

Isle of Thanet Landscape Mapping Project: Aerial Investigation and Mapping

Fiona Small and Katy Whitaker



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Summary

This report summarises the results of Aerial Investigation and Mapping (AI&M) of archaeological features from historic and modern aerial photography and lidar (airborne laser scanning data) in the Isle of Thanet, north-east Kent. The project was part of the Thanet Archaeological Landscapes Project, led by Kent County Council and supported financially through grant-aid by Historic England. Its aim is significantly to enhance archaeological understanding of the Isle of Thanet in the context of intensive development which threatens the remaining open areas of land in which many archaeological features lie. The project results will contribute to the Thanet Archaeological Landscapes Project's Archaeological Characterisation and subsequent Archaeological Strategy. Historic England's Aerial Survey team used all readily available aerial sources to deliver map-based historic environment information, recording all features that are visible in aerial photographs and visualisations of lidar datasets. The research has resulted in the creation or enhancement of more than 2,600 monument records for Thanet District. The data, in the form of vector feature polygons and textual records, were inputted in the Kent Historic Environment Record.

The research found that a range of factors contribute to the visibility, detection and interpretation from aerial sources of archaeological sites on the Isle of Thanet. The exceptional density of sites across the District spans the Neolithic to the Cold War. New findings include possible Neolithic mortuary monuments and pit alignments; an increased number of Bronze Age round barrows represented by cropmark ring ditches; complex networks of later prehistoric and Roman field systems, trackways and settlements including a defended area at North Foreland. Known early medieval inhumation cemeteries have been mapped as well as numerous medieval settlements, often linear in arrangement, associated with past and present-day routeways. Ridge and furrow is noticeably rare on Thanet, possibly as a result of regional medieval/post-medieval agricultural practices. Important local industries ranging from bulk mineral extraction to salt production are also reflected in the aerial sources and numerous chalk pits and salterns have been mapped. Finally, the aerial mapping has made clear Thanet's extensive 20th-century military landscapes, revealing the potential for understanding relationships between First, Second and Cold War thinking on national defence. In consequence, recommendations and research questions in relation to this diverse archaeological record are outlined.

Contributors

The research was carried out by Fiona Small and Katy Whitaker.

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Front cover image: Cropmarks of Second World War and prehistoric features at Hengrove. [Next Perspectives APGB Imagery 21-APR-2007 © Bluesky International Limited and Getmapping Limited 1999-2023]

Archive location

Historic England Archive, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH, archive@historicengland.org.uk

The project is recorded through OASIS, the online system for reporting archaeological investigations, as nmr1-521287.

Date of survey/research/investigation

The aerial investigation and mapping was undertaken between August 2023 and September 2024. Monument recording was completed between October 2024 and January 2025 in Kent County Council's Historic Environment Record. The report was written during January to April 2025.

Contact details

Fiona Small and Katy Whitaker, Aerial Survey Team, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH, 01793 445050.

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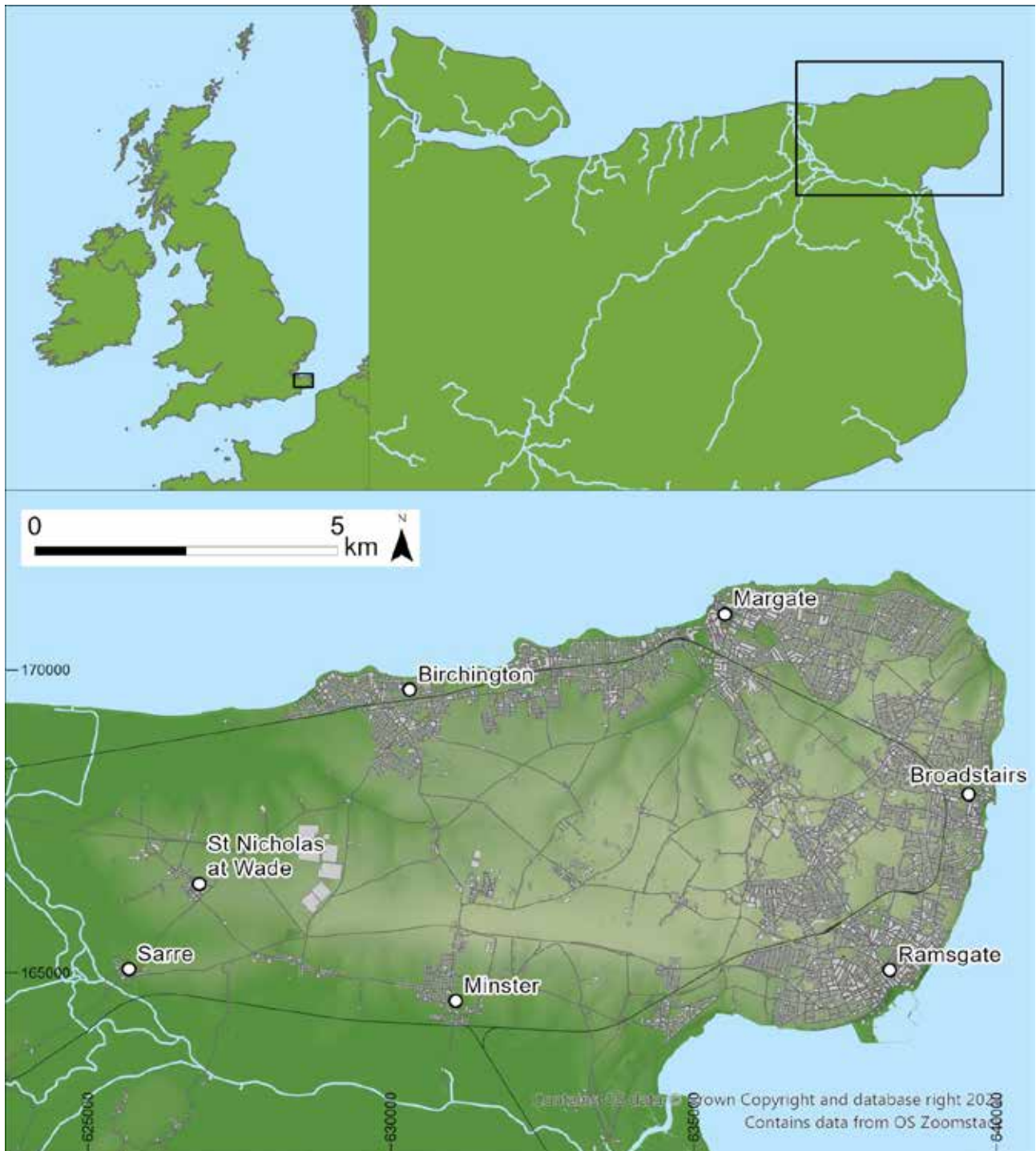
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Introduction



Project background

The Thanet Archaeological Landscapes Project, led by Kent County Council and supported financially through grant-aid by Historic England, aims to enhance archaeological understanding of the Isle of Thanet. It takes as its starting point the relatively limited research synthesis of Thanet District's highly significant archaeological remains. This problem is especially pressing given intensive development which threatens the remaining open areas of land in which many well-preserved archaeological features lie (Cuming 2022).

The project includes a data-gathering phase to enhance the Kent County Council Historic Environment Record (HER). Aerial investigation and mapping by Historic England's Aerial Survey team, reported on here, has formed part of that phase (hereafter referred to as the Thanet project). The Aerial Survey team uses all readily available aerial sources to deliver map-based historic environment information, recording all features (from the Neolithic to the Cold War) that are visible in aerial photographs and visualisations of lidar datasets. This research produces spatial mapping as a GIS dataset along with new or enhanced HER records. The augmented HER data will support a better understanding of the archaeological record at a landscape scale. These results will then contribute to the Thanet Archaeological Landscapes Project's Archaeological Characterisation and subsequent Archaeological Strategy.

The aims of this phase of aerial investigation and mapping, intended to enhance the HER, were to:

- undertake aerial investigation and mapping using aerial photographs and lidar to identify, map, record and better understand Thanet District's archaeology;
- provide spatial data in vector format;
- create both new and amended HER monument records derived from the new analysis of aerial imagery;
- provide polygonised monument records.

History of aerial investigation and mapping on Thanet

Archaeological features in Thanet District have previously been recorded from aerial photographs as part of the National Mapping Programme (NMP) survey for Kent. That was an NMP pilot project carried out by the Royal Commission on the Historical Monuments of England's (RCHME) Air Photography Unit between 1986 and 1987. The pilot project's

methodology was designed to produce maps of archaeological features at 1:10,000 scale with written descriptions of features for the then National Archaeological Record and Kent County Council's Sites and Monuments Record (now the HER) (RCHME 1989).

At the time of that pilot project, NMP methodology and scope were more limited than Historic England's present-day Aerial Investigation and Mapping (AI&M) standards and technical specification (Evans 2019). Only oblique aerial photographs and a limited selection of vertical photographs were assessed for their archaeological information. Cropmark sites were recorded but earthworks were specifically excluded. Easily accessible specialist software for the accurate rectification of photographs was not yet available. Archaeological features were sketch-plotted against the 1:10,000 Ordnance Survey base map, leading to persistent locational inaccuracies in the HER dataset.

The Richborough Environs Project (Small 2002) covered 15 sq. km abutting the southern boundary of the Thanet project area.

A later AI&M project – the South East Rapid Coastal Zone Assessment (SE RCZAS) – was carried out by Wessex Archaeology in 2010 (Hamel and Lambert 2011). Block M of the SE RCZAS included 34 sq. km of Thanet's eastern coastline and part of the River Wantsum channel. The project did not cover the northern coastline.

Most recently, the AI&M component of Historic England's Ramsgate Heritage Action Zone (HAZ) project was completed in 2019 (Small and Barber 2019). Some 20sq km encompassing the town of Ramsgate in the south-east of Thanet were mapped, documenting changes to the urban area and its environs. Where relevant, some of the sites identified in the Ramgate HAZ and SE RCZAS projects are referred to in this report.

Since 2013 a volunteer for Kent Archaeological Society has been compiling a digital map of archaeological features observed in a sub-set of the total available aerial sources. Recording cropmarks and a small range of other archaeological features as polylines with simple associated metadata, the project has benefited from access to the Cambridge University Collection of Aerial Photography and Google Earth Imagery. Data are displayed online (<https://www.kentarchaeology.org.uk/maps/archaeological-features>).

Small-scale mapping projects have been carried out by independent specialists for individual archaeological investigations, such as Deegan (2009). However, except for instances where their results are relevant to specific sites discussed below, they are not further addressed in this report.

The Isle of Thanet was already known for a wealth of archaeological sites identified from cropmarks thanks to prior work including Kent NMP and monitoring for the Thanet District

Sites and Monuments Record. Nevertheless, the significant volume of new aerial photography taken since the Kent NMP pilot project was completed more than 25 years ago has revealed substantially more archaeological features than were previously identified. The development of new resources such as lidar, in association with vertical aerial photography viewed stereoscopically, has the potential to improve knowledge and understanding of archaeological earthworks that had not been included in Kent NMP. A more comprehensive picture can be built up by consulting a far greater range of sources and by employing modern mapping, recording and data standards. Combined with updates to the SE RCZAS mapping and integrated with the Ramsgate HAZ results, the Thanet project has significantly enhanced the Kent HER and our understanding of the Isle of Thanet's archaeology at a landscape scale. This has important consequences for the future management of Thanet's historic environment.

The Isle of Thanet in its setting

Thanet's topography and geology have been described in detail by, for example, Moody (2008), Shephard-Thorn (1988), Stafford (2015) and White (1928). A brief overview is given here.

The Isle of Thanet forms the north-eastern tip of Kent (Fig.1). It is part of the North Kent Plain National Character Area (NCA 113), lying between the Thames Estuary to the north and the Kent Downs to the south. NCA 113 is typified by open, gently undulating land. The Isle of Thanet forms a distinct area within the NCA, due to its high uniformity of agriculturally productive land on outcropping chalk geology, with few hedgerows to interrupt the wide landscape views (Natural England 2015 [2025]).

The 'island' is formed of the Isle of Thanet anticline, divided from mainland Kent by the Richborough syncline to the south (Shephard-Thorn 1988, 32). The anticline's east-west oriented chalk ridge, about 6.5km long, forms the highest ground, in places over 50m above Ordnance Datum (aOD). A relatively steep scarp slope rises up to the ridge from the Wantsum Channel to the south. The chalk dip-slope falls away more gently to the north, forming a plateau dissected by dendritic dry valleys that descend to the coast. Much of Thanet is between 40m and 50m aOD, with steep cliffs and occasional sandy bays forming the east and north coastline (Stafford 2015). Settlement is clustered along and inland from the coastal fringe, whilst Kent International Airport (formerly RAF Manston) occupies the highest part of the plateau and the anticline ridge. The formation of the Wantsum Channel is poorly understood (Kent County Council 2013, Appendix 1). Moody (2008, 45–52) suggests that flooding by a combination of watershed drainage and post-glacial sea ingression resulted in Thanet becoming isolated by the Early Bronze Age, later

separated from mainland Kent by a navigable tidal channel until ongoing silting, exacerbated by land reclamation (a process known as 'inning'), compromised the watercourse by the later medieval period.

Thanet's outcropping solid geology is predominantly White Chalk, comprising the Seaford Chalk Formation containing seams of nodular and tabular flint, nodular 'hardgrounds' and thin seams of marl, whilst the Margate Chalk Member has some flint and marl beds. Large chalk quarries were dug in numerous locations on Thanet, including a string of pits following roughly the 30m aOD contour close to the top of the scarp slope, and quarries on lower ground, for example at Monkton, Sarre, Down Barton and Belle Isle. Palaeogene deposits lie unconformably over the chalk. These are predominantly Thanet Formation sands, silts and clays present in the environs of Manston and between Ramsgate and Broadstairs; in small outcrops between Sarre and Pegwell Bay; and forming the Ebbsfleet peninsula. Considerable areas of superficial deposits mantle the plateau and valley slopes/bottoms. The south facing chalk scarp slope overlooking the Wantsum Channel is covered by Coombe rock and clay and silt Head1 deposits, which also tend to fill the dry valley bottoms as a result of erosion and solifluction processes. Head2 deposits overlie areas of the plateau, where also loessic brickearth deposits were exploited in places by brickworks (such as at Westwood and Shottendane). Marine and estuarine alluvium fills the Wantsum Channel, with beach and tidal flats to its eastern end at Pegwell (British Geological Survey 2024; Moody 2008; Shephard-Thorn 1988).

In consequence, soils on the Isle of Thanet range from seasonally wet, deep clay soils (Newchurch 2) in the Wantsum Channel, to well-drained, calcareous, fine silty soils (Coombe 1) and well-drained often stone-free, fine silty soils (Hamble 1) on slopes and higher ground. Calcareous Coombe 1 soils occur on flinty, chalky superficial deposits and on chalk dip slopes. They may be deeper in valley bottoms and much shallower on valley sides. The slightly acid Hamble 1 soils, only occurring in north and east Kent, may be deep; they often occur where underlying superficial deposits are thick and a spatial association between those soils and both Head and Tertiary deposits is clear on Thanet (Cranfield University 2025). Aside from the urban areas and industrial land use of RAF Manston/Kent International Airport, these soils support high-grade agricultural land: predominantly Grade 1, with some Grade 2 and 3 areas largely in the Wantsum Channel (Natural England 2007 [2019]). At the time of writing, the great majority is used for arable and horticulture (about 4,229ha), with a small proportion of improved grassland (about 415ha) and small, infrequent areas of broadleaved, mixed and yew woodland (about 219ha) (Natural England 2022; Morton et al. 2024).

