The Great Grid Upgrade

Sea Link

Sea Link

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Alison Deegan

LIDAR AND AIR PHOTO

MAPPING, INTERPRETATION AND ANALYSIS

FOR ARCHAEOLOGICAL APPLICATIONS

www.alisondeegan.co.uk

Air photo and LiDAR mapping and interpretation:

Sea Link Project—Kent section

Issued 9 May 2024

Project number 2324001

Undertaken by Alison Deegan BSc MCIfA

Commissioned by

AECOM

Summary

This report concerns the results of interpretation and mapping of archaeological features from air photos and LiDAR imagery for the Kent section of the Sea Link Project.

This survey consolidated the results from previous surveys undertaken and/or funded by Historic England and its predecessors with mapping and interpretation from more recent sources, including LiDAR imagery and orthophotography.

This survey has identified the remains of medieval and/or post medieval sea or flood defences, post medieval agricultural features, and a range of Second World War defences.

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Contents

1 Introduction

1.1 Background to the survey

1.1.1 Alison Deegan was commissioned by AECOM (the Consultant) on behalf of National Grid Electricity Transmission (the Client) to undertake air photo and LiDAR analysis and mapping for land within the Sea Link Project Boundary. The purpose being to identify and record archaeological earthworks, cropmarks and soilmarks of all periods.

1.1.2 The Sea Link Project is a proposal by National Grid Electricity Transmission plc (NG) to reinforce the transmission network in the South-East of England and East Anglia. This would be achieved by reinforcing the network with a High Voltage Direct Current (HVDC) link between the proposed Friston substation in the Sizewell area of Suffolk and the existing Richborough to Canterbury 400kV overhead line close to Richborough in Kent. The Project is required to accommodate additional power flows generated from renewable and low carbon energy generation, as well as additional new interconnection with mainland Europe.

1.1.3 This report pertains to the Kent section only, a separate report will detail the results of the Suffolk section. This survey incorporates results from two earlier surveys, which were undertaken by or with funding from Historic England and its predecessors.

1.2 The Kent section of the Sea Link Project (see Figures 1 and 2)

1.2.1 This survey concerns the Kent section of the Sea Link Project. This scheme runs inland from Pegswell Bay, across Minster Marshes to the River Stour. Here it branches north-westward to Boxlees Hill and south-eastward to Richborough.

1.2.2 The Kent section of this scheme covers approximately 205 hectares. The air photo and lidar survey covers this area, a 25m buffer and includes those small areas of land that are excluded from but surrounded by the scheme's Red Line Boundary (RLB). This amounts to a total area of 288 hectares.

1.2.3 From the coast the scheme passes through St Augustine's Golf Course, climbs slightly at Cottingham Hill and towards Minster and then descends onto reclaimed marshland either side of the River Stour. This swathe of lower ground that runs from Pegswell Bay to Reculver on the north Kent coast is known as the Wantsum Channel. Until the medieval period, it cut the Isle of Thanet off from the rest of the county.

1.2.4 The bedrock is Thanet Formation – Sand, silt and clay covered by Beach and Tidal Flat Deposits along the coat and Tidal Flat deposits along the Wantsum Channel (https://geologyviewer.bgs.ac.uk).

1.2.5 To facilitate cataloguing and description of the archaeological features the survey area was divided into numbered parcels loosely based on the current field and land boundaries. Parcels were created for all fields intercepted by the overall air photo and LiDAR survey area, so parts of many parcels and some whole parcels are outside of the scheme's RLB.

1.2.6 A brief overview of the uses of air photos and LiDAR for archaeological remote sensing is provided in Appendices 1 & 2.

1.3 Existing mapping data incorporated into this survey

1.3.1 Historic England and its predecessors (English Heritage and the Royal Commission on the Historical Monuments of England (RCHME)), has a long-running programme of air photo mapping projects, previously know as the National Mapping Programme (NMP) and now under the umbrella of Archaeological Investigation and Mapping (AIM). Two such projects are pertinent: the Kent NMP Pilot Project and the South East Rapid Coastal Zone Assessment Survey, and their results are incorporated into this survey.

1.3.2 The Kent Pilot NMP Project was a county-wide survey undertaken by RCHME and completed in 1988. It was a hand-drawn survey, using a selection of the vertical air photos and the oblique air photos that were available at that time. Historic England has scanned and vectorised this hand-drawn survey.

1.3.3 The South East Rapid Coastal Zone Assessment Survey (SERCZAS) was undertaken by Wessex Archaeology and completed in 2013. This is a digital project that used the vertical and oblique air photos, and LiDAR imagery that were available at that time. It covers part of the Kent section of the Sea Link Project (see Figure 1).

2 Sources and methodology

2.1 Data sources

2.1.1 The following resources were consulted for this survey.

Source	Data type	Notes
AECOM	LiDAR	25cm resolution data supplied in various formats. This data does not cover Parcels 42-51. ASCI format files used.
AECOM	Orthophotography	High resolution data supplied in various formats. This data does not cover Parcels 42-51. Geotiff files used.
Environment Agency	LiDAR	1m resolution tiff files used
Google Earth	Orthophotography	Imagery captured for years between 2003 and 2022, and lower resolution imagery compiled from historical RAF air photos.
Bing	Orthophotography	A single layer of undated imagery
Historic England Archive	Vertical air photos	170 prints examined in the Archive on the 25th and 30th May 2023. Most were taken between 1942 and 1963 and just two prints in 1994. See Appendix 4 for full list of prints examined.
Historic England Archive	Specialist air photos	8 prints examined in the Archive on the 25th and 30th May 2023 and 14 prints examined online. See Appendix 4 for full lists of photos examined
Historic England Archive	Military Oblique air photos	6 prints examined in the Archive on the 25th and 30th May 2023. See Appendix 4 for full lists of photos examined
Historic England Archive	Kent NMP Pilot Project	Vector data in shapefile format
Historic England Archive	SERCZAS	Vector data in shapefile format
National Library of Scotland	Historical Ordnance Survey maps	Six and 25 inch maps published in the late 19th century. (https://www.nls.uk/)

2.2 Processing and mapping

2.2.1 The AECOM-supplied and Environment Agency LiDAR data was processed in the Relief Visualisation Toolbox 2.2.1. 16-direction hill-shaded visualisations were generated for the Digital Surface Models (DSM) and Digital Terrain Models (DTM) and Simple Local Relief Model models were generated for the 1m resolution DTM.

2.2.2 The various sources of orthophotography: AECOM-supplied, Bing and Google Earth imagery were

examined on screen on a field by field basis.

2.2.3 The air photo prints held by the Historic England Archive (HEA) were examined systematically, using x2 magnification where necessary and stereoscopically where possible. Selected prints were then photographed with a hand-held digital camera to enable rectification and digitisation of archaeological features. The HEA digital air photos were examine on screen.

2.2.4 Captures from the HEA prints were rectified to ground control points derived from OS mastermap data using Aerial5.36. AERIAL5.36 gives error readings for each control point, where 5 or more control points are used. In all cases errors of within ±3m were achieved for the control points. However this may not reflect the on-the-ground positional accuracy of the features mapped because these usually lie between rather than at the control points.

2.2.5 Archaeological features that are visible on the LiDAR visualisations, orthophotography and rectified image captures were digitised in the GIS (MAPInfo Professional 21) and with reference back to the original source material. Archaeological features were mapped to a nominal scale 1:2500 in terms of detail and accuracy. Data pertaining to each feature was recorded in the GIS. The structure and content of the digital map dataset is described in Appendix 5.

2.2.6 Archaeological features mapped at an appropriate level of detail and accuracy by either the Kent Pilot NMP Project or SERCZAS were not mapped again for this survey.

3 Results

3.1.1 Figures 3 to 6 in this report show the results of this survey combined with the Kent Pilot NMP Project and SERCZAS. Archaeological features from all surveys have been catalogued and described according to the parcel division described in Section 1.3.4. (see Appendix 3). A brief overview of the results is provided below.

3.1.2 Details including type, period and sources for individual archaeological features can be accessed in the digital versions of this survey and the SERCZAS (see Appendix 5). All attributions of date and type are provisional and open to re-interpretation.

3.1.3 Geophysical surveys have been conducted over some of the land covered by this project (filename: SSSK23_Kent_Interpretation, supplied by AECOM). Overall, very few of the features identified on the historical and recent air photos and lidar imagery were recorded in the geophysical survey interpretations. Similarly most of the features identified by the geophysical surveys were not visible on the aerial sources. In particular the extensive settlement identified on Cottingham Hill (**Parcels 8**, **11** and **12**) was not revealed on any of the air photos examined.

3.2 Neolithic to Early Medieval

3.2.1 No cropmarked, soilmark or earthwork features of known or possible Neolithic, Bronze Age, Iron Age, Roman or early medieval date were identified by this survey, the SERCZAS or the Kent Pilot NMP Project. Various archaeological excavations undertaken on Cottingham Hill have demonstrated the use and occupation of this higher ground from the early Neolithic period through to the Saxon period (eg MKE91898, MKE91910 and MKE91912 amongst many other) but no such evidence was detected on the photos and imagery examined.

3.3 Medieval features

3.3.1 The 'Boarded Groin', which is reported to be a sea wall built in 1365, is visible as an earthwork bank running along the northern edge of **Parcel 4** (Cotton 1895, 16).

3.3.2 Inland the scheme intersects the 'Abbotts Wall' in **Parcels 25** and **27**. This flood defence is claimed to have been constructed in the 13th century and it ran inland from Ebbsfleet, along the north side of the River Stour towards Sarre (Cotton 1895, 25).

3.3.3 Just north of 'Abbotts Wall' in **Parcel 24**, the SERCZAS identified a short bank as a section of medieval or early post medieval flood defence associated with the reclamation of the Wantsum Channel.

3.3.4 South of the River Stour the scheme intersects several lines of possible sea or flood defences. The most northerly runs close to the river through **Parcel 35** and then veers slightly away in

Parcel 28. This embankment it depicted on the OS map of 1877. The more easterly sections in **Parcel 28** are denuded but the others survive as well-defined earthworks.

3.3.5 The SERCZAS recorded an ephemeral bank and ditch running approximately 120m south of the river, through **Parcels 32** and **35**. These survive as very slight earthworks. This embankment is not depicted on the OS map of 1877.

3.3.6 The SERCZAS depicts a third line of defences sweeping gently through **Parcels 33**, **34**, **36**, **38** and **40**. This embankment is not depicted on the OS map of 1877. The LiDAR imagery indicates that this feature survives as a low earthwork but suggests that it is a gentle scarp incised by small creeks running to the river, rather than embankment. This feature may instead be a small terrace formed when the historical River Wantsum silted up and retreated.

3.3.7 The SERCZAS recorded medieval stack stands in **Parcels 30**, **34**-**35**, **38**, **39**, **41**-**44**. Stack stands are small mounds, often circular in shape, that elevate cut hay above damp meadows for drying. It is likely that stack stands were used on the marsh in the medieval period. However, the examples that are visible in **Parcel 38** appear to sit on top of straight narrow plough furrows of likely post medieval origin. Extrapolating from this it seems more likely that the surviving stack stand mounds within and adjacent to the scheme are of post medieval rather than medieval construction.

3.4 Post medieval features

3.4.1 To remain effective it is likely that both the 'Boarded Groin' and 'Abbotts Wall', and the other sea or flood defences with tentative medieval origins were maintained and repaired in the post medieval period.

3.4.2 The scheme intersects a fourth line of flood or sea defences along the southern edge of **Parcels 41** and **45**. No evidence is forthcoming to suggest that these defences are as old as the 'Boarded Groin' or 'Abbotts Wall', hence they are ascribed to the post medieval rather than medieval period. These features survive as well-formed earthworks, except the short extension that curved into **Parcel 45**, which as been levelled.

