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

138. Concentrations of possible relict watercourses are identifiable in the following locations:

- to the east of Bucklegate Lane;
- on Earl Marsh, south of Ireland's Farm; this includes a possible large sub-circular pond;
- at New Marsh on the northern banks of the River Welland; and
- to the south of Puttock Gate.



139. The presence of these features may suggest a heightened palaeo-environmental/geoarchaeological potential in those areas.

## **2.14 ECC13**

### **2.14.1 Historic England's Aerial Archaeology Mapping Explorer**

140. The NMP did not extend to the footprint of this segment.

### **2.14.2 Historic England's Aerial Photo Explorer**

141. The photo explorer does not hold any oblique photographs of this segment.

### **2.14.3 Historic England Archives – Swindon**

142. To supplement an area of the Order Limits not subject to wholesale geophysical survey a cover search of Historic England's oblique and vertical collections including the southern end of the segment was undertaken in August 2023.

143. Cropmarks were limited to palaeochannels.

### **2.14.4 LiDAR/Project Aerial Imagery - Bicker Creek**

144. A former length of Bicker Creek, and what appears to be a former tributary, flow through the north-western part of this route segment. To the south of this are two former outbuildings (55) located outside of the ES boundary and an amorphous area of possible earthworks (56); the latter may alternatively relate to modern agricultural activity. Geophysical survey at this location did not verify any activity.

### **2.14.5 LiDAR/Project Aerial Imagery - Uncertain earthworks**

145. A series of possible mounds is located on Algarkirk Marsh, west of the Risegate Outfall (57; Figure 20.1.3.24). These extend into the ES boundary and may be natural, or they may relate to salt working. Geophysical survey at this location did not verify any activity.

146. There are a series of linear earthworks to the south-east and south-west of Bottom Farm (61), probably related to drainage.

### **2.14.6 LiDAR/Project Aerial Imagery - Sea banks**

147. A bank runs from Fosseyke Bridge west onto Algarkirk Marsh.





### **2.14.7 LiDAR/Project Aerial Imagery - Drains**

148. The Risegate Eau enters The Welland at Algarkirk Marsh.

149. Other non-principal drains / dykes are present within this segment, along with several ponds.

### **2.14.8 LiDAR/Project Aerial Imagery - Geological / palaeo-channel activity**

150. Concentrations of possible relict watercourses are identifiable to the west of the Welland. The presence of these features may suggest a heightened palaeo-environmental/geoarchaeological potential in this area.

### **2.14.9 LiDAR/Project Aerial Imagery - Drains**

151. The principal drain of Lord's Drain (62) has been identified within this segment of the route. The remnants of former drainage channels and ponds are present throughout the segment.

## **2.15 ECC14**

### **2.15.1 Historic England's Aerial Archaeology Mapping Explorer**

152. The NMP did not extend to the footprint of this segment.

### **2.15.2 Historic England's Aerial Photo Explorer**

153. The photo explorer does not hold any oblique photographs of this segment.

### **2.15.3 Historic England Archives – Swindon**

154. To supplement an area of the Order Limits not subject to wholesale geophysical survey a cover search of Historic England's oblique and vertical collections including the southern end of the segment was undertaken in August 2023.

155. Cropmarks were limited to palaeochannels.

### **2.15.4 LiDAR/Project Aerial Imagery - Tramways**

156. Several possible lengths of a known 19<sup>th</sup> century tramway may be located on Wragg Marsh (59; Figure 20.1.3.25). These would appear to be identifiable as a nexus of former banks and extant embanked boundaries forming an extension to the known



tramway. Alternatively, these banks may represent former sea banks or other flood defences, being just south of the Old Sea Bank.

#### **2.15.5 LiDAR/Project Aerial Imagery - Historic buildings**

157. A small building is located within Weston Marsh, possibly a former outbuilding to Bottom Yard (60).

#### **2.15.6 LiDAR/Project Aerial Imagery - Drains**

158. The principal drain of Lord's Drain (62) has been identified within this segment of the route. The remnants of former drainage channels and ponds are present throughout the segment.



**Plate 1: ECC2: Sample Area Aerial Photographic Transcription (recorded DMV polygon in blue)**