The project area comprises two Landscape Character Areas (LCAs), 'Thanet' and 'The Wantsum and Lower Stour Marshes' (Jacobs Babbie 2004). The Thanet LCA is defined physically by the high ground, formerly isolated from the Kent mainland, with a long history of cultivation. Long views from and to Thanet across its open, unenclosed landscape are a striking component of the District's character. Its settlements are nuclear or focussed on the coastal strip, having developed from fishing villages to more urban, residential conurbations. The Wantsum LCA encompasses the arc of low-lying land without settlements that divides the Thanet LCA from mainland Kent. The flat, open ground has very long views tempered by rising slopes either side of the River Wantsum plain. Small fields are defined by drainage ditches and dykes, often marked by reeds and water-loving trees. Originally reclaimed to support sheep walks, the fields are now largely arable. To the south-east, outside the Thanet Project area, the marshes are more coastal in nature with residential and commercial areas focussed on the town of Sandwich.

Thanet District is covered by three Historic Landscape Character Areas (HLCA): HLCA 18 (Isle of Thanet), 19 (Wantsum Channel) and a small part of 34 (Wantsum Coastal Belt) (Croft et al. 2001). HLCA 18 is dominated by two landscape types; 'post-1801 settlement' and 'irregular fields bound by roads, tracks and paths'. These two landscape types represent the largely coastal urban/suburban conurbations on the north and east of the Isle of Thanet (just over 2,900ha) and roughly 4,567ha of farmland that maps closely to the distribution of the 'arable and horticulture' land classification mentioned above. Croft et al. (2001, vol. 1, 3 of 8) suppose that this dominant field pattern is the result of informal post-medieval enclosure. In contrast, HLCA 19 is dominated by rectilinear enclosures of reclaimed marsh with fields defined by drainage channels, and areas of salterns on Chislet Marshes. These landscape types are the result of drainage and industrial exploitation that began in at least the 12th century (Croft et al. 2001, vol. 1, 3 of 8). The northern end of HLCA 34 includes the mud flats, wetlands and former hoverport of Pegwell Bay where, during the 20th century, public recreation changed from a focus on cross-Channel transportation to the opportunity to enjoy the Sandwich and Pegwell Bay National Nature Reserve (Kent Wildlife Trust 2025).

The LCA and HLCA units map closely, both geographically and descriptively. The characteristic openness of both Thanet's upland and lowland areas emphasised by the LCAs (Jacobs Babbie 2004) is influenced by fields across the District that lack hedges and shaws but which are instead defined by routeways and watercourses (Croft et al. 2001).

Factors affecting visibility, detection and interpretation of sites

Aerial survey makes a significant contribution to recording and understanding the historic environment, especially at a landscape scale. Nevertheless, numerous factors affect the visibility of archaeological features from the air; their detection by new reconnaissance or during the review of existing aerial sources; and the interpretation of the evidence (Carter 1998). Many variables contribute to cropmark formation, earthwork survival, reconnaissance decisions and the availability of sources to evidence the archaeological record. Not least of these is the nature of archaeological features themselves. We discuss some of the issues below briefly, with reference to the Isle of Thanet. It should be noted that a comprehensive assessment is out of scope of this report.

Reconnaissance history

An important contribution of the Thanet project, with the Ramsgate HAZ project (Small and Barber 2019) and the SE RCZAS (Hamel and Lambert 2011), is to augment and enhance Kent HER records following on from the Kent NMP pilot project, carried out in the late 1980s (see above). The volume of aerial imagery has increased substantially in the intervening years. New datasets, including digital orthomosaics and lidar, have become available as the extent and frequency of image capture have expanded (for a summary of the material consulted for this project, see Methodology). These varied sources have strengths and weaknesses in respect to the aims of archaeological research.

The imagery available to this project falls into six general categories:

- Specialist oblique aerial photographs taken by archaeologists for archaeological research. Traditionally, these photographs target cropmark sites; their distribution is therefore influenced by where cropmarks are most prolific (Carter 1998, 98). More recent applications of archaeological oblique photography include scheduled monument monitoring and recording a greater variety of site types as research interests have developed.
- Military oblique aerial photographs taken by the Royal Air Force. In the UK these are usually the outcome of reconnaissance practice or monitoring of specific features such as coastal defences.
- Oblique aerial photographs taken commercially. They are usually attractive, illustrative images of targets with high public interest, taken on commission or speculatively for onward sale.

- Vertical aerial photographs, taken from the 1940s onwards by various public bodies and commercial organisations. They are intended to provide complete stereoscopic coverage for purposes including monitoring, mapping and planning.
- Digital orthomosaics, often produced commercially, offering seamless vertical coverage for illustrative and analytical purposes. Each orthomosaic is made from individual vertical photographs (either digitised analogue prints or digital images) and is fully georeferenced. They include layers accessible through Web Mapping Services and programmes such as Google Earth.
- Visualisations of Environment Agency lidar datasets including both Digital Surface and Digital Terrain Models at 1m resolution. The lidar datasets have multiple analytical uses across numerous disciplines.

Various factors influence which of these varied aerial sources are used for mapping archaeological features, beyond the simple fact that cropmarks, earthworks or structures appear in any given image. Often features are visible in more than one source and professional judgement is applied to choose the most appropriate for mapping. Factors include, for example: the clarity of cropmarks in certain crops or their stage of development when they happen to have been photographed; how well distinguished earthwork sites are in different light conditions; the quality of available control for the process of rectifying scanned analogue prints; or the opportunity to take advantage of spatially-located orthomosaics that do not require rectification. In the following discussion we analyse which sources were used to map types of archaeological features for the Thanet project, but it should be borne in mind that this categorisation does not necessarily mean that features were visible in only the primary source that is recorded in the mapping attribute data (SOURCE_1 field, see Methodology).

Oblique aerial photographs

Specialist and commercial oblique aerial photographs, although serving different purposes, are nevertheless commonly taken in good flying conditions at key times of the year. This can be seen in the distribution of material from Historic England Archive and the Cambridge University Collection of Aerial Photography (CUCAP), by month flown (Fig. 2). Peak flying time for cropmark photography is evident in the large number of images taken over Thanet in Spring/Summer months.

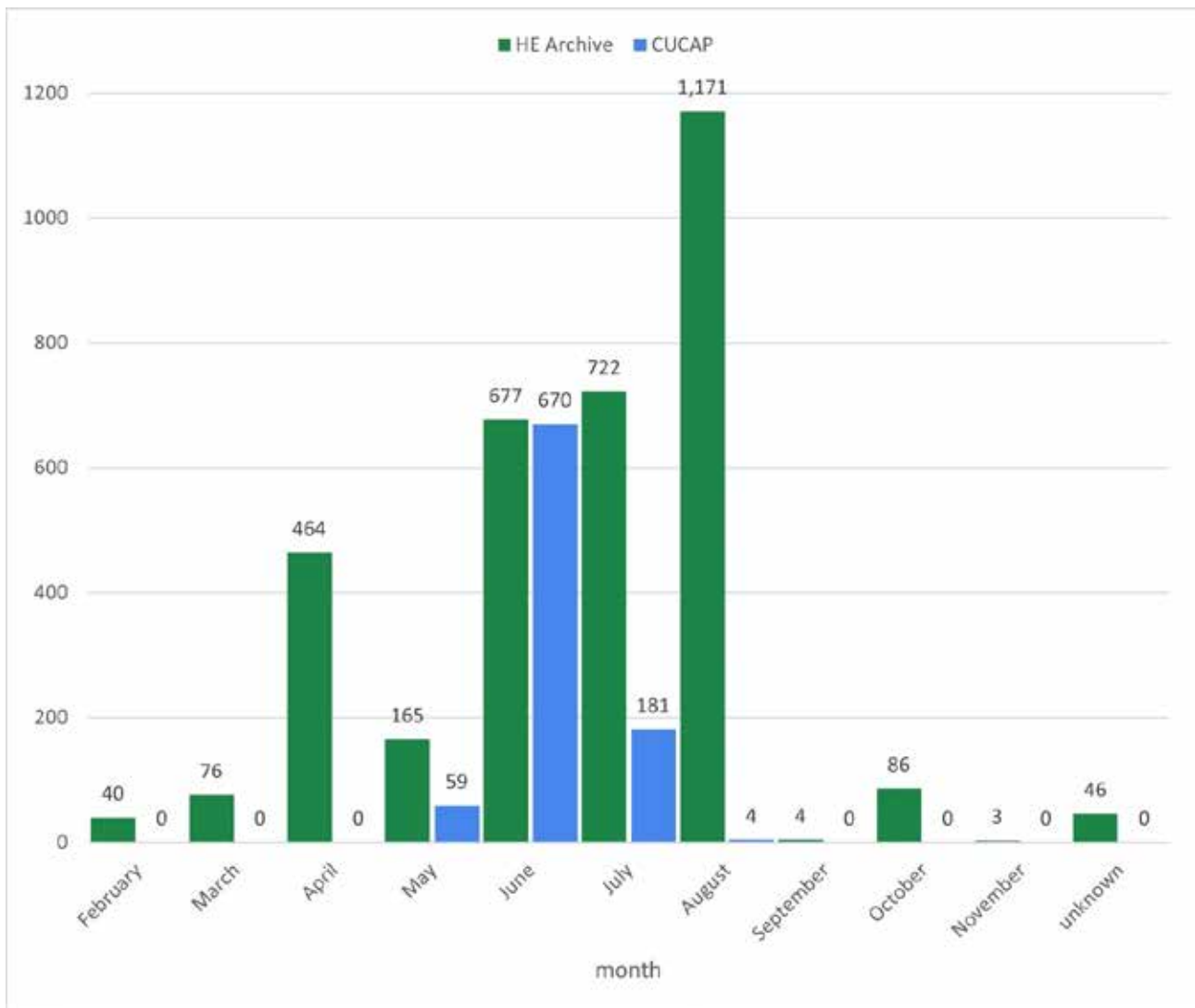


Figure 2: Distribution of Historic England Archive (HEA) and Cambridge University Air Photo Collection (CUCAP) oblique aerial photographs of Thanet by month flown. Data for HEA collections taken from project coversearches; data for CUCAP taken from online Collection data.

Taken together, Historic England Archive oblique collections for the Isle of Thanet provide coverage of mainly inland cropmark sites in specialist archaeological photographs and often coastal scenes through the commercial Aerofilms Collection. The most frequently photographed areas include Ramsgate Harbour, central Broadstairs and central Margate (including numerous inter-war period Aerofilms Collection images) and cropmark sites in the environs of Down Barton Farm, Minster, Monkton, St Nicholas at Wade, Great Brooksend Farm, Acol and Shottendane. Significantly fewer images from these collections cover the Wantsum Channel, Chislet Marshes or Wade Marsh where cropmarks are less likely to form and which have few commercially attractive targets (Fig. 3).

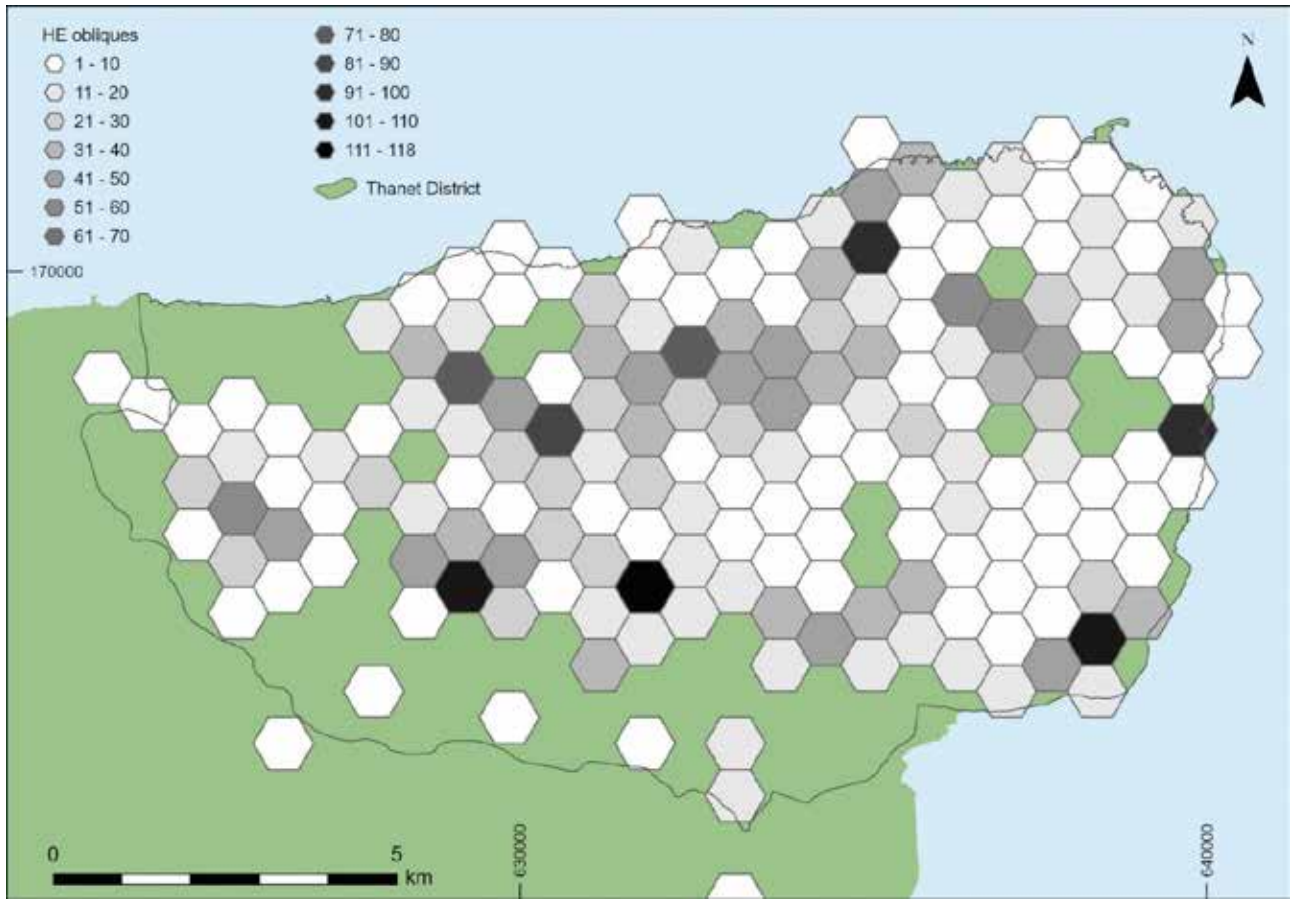


Figure 3: Distribution and density of Historic England Archive oblique aerial photographs over the Isle of Thanet. [Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The Cambridge University Collection of Air Photographs is another significant source of specialist oblique images taken for archaeological research. CUCAP images were used by the Kent NMP pilot project, alongside the Historic England Archive specialist obliques that had been taken by the late 1980s. Spatial data downloaded from the CUCAP website, indicating image locations, highlights a focus on inland cropmarks sites, with a high density of photographs over agricultural areas and far less historic coastal or urban imagery (Fig. 4).