3.4.3 As noted above it is likely that the stack stands that are visible as low earthworks across the former marshland and on the slightly higher ground towards Minster are of post medieval date, though the practice of drying hay has medieval origins. This most recent survey has identified additional examples **Parcels 10**, **13**, **17**, **18** and **32.**

3.4.4 The LiDAR imagery indicates that the best preserved stack stands within the Scheme's RLB are in **Parcels 38** and **32**.

3.4.5 Post medieval ridge and furrow is visible as earthworks in **Parcel 38**.

3.4.6 A small hamlet stood in **Parcels 13** and **16**, on the slightly higher ground, north of the reclaimed

marshland**.** It is named as 'Dorlock' on the OS map of 1816 and it stood on Brook Lane, which ran from Ebbsfleet to Minster. Late 19th century maps place 'Durlock' 1 km to the north-west at Minster and depict 'Brook Cottages' a little to the north of the hamlet. The hamlet itself appears to have been near-abandoned at that time. In the 1940s 'Brook Cottages' were still standing and the area of the hamlet was overgrown. A section of Brook Lane was visible as a cropmark. 'Brook Cottages' were demolished by 1960 and the land where these and the hamlet stood has now been ploughed and cultivated. Some of these features are adjacent to or may run into the scheme's RLB.

3.4.7 A farm named as White House is depicted on the OS map of 1877, approximately 1km north of the Richborough (**Parcel 47**). It stood where the drove road from Richborough crossed Richborough Brook. The farm stood on a small plot encircled by a drainage ditches. Some parts of the farm were still standing and the ditches were extant in the 1940s but all buildings have now been levelled, the ditches filled in and the land is under cultivation.

3.4.8 A small square embanked enclosure sat in the north-west corner of **Parcel 40**. This may have been an old sheep pen.

3.4.9 The reclaimed marshes were used extensively for sheep grazing and this is reflected in the distribution of sheep pens and a sheep wash, as seen in **Parcels 15**, **18**, **23**, **24** and **46**. These examples are depicted on the OS map of 1877 and the structures themselves are likely to be of late post medieval date.

3.4.10 Fragments of post medieval drainage ditches, water channels and field boundaries, were visible as earthworks, cropmarks or soilmarks in **Parcels 2**, **5**, **12**, **18**, **22** and **27**.

3.4.11 Of less certain function but likely post medieval date are the low irregular mound or platform and long hollow in **Parcel 17**. These features have now been levelled.

3.5 Second World War features

3.5.1 During the Second World War Pegswell Bay and its hinterland held a strategic and vulnerable position on the English Channel. This is reflected in the quantity and complexity of defences that were constructed in areas intersected by this scheme.

3.5.2 In **Parcel 1**, in the intertidal zone, a grid like arrangement of circular posts and a long barrier were constructed to prevent approaches and landings. Anti-tank blocks were placed along the foreshore to stop any landed vehicles from progressing inland.

3.5.3 In **Parcels 2** and **3**, barbed wire entanglement backed up the anti tank cubes and behind this the scheme encounters for the first time part of the stop line that ran between Cliffs End and Minster.

3.5.4 This stop line is also encountered in **Parcels 2-5**, **7**, **9**, **15**, **17**, **18**, **23-25** and **27**. It is characterised as a stream fortified with banks (eg **MWX43387**, **MWX43372**). This defence work utilised various

drainage ditches that were all in existence in the late 19th century. The material that is freshly placed alongside these ditches on the 1942 air photos and interpreted as fortifications are indistinguishable from the deposits of dredged material that appear alongside most of the waterways, some clearly grassed over by 1942 and others appearing after the war.

3.5.5 Behind the stop line in **Parcel 2** there is a line of slit trenches and further barbed wire entanglements, and behind these a group of gun emplacements and associated structures.

3.5.6 On the higher ground overlooking the bay there is a gun emplacement in **Parcel 8** and a strong point concealed by hedges and protected by barbed wire straddling **Parcels 6** and **8**. The Kent NMP Project recorded a zig-zagged trench in **Parcel 8**. This feature is visible as a faint cropmarks on air photos taken in 1946 but there is no trace of it on the 1942 or 1944 photos, which casts some doubt as to its origin.

3.5.7 Further inland, as well as parts of the stop line described above there are small embanked gun emplacements in **Parcels 14** and **46** and a possible third example in **Parcel 27**. However the latter may be no more than an impromptu shelter for sheep.

3.5.8 Air photos taken in the 1940s show three structures in **Parcel 16**. These appear to be have been newly constructed in 1944 and so a defensive role is plausible. These features are outside of the scheme's boundary.

3.5.9 Just beyond the scheme, on the north side of Boxlees Hill, air photos taken in 1944 show a small arrangement of buildings and structures (**Parcel 31**). The nature of these features is not certain but they may be the components of a radio telegraphy station.

3.5.10 A number of bomb craters are visible on the historical air photos. Single craters in **Parcels 3**, **9**, and **17**, and a cluster of impacts outside of the scheme's boundary near Boxlees Hill (**Parcels 27 and 31**).

3.5.11 Of these various Second World War structures, trenches and embankments very little survives above ground within the scheme's RLB, except in **Parcel 2** where some small discrete earthworks may survive amongst the golf course landscaping.

4 Concluding remarks

4.1.1 The air photos and LiDAR did not reveal evidence for any pre-medieval features. This is not unexpected for the area of former marshland in the Wantsum Channel.

4.1.2 Many of the medieval, post medieval and 20th century features identified by this survey have now been levelled or survive only as very low or shallow earthworks. This does not preclude the survival of archaeological deposits below ground level .

4.1.3 The absence of evidence for archaeological features anywhere in this survey's area should not be taken as an absence of presence.

References and resources cited

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Ordnance Survey 25 inch and 6 inch scale maps. Various dates via http://maps.nls.uk/

Ordnance Survey 1 inch scale map 1853 Sheet 83. Via https://www.visionofbritain.org.uk/

Appendix 1 Archaeology from black and white and colour air photographs

Air photographs and aerial imagery taken in appropriate conditions can record crop marks, soilmarks and earthworks of archaeological origin.

Crop marks result from variations in leaf and stalk colour and plant height and vigour. Crop marks occur where there are anomalies below the ground: in-filled hollows, palaeochannels, frost cracks, archaeological pits, ditches, surfaces and banks or modern disturbances such as land drains. Crop marks can also be created by variations in the treatment of the topsoil and ground cover, for example the uneven application of fertilizers, pesticides and herbicides or damage.

Crop marks that delineate buried and levelled archaeological features are the effect of differential growth and ripening between the vegetation on the archaeological deposits and that on surrounding undisturbed ground. Variations in growth and ripening are most visible when there is a significant difference in the water and nutrient availability between the archaeological and natural deposits. Crop marks can form at any stage from germination to ripening but the optimal conditions are during periods when precipitation is exceeded by transpiration. This results in potential soil moisture deficit (SMD) and water-stressed plants (Jones and Evans 1975). Prolonged periods of SMD halt plant growth and then cause wilting of the plant leaves, stem and finally root. Water-stress is exacerbated by free-draining sub-surface deposits such as archaeological walls or road surfaces but mitigated by rich and humic ditch and pit deposits. Even after ripening, differences in crop height and bulk can indicate the presence of buried features where there are no tonal differences. Crop marks can be seen most clearly in large areas of homogenous, fast-growing plants such as cereal crops and, less frequently, in root crops and grass. Crop marks produced in arable and grass at times of significant moisture stress, usually over buried structures or other highly permeable archaeological deposits, are often referred to as parchmarks.

Soilmarks are the colour and tonal differences between archaeological deposits and the plough or subsoil. The action of ploughing, which can penetrate the ground to a depth of 45cm, brings to the surface previously buried material. The rotation of the plough exposes the cut surface uppermost. Where the plough cuts buried and infilled archaeological features such as banks and ditches it brings to the surface slices of these deposits. If these slices are sufficiently differentiated from the natural plough or subsoil they can be visible from the air.

Archaeological earthworks that are visible on the ground can also be seen from the air. Detection and recording of earthworks from the air is determined by their survival and visibility. The survival of earthworks depends on past and present land use; natural erosion processes, deliberate destruction and ploughing can all reduce upstanding features to ground level. Earthworks can be revealed by the pattern of sunlight and shadow, differential frost or snow cover or the distribution of standing and flood water. Large and subtle variations in ground relief are further accentuated when viewed stereoscopically. Most stereo images are vertical photographs taken in long, regular sorties but stereo-overlapping can also be achieved from correctly set-up oblique views.

Appendix 2 Archaeology from LiDAR survey data

Airborne Light Detection and Ranging (LiDAR) is a data collection technique that uses a laser to measure certain variables. For archaeological purposes it is the distance between the aircraft and the ground that provides particular interest. During LiDAR flights up to 100,000 measurements per second are made of the ground, allowing highly detailed models of the ground surface, including the details of surviving archaeological earthworks, to be generated at spatial resolutions of between 25cm and 2 metres.

The resulting dataset is a grid of height points called a Digital Elevation Surface Model, these points can be filtered to remove those measurements that were read from trees, buildings and other supra-surface features, the result is a Digital Terrain Model, sometimes called a 'Bare Earth' model. The latter is particular useful for the identification of archaeological earthworks where they are obscured on conventional air photos by tree and shrub cover. The DSM and DTM need to be transformed into a visualisations for analysis and interpretation. For this survey two different visualisations were employed for the identification of archaeological earthworks: multi-direction hill-shaded model and simple local relief model.

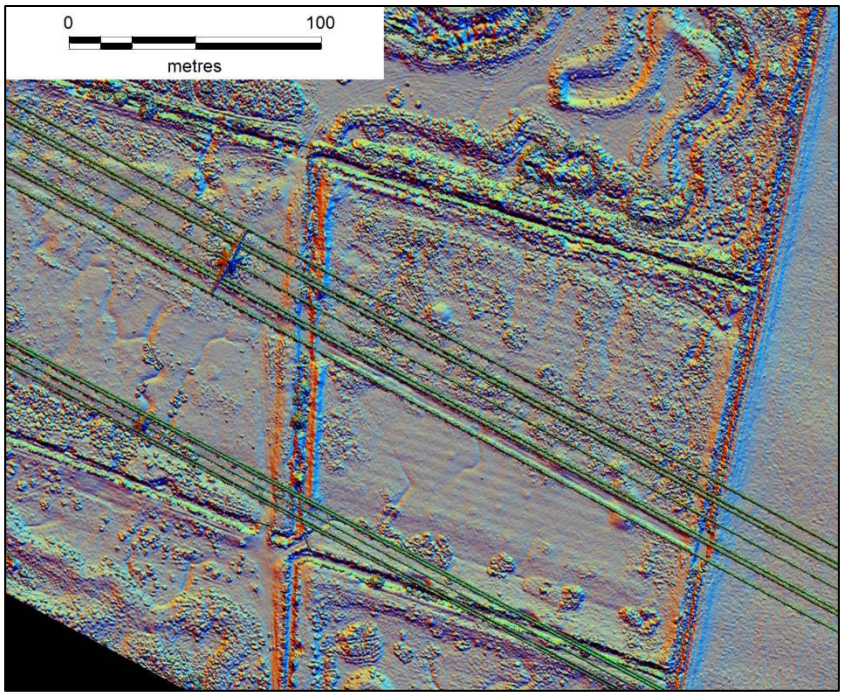

Figure A. A 16-Direction Hill-shaded model of the DSM, generated from 25cm resolution LiDAR data. Hill-shading casts an artificial light source across a landscape to reveal surface irregularities. Hill-shading from a single direction of light will not reveal those features that are in alignment with the light source. This visualisation combines the light and shade of 16 different directions of light. The visualisation can be further enhanced by exaggerating the vertical elevation and lowering the angle of the light source.

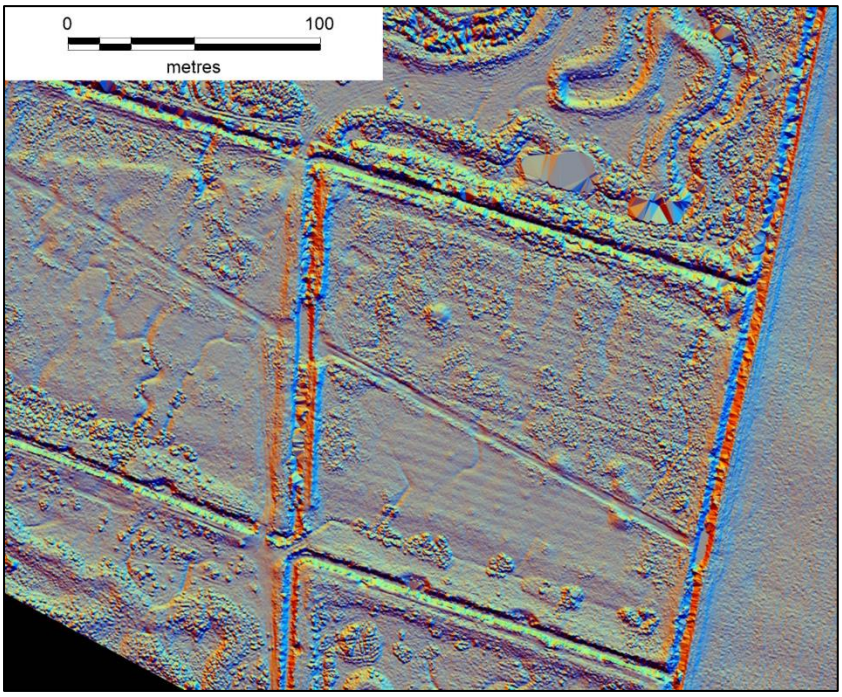

Figure B. A 16-Direction Hill-shaded model of the DTM, generated from 25cm resolution LiDAR data. This visualisation combines the light and shade of 16 different directions of light. The visualisation can be further enhanced by exaggerating the vertical elevation and lowering the angle of the light source.

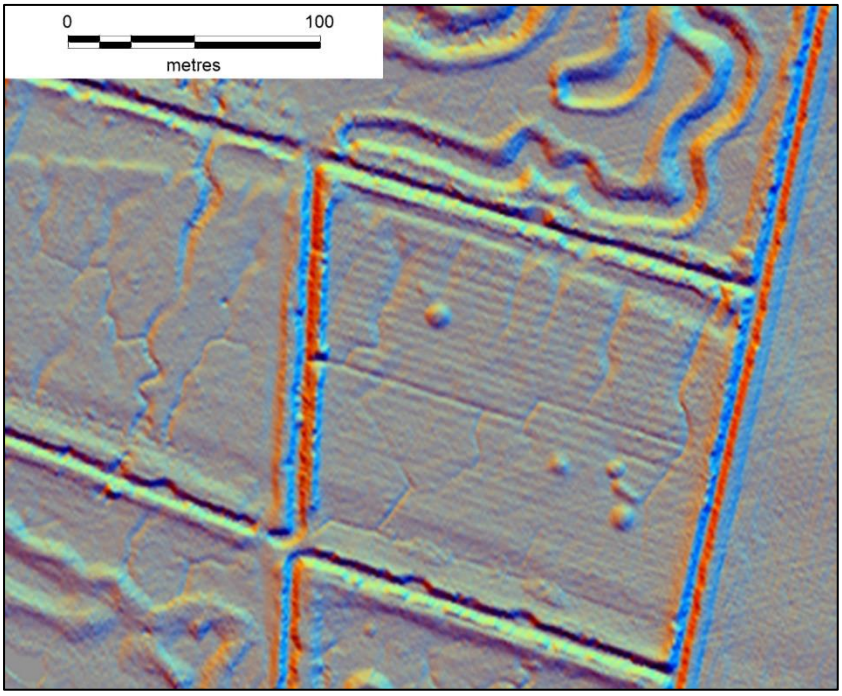

Figure C A hill- shaded model of the DTM, generated from 1m resolution Environment Agency LiDAR data. This visualisation combines the light and shade of 16 different directions of light. The visualisation can be further enhanced by exaggerating the vertical elevation and lowering the angle of the light source.

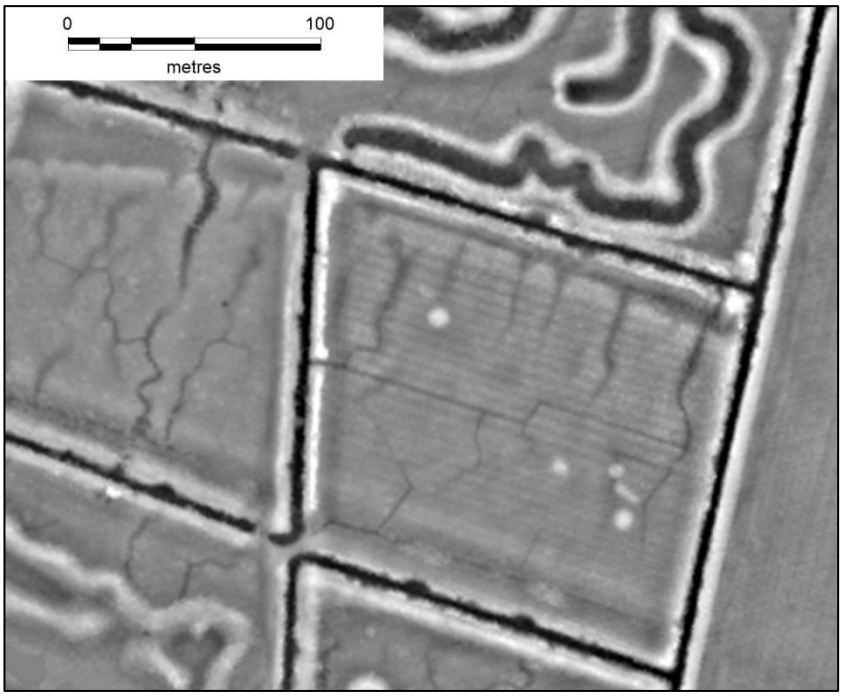

Figure D Simple Local Relief Model generated from 1m resolution Environment Agency LiDAR data. General relief models convey landscape scale topography at the expense of smaller scale features, including archaeological earthworks. This visualisation removes the general trend, eg hills and valleys to accentuate the appearance of the smaller scale features. In this visualisation the lighter tones represent banks and mounds, the darker, ditches and pits. This visualisation is particularly effective at revealing very low earthworks.

Further information and guidance on the use of LiDAR for archaeological prospection and the creation of visualisation from LiDAR data can be found in Crutchley and Crow (2009) and Kokalj and Hesse (2017).

Appendix 3 Catalogue of features

Covered by SERCZAS Y – completely coverage by this project, N – not covered by this project, P – partly covered by this project

Parcel	Covered by SERCZAS?	Description
1	Y	The SERCZAS recorded a grid like arrangement of Second World War anti landing obstacles in the intertidal zone and anti tank blocks on the foreshore.(1-2) Air photos taken in 1942 and 1946 show Second World War military coastal defences running across Pegwell Bay from Cliffsend towards the mouth of the River Stour. This was in the form of a long, straight continuous barrier, of uncertain form. In this parcel it stood approximately 100m from the shore. This feature is not visible on air photos taken at low tide in 1950, which suggests that it had been removed by this date. (3-5) 1 MWX43173 2 MWX43185 3 RAF/HLA/386 RP 607 02 JAN 1942 4 RAF/106G/UK/1131 RS 4005 17 JAN 1946 5 RAF/541/508 RP 3059 22 APR 1950
2	Y	The SERCZAS recorded a number of Second World War defences in this parcel including gun emplacements, slit trenches, barbed wire entanglements, and other earthwork defences. It suggested that some of the pre-existing water channels in this parcel, and freshly constructed (when photographed) banks either or both sides, formed part of a Second World War anti-invasion stop line that ran between Cliffs End and Minster. (1-6) The historical air photos also show other earthwork features including a short section of the Boarded Groin (MKE76084), post medieval drainage ditches and additional Second World War features. The LiDAR imagery suggests most still survive, albeit as very low or shallow earthworks.(7-8) The Boarded Groin is reported to have medieval origins. (9) 1 MKE39400 2 MWX43188 3 MWX43190 4 MWX43191 5 MWX43192 6 MWX43387 7 RAF/106G/UK/1131 RS 4005 17 JAN 1946 8 LIDAR IMAGERY (Environment Agency & AECOM supplied) 9 HE Research Record 469523
3	Y	The SERCZAS recorded Second World War features in this parcel including barbed wire entanglements and bomb craters. It suggested that some of the pre-existing water channels in this parcel, and freshly constructed banks on either or both sides, formed part of a Second World War anti-invasion stop line that ran between Cliffs End and Minster. (1-2) 1 MWX43187 2 MWX43188
4	Y	The SERCZAS suggests that the water channel that runs along the north-west edge of this parcel was part of a Second World War anti-invasion stop line (see **Parcel 2**). (1) The historical air photos also show a section of the Boarded Groin running along the north-west edge of this parcel (MKE76084). The LiDAR imagery indicates that this feature survives as an earthwork, but it may have been modified then the St Augustine's Golf Course was landscaped. (2-3) The Boarded Groin is reported to have medieval origins. (4) 1 MWX43387 2 RAF/106G/UK/1131 RS 4005 17 JAN 1946 3 LIDAR IMAGERY (Environment Agency & AECOM supplied) 4 HE Research Record 469523

Parcel	Covered by SERCZAS?	Description
5	Y	The SERCZAS suggests that bank that along the south-east edge of this parcel was part of a Second World War anti-invasion stop line (see **Parcel 2**). (1) The historical air photos also show post medieval drainage ditches that are likely to be contiguous with those recorded in **Parcel 2**. (2) LiDAR imagery indicates that this parcel has been substantially relandscaped for the St Augustine's Golf Course and the impact on the features described above is not known. (3) 1 MWX43387 2 RAF/106G/UK/1131 RS 4005 17 JAN 1946 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
6	N	Air photos taken in 1942 show a possible Second World War barbed wire entanglement defending the south-west corner of this parcel. Air photos taken in 1944 show a second circuit of entanglement. These features had been removed by 1946. They are likely to have protected a small group of features in **Parcel 8**. (1-3) 1 RAF/HLA/386 RP 685 02 JAN 1942 2 US/7PH/GP/LOC286 V 5008 19 APR 1944 3 RAF/106G/UK/1131 RS 4005 17 JAN 1946
7	Y	The SERCZAS suggested that some of the pre-existing water channels in this parcel were part of a Second World War anti-invasion stop line (see **Parcel 2**). (1) LiDAR imagery indicates that this parcel has been substantially relandscaped for the St Augustine's Golf Course and the impact on the features described above is not known. (2) 1 MWX43387 2 LIDAR IMAGERY (Environment Agency & AECOM supplied)
8	N	The Kent Pilot NMP Project recorded a zig-zag trench in this parcel. (1) This feature has been reassessed. It appears as a faint cropmark on air photos taken in 1946 but it is not visible on the photos taken in 1942 or 1944, which casts some doubt on its origin. (2) Historical air photos show other possible Second World War features, one near the centre of the parcel, the other partially concealed by the hedge between this parcel and Parcel 6. The former is a group of small earthworks, including a possible gun emplacement, built along the route of what had been Cottingham Lane. It may have been among the features encountered during excavations in 2005 (see MKE21077). The latter is a group of slit trenches and a possible building, tucked in behind the hedge and protected by circuits of barbed wire that continued into Parcel 6. (3-4) Most of these features had been removed, infilled or levelled by 1950. (5) 1 MKE8106 2 RAF/106G/UK/1131 RS 4006 17 JAN 1946 3 RAF/HLA/386 RP 685 02 JAN 1942 4 US/7PH/GP/LOC286 V 5008 19 APR 1944 5 RAF/541/508 RP 3063 22 APR 1950
9	P	The SERCZAS suggested that some of the pre-existing water channels in this parcel, and freshly constructed banking on either or both sides were part of a Second World War anti-invasion stop line (see **Parcel 2**). It also recorded a bomb crater near the centre of this parcel, but this feature lies outside of the scheme's RLB. (1-2) LiDAR imagery indicates that this parcel has been substantially relandscaped for the St Augustine's Golf Course and the impact on the features described above is not known. (3) 1 MWX43387 2 MWX43206 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
10	N	Historical air photos show two small pale soilmarks, suggesting small circular mounds, one in this parcel and one in the path of what is now the A286. These may be the remains of post medieval stack stands but a more recent origin cannot be discounted. (1) 1 RAF/106G/UK/1131 RS 4006 17 JAN 1946
11	N	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey or the Kent Pilot NMP Project.