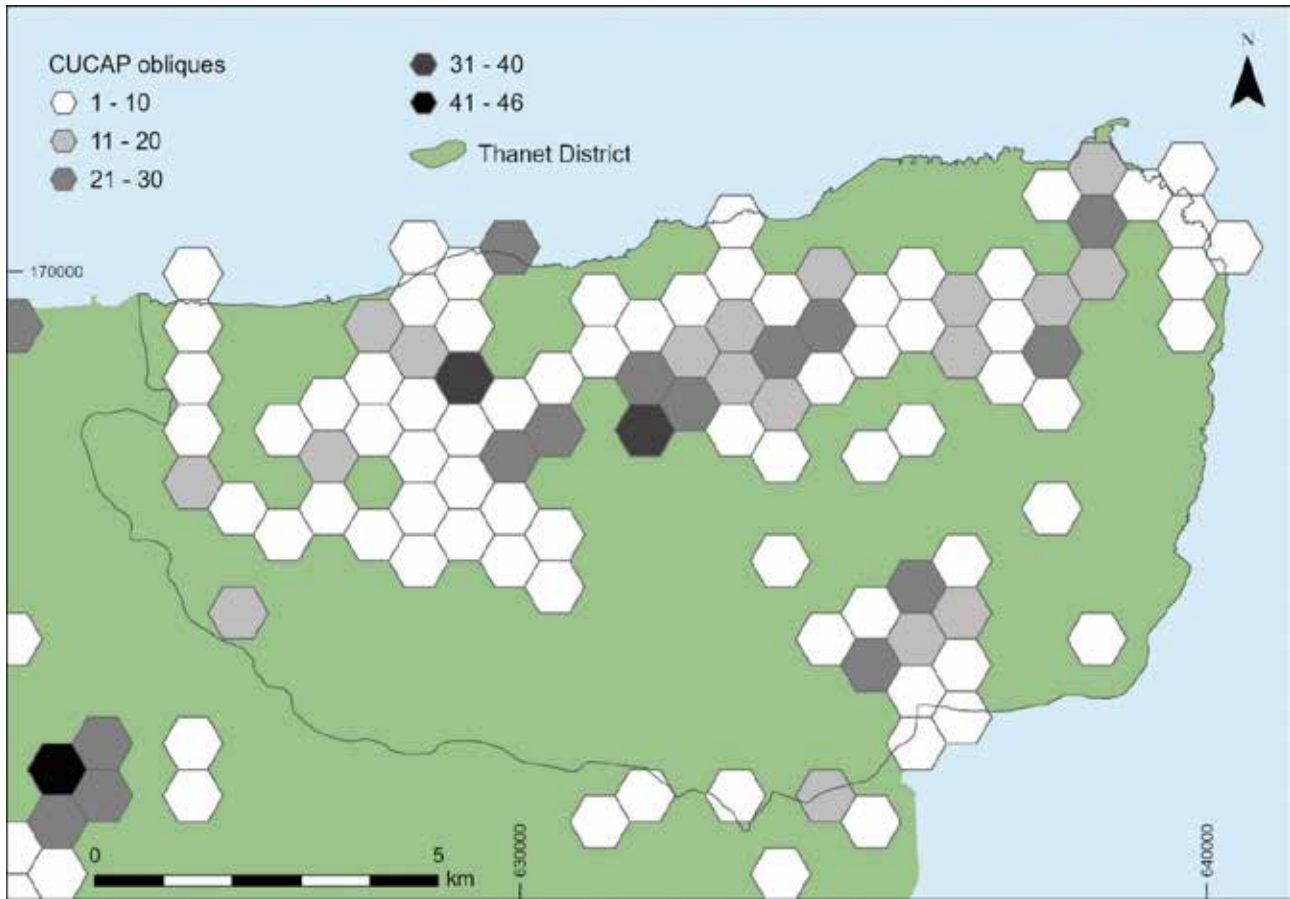


Figure 4: Distribution and density of CUCAP oblique aerial photographs over the Isle of Thanet and environs (data download 20 September 2023). [Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

An important feature of CUCAP images is that they provide a record of cropmark sites in farmland during the 1950s and 1960s, prior to the growth of various suburban areas, for example to the west of Ramsgate and between Margate and Broadstairs in the north-east. Specialist oblique photographs in the Historic England Archive date from the establishment of the RCHME Air Photo Unit in 1965, but for the Isle of Thanet, significant coverage does not appear until the 1970s (Fig. 5). Much 20th-century development had already occurred by that time. Unfortunately, the CUCAP library has been closed since 2016 and its photographs were not available to the Thanet project, apart from a very small selection of scanned images that can be viewed online (<https://www.cambridgeairphotos.com/>). In consequence, it has not been possible to consult the 1950s and 1960s CUCAP specialist obliques.

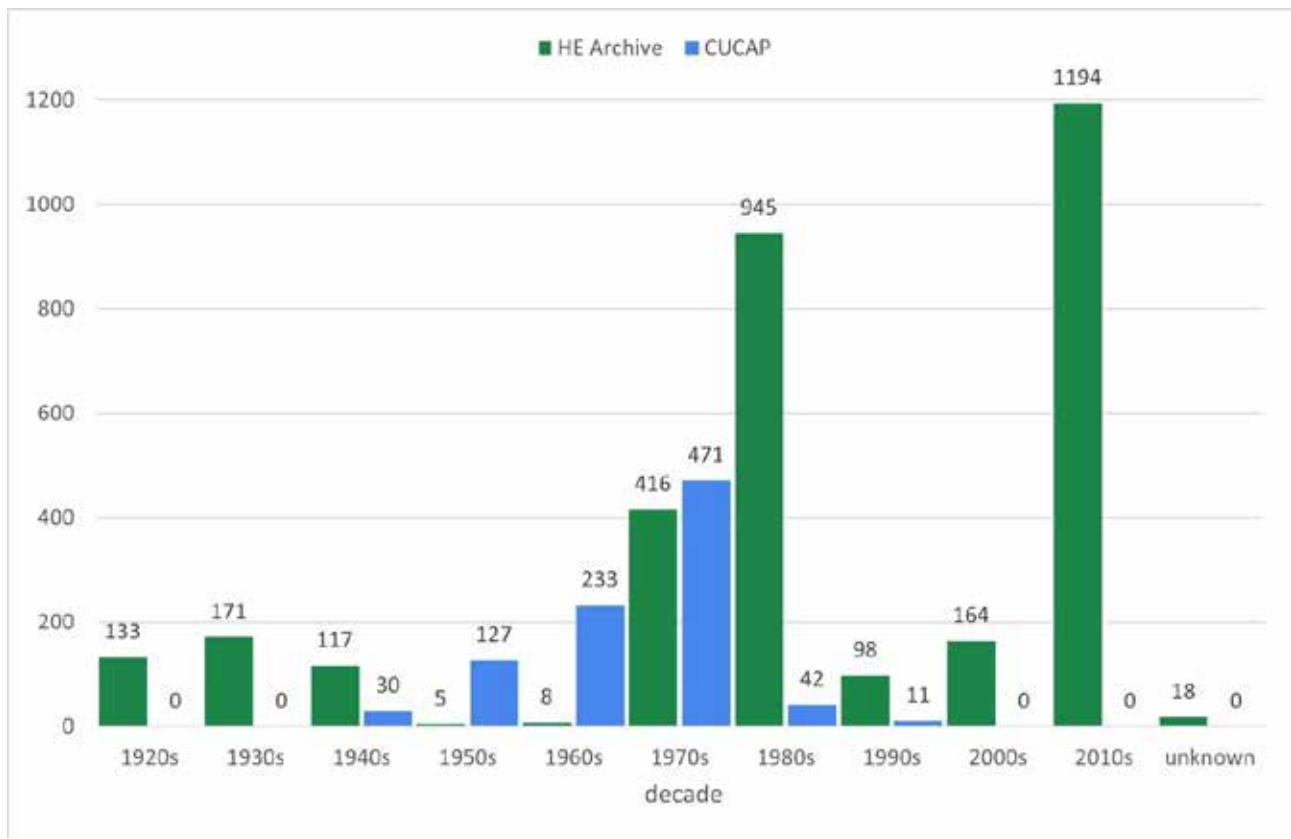


Figure 5: Distribution of Historic England Archive (HEA) and Cambridge University (CUCAP) oblique aerial photographs of Thanet by decade flown. Fewer HEA photographs were taken between about 1990 and 2010 because the flying base moved from Biggin Hill airfield and when policies to target less-well photographed areas were instituted.

A consequence of not being able to consult that mid-20th-century CUCAP imagery is that some features that were mapped by Kent NMP from CUCAP photographs are not in the Thanet project's GIS data because they were not observed on alternative sources. One such example is at the cropmark complex on the north side of St Peter's Road, to the south-east of Margate (Fig. 6). Some of the rectilinear ditches, a single ring ditch and a double-ditched ring ditch in the area between the road and the railway line, that were observed and plotted by Kent NMP, were not visible on sources available to the Thanet project (although they remain, of course, described in record Kent HER: TR 36 NE 161). On the other hand, it has been possible to map visible features in more detail and with improved spatial precision compared with Kent NMP. This reflects the difference in methodologies used between the 1980s and today: sketch-plotting at 1:10,000 scale compared with mapping at larger scales in GIS from digitally rectified aerial photographs.

Furthermore, other details have been added to this cropmark complex that were not recorded by the earlier project. They include further boundary ditches, enclosures and ring

ditches seen as cropmarks and soilmarks. Additionally, two gun emplacements and a group of Second World War anti-landing poles were mapped from Royal Air Force vertical aerial photographs (RAF/HLA/380 PORT 648 15-DEC-1941). Those 20th-century features were out of scope for Kent NMP, but the new mapping shows how this area of open ground to the south-east of the town was incorporated into the early 1940s defence scheme (Fig. 6).

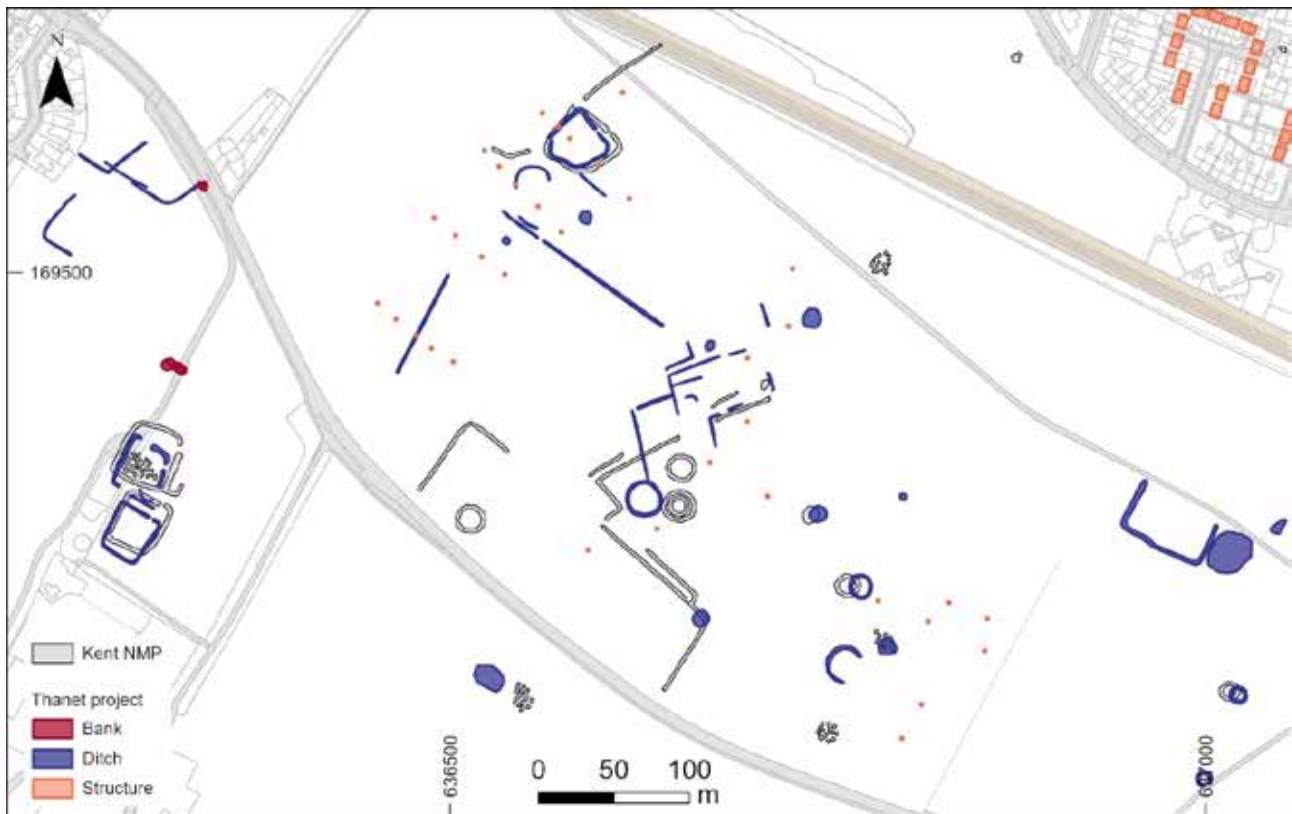


Figure 6: Cropmark complex north of St Peter's Road, Margate, comparing archaeological features mapped by Kent NMP and re-mapped by the Thanet project. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Airspace

Airspace restrictions around civilian and military airfields can reduce the amount of archaeological reconnaissance that is possible in an area (Carter 1998). RAF Manston/Kent International Airport occupies central Thanet and could be expected to have had such an impact. The former Military Aerodrome Traffic Zone (MATZ) comprising a circle of five nautical miles radius, with a 'stub' of similar length extending to the west to protect the airfield approach, entirely enclosed the District. Civilian flying through and within this area would have been by request and permissions invariably depended on the type of activity underway at the airfield at any given time (Nicola Cryer pers. comm. 2025).

It may have been the case that CUCAP flying was affected by the airfield's protections earlier in the 20th century. Although numerous CUCAP specialist oblique photographs were taken of sites close to the airfield, there are far fewer images in the immediate environs (112 within 1000m of the airfield, 9% of CUCAP obliques for Thanet) compared with similar cover from Historic England Archive (685 within 1000m of the airfield, 20% of HE Archive obliques for Thanet) (Fig. 7). The majority of the CUCAP images date to the 1950s, 1960s and 1970s when the airfield was an active Royal Air Force (RAF) and United States Air Force (USAF) base (Stockman 1986), which may have limited transits through and flying within the controlled airspace.

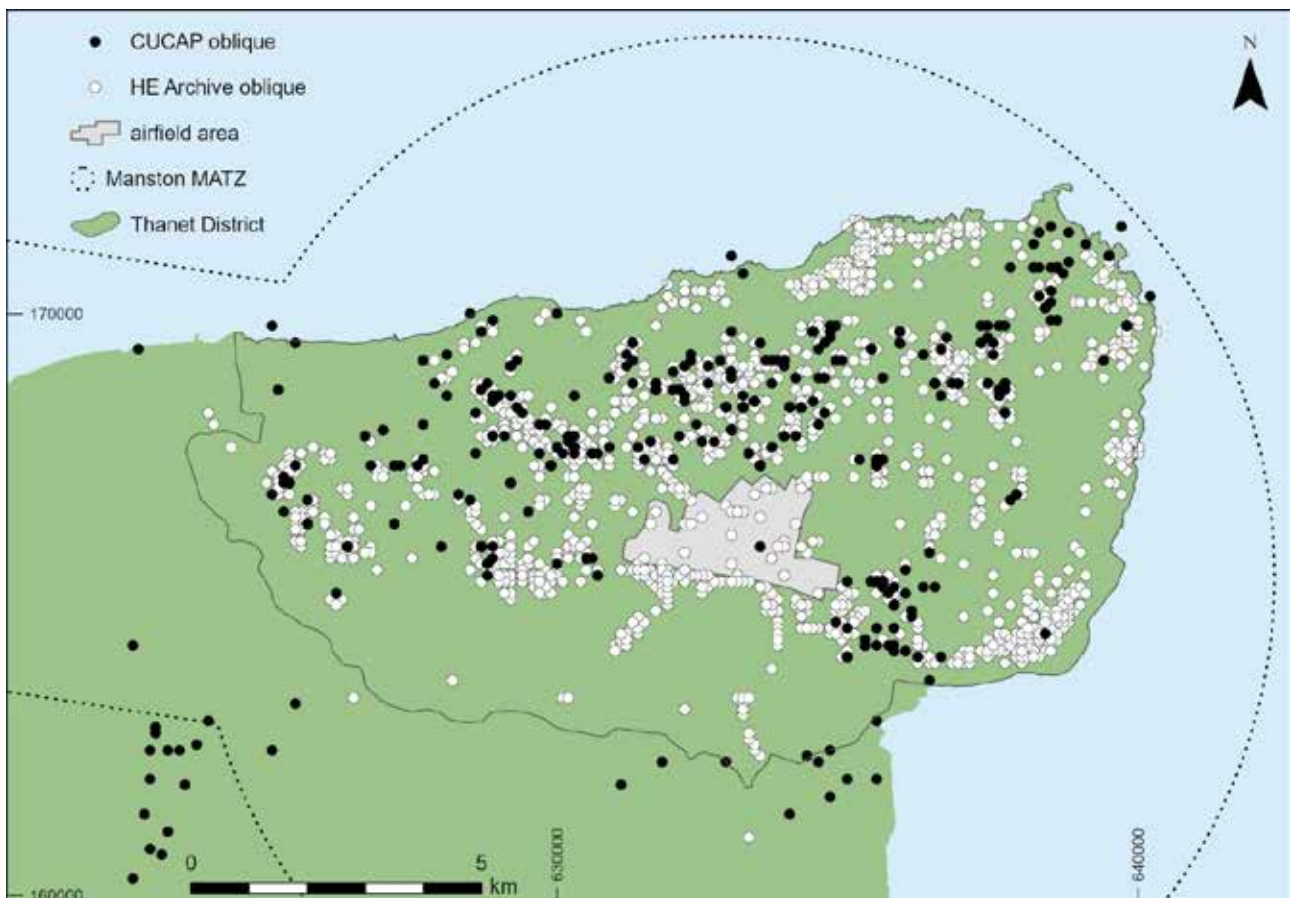


Figure 7: Distribution of Historic England Archive and CUCAP oblique aerial photographs for Thanet District in relation to RAF Manston/Kent International Airport. [Airfield boundary based on RAF Manston plan X004/2380, RAF Museum Hendon (mid-20th century); MATZ boundary based on Civil Aviation Authority Aeronautical Chart Southern England and Wales Edition 1 (1994) (the MATZ boundary may have been larger in previous years). Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

In contrast, no such deterrent has been felt, at least in more recent decades, by Historic England's reconnaissance programme (Damian Grady pers. comm. 2025). Without more detailed flight information from CUCAP, it remains only a possibility that airspace control

affected the ability to search for and photograph archaeological sites. Gaps in coverage around the north side of Manston airfield may be attributed to the prevalence of small built-up areas, gardens and paddocks, which are less conducive to cropmark formation. It is less clear why fewer specialist oblique photographs have been taken of ground immediately to the south of the airfield, which is largely given over to cultivated fields.

Vertical aerial photographs

Historic England Archive collections of vertical aerial photography consulted for the Thanet project provide coverage since the early 1940s. Captured at different scales and throughout the year, flights may not have been taken at good times for cropmarks (although cropmarks near Broadstairs and Foreness Point were mapped from RAF vertical photographs, for example). Photographic prints can be consulted for mapping: where imagery exists only in negative film or diapositive format, it cannot be made available. Flights at scales smaller than 1:15,000 are excluded, because smaller scale imagery is less suited to archaeological mapping. In consequence, most of the vertical imagery used for the Thanet project dates to the 1940s and 1950s, taken by RAF and USAF (Fig. 8).

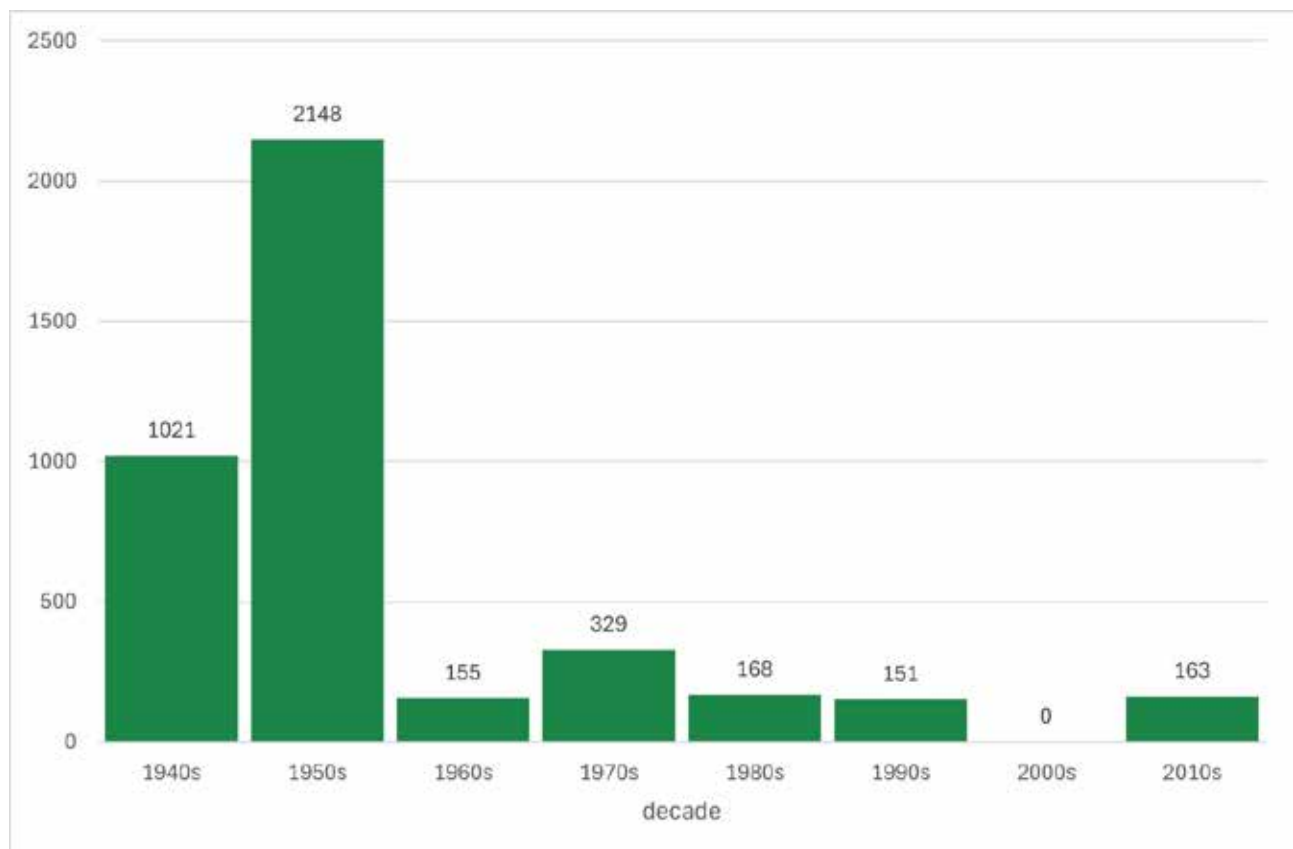


Figure 8: Distribution of Historic England Archive vertical aerial photographs (prints) covering the Isle of Thanet, by decade flown.

Nearly half (9,924, 48%) of all mapped individual feature polygons were recorded from RAF and USAF photographs. These flights provide partial coverage of Thanet between 1940 and 1945 and blanket coverage during the later 1940s and into the 1950s. Almost all the features mapped from this material date to the First World War, inter-war, Second World War or Cold War periods and speak to the Isle of Thanet's extensive 20th-century military landscapes (see below). Some 511 feature polygons mapped from these sources, however, represent sites of other periods (Table 1). Although they are only 2.5% of the total number of mapped feature polygons, nevertheless this demonstrates the importance of mid-20th-century military vertical aerial photographs to mapping both cropmark and earthwork sites of different periods. In particular, the ability to use vertical prints stereoscopically is a significant advantage. Well-preserved earthworks on land that had not yet been brought into cultivation can appear as crisp and substantial features when viewed in stereo. They are easier to map with greater precision than as denuded, low-relief features spread by years of ploughing that appear in visualisations of recent lidar datasets.

Table 1: Numbers of non-20th-century feature polygons mapped by the Thanet project from RAF and USAF vertical photographs, by period and evidence type.

Period	n	%	Earthworks	Cropmarks	Other Evidence
Later prehistoric	10	2.0	0	10	0
Bronze Age	42	8.2	1	41	0
Bronze Age/ Iron Age	15	2.9	0	15	0
Iron Age	11	2.2	0	11	0
Iron Age/ Roman	38	7.4	1	37	0
Roman	5	1.0	0	5	0
Medieval	77	15.1	63	14	0
Medieval/ post-Medieval	33	6.5	15	18	0
Post-Medieval	180	35.2	150	21	9
Victorian	19	3.7	12	0	7
uncertain	81	15.9	11	69	1
total	511	100	253	241	17

Orthomosaics

Modern digital orthomosaics cannot be viewed stereoscopically, but they augment both vertical and oblique archive collections by providing more recent coverage. The images forming orthomosaics may coincidentally have been taken when cropmarks have formed, because they are usually captured at times of year with good flying and visibility conditions. They also offer high degrees of spatial accuracy for mapping, having been

processed for GIS use. The Thanet project consulted numerous modern digital orthomosaics (see Methodology). Some 3,461 feature polygons (nearly 17%) were mapped from images supplied via the Aerial Photography for Great Britain (APGB) agreement alone.

A disadvantage is that the APGB coverage of Thanet post-dates many recent instances of farmland conversion to residential, industrial/commercial or infrastructure use, as those layers available to the project only cover the period from 2003 to 2021. A cropmark complex lying largely to the north of the A299 between Monkton and Minster is a case in point (Kent HER: TR 36 NW 238). The majority of the features, including Bronze Age ring ditches, a Roman settlement site and medieval/post-medieval extractive pits, were mapped from cropmarks seen in APGB imagery of 5 May 2018. Parts of the cropmark complex, however, had been obscured by the A299 dual carriageway and were mapped from specialist obliques dating to 6 August 1979 and 2 July 1986, pre-dating the road dualling. Crucially, recent digital orthomosaics coincidentally taken in favourable conditions may be combined with other sources to create detailed, spatially accurate representations of cropmark sites.

Lidar visualisations

To achieve complete coverage of the Isle of Thanet by 1m Environment Agency lidar the Thanet project used data captured in 2017 (about 102sq km) and 2019 (about 4sq km, covering the westernmost tip of the District) (see Methodology). Lidar datasets comprise three-dimensional data points from which both a Digital Surface Model and a Digital Terrain Model can be derived. Different visualisations of the landform may then be made to reveal archaeological features that have height or depth; each visualisation has pros and cons in archaeological research (Historic England 2018a). An advantage of lidar is to help visualise earthwork sites under tree cover. This is less relevant on the Isle of Thanet, which has a very small percentage of woodland land use; about 220ha of broadleaved, mixed and yew woodland and coniferous woodland, in parcels of median size 6.1ha (Natural England 2022; Morton et al. 2024). The majority of features mapped from lidar were field boundaries (49% of feature polygons mapped from lidar), other earthwork banks (19%) and salterns (10%). These features are almost all in open ground including farmland, parks, golf courses and sports fields.

Environmental influences

Before discussing relationships between the visibility of archaeological features and geology and soils on Thanet's interior, it should be noted that coastal erosion has probably resulted in the total loss of some archaeological features from the project area (Perkins

2010, 287). Coastal changes were noted during the mapping phase of the Thanet project, for example along the north coast where rectifying older aerial photographs against modern Ordnance Survey mapping proved challenging due to landscape alterations over time. This represents a difference in only some 80 years since the 1940s, let alone earlier historical losses, and is illustrated by the loss of the sound mirror platform overlooking Joss Bay (see Military Archaeology below for a discussion of this unusual and important site) (Fig. 9). Only 585m to the south-east, cropmarks of the north-east end of a Bronze Age/Iron Age linear earthwork (Kent HER: MWX43002) on North Foreland stop against the cliff path. A combination of the modern cliff edge position and the installation of a small Second World War gun battery likely interrupt the original termination of the linear earthwork that may have extended further east, or even partially wrapped around the chalk spur. Prehistoric and Roman finds on the north coast foreshore, as at Walpole Bay, Margate Bay and St Mildred's Bay, and the silting of the Wantsum Channel, speak to major environmental influences on the archaeological record.



Figure 9: First World War early warning site, Joss Bay. (a) Joss Bay sound mirror platform cut into the cliff. [Extract of AFL19270622/EPW018627 22-JUN-1927 Historic England Archive (Aerofilms collection)]; (b) The former location of the sound mirror platform. [Next Perspectives APGB 07-APR-2021, © Bluesky International Limited and Getmapping Limited 1999-2023]

Wilson (1982 [2000]) discusses in detail how archaeological soilmarks and cropmarks are formed, and the conditions in which earthwork sites may best be seen and photographed from the air. Wilson's level of detail is not rehearsed in full here: in this report section, we focus on some of the conditions specific to the Isle of Thanet that may influence the visibility of archaeological features. We explore earthwork and cropmark distributions using

feature polygons mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects within the Thanet project study area. The main focus is on cropmarks, because they represent such a high proportion of the monuments recorded by the Thanet project. Features mapped as structures have not been included in this analysis. Feature polygon counts are used as a proxy for the presence of archaeological features (as recorded in the Evidence_1 metadata field), rather than points representing centroids of monument polygons, to provide slightly more finesse where parts of monuments are present on more than one soil type.