Parcel	Covered by SERCZAS?	Description
12	N	A series of short drainage ditches of possible post medieval origin are visible as earthworks and soilmarks on historical air photos. All but one were contained within the small irregular field that extended north from Ebbsfleet Farm. These features have now been levelled. (1-2) 1 RAF/106G/UK/1131 RS 4006 17 JAN 1946 2 LIDAR IMAGERY (Environment Agency & AECOM supplied)
13	N	Historical air photos show two small hedged plots in the north-west corner of this parcel and extending into Parcel 16. (1) The OS Six Inch map of 1877 depicts these plots as gardens and the OS map of 1816 shows several buildings in both plots and labels this small hamlet 'Dorlock'. (2-3) Two small mounds are also visible in this parcel, these are likely to be the remains of post medieval stack stands.(1) All of these features have now been levelled. (4) 1 RAF/106G/UK/1131 RS 4008 17 JAN 1946 2 Ordnance Survey Six Inch to One Mile map 1877 3 Ordnance Survey One Inch to One Mile map 1816 4 LIDAR IMAGERY (Environment Agency & AECOM supplied)
14	N	In 1942 this parcel was unploughed former marsh. A narrow newly constructed bank-like feature ran along the eastern side of the water channel that marks the western edge of this parcel. This is likely to have been material dredged from the channel as part of the normal maintenance cycle, however the SERCZAS has suggested that similar features in nearby parcels are part of an part of a Second World War anti-invasion stop line or defence works. (1) 1940s air photos also show a small rectangular embanked enclosure, likely to be a small Second World War gun emplacement (2-3) The LIDAR imagery indicates that these features have now been levelled. (4) 1 RAF/HLA/564 V 6005 01 JUN 1942 2 RAF/106G/UK/1131 RS 4008 17 JAN 1946 3 US/7PH/GP/LOC286 V 5008 19 APR 1944 4 LIDAR IMAGERY (Environment Agency & AECOM supplied)
15	P	The SERCZAS suggests that the bank that runs along the southern edge of this parcel was part of a Second World War anti-invasion stop line (see **Parcel 2**). (1) In addition, the historical air photos show the remains of a small post medieval sheep pen, which has now been demolished and cleared. (2-3) 1 MWX43387 2 RAF/106G/UK/1131 RS 4008 17 JAN 1946 3 GOOGLE EARTH 05/2007
16	N	Historical air photos show two small hedged plots in the north-east corner of this parcel and extending into Parcel 13. A building stands in one of the plots and there is a short broad cropmark running from the plots in a north west direction. (1) The building is named on as Brook Cottages on the OS Six Inch map of 1877 and the plots are marked as gardens. The OS map of 1816 shows several buildings in both plots and labels this small hamlet 'Dorlock'. The cropmark aligns with a section of Brook Lane, which in 1816 ran from Ebbsfleet, via Dorlock to Minster.(2-3) Air photos taken in 1944 and 1946 also show a three small rectangular structures near the centre of this parcel. These may have been Second World War military features, they had been demolished by 1950. (1, 4-5) 1 RAF/106G/UK/1131 RS 4008 17 JAN 1946 2 Ordnance Survey Six Inch to One Mile map 1877 3 Ordnance Survey One Inch to One Mile map 1816 4 US/7PH/GP/LOC286 V 5008 19 APR 1944 5 RAF/541/508 RP 3063 22 APR 1950

Parcel	Covered by SERCZAS?	Description
17	N	In the 1940s this parcel was unploughed former marshland and divided into a number of smaller fields by a mix of straight and irregular water channels. The fields in the north of this parcel contain a series of small, well-spaced circular mounds. These are likely to be the remains of post medieval stack stands. There is also a small circular hollow with upcast around it, probably caused by a Second World War bomb. These features lay outside of the scheme's RLB. The fields in the south of Parcel 17, which are within the scheme's RLB, contain another post medieval possible stack stand, a larger irregular mound or platform and a hollow. The mound and hollow, also of probable post medieval date but known function, may have been constructed from silt dredged from the nearby water channel. (1-2) Air photos taken in 1942 show freshly deposited material along the some of the water channels around this parcel. This is likely to have been material dredged from the channel and part of the normal maintenance cycle, however the SERCZAS has suggested that similar features in nearby parcels were part Second World War anti-invasion stop line that ran between Cliffs End and Minster (see Parcels 3, 4, 7 and 9). (3) All of these features have now been levelled. (4) 1 RAF/106G/UK/1131 RS 4008 17 JAN 1946 2 RAF/106G/UK/1131 RS 4006 17 JAN 1946 3 RAF/HLA/564 V 6005 01 JUN 1942 4 LIDAR IMAGERY (Environment Agency & AECOM supplied)
18	P	Air photos taken in 1942 show freshly deposited material along the edges of the water channel that run around and across this parcel. This is likely to have been material dredged from the channel and part of the normal maintenance cycle, however the SERCZAS has suggested that similar features in nearby parcels are part of an part of a Second World War anti-invasion stop line that ran between Cliffs End and Minster (see Parcels3, 4, 7 and 9). (1) In addition historical air photos show a post medieval sheep pen and possible stack stand in this parcel. (2) The LiDAR imagery indicates that all of these features have now been levelled. (3) 1 RAF/HLA/564 V 6005 01 JUN 1942 2 RAF/106G/UK/1131 RS 4041 17 JAN 1946 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
19	Y	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey, the Kent Pilot NMP Project or the SERCZAS.
20	Y	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey, the Kent Pilot NMP Project or the SERCZAS.
21	Y	This parcel contains the remains of the junction between the mineral railway that ran to Richborough Port and the mainline Deal Branch railway. It was built in the early 20th century but is now disused. (1-2) 1 RAF/106G/UK/1131 RS 4023 17 JAN 1946 2 LIDAR IMAGERY (Environment Agency & AECOM supplied)
22	N	Post medieval drainage ditches are visible as earthworks on historical air photos in the area to the west of The Rough. (1) Air photos taken in 1942 show freshly deposited material along the some of the water channels around this parcel. This is likely to have been material dredged from the channel and part of the normal maintenance cycle, however the SERCZAS has suggested that similar features in nearby parcels are Second World War defence works. (2) All of these features have now been levelled. (3) 1 RAF/106G/UK/1131 RS 4009 17 JAN 1946 2 RAF/HLA/564 V 6030 01 JUN 1942 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)

Parcel	Covered by SERCZAS?	Description
23	Y	Air photos taken in 1942 show freshly deposited material next to a water channel. This is likely to have been material dredged from the channel and part of the normal maintenance cycle, however the SERCZAS has suggested that similar features in nearby parcels are part of a Second World War anti-invasion stop line that ran between Cliffs End and Minster (see Parcels3, 4, 7 and 9). (1) There is also a post medieval sheep wash on the northern edge of this parcel. This feature is depicted on the OS map of 1877.(2-3) Both features have now been levelled. (4) 1 RAF/HLA/564 V 6005 01 JUN 1942 2. RAF/106G/UK/1131 RS 4008 17 JAN 1946 3 Ordnance Survey Six Inch to One Mile map 1877 4 LIDAR IMAGERY (Environment Agency & AECOM supplied)
24	P	The SERCZAS identified medieval flood defences overlain with earthworks associated with the anti invasion stop line earthworks along the southern edge of this parcel. (1-2) A small post medieval sheep pen is also visible on the historical air photos. (3) All of these features have now been levelled. (4) 1 MWX43372 2 MWX43370 3 RAF/106G/UK/1131 RS 4023 17 JAN 1946
25	Y	The SERCZAS suggested that freshly constructed banking along the northern edge of this parcel formed part of a Second World War anti-invasion stop line (see **Parcel 2**). (1) A section of medieval/ post medieval sea defence is visible on historical air photos and on LiDAR imagery. The sea defence, named 'Abbotts Wall' is a broad embankment running along the north side of the River Stour, purported to have been built in the 13th century (MKE76083 and HE Research Record 469526). (2-4) 1 MWX43372 2 RAF/106G/UK/1131 RS 4023 17 JAN 1946 3 LIDAR IMAGERY (Environment Agency & AECOM supplied) 4 Cotton 1895, 15
26	N	The Kent Pilot NMP Project recorded a line of three small mounds, these features are outside of the scheme's RLB. (1) A section of post medieval sea defence is visible on historical air photos and on LiDAR imagery. This broad embankment with a marked loop, run along the north side of the Minster Stream, a tributary of the River Stour. (2) LiDAR imagery indicates that these earthworks has now been levelled. (3) 1 MKE8109 2 RAF/106G/UK/1131 RS 4023 17 JAN 1946 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
27	P	The SERCZAS suggested that freshly constructed banking along the eastern edge of this parcel was part of a Second World War anti-invasion defence work. It also recorded a short section of water channel and, beyond the scheme's RLB, a cluster of bomb craters. (1) A section of medieval/post medieval sea defence is visible on historical air photos and on LiDAR imagery. The sea defence, named 'Abbotts Wall' is a broad embankment running along the north side of the River Stour, purported to have been built in the 13th century (MKE76083 and HE Research Record 469526 . (2-4) Air photos taken in 1946 show a small disturbance close on the northern edge of this parcel. It is not clear if this a late Second World War gun emplacement or simply a scoop cut to shelter sheep. It does not appear to have been present on air photos taken in 1944. It has now been levelled. (2-3, 5) 1 MWX43342 2 RAF/106G/UK/1131 RS 4023 17 JAN 1946 3 LIDAR IMAGERY (Environment Agency & AECOM supplied) 4 Cotton 1895, 15 5 US/7PH/GP/LOC286 V 5008 19 APR 1944