Geological deposits and the soils that they support underlie the local topography in which earthwork sites are situated, and play a significant role in the development and visibility of cropmarks. Cropmarks are the visible result of differences in crop growth and ripening, arising from differential availability of water to plants growing in/over archaeological deposits compared with the rest of the field (Wilson 1982 [2000], 67–80). The likelihood that cropmarks will form is affected by a complex interplay of soil type, Soil Moisture Deficit (as a proxy for water availability), crop type and growth stage, cultivation regime and other factors and the ability to record cropmarks in aerial photographs can even depend on the time of day. In general, however, cropmarks are more likely to form over solid and superficial geological formations from whence amenable soil types, including lighter, thinner soils, are developed (Carter 1998, 98).

Cropmarks might be expected to form most readily in areas of Thanet with lighter, well-draining soils on the majority outcropping chalk bedrock (described above). Most of the mapped cropmark sites are on such Coombe 1 soils which comprise about 4,311ha of the District overall. Nevertheless, significant cropmark complexes appear on Hamble 1 soils (about 4,236ha of the District) in the environs of Quex Park/Westgate-on-Sea/Garlinge (A in Figure 10), at Westwood Cross (B in Figure 10), to the east and south of St Nicholas at Wade (C in Figure 10) and in patches on the north-east of the Isle. Although Hamble 1 soils may be deep, they are still well-drained and clearly support cropmark formation in various locations (Fig. 10). At Quex Park/Westgate-on-Sea/Garlinge and at Westwood Cross, Hamble 1 soils overlie superficial deposits that mantle chalk, whereas to the east/south-east there are places where they overlie both clay and silt superficial deposits and Palaeogene sands, silts and clays. The Tertiary/Quaternary deposits may be influencing the rate by which water is released to crops and thus how cropmarks may or may not form there. Very few cropmarks were recorded on the deep clay Newchurch 2 soils of the Wantsum Channel even though most of the area is under arable or horticultural use (Natural England 2022) (although it should be noted that the occasional cropmarks of now filled in drainage ditches which are nonetheless mapped on historical Ordnance Survey maps were not recorded, as laid out in AI&M Standards) (Fig. 10). The heavier

soils release water more slowly and thus cropmarks develop more slowly, if at all (Wilson 1982 [2000], 69).

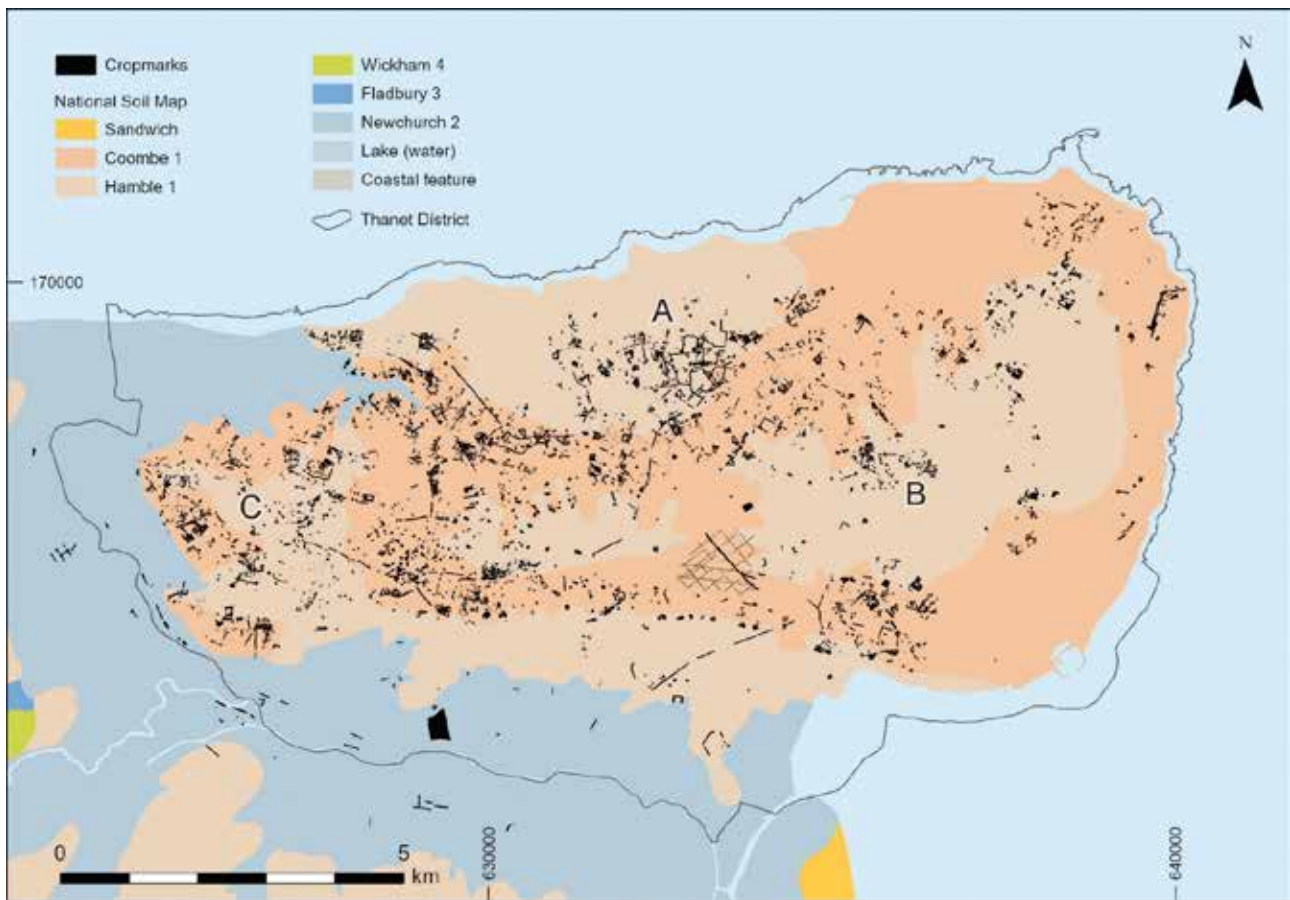


Figure 10: Cropmarks mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects and soil Associations. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains British Geological Survey materials © 2025]

Some 2,325 earthwork feature polygons (83% of the total recorded by the three projects in the District) were recorded on Coombe 1 and Hamble 1 soils across the Thanet plateau (Fig. 11). The majority are 20th-century military features recorded from 1940s vertical aerial photographs; most were short lived, being created, dismantled and levelled during or soon after the Second World War. Fragments of medieval and post-medieval field systems, present across Thanet, are perhaps a more useful monument type to explore earthwork visibility in the aerial sources, rather than the temporary military features. All but two of the 211 field boundary feature polygons were mapped from lidar visualisations, in which they appear as low, spread features. They are distributed across the Coombe 1 and Hamble 1 soils, seemingly regardless of the underlying superficial and solid geology.

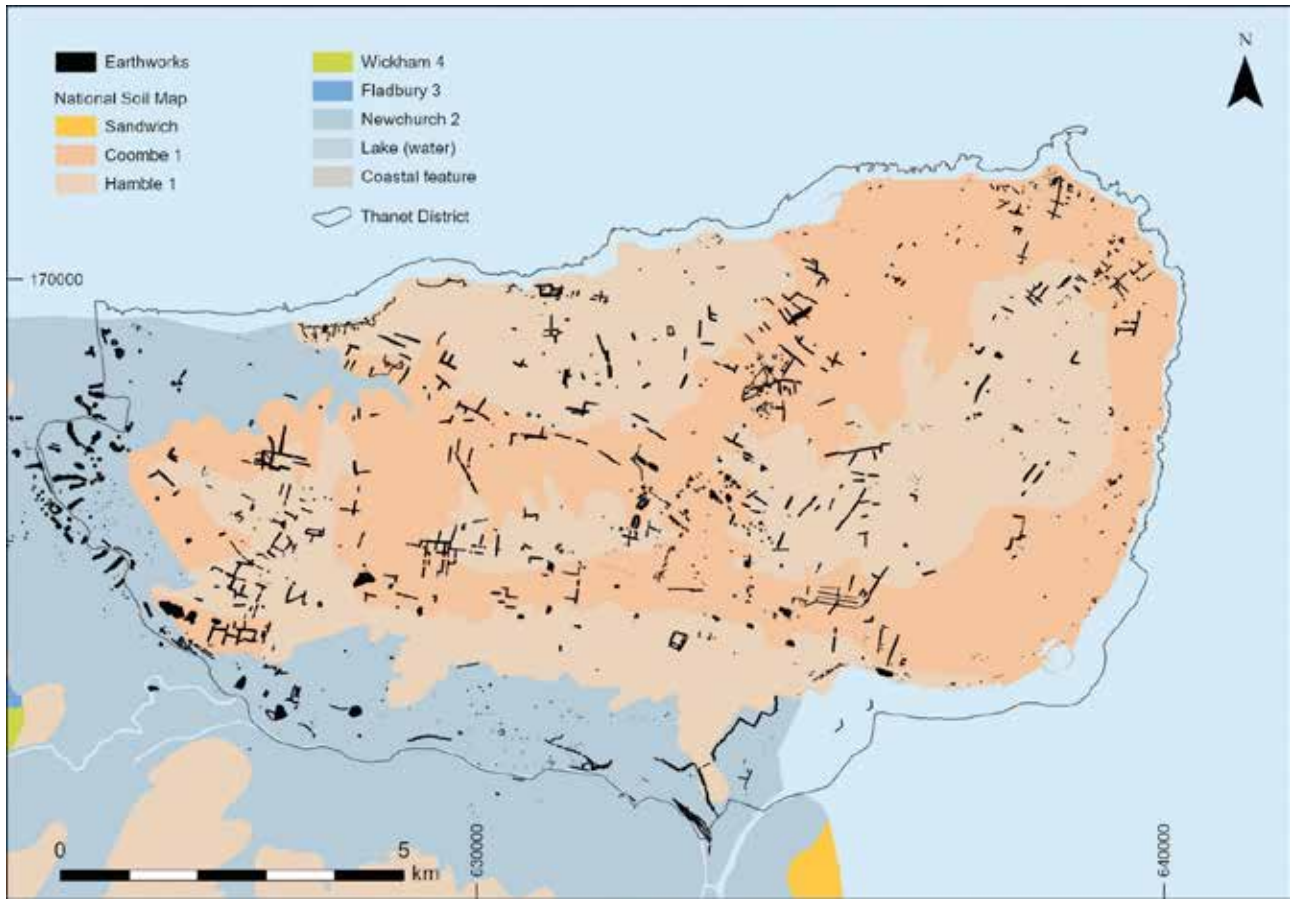


Figure 11: Earthworks mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects and soil Associations. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains British Geological Survey materials © 2025]

Only 479 earthwork feature polygons (some 17% of the total earthwork feature polygons mapped by the three projects) were observed on Newchurch 2 soils (Fig. 11). Nevertheless, they represent significant aspects of Thanet's history. These features in the Wantsum Channel are medieval, post-medieval and 20th century in date including salterns, earthwork banks, stack stands and military features. The majority were mapped from RAF vertical aerial photographs pre-dating the expansion of arable agriculture, in which their form tends to be much more strongly defined than in recent lidar visualisations that capture later degradation of surface features. The Thanet and Ramsgate HAZ projects both recorded the latest appearance of features: 273 (70%) appear as levelled earthworks in the latest available imagery, 112 (29%) as earthworks and three (1%) have been destroyed. The high proportion that have been levelled is indicative of change from pasture to arable in much of the Wantsum Channel.

The presence of earthwork sites on all soil types, combined with the proliferation of cropmarks in most circumstances, suggests that mapping by AI&M projects is representative of the Isle's archaeology overall, except possibly where Palaeogene and superficial geological deposits combine to affect cropmark formation. A more nuanced reading of the role of soils is therefore required, to address why gaps are present in the mapping in some places.

The degree of soil loss across the Isle of Thanet through centuries of ploughing and natural processes of erosion has been noted repeatedly by excavators and surveyors in numerous archaeological reports. For example, excavations at the early medieval cemeteries at Ozengel and Monkton reported that most graves were shallow, covered only by a thin layer of remaining topsoil, and suggested that graves not cut into the underlying chalk would almost certainly have been lost to the plough (Thanet District Council 1988, 43, 45). At five sites investigated in the vicinity of Quex Park, severe erosion by heavy ploughing was reported with archaeological features visible in the plough soil (Moody 2012).



Figure 12: Cropmarks at Woodchurch and soil Associations. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains British Geological Survey materials © 2025]

Those five sites include a scheduled monument at Woodchurch (National Heritage List for England: 1005135) (Fig. 12) where part of the field was described,

‘Regularly spaced stripes of clean natural chalk, often with raw flint nodules visible show that deep ploughing is cutting through the very shallow topsoil into the chalk geology below. The freshness and size of some of the pottery sherds collected from the monument indicate that stratified material is being ploughed out of archaeological features...In these areas there has undoubtedly been a negative impact on any surviving archaeological features.’ (Moody 2012, n.p).

In many cases the depth of soil within which buried structures remain is so shallow that they are in danger of being lost (Moody 2012); in areas of Thanet that are theoretically conducive to cropmark formation but where cropmarks have not been observed, the archaeological evidence may already have been lost.