Parcel	Covered by SERCZAS?	Description
28	Y	The SERCZAS recorded a short section of flood defences and suggested that freshly constructed bank along the western edge of this parcel was a Second World War defence work. (1-2) A further section of sea defence is visible on historical air photos and on LiDAR imagery. The sea defences, in the form of a broad embankment running along the south side of the River Stour, is depicted on the OS map of 1877. It is likely to be of post medieval date. (3-5) 1 MWX43373 2 MWX43340 3 RAF/106G/UK/1131 RS 4023 17 JAN 1946 4 LIDAR IMAGERY (Environment Agency & AECOM supplied) 5 Ordnance Survey Six Inch to One Mile Map of 1877
29	N	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey or the Kent Pilot NMP Project.
30	Y	The SERCZAS recorded two medieval stack stands in this parcel, one lies outside of the scheme's RLB. (1-2) Both have now been levelled. (3) 1 MWX43335 2 MWX43334 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
31	P	The SERCZAS recorded two Second World War bomb craters in this parcel, both lie outside of the scheme's RLB. (1) The historical air photos show a small installation to the north of Marsh Farm, and beyond the scheme's RLB. This may have been a Second World War radio telegraphy station. All structures had been removed by 1950. (2-3) 1 MWX43353 2 US/7PH/GP/LOC286 V 5008 19 APR 1944 3 RAF/541/508 RP 3063 22 APR 1950
32	Y	The SERCZAS recorded a medieval flood defence running east to west across this parcel and suggested that freshly constructed banks along the eastern edge of this parcel were Second World War defence works (1-2) The LiDAR imagery also show five small circular mounds, which are likely to be the remains of post medieval stack stands. (3) 1 MWX43344 2 MWX43339 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
33	Y	The SERCZAS recorded a short section of a medieval flood defence in this parcel. This section is outside of the scheme's RLB. (1) The LiDAR imagery suggests that this feature is a slight scarp rather than bank, it may be a low terrace formed when the River Wantsum silted up. (2) 1 MWX43343 2 LIDAR IMAGERY (Environment Agency & AECOM supplied)
34	Y	The SERCZAS recorded a short section of a medieval flood defence, a stack stand and suggested that a freshly constructed bank along the eastern edge of this parcel was a Second World War defence work. (1-3) The LiDAR imagery show two other circular mounds, which are likely to be the remains of post medieval stack stands, one of which is it lies outside of the scheme's RLB. This imagery suggests that the medieval flood defence is a slight scarp rather than bank, it may be a low terrace formed when the River Wantsum silted up. (4) 1 MWX43339 2 MWX43343 3 MWX43356 4 LIDAR IMAGERY (Environment Agency & AECOM supplied)

Parcel	Covered by SERCZAS?	Description
35	Y	The SERCZAS recorded medieval flood defences and two stack stands, and suggested that freshly constructed banking around the edges of this parcel were Second World War defence works. (1-4) A further section of sea defence is visible on historical air photos and on LiDAR imagery in this parcel but is outside of the scheme's RLB. This feature, in the form of a broad embankment running along the south side of the River Stour, is depicted on the on the OS map of 1877. It is likely to be of post medieval date. (5-7) 1 MWX43358 2 MWX43339 3 MWX43344 4 MWX43357 5 RAF/106G/UK/1131 RS 4023 17 JAN 1946 6 Ordnance Survey Six Inch to One Mile Map of 1877 7 LIDAR IMAGERY (Environment Agency & AECOM supplied)
36	Y	The SERCZAS recorded a section of medieval flood defence and suggested that freshly constructed banks along the southern edge of this parcel were Second World War defence works. (1-2) The LiDAR imagery suggests that the medieval flood defence is a slight scarp rather than a bank, it may be a low terrace formed when the River Wantsum silted up. (3) 1 MWX43343 2 MWX43339 3 LIDAR IMAGERY (Environment Agency & AECOM supplied)
37	Y	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey, the Kent Pilot NMP Project or the SERCZAS.
38	Y	The SERCZAS recorded a section of medieval flood defence and two stack stands. (1-4) The historical air photos and LiDAR imagery also reveal earthwork post medieval narrow ridge and furrow running near east to west across this parcel and three further stack stands. All of the mounds in this parcel are built over the plough ridges indicating that these features are all of post medieval date. (5-7) 1 MWX43360 2 MWX43339 3 MWX43343 4 MWX43359 5 RAF/106G/UK/1131 RS 4023 17 JAN 1946 6 RAF/106G/LA/90 RS 4028 04 JAN 1945 7 LIDAR IMAGERY (Environment Agency & AECOM supplied)
39	Y	The SERCZAS recorded a medieval stack stand and suggested that freshly constructed banking around the edges of this parcel was a Second World War defence work. (1-2) 1 MWX43339 2 MWX43361
40	Y	The SERCZAS recorded a section of medieval flood defence, a small post medieval enclosure and suggested that freshly constructed banks around the edges of this parcel were Second World War defence works. (1-3) The LiDAR imagery suggests that the medieval flood defence is a slight scarp rather than a bank, it may be a low terrace formed when the River Wantsum silted up. (4) 1 MWX43339 2 MWX43343 3 MWX43368 4 LIDAR IMAGERY (Environment Agency & AECOM supplied)

Parcel	Covered by SERCZAS?	Description
41	Y	The SERCZAS recorded a short section of medieval flood defence, five medieval stack stands and suggested that freshly constructed banks around the edges of this parcel were Second World War defence works. (1-3) The historical air photos and LiDAR imagery also show a section of post medieval sea defences along the southern edge of this parcel. This feature is depicted on the OS map of 1877. (4-6) 1 MWX43340 2 MWX43373 3 MWX43376 4 RAF/106G/UK/1131 RS 4022 17 JAN 1946 5 LIDAR IMAGERY (Environment Agency & AECOM supplied) 6 Ordnance Survey Six Inch to One Mile Map of 1877
42	Y	The SERCZAS recorded two medieval stack stands and suggested that freshly constructed banks along the western edge of this parcel were Second World War defence works. (1-2) 1 MWX43340 2 MWX43378
43	Y	The SERCZAS recorded three medieval stack stands and suggested that freshly constructed banks in this parcel were Second World War defence works. (1-3) 1 MWX43380 2 MWX43341 3 MWX43379
44	Y	The SERCZAS recorded three medieval stack stands and suggested that freshly constructed banks in this parcel were Second World War defence works. (1-2) 1 MWX43341 2 MWX43381
45	Y	The SERCZAS recorded a Second World War bomb crater and suggested that freshly constructed banks in this parcel were Second World War defence works. (1-2) The historical air photos show a section of post medieval sea defences along the southern edge of this parcel. This feature is depicted on the OS map of 1877. The LiDAR imagery indicates that the main section survives as earthworks, but a short extension that curves northward into the field has now been levelled. (4-5) 1 MWX43374 2 MWX43340 4 RAF/106G/UK/1131 RS 4022 17 JAN 1946 5 LIDAR IMAGERY (Environment Agency & AECOM supplied)
46	N	This historical air photos show post medieval water channels, a field boundary, a sheep pen, and a Second World War gun or searchlight emplacement with a command post. The LiDAR imagery indicates that all of these features have now been levelled or demolished. (1-5) 1 RAF/106G/UK/1131 RS 4022 17 JAN 1946 2 RAF/106G/UK/1131 RS 4041 17 JAN 1946 3 RAF/543/2324 F21 340 22 JUL 1963 4 RAF/106G/LA/90 RP 3030 04 JAN 1945 5 LIDAR IMAGERY (Environment Agency & AECOM supplied)
47	N	This historical air photos show post medieval water channels, a drainage ditch and a farmstead. The farmstead, named as White House on the OS map of 1877 was still extant in the 1940s but has now been demolished. (1-3) 1 RAF/106G/UK/1131 RS 4041 17 JAN 1946 2 RAF/543/2324 F21 340 22 JUL 1963 3 Ordnance Survey Six Inch to One Mile Map of 1877
48	N	The historical air photos show earthwork post medieval narrow ridge and furrow in this parcel. These remains have now been levelled. (1-2) 1 RAF/106G/UK/1131 RS 4041 17 JAN 1946 2 LIDAR IMAGERY (Environment Agency & AECOM supplied)

Parcel	Covered by SERCZAS?	Description
49	Y	The SERCZAS recorded Second World War bomb craters in this parcel. (1) The Kent Pilot NMP Project recorded cropmarks of perpendicular linear ditches in this parcel. (2) These feature were re-mapped to improve their locational accuracy. These features are likely to be the remains of post medieval drainage ditches. (3) All of these features are outside of the scheme's RLB. 1 MWX43285 2 MKE8097 3 TR 3260 /43 (NMR 1671/120-121) 06 AUG 1979
50	P	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey, the Kent Pilot NMP Project or the SERCZAS.
51	N	No features of archaeological origin were identified on the air photos and LiDAR imagery examined for this survey or the Kent Pilot NMP Project.

Appendix 4 - Historic England Archive coversearches

HISTORIC ENGLAND

Air Photographs

Historic England

Full single listing - Verticals, Standard order

Customer enquiry reference: 139385

Sortie number	Library number	Camera position	Frame number	Held	Centre point	Run	Date	Sortie quality	Scale 1:	Focal length (in inches)	Film details (in inches)	Film held
RAF/106G/UK/1131	169	RS	4003	P	TR 354 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4004	P	TR 346 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4005	P	TR 339 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4006	P	TR 332 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4007	P	TR 325 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4008	P	TR 317 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4009	P	TR 311 640	11	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4018	P	TR 349 622	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4019	P	TR 342 623	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4020	P	TR 334 624	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4021	P	TR 327 625	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4022	P	TR 320 626	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4023	P	TR 312 627	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4024	P	TR 305 628	12	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4032	P	TR 309 609	13	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4040	P	TR 329 606	14	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1131	169	RS	4041	P	TR 321 605	14	17 JAN 1946	A	10500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	FV	7123	P	TR 332 620	18	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	FV	7124	P	TR 325 621	18	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	FV	7125	P	TR 318 622	18	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	FV	7126	P	TR 310 620	18	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5098	P	TR 346 636	11	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5099	P	TR 339 635	11	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5100	P	TR 332 633	11	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5101	P	TR 325 632	11	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5102	P	TR 318 630	11	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5103	P	TR 311 629	11	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5121	P	TR 325 602	12	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5122	P	TR 318 603	12	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1378	295	V	5123	P	TR 310 602	12	04 APR 1946	A	11500	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3057	P	TR 347 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3058	P	TR 341 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3059	P	TR 335 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3060	P	TR 329 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3061	P	TR 323 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3062	P	TR 317 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3063	P	TR 311 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3064	P	TR 305 635	3	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3077	P	TR 329 617	4	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3078	P	TR 322 616	4	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3079	P	TR 316 616	4	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/508	1065	RP	3080	P	TR 309 616	4	22 APR 1950	A	9900	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3152	P	TR 317 600	6	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3153	P	TR 312 600	6	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3165	P	TR 350 639	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3166	P	TR 344 639	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3167	P	TR 339 639	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3168	P	TR 333 639	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3169	P	TR 328 638	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3170	P	TR 322 638	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3171	P	TR 317 638	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3172	P	TR 312 638	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3173	P	TR 307 638	7	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3199	P	TR 310 637	8	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RP	3200	P	TR 305 636	8	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RS	4131	P	TR 331 617	13	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RS	4132	P	TR 325 616	13	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RS	4133	P	TR 319 615	13	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR