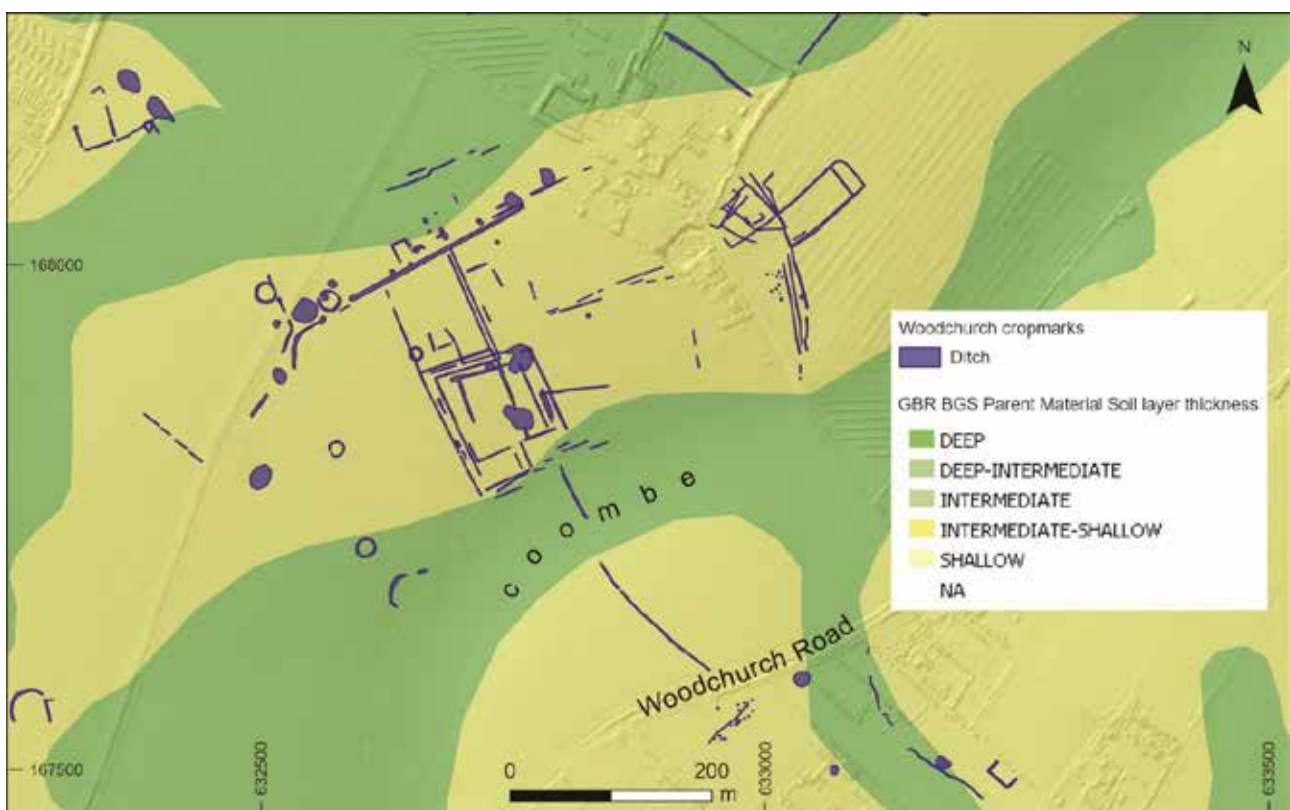


Figure 13: Cropmarks at Woodchurch and soil thickness. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. © Historic England; source Environment Agency. Contains British Geological Survey materials © 2025]

Conversely, thicker soils may act as a mask above deeply buried archaeological features (Wilson 1982 [2000], 84). For example, at the site in Woodchurch mentioned above, cropmarks revealing buried archaeology have formed over well-draining Coombe 1 and Hamble 1 soils. On average, Hamble 1 soils tend to be deeper. The southern sides of the rectilinear enclosures were mapped from cropmarks in specialist oblique photographs NMR 2639/3113 01-AUG-1985 and NMR 2137/20 28-JUN-1983. The same features were not detected by geophysical survey; the surveyors described that area as ‘masked by colluvium’ (Moody 2012, n.p). Far fewer cropmarks were mapped to the south of the complex in the direction of Woodchurch Road (Fig. 12). It is possible that the colluvium noted by the surveyors continues to the south and becomes thicker in this slightly downslope area of the field, affecting cropmark formation. This is borne out in the British Geological Survey Indicative Parent Material Soil Layer Thickness mapping, which depicts deep soils filling the slight coombe that passes through this area (Fig. 13).

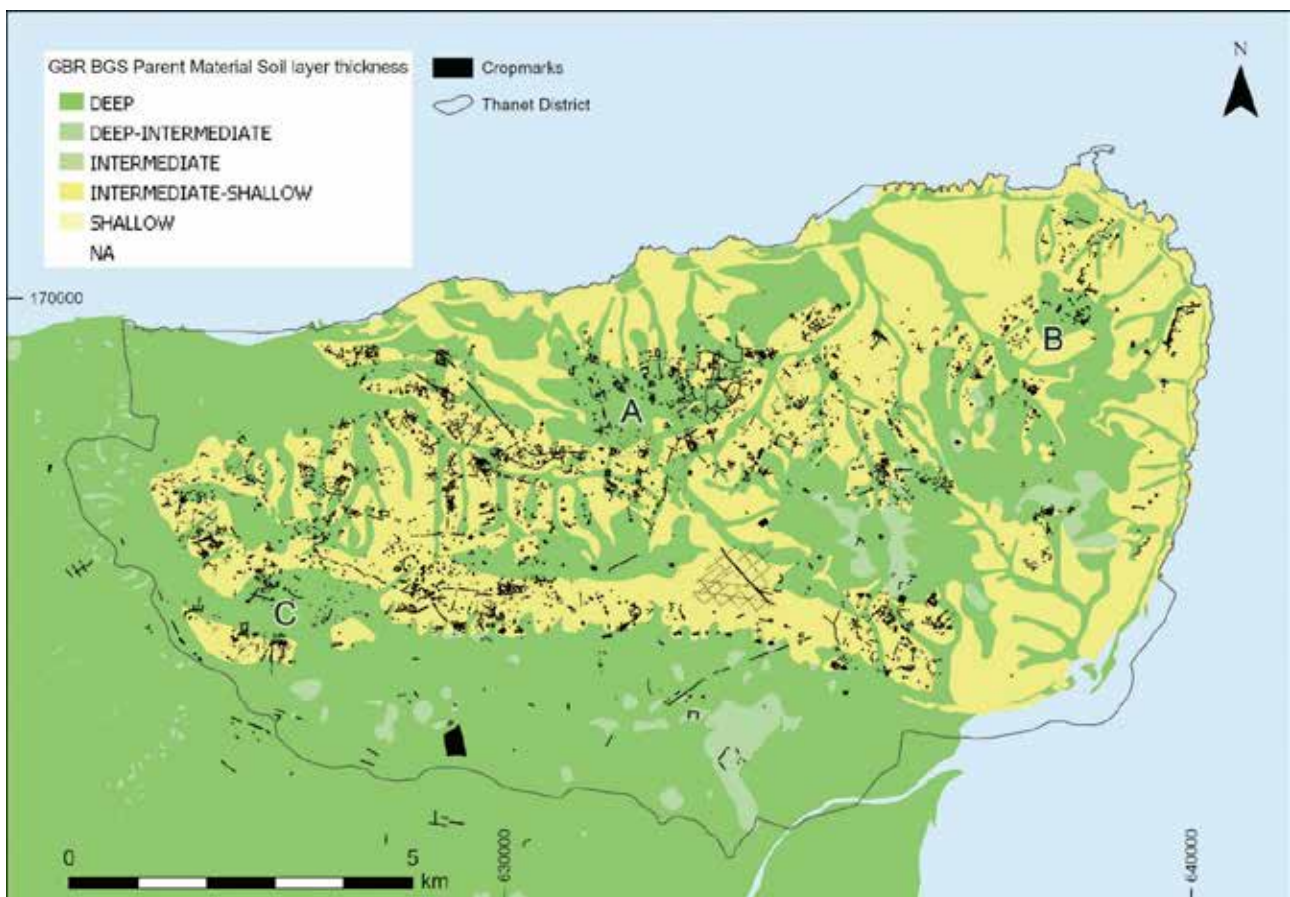


Figure 14: Cropmarks mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects with BGS Parent Material Soil Layer Thickness. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains British Geological Survey materials © 2025]

It is beyond the scope of this report to make a detailed analysis of the possible relationships between soil thickness and cropmarks at all the locations where cropmarks have and have not formed on the Isle of Thanet. The period in which soil accumulation has happened also has a bearing on which archaeological features may have been obscured. Nevertheless, a simple visual measure comparing mapped cropmarks and BGS Soil Layer Thickness shows a close affinity between cropmarks and estimated thinner soils across most of the District. The main exceptions are where cropmarks have been recorded on areas of thicker soil in the environs of Quex Park/Westgate-on-Sea/Garlinge (A in Figure 14), Northdown/Reading Street (B in Figure 14), and smaller areas at Westwood Cross, Northwood, Dumpton and south of St Nicholas at Wade (for example, C in Figure 14). Cropmarks are largely absent from built-up areas, except between Cliftonville and Kingsgate where photographs were taken prior to later 20th-century development (Fig. 14).

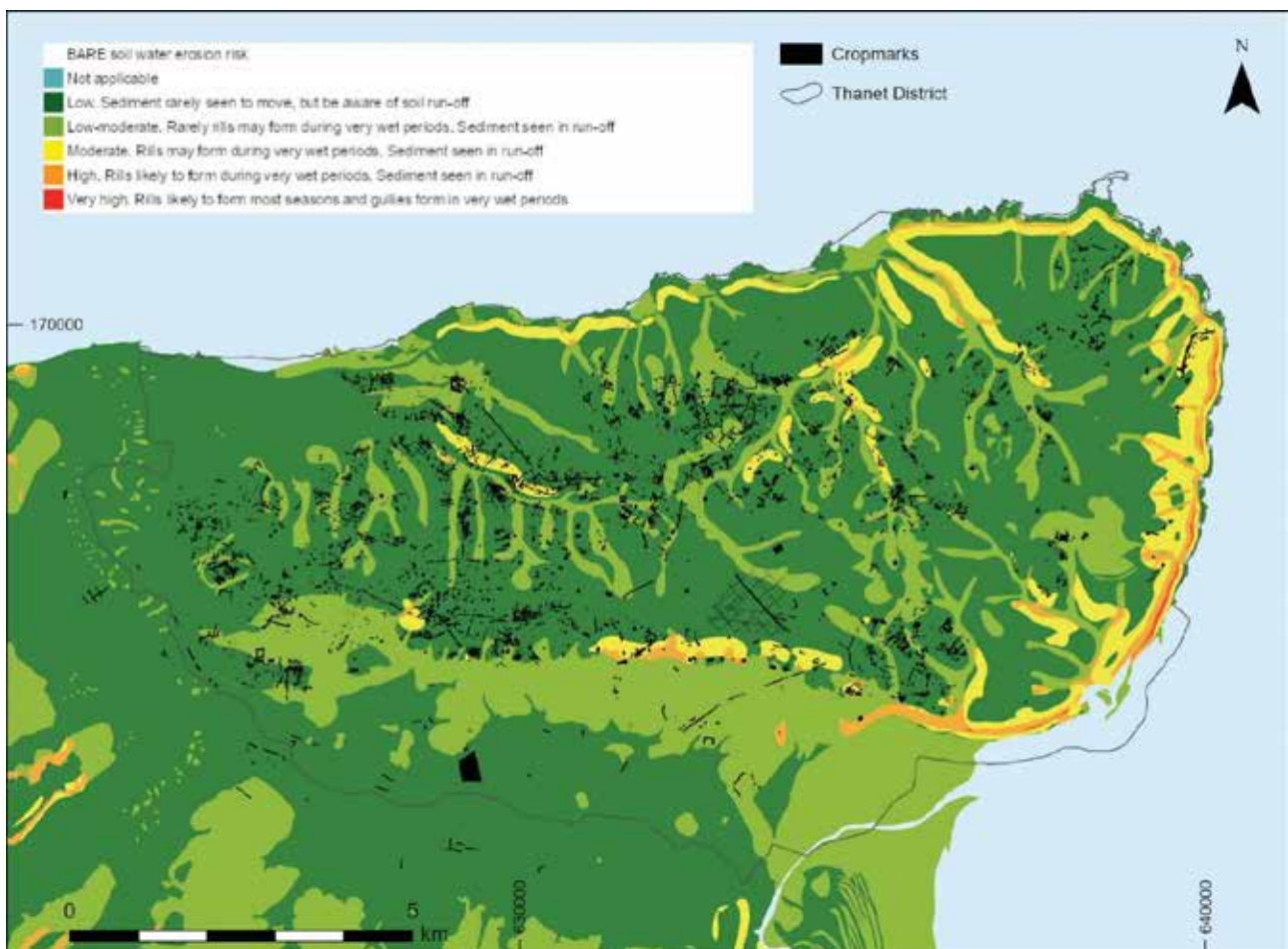


Figure 15: Cropmarks mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects with BGS Parent Material Bare Soil Water Erosion Risk. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains British Geological Survey materials © 2025]

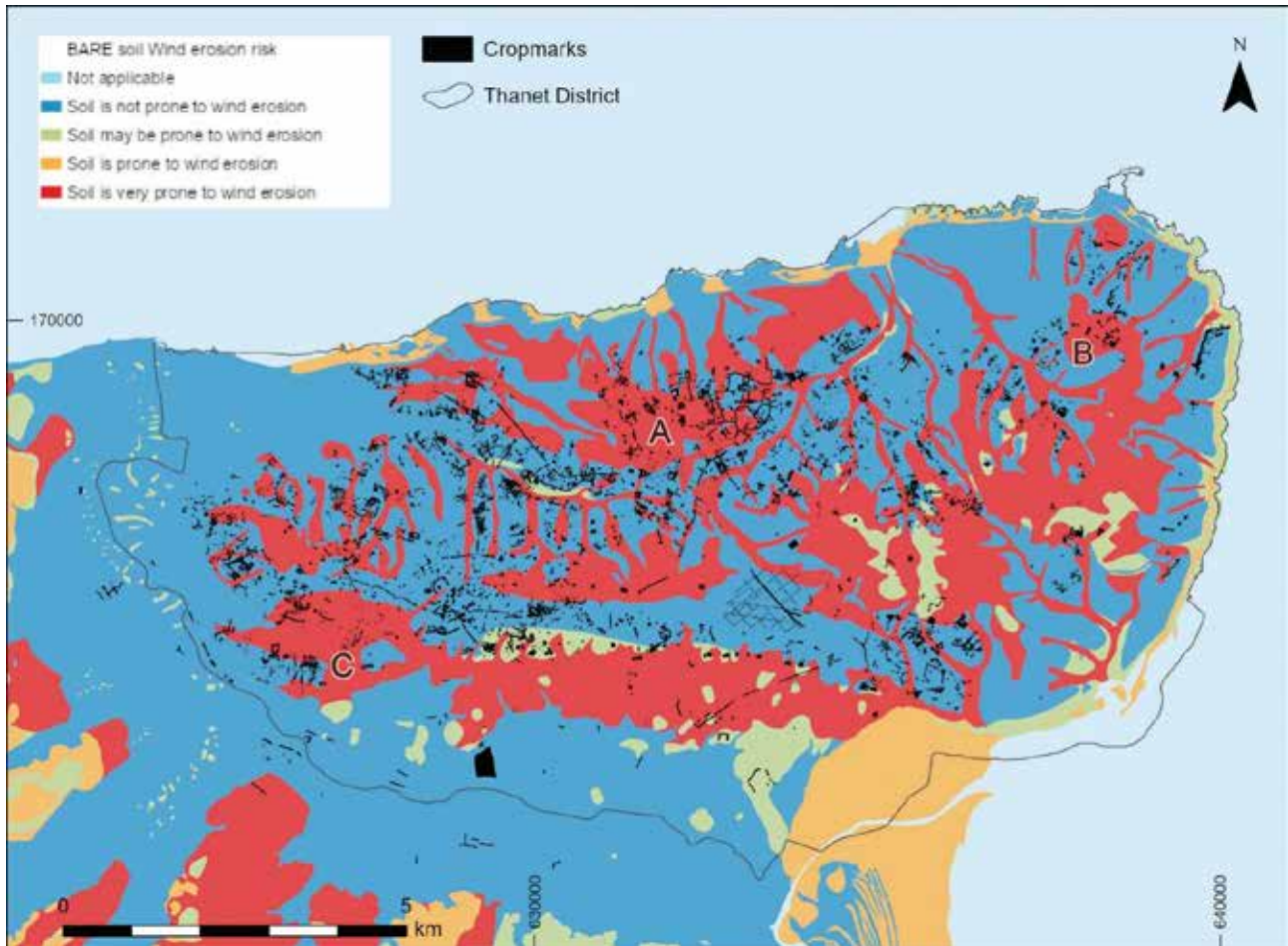


Figure 16: Cropmarks mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects with BGS Parent Material Bare Soil Wind Erosion Risk. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains British Geological Survey materials © 2025]

The risk of water and wind erosion to the soils on which the majority of mapped cropmarks have formed is on the whole low, evidenced by the British Geological Survey Bare Soil Water Erosion risk mapping and Bare Soil Wind Erosion risk mapping (1:50,000 scale) (Lawley 2021; British Geological Survey 2025).¹ Making a simple visual comparison, cropmark sites have formed largely on the Thanet plateau and gentler dip slopes, at overall low estimated risk of water erosion. Fewer cropmarks seem to appear within the

¹ BGS Bare Soil Water and Wind Erosion risk mapping can also be viewed on the UKSO data portal as part of the Agronomy group (<https://mapapps2.bgs.ac.uk/ukso/home.html>, accessed 1 May 2025). It is calculated using the BGS Soil Parent Material Map v6 dataset, the Industrial Minerals Assessment Unit Sand and Gravel dataset and OS Terrain 50.

dendritic dip slope valleys and coombes that are at low to moderate risk of water erosion. They are not, however, entirely absent from such locations (Fig. 15).