Appendix 4 - Historic England Archive coversearches

HISTORIC ENGLAND

Air Photographs

Historic England

RAF/541/480	1075	RS	4134	P	TR 314 613	13	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RS	4152	P	TR 316 617	14	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/541/480	1075	RS	4153	P	TR 310 616	14	07 APR 1950	A	9800	20	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F62	6	P	TR 329 607	26	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F62	7	P	TR 318 609	26	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F62	8	P	TR 306 610	26	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F63	4	P	TR 353 638	36	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F63	5	P	TR 341 639	36	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F63	6	P	TR 329 641	36	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F63	7	P	TR 318 642	36	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/82/1006	1520	F63	8	P	TR 307 643	36	31 AUG 1954	AB	15000	36	Black and White 8.25 x 7.5	NMR
RAF/543/2324	2164	F21	339	P	TR 309 622	20	22 JUL 1963	AB	16000	36	Black and White 8.25 x 7.5	NMR
RAF/543/2324	2164	F21	340	P	TR 316 623	20	22 JUL 1963	AB	16000	36	Black and White 8.25 x 7.5	NMR
RAF/543/2324	2164	F22	339	P	TR 307 603	32	22 JUL 1963	AB	16000	36	Black and White 8.25 x 7.5	NMR
RAF/543/2324	2164	F22	340	P	TR 314 603	32	22 JUL 1963	AB	16000	36	Black and White 8.25 x 7.5	NMR
RAF/58/T/3641	2332	F21	2	P	TR 354 637	1	04 JUL 1960	A	14500	36	Black and White 8.25 x 7.5	FNH
RAF/58/T/3641	2332	F21	3	P	TR 344 639	1	04 JUL 1960	A	14500	36	Black and White 8.25 x 7.5	FNH
RAF/58/T/3641	2332	F21	4	P	TR 336 639	1	04 JUL 1960	A	14500	36	Black and White 8.25 x 7.5	FNH
RAF/58/T/3641	2332	F21	5	P	TR 329 640	1	04 JUL 1960	A	14500	36	Black and White 8.25 x 7.5	FNH
RAF/541/152	2698	RP	3018	P	TR 326 652	7	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RP	3019	P	TR 333 647	7	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RP	3020	P	TR 340 643	7	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RP	3021	P	TR 347 639	7	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RS	4017	P	TR 307 634	9	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RS	4018	P	TR 314 630	9	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RS	4019	P	TR 321 626	9	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/541/152	2698	RS	4020	P	TR 328 622	9	04 SEP 1948	AB	13333	36	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RP	3081	P	TR 323 609	6	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RP	3082	P	TR 320 610	6	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RP	3083	P	TR 316 610	6	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4077	P	TR 341 627	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4078	P	TR 337 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4079	P	TR 333 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4080	P	TR 330 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4081	P	TR 326 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4082	P	TR 322 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4083	P	TR 318 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4084	P	TR 314 628	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4085	P	TR 310 629	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
RAF/106G/UK/1110	3440	RS	4086	P	TR 307 629	20	10 JAN 1946	AC	9600	20	Black and White 8.25 x 7.5	NMR
US/7PH/GP/LOC286	6927	V	5008	P	TR 328 633	6	19 APR 1944	A	14250	24	Black and White 18 x 9	FDM
US/7PH/GP/LOC286	6927	V	5009	P	TR 327 647	6	19 APR 1944	A	14250	24	Black and White 18 x 9	FDM
US/7PH/GP/LOC295	8180	V	5011	P	TR 312 649	7	20 APR 1944	AC	15800	24	Black and White 18 x 9	FDM
US/7PH/GP/LOC295	8180	V	5012	P	TR 320 649	7	20 APR 1944	AC	15800	24	Black and White 18 x 9	FDM
US/7PH/GP/LOC295	8180	V	5013	P	TR 327 649	7	20 APR 1944	AC	15800	24	Black and White 18 x 9	FDM
US/7PH/GP/LOC295	8180	V	5014	P	TR 335 649	7	20 APR 1944	AC	15800	24	Black and White 18 x 9	FDM
RAF/106G/LA/90	8334	RP	3008	P	TR 314 595	1	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3009	P	TR 318 603	1	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3010	P	TR 315 612	1	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3027	P	TR 325 642	2	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3028	P	TR 329 638	2	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3029	P	TR 334 634	2	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3030	P	TR 339 629	2	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RP	3031	P	TR 344 624	2	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RS	4026	P	TR 306 637	14	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RS	4027	P	TR 313 631	14	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RS	4028	P	TR 317 626	14	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RS	4029	P	TR 322 621	14	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RS	4030	P	TR 327 617	14	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/106G/LA/90	8334	RS	4031	P	TR 333 613	14	04 JAN 1945	A	10000	36	Black and White 8.25 x 7.5	NMR
RAF/HLA/386	8417	RP	607	P	TR 346 629	1	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	608	P	TR 346 633	1	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	609	P	TR 347 636	1	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	610	P	TR 347 640	1	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	654	P	TR 334 625	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM

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HISTORIC ENGLAND

Air Photographs

Historic England

RAF/HLA/386	8417	RP	655	P	TR 335 628	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	656	P	TR 335 631	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	657	P	TR 336 635	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	658	P	TR 336 638	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	659	P	TR 336 641	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	660	P	TR 337 644	2	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	681	P	TR 317 604	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	682	P	TR 317 607	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	683	P	TR 316 610	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	684	P	TR 316 613	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	685	P	TR 316 616	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	686	P	TR 317 620	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	687	P	TR 317 623	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	688	P	TR 317 627	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	689	P	TR 316 630	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	690	P	TR 316 634	3	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RP	713	P	TR 340 625	4	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	904	P	TR 351 629	5	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	905	P	TR 352 633	5	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	906	P	TR 352 636	5	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	952	P	TR 341 627	6	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	953	P	TR 342 630	6	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	954	P	TR 343 633	6	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	955	P	TR 343 637	6	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	956	P	TR 344 640	6	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	957	P	TR 344 643	6	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	979	P	TR 325 607	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	980	P	TR 324 610	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	981	P	TR 324 614	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	982	P	TR 324 617	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	983	P	TR 323 620	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	984	P	TR 323 624	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	985	P	TR 323 627	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	986	P	TR 322 630	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	987	P	TR 322 633	8	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	1009	P	TR 347 628	9	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/386	8417	RS	1010	P	TR 346 631	9	02 JAN 1942	A	7500	8	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6001	P	TR 329 619	1	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6002	P	TR 329 623	1	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6003	P	TR 329 628	1	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6004	P	TR 329 633	1	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6005	P	TR 329 637	1	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6006	P	TR 328 642	1	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6030	P	TR 312 639	5	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
RAF/HLA/564	8510	V	6031	P	TR 315 643	5	01 JUN 1942	A	12500	14	Black and White 5 x 5	FDM
OS/94013	14539	V	15	P	TR 314 647	1	10 MAR 1994	A	7500	12	Black and White 9 x 9	NMR
OS/94013	14539	V	16	P	TR 320 646	1	10 MAR 1994	A	7500	12	Black and White 9 x 9	NMR
~~OS/94013~~	~~14539~~	~~V~~	~~17~~	~~N~~	~~TR 327 646~~	~~1~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~18~~	~~N~~	~~TR 332 646~~	~~1~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~19~~	~~N~~	~~TR 338 645~~	~~1~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~20~~	~~N~~	~~TR 344 646~~	~~1~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~21~~	~~N~~	~~TR 349 646~~	~~1~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~76~~	~~N~~	~~TR 341 625~~	~~4~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~77~~	~~N~~	~~TR 340 630~~	~~4~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~78~~	~~N~~	~~TR 339 635~~	~~4~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~79~~	~~N~~	~~TR 339 641~~	~~4~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~80~~	~~N~~	~~TR 337 647~~	~~4~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~86~~	~~N~~	~~TR 326 649~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~87~~	~~N~~	~~TR 326 642~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~88~~	~~N~~	~~TR 326 636~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~89~~	~~N~~	~~TR 326 631~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~90~~	~~N~~	~~TR 327 624~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~91~~	~~N~~	~~TR 326 616~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~92~~	~~N~~	~~TR 327 610~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~
~~OS/94013~~	~~14539~~	~~V~~	~~93~~	~~N~~	~~TR 326 605~~	~~5~~	~~10 MAR 1994~~	~~A~~	~~7500~~	~~12~~	~~Black and White 9 x 9~~	~~NMR~~

Appendix 4 - Historic England Archive coversearches

HISTORIC ENGLAND

Air Photographs

Historic England

OS/94013	14539	V	94	N	TR 327 600	5	10 MAR 1994	A	7500	12	Black and White 9 x 9	NMR
OS/67344	20305	V	62	N	TR 323 608	6	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/67344	20305	V	63	N	TR 332 615	6	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/67344	20305	V	64	N	TR 341 623	6	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/67344	20305	V	65	N	TR 351 630	6	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/67344	20305	V	72	N	TR 339 650	7	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/67344	20305	V	73	N	TR 342 639	7	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/67344	20305	V	74	N	TR 346 628	7	04 SEP 1967	A	15000	6	Black and White 9 x 9	NMR
OS/97071	22210	V	17	N	TR 304 629	1	07 APR 1997	A	7500	12	Black and White 9 x 9	NMR
OS/97071	22210	V	18	N	TR 305 624	1	07 APR 1997	A	7500	12	Black and White 9 x 9	NMR
OS/97071	22210	V	109	N	TR 334 620	2	07 APR 1997	A	7500	12	Black and White 9 x 9	NMR
OS/97071	22210	V	110	N	TR 334 625	2	07 APR 1997	A	7500	12	Black and White 9 x 9	NMR
OS/97071	22210	V	111	N	TR 334 630	2	07 APR 1997	A	7500	12	Black and White 9 x 9	NMR
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OS/03999(Z)	24373	V	1299	N	TR 342 630	3	22 MAR 2003	A	7500	6	Colour 9 x 9	NMR

Appendix 4 - Historic England Archive coversearches

HISTORIC ENGLAND

Air Photographs

Historic England

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~~strikethrough~~ indicates prints not available to view (negatives held only)

Total Sorties 21

Total Frames 285

HISTORIC ENGLAND
Air Photographs

Historic England

Customer oblique listing - Obliques, Standard Order

Customer enquiry reference number: 139385

Photo reference (NGR and Index number)	Film and frame number		Original number	Date	Film type		Map Reference (6 figure grid	What can you order?			
								Photocopy	Laser copy	Photographic copy	Digital copy
TR 3160 / 4	NMR 21656	/ 09		17 JUN 2002	Colour neg	70mm,120,220	TR 319605	Y	Y	Y	U
TR 3160 / 10	NMR 23124	/ 04		04 AUG 2003	Colour neg	35 mm	TR 316604	Y	Y	Y	U
TR 3160 / 11	NMR 23124	/ 05		04 AUG 2003	Colour neg	35 mm	TR 316605	Y	Y	Y	U
TR 3160 / 15	NMR 23157	/ 30		04 AUG 2003	Colour neg	35 mm	TR 317603	Y	Y	Y	U
TR 3260 / 38	NMR 1661	/ 391-393		16 JUL 1979	Black & white	70mm,120,220	TR 320603	Y	Y	Y	U
TR 3260 / 43	NMR 1671	/ 120-121		06 AUG 1979	Black & white	70mm,120,220	TR 320608	Y	Y	Y	U
TR 3263 / 3	NMR 1763	/ 196-197		28 MAY 1980	Black & white	70mm,120,220	TR 322632	Y	Y	Y	U
TR 3362 / 1	NMR 26607	/ 02		06 APR 2010	Digital colour	35 mm	TR 333628	Y	Y	Y	U
TR 3362 / 11	NMR 26607	/ 12		06 APR 2010	Digital colour	35 mm	TR 333627	Y	Y	Y	U
TR 3362 / 12	NMR 26607	/ 13		06 APR 2010	Digital colour	35 mm	TR 333627	Y	Y	Y	U
TR 3362 / 13	NMR 26607	/ 14		06 APR 2010	Digital colour	35 mm	TR 333628	Y	Y	Y	U
TR 3362 / 14	NMR 26607	/ 15		06 APR 2010	Digital colour	35 mm	TR 333628	Y	Y	Y	U
TR 3363 / 1	NMR 1671	/ 106-109		06 AUG 1979	Black & white	70mm,120,220	TR 337639	Y	Y	Y	U
TR 3363 / 2	NMR 26607	/ 16		06 APR 2010	Digital colour	35 mm	TR 331634	Y	Y	Y	U
TR 3363 / 3	NMR 26607	/ 17		06 APR 2010	Digital colour	35 mm	TR 332631	Y	Y	Y	U
TR 3363 / 4	NMR 26607	/ 18		06 APR 2010	Digital colour	35 mm	TR 332631	Y	Y	Y	U
TR 3363 / 5	NMR 26607	/ 19		06 APR 2010	Digital colour	35 mm	TR 332632	Y	Y	Y	U
TR 3363 / 6	NMR 26607	/ 20		06 APR 2010	Digital colour	35 mm	TR 332633	Y	Y	Y	U
TR 3363 / 7	NMR 26607	/ 21		06 APR 2010	Digital colour	35 mm	TR 332634	Y	Y	Y	U
TR 3363 / 8	NMR 26607	/ 22		06 APR 2010	Digital colour	35 mm	TR 333634	Y	Y	Y	U
TR 3363 / 9	NMR 26607	/ 23		06 APR 2010	Digital colour	35 mm	TR 332632	Y	Y	Y	U
TR 3364 / 13	NMR 26606	/ 14		06 APR 2010	Digital colour	35 mm	TR 338643	Y	Y	Y	U

Total 22 records

HISTORIC ENGLAND
Air Photographs

Historic England

Oblique listing - Military obliques, Standard order
Customer enquiry reference:

Library and frame number		Photo reference (NGR and Index	Original number	Date	Film type		Map Reference (6	What can you order?			
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MSO 31215	/ PO-46	TR 3463 / 1	RAF/1416/S329H52	16 JUL 1941	Black & white	5x5"	TR 340631	Y	Y	Y	U
MSO 31215	/ PO-48	TR 3463 / 2	RAF/1416/S329H52	16 JUL 1941	Black & white	5x5"	TR 345639	Y	Y	Y	U
RAF 30088	/ PO-0073	TR 3463 / 3	RAF/CAL/UK/1	02 JUN 1947	Black & white	5x5"	TR 342631	Y	Y	Y	U
RAF 30088	/ PO-0074	TR 3463 / 4	RAF/CAL/UK/1	02 JUN 1947	Black & white	5x5"	TR 342635	Y	Y	Y	U
RAF 30095	/ PO-0020	TR 3364 / 1	RAF/CAL/UK/9	25 AUG 1947	Black & white	5x5"	TR 338642	Y	Y	Y	U
RAF 30164	/ PSFO-0003	TR 3463 / 5	RAF/58/5641	05 SEP 1962	Black & white	8x7"	TR 346639	Y	Y	Y	U

Total 6 records

Appendix 5 Structure and content of digital map dataset

All features in the MapInfo table and ESRI shape files 'Sea_Link KENT AP_LIDAR MAPPING' are associated with the following information, where applicable.

SEA_LINK_KENT_PARCEL_NO	Identified for parcel of land
LAYER	Indicates nature of feature depicted eg bank, ditch, ridge and furrow, modern etc
TYPE	Historic England Monument Type Thesaurus term
PERIOD	Period
SOURCES1	Photo reference number + date
SOURCE1EVIDENCE	Evidence (earthwork, structure, soilmark, parchmark, cropmark) as features appears on SOURCE1
SOURCES2	Photo reference number + date
SOURCE2EVIDENCE	Evidence (earthwork, structure, soilmark, parchmark, cropmark) as features appears on SOURCE2
SOURCES3	Photo reference number + date
SOURCE3EVIDENCE	Evidence (earthwork, structure, soilmark, parchmark, cropmark) as features appears on SOURCE3
HER	Historic Enviroment Record monument number (where applicable)
HERR	Historic England Research Record number (where applicable)

The original structure of the SERCZAS the Kent NMP Pilot datasets has been maintained, except for the addition of the SEA_LINK_KENT_PARCEL_NO field to both.

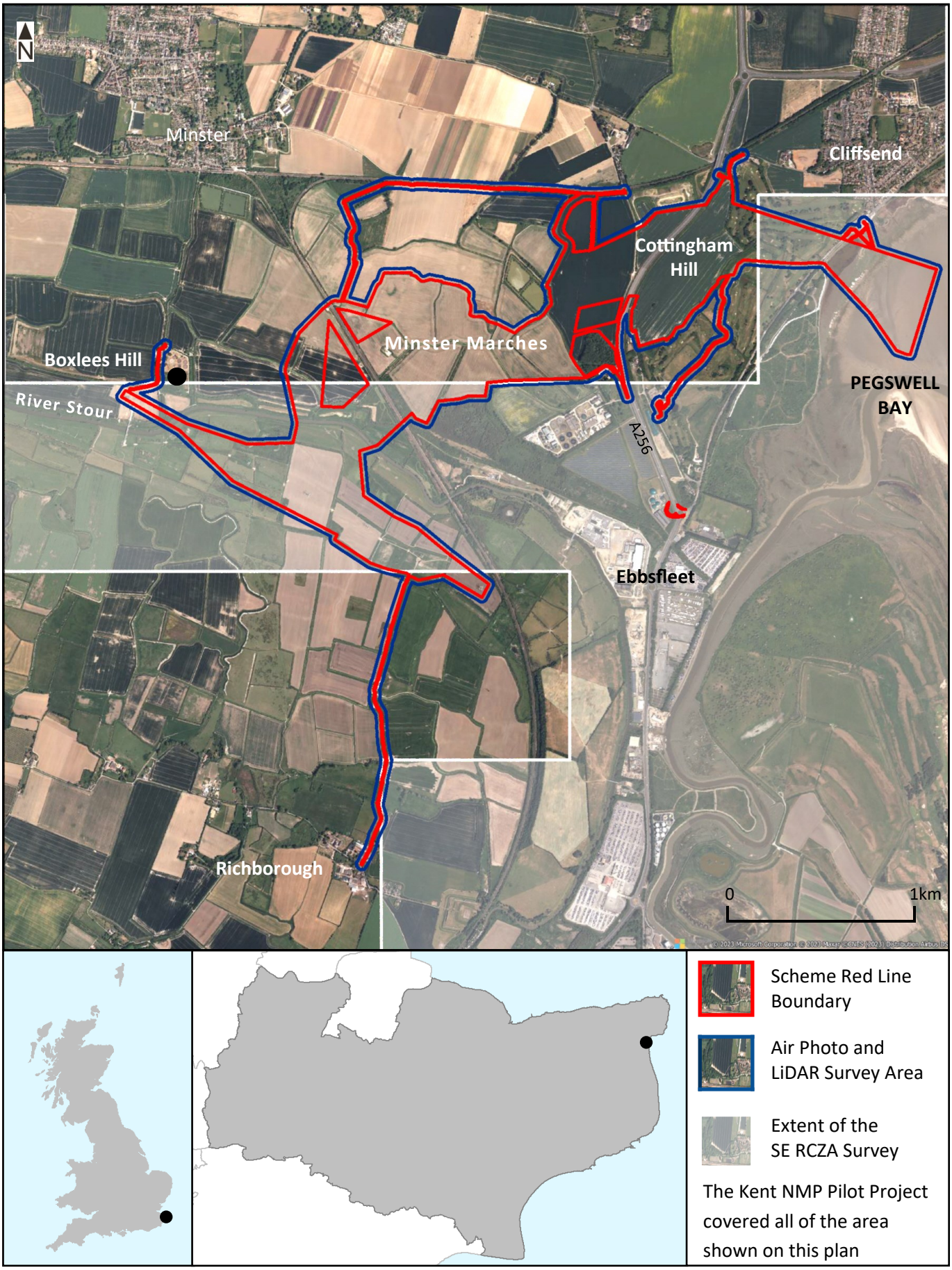

Figure 1 . Location plan of the Kent section of Sea Link Project.

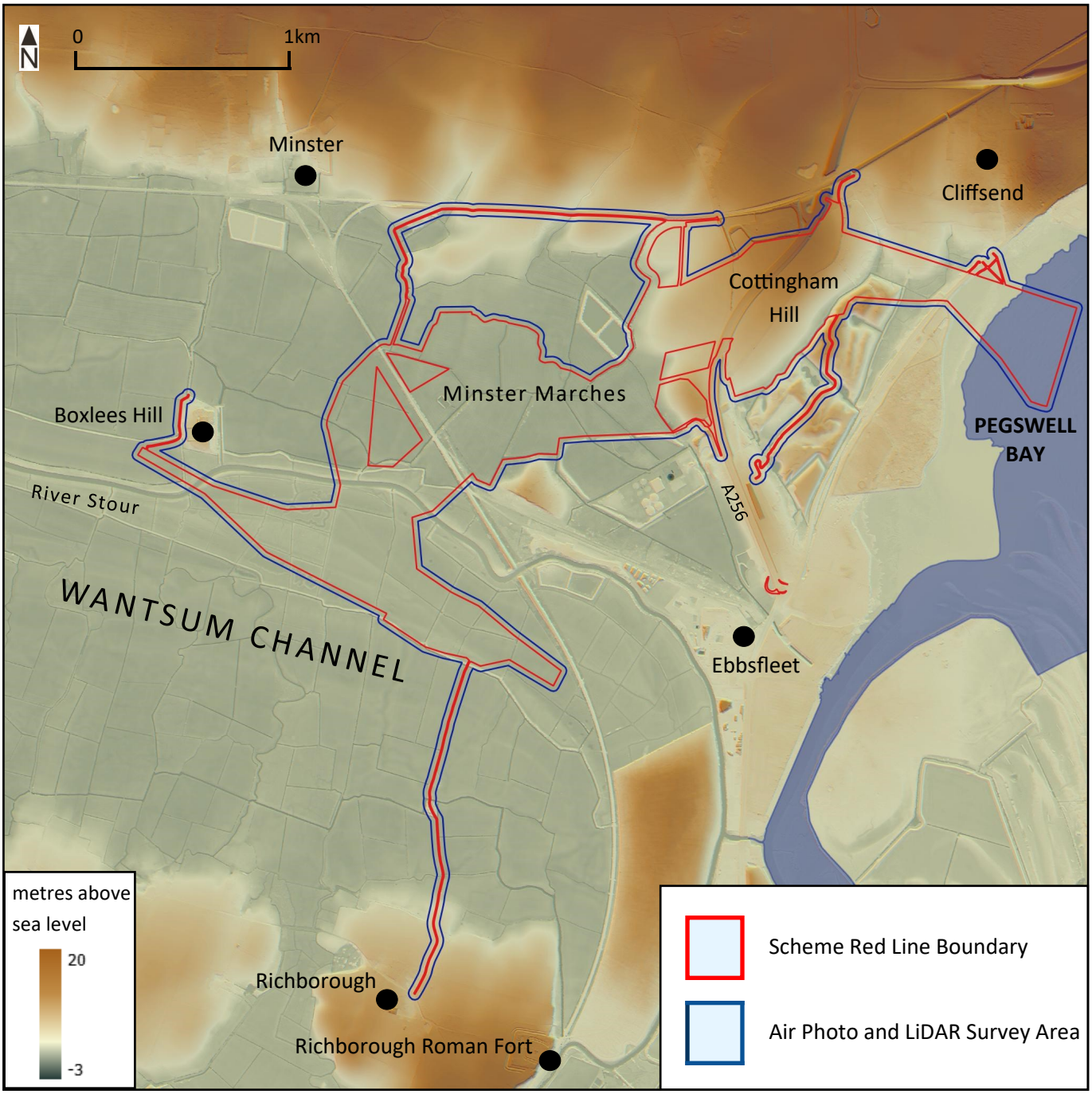

Figure 2 . Topographic setting of the Kent section of Sea Link Project (generated from Environment Agency LiDAR data).