Similarly, most cropmarks are appearing in soils that are not prone to wind erosion, with notable exceptions including in the environs of Quex Park/Westgate-on-Sea/Garlinge (A in Figure 16), at Northdown/Reading Street (B in Figure 16) and north-east of Sarre (C in Figure 16), where wind erosion risk is estimated to be high (Fig. 16).

Although cropmarks are on the whole likely to appear on the thinner soils, on the basis of these simple visual comparisons there is not a strong correlation between areas at particular risk of soil erosion by water or wind and the visibility of archaeological features as cropmarks. The anecdotal evidence (mentioned above) of plough damaged archaeology that nonetheless has been expressed as cropmarks in later 20th-century photographs serves to emphasise the importance of accessing and consulting all available aerial sources including archival collections, to create as full an archaeological record as possible.

Part of the problem in assessing whether or not thinning soils are adversely affecting cropmark formation is the very fact that our picture of cropmark distribution is built up from these numerous sources, of all dates. In an area of thinner soil such as north of Monkton and Hoo, cropmarks have been mapped from images dating from 1944 to 2024. Around two-thirds of the feature polygons there were mapped from sources post-dating 2000. This is not to say that soil erosion is not having a detrimental effect on buried archaeology. Rather, differences within individual fields, as in the Woodchurch example above, and those locations where cropmarks appear over thicker soils but apparently not so often over Tertiary/Quaternary deposits, suggest that other factors are contributing to cropmark distribution. Although earthwork sites were more rarely recorded by the Thanet project, they are distributed across the District. Their often ephemeral nature, denuded by cultivation, and the predominance of cropmark sites where plant growth is being affected by buried archaeology, indicate that agricultural practices are a strong influence on the visibility and detection of archaeological features on Thanet.

Agricultural influences

Using relevant Kent Historic Landscape Characterisation Areas, about 3,717ha (33%) of the area of Thanet District is built up (these figures are based on HLCA polygons and do not include, for example, out-of-town road surfaces). Much of the built up area comprises post-1801 settlement (Munby 2014), established during the 19th and 20th centuries with the expansion of seaside communities on the coastal fringe. The industrial area around RAF Manston/Kent International Airfield accounts for another significant developed area,

albeit including ‘windows’ of paddocks and grass where archaeological features may be visible in aerial sources. Around two-thirds of Thanet is under some form of agricultural or horticultural use (Fig. 17).

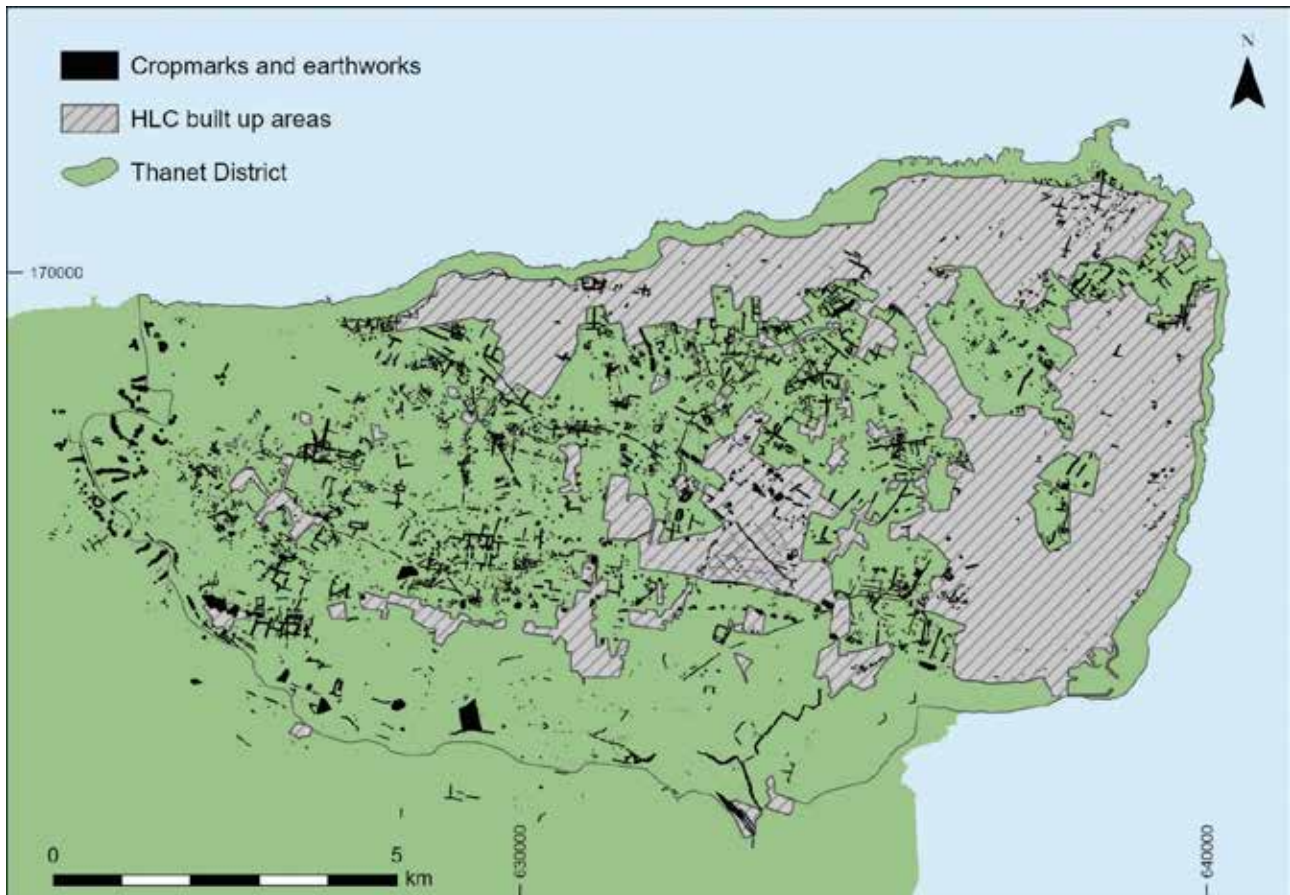


Figure 17: Cropmarks and earthworks mapped by the Thanet, Ramsgate HAZ and SE RCZAS projects with built up areas defined as Kent Historic Landscape Character Areas 8.5, 9.1, 9.2, 9.6, 9.7, 9.9, 9.11, 12.3, 12.4, 12.6 and 13.3 (Munby 2014). [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

In their analysis of the relative distributions of cropmarks and earthworks/levelled earthwork in West Wiltshire, Last et al. (2017) explored some of the impacts that land use and cultivation there had on the distributions of archaeological monuments recorded by aerial survey. For example, they noted that the highest proportion of earthworks and levelled earthworks had been mapped on clay lands. On those heavier soils, earthworks (especially ridge and furrow) were less likely to have been ploughed up; but where modern farming methods had been used to support the reversion of pasture to arable, more earthworks had been levelled even to the extent that earlier, underlying features were now appearing as cropmarks (Last et al. 2017, 124–6). Both Last et al. (2017) and Evans et al.

(2012), working in the East Riding/Hull Valley, used Agricultural Land Classification (ALC) Grades as a proxy for farmed land use.² Both projects recorded the highest density of monuments overall on Grade 4 land ('poor', mostly given over to pasture), and the most cropmarks on the best quality Grade 1 and 2 land ('excellent', 'very good') dominated by arable (Evans et al. 2012, 58–60; Last et al. 2017, 127–8).

Cropmark and earthwork sites are prevalent across Thanet. The District does not exhibit such strong distribution differences of cropmarks and earthworks as in the West Wiltshire and East Riding/Hull Valley project areas mentioned above. Furthermore, the area encompassed by the Thanet and Ramsgate HAZ project boundaries is overwhelmingly Grade 1 and 2 land (6,832ha, 61.5%). There is no Grade 4 land in the District and only 7ha within the combined project study areas. Urban and Non-agricultural land accounts for 3,157ha (28.4%) in the combined project study areas (a similar assessment to the 3,717ha accounted for in the District using relevant HLC Areas, see above) (Table 2).

Table 2: Agricultural Land Classification, with counts of feature polygons mapped by the Thanet, Ramsgate and SE RCZAS projects, within the combined Thanet and Ramsgate HAZ project study areas.

ALC	area (ha)	area (%)	cropmark feature polygons (N)	cropmark feature polygons (%)	earthwork feature polygons (N)	earthwork feature polygons (%)
Grade 1	4,532	40.8	7,912	71.2	1,010	36.7
Grade 2	2,300	21.7	1,434	12.9	608	22.1
Grade 3	909	8.2	326	2.9	235	8.6
Grade 4	7	0.1	0	0	0	0
Grade 5	195	1.8	4	<1	34	1.2
Urban	2,927	26.4	976	8.8	533	19.4
Non-agricultural	230	2.1	466	4.2	329	12.0
total	11,100	100	11,118	100	2,749	100

Most mapped cropmark and earthwork feature polygons are located on the best quality land; some 9,346 cropmarks (84%) and 1,618 earthworks (59%). To an extent, this is simply a reflection that most of Thanet's undeveloped area comprises Grade 1 and 2 land.

² Grade 1, Excellent quality; Grade 2, Very good; Grade 3, Good to moderate; Grade 4, Poor; Grade 5, Very poor (Ministry of Agriculture, Fisheries and Food 1988).

More cropmark and earthwork feature polygons were recorded on Urban/Non-agricultural than Grade 3 land (Table 2). Again, this is in part because nearly one third of Thanet is built up (28.5%) compared with the small proportion of Grade 3 land (8.2%); and because cropmarks on Non-agricultural land include the former location of more than 400 Second World War anti-landing poles arranged over RAF Manston's outfield, whose positions were revealed by parching seen in vertical aerial photographs dating to 1 June 1942. A close inspection also shows that many features in Urban areas were recorded from aerial sources that pre-date housing development (for example, between Cliftonville and Kingsgate) or appear on ground such as golf courses or urban green space.³ The Grade 3 land is in the Wantsum Channel, coinciding with the very lowest lying ground at or below the present-day 5m aOD contour. There, fewer archaeological features have been observed overall on the Newchurch 2 soils (see above). The exceptions are Grade 3 land on Hamble 1 soils at Plumpudding Island, formerly occupied by military defences, and a slightly elevated area of Grade 3 land near Little Brooksend Farm where cropmark complexes, including a Roman villa site (Kent HER: TR 26 NE 71), have developed on a spur of Coombe 1 soils.

Using ALC data as a proxy for land use to explore the impact of cultivation regimes on archaeological visibility is less satisfactory on Thanet than it was for the analyses by Last et al. (2017) and Evans et al. (2012). There is not a large enough differential of land quality in the ALC schema over the District and both cropmarks and earthworks are present extensively across Thanet. In order to explore possible agricultural influences on archaeological visibility more effectively, it is necessary to focus on the detail of crop regimes at specific sites.

As a case study, we examine an area of about 82ha of farmland between Lydden and Haine in Manston parish, north-west of Ramsgate (Fig. 18). The area is bisected by a trackway linking Lydden and Coldswood Farm. Numerous cropmarks and earthworks have been mapped to the east of the trackway but far fewer have been recorded to the west. An extensive archaeological evaluation of the eastern area (O'Shea-Walker and Helm 2017) has investigated elements of its multi-period cropmarks, most of which were found to be representative of Roman boundary, enclosure and trackway ditches. On the western side, a ditch forming part of a rectilinear enclosure near Manston Court Road (recorded by this

³ It should be noted that the ALC Grade polygons are quite generalised. They do not map precisely to the coastline and in some places on Thanet, land classified by agricultural quality was in fact developed some years ago and might be expected to be included in the 'Urban' classification. ALC grading does not necessarily reflect the current land use (Ministry of Agriculture, Fisheries and Food 1988, 8). The statistics discussed here should be treated as indicative, with ALC (which was introduced in the 1960s) being used as a proxy for land use.

project as a cropmark) was sectioned in 1980, revealing 'Romano-British sherds' (unpublished, Kent HER: TR 36 NE 175).

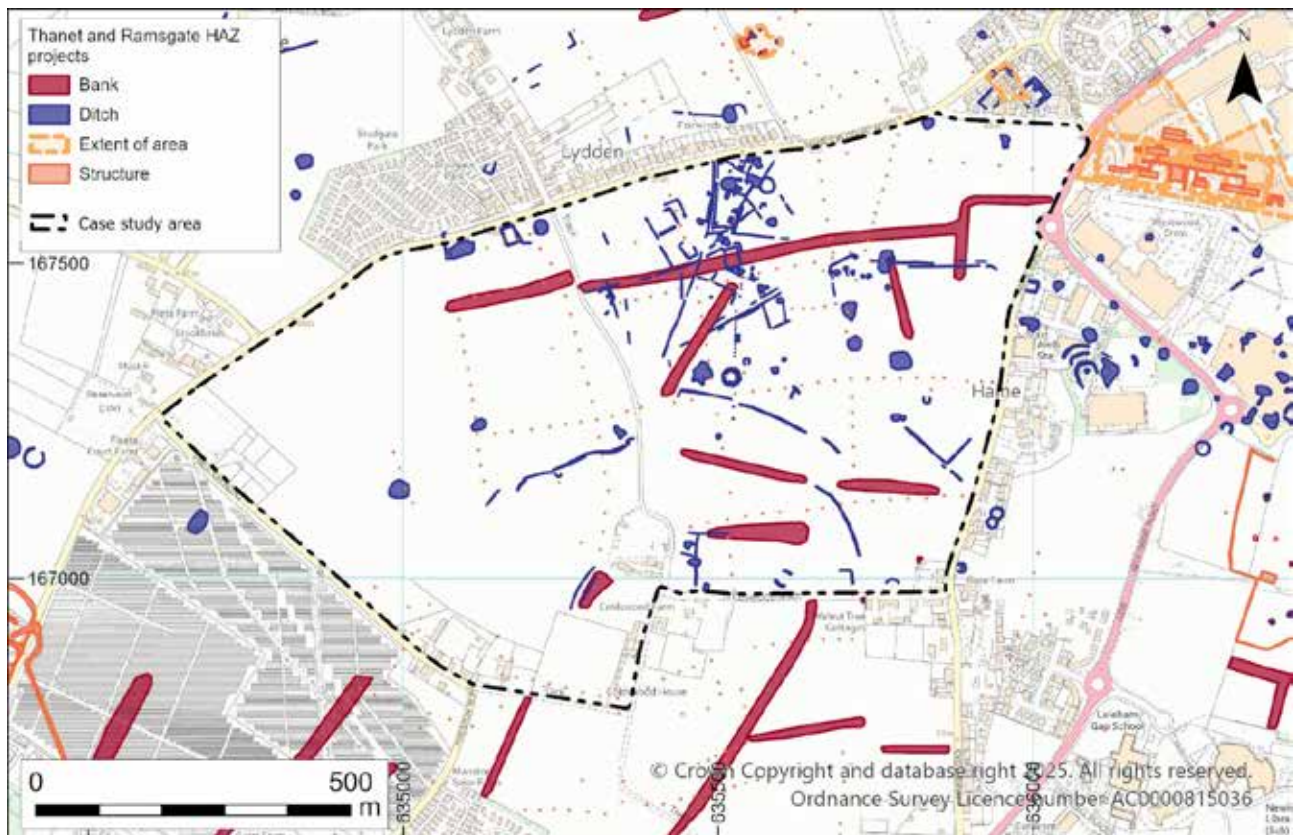


Figure 18: Cropmarks and earthworks mapped by the Thanet and Ramsgate HAZ projects in the environs of Lydden and Haine. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The cropmarks were mapped from multiple sources (discussed below) whereas the earthworks were all mapped from Environment Agency 1m lidar (07-DEC-2017), apart from a Second World War slit trench that was recorded from vertical aerial photograph RAF/HLA/380 IPRU 962 15-DEC-1941. A grid of contemporary anti-landing posts was mapped across the fields as structures, also from the 1941 vertical photography. The difference between feature density either side of the trackway is noticeable, despite the fields having similar areal extent.