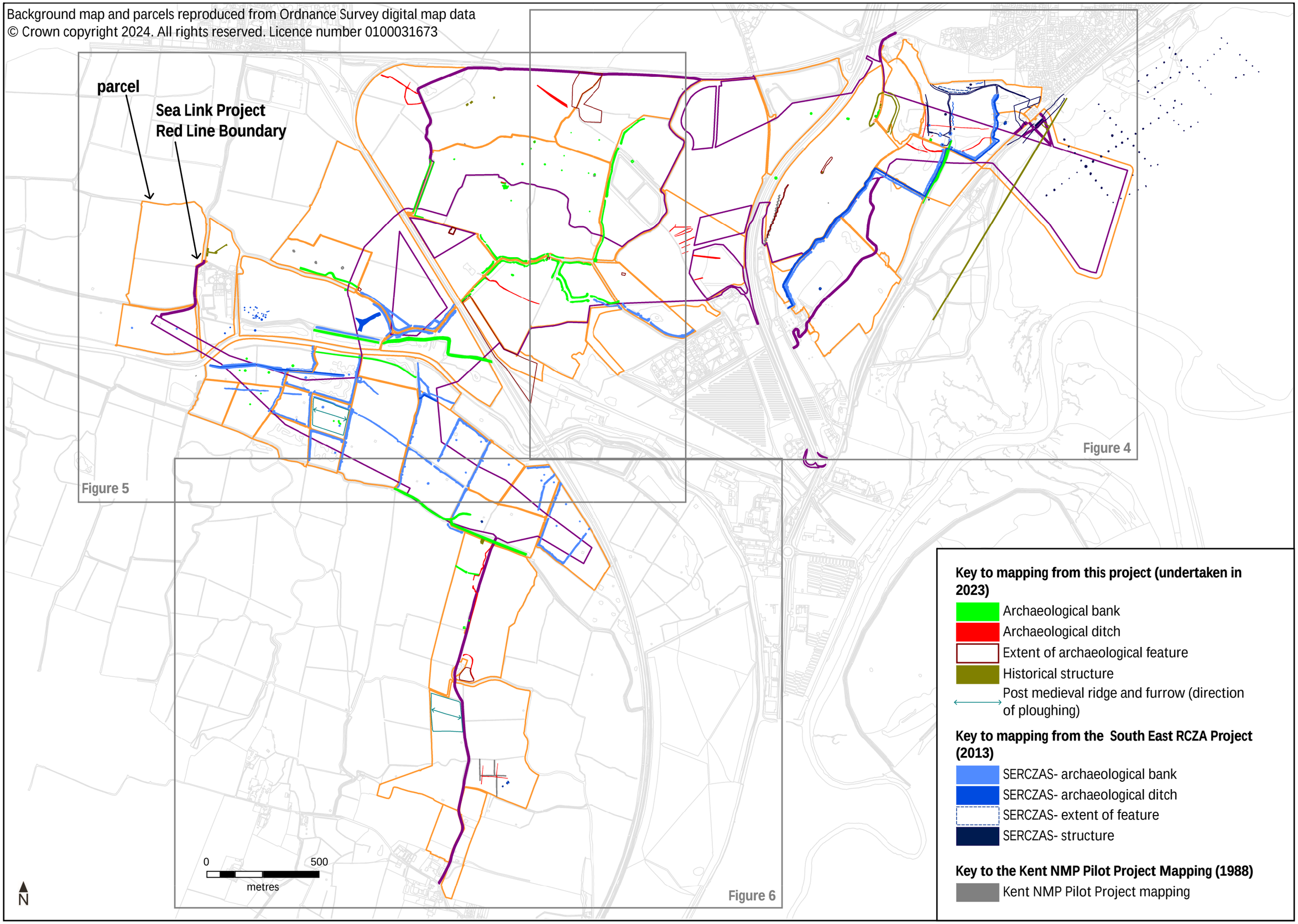

Figure 3. Overview of air photo and LiDAR mapping for the Kent section of the Sea Link Project, including data from the South East Rapid Coastal Zone Assessment Survey and the Kent Pilot NMP Project..

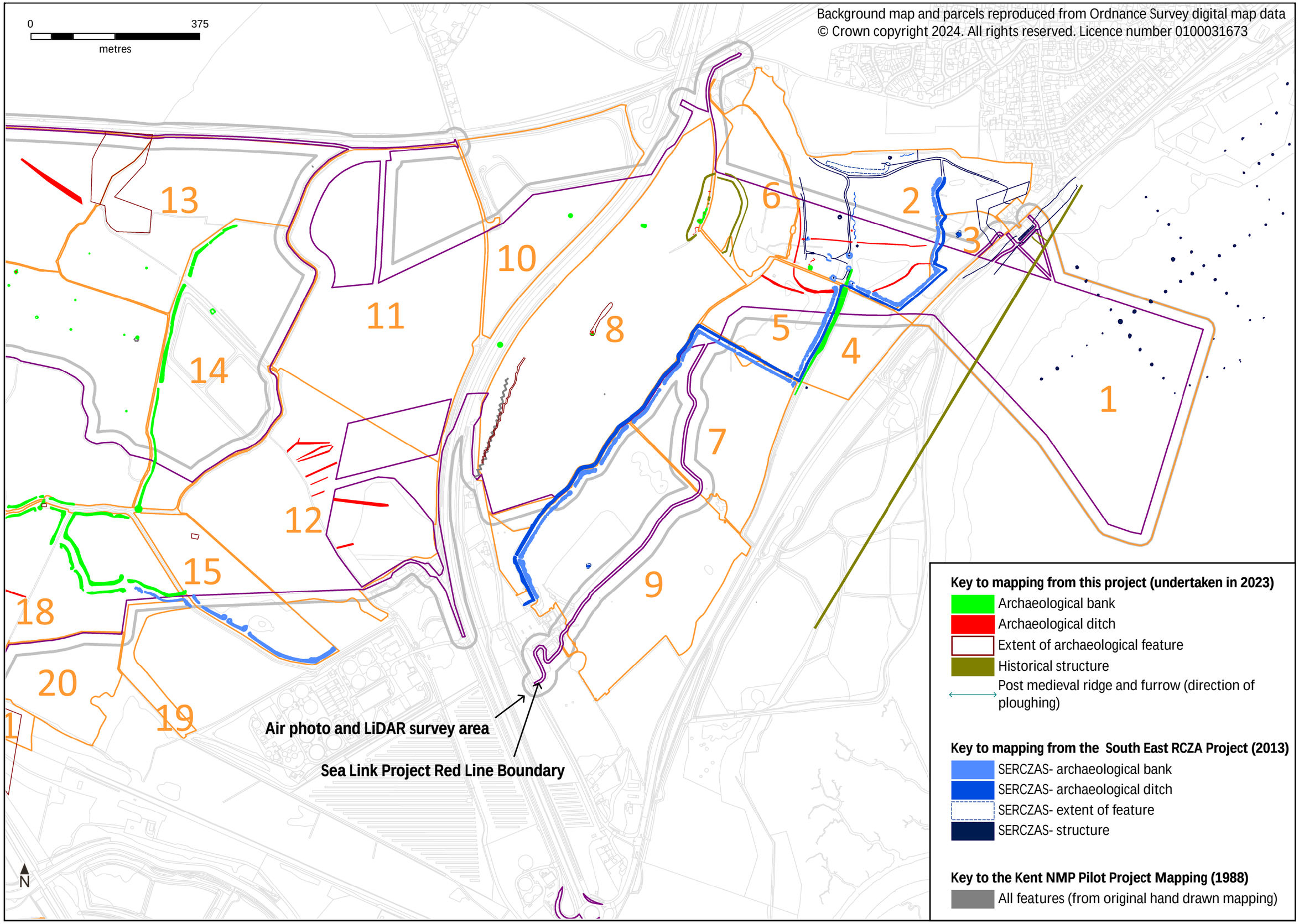

Figure 4. Air photo and LiDAR mapping for the Kent section of the Sea Link Project, including data from the South East Rapid Coastal Zone Assessment Survey and the Kent Pilot NMP Project (Parcels 1 to 15).

Key to mapping from this project (undertaken in 2023)

- Archaeological bank
- Archaeological ditch
- Extent of archaeological feature
- Historical structure
- Post medieval ridge and furrow (direction of ploughing)

Key to mapping from the South East RCZA Project (2013)

- SERCZAS- archaeological bank
- SERCZAS- archaeological ditch
- SERCZAS- extent of feature
- SERCZAS- structure

Key to the Kent NMP Pilot Project Mapping (1988)

- All features (from original hand drawn mapping)

Sea Link Project Red Line Boundary

Air photo and LiDAR survey area

N

0 375 metres

Figure 5. Air photo and LiDAR mapping for the Kent section of the Sea Link Project, including data from the South East Rapid Coastal Zone Assessment Survey and the Kent Pilot NMP Project (Parcels 12 to 42).

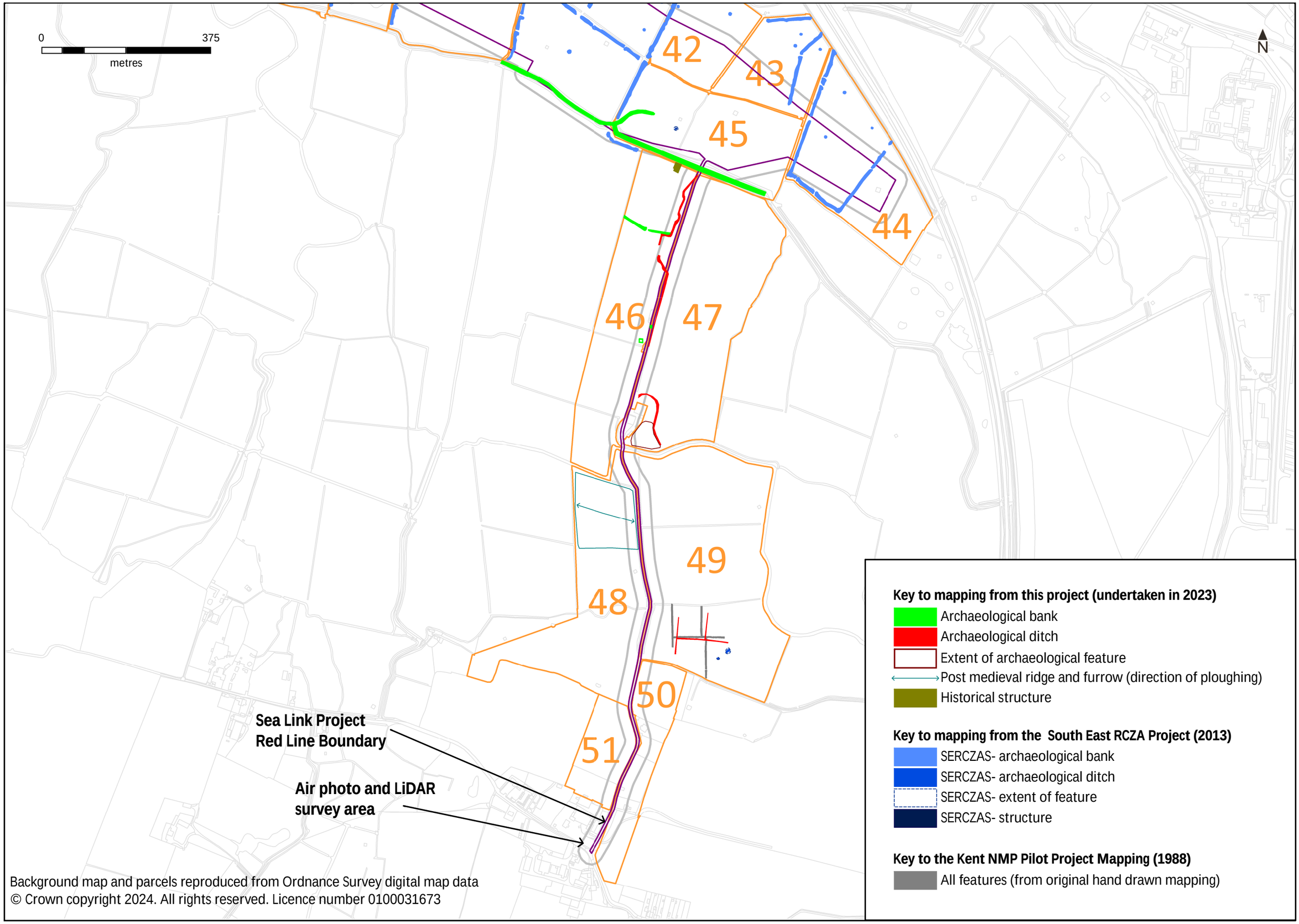

Figure 6. Air photo and LiDAR mapping for the Kent section of the Sea Link Project, including data from the South East Rapid Coastal Zone Assessment Survey and the Kent Pilot NMP Project (Parcels 42 to 51).

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