The case study area is on the Margate Chalk Member, with some outcropping Thanet Formation deposits largely on the east side. Superficial Head1 deposits fill a shallow coombe that descends from south to north, while Head2 deposits mantle the highest ground on the east and west at around 50m aOD. The main area of cropmarks on the east side is over the chalk, largely to the east of the Head1-filled coombe, on a gentle

west/south-west facing slope. A few cropmark fragments have been recorded over both the Thanet beds and Head1. Far fewer cropmarks have been mapped over the chalk on the west side where there are also fewer earthworks (Fig. 19).

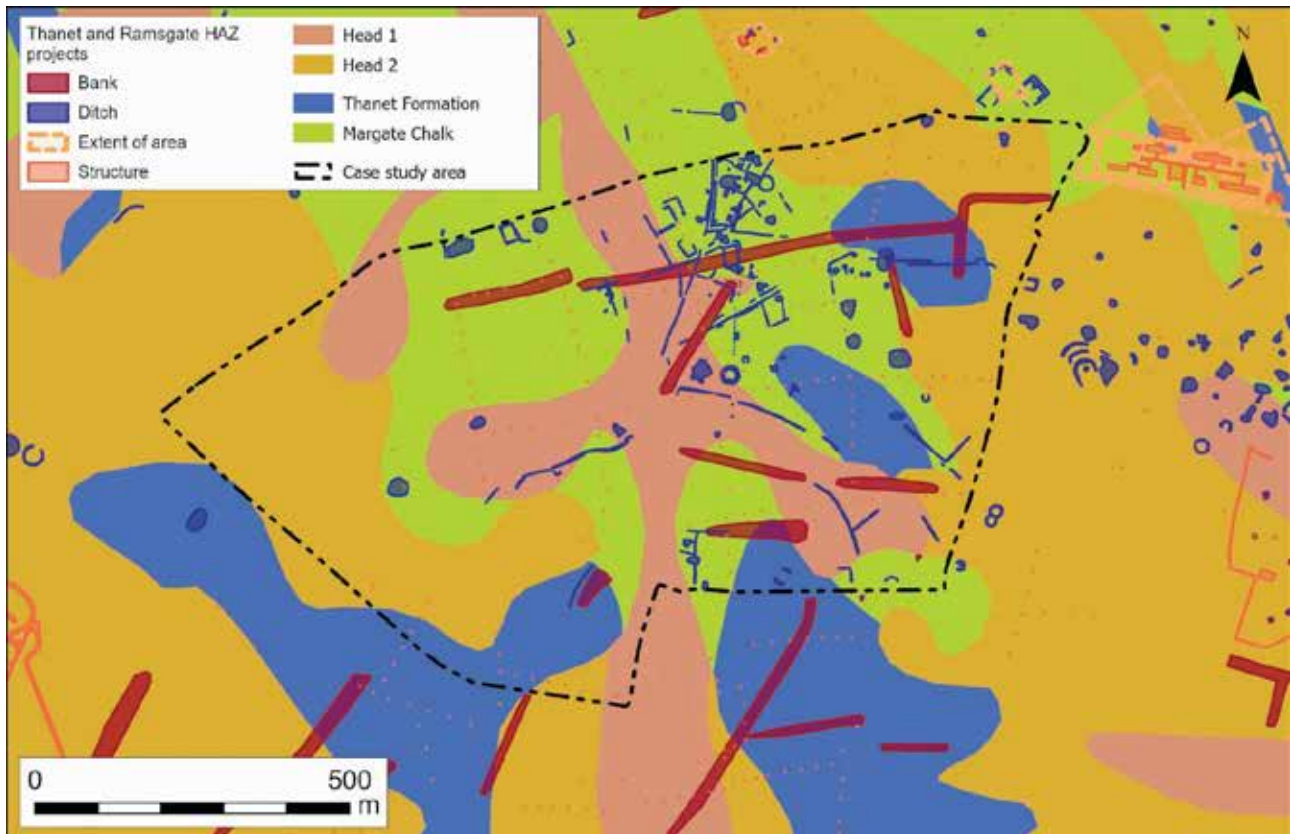


Figure 19: Cropmarks and earthworks mapped by the Thanet and Ramsgate HAZ projects in the environs of Lydden and Haine, with bedrock and superficial geology. [Archaeological mapping © Historic England. Contains British Geological Survey materials © 2025]

Almost all of the case study area is on Hamble 1 soils, with a small area of Coombe 1 soils on the north side (Fig. 20). Within the case study area, the Coombe 1 soils directly overlie Margate chalk whilst the Hamble 1 soils overlie chalk, Thanet beds and superficial deposits in places. As expected from the discussion above (see Environmental Influences), cropmarks have developed in both soil Associations, with the majority in locations where thinner soils overlie the Margate chalk and fewer observed on soils that overlie Tertiary/Quaternary deposits (Table 3). Given this typical cropmark distribution over these soils and geological deposits, the lack of observed cropmarks in the western half of the case study area – where the soils overlying Margate chalk should be just as conducive to cropmark formation – may be due to the cultivation/crop history; or be a genuine gap in archaeological evidence.

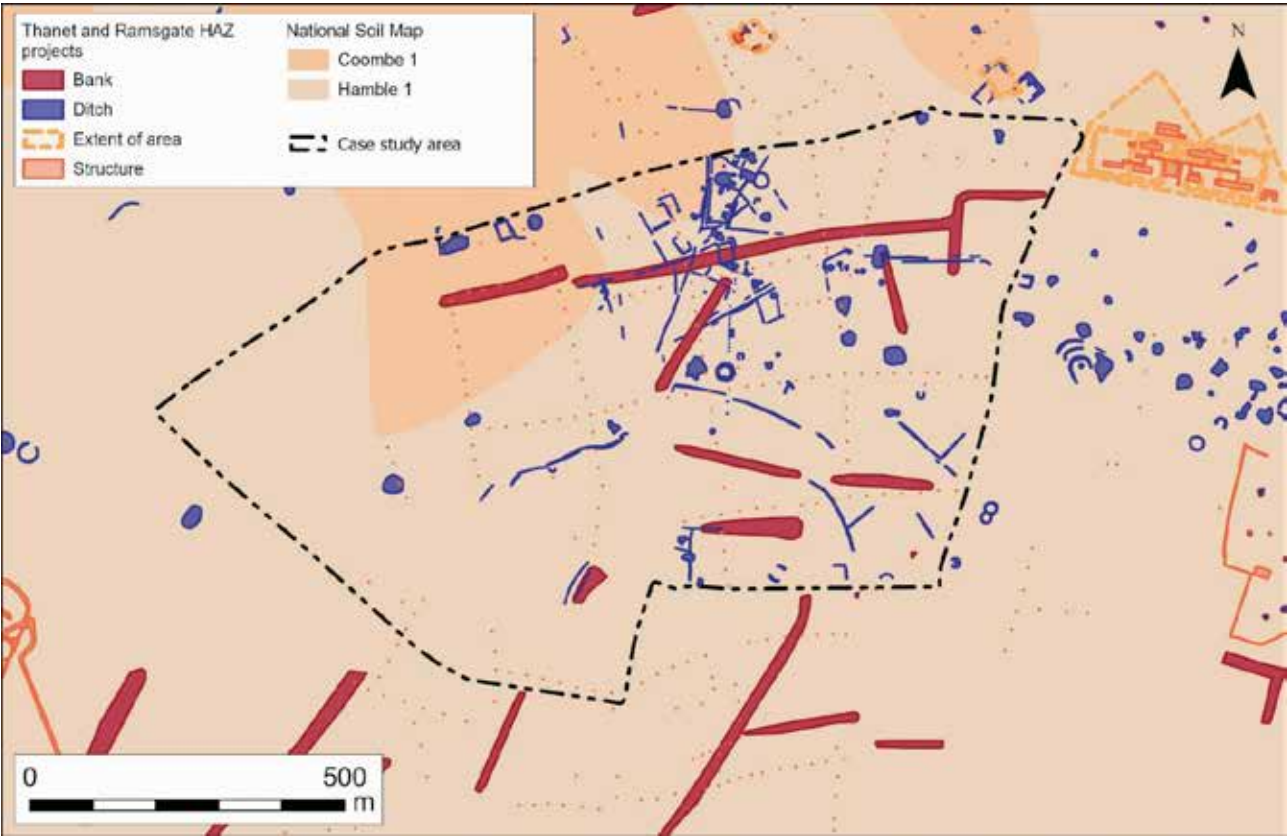


Figure 20: Cropmarks and earthworks mapped by the Thanet and Ramsgate HAZ projects in the environs of Lydden and Haine, with soil Associations. [Archaeological mapping © Historic England. Contains British Geological Survey materials © 2025]

Table 3: Indicative count of case study area cropmark feature polygons by soil Association and underlying geology (note, some features, such as linear ditches, cross soil and/or geology boundaries and may be counted more than once).

cropmarks	Hamble 1 soils	Coombe 1 soils
over superficial deposits and/or Thanet beds	76	0
over Margate chalk	143	59

The cultivation history of the case study area may be explored using a selection of the numerous available aerial sources. The selection discussed here provides cover of the area roughly every 15 years. The earliest available photographs covering the area date to 15 December 1941. None of the cropmarks or earthworks were mapped from that Winter imagery. A mosaic of three frames from the flight's run that covers most of the case study area (RAF/HLA/380 STDB 961-963 15-DEC-1941) reveals through differences in tone and texture that the large un-hedged fields were divided into plots for different crops using

successional planting practices to ensure a steady flow of produce. At the time of this photography, that included a block and strips of leafy crops either side of the former Coldswood chalk pit, for example. The main cropmark complex area to the east of the trackway is being ploughed; tonal difference from left to right indicates where the ploughing began, the most recently broken soil being the darkest. To the west of the trackway, the field use has been more varied in the previous growing season as shown by the mix of ploughed plots, smoother paler unploughed ground and strips still carrying a leafy crop (Fig. 21).

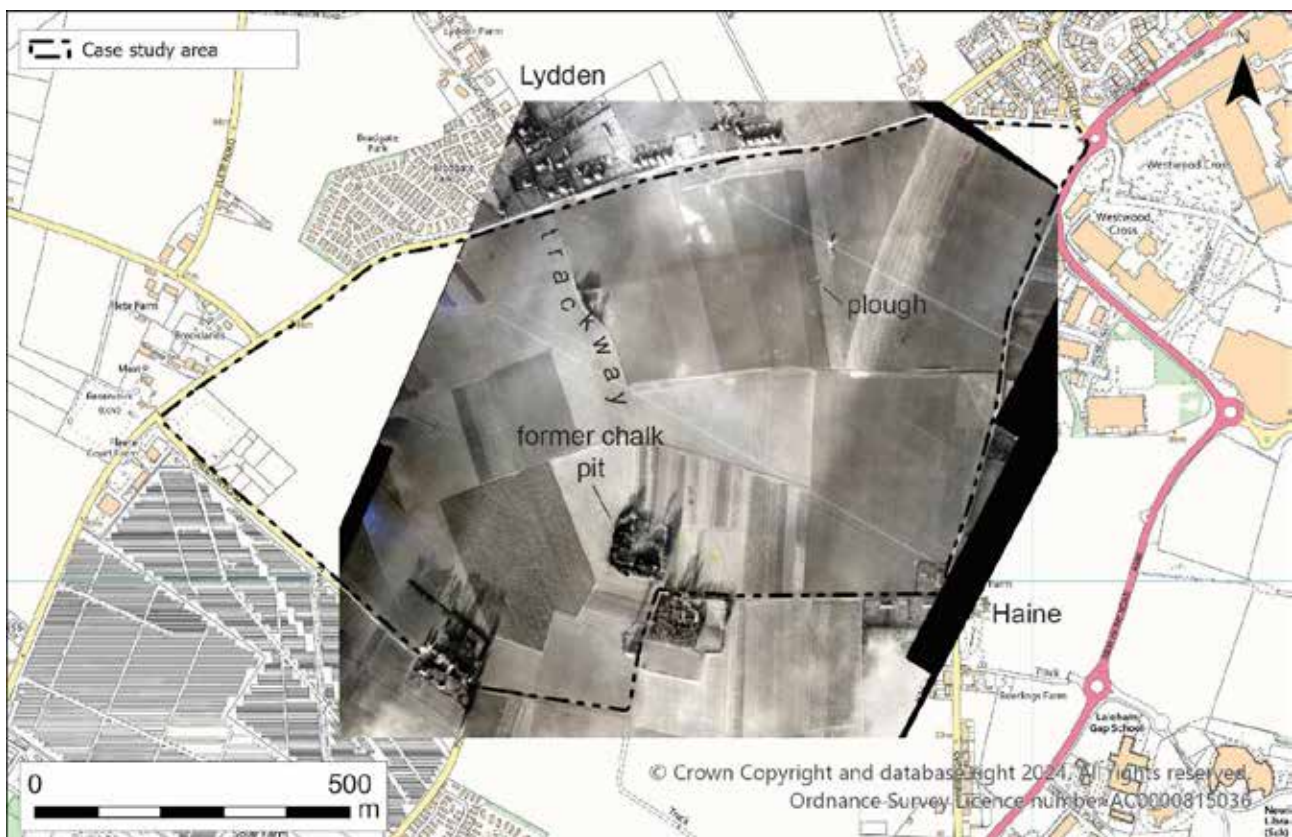


Figure 21: Lydden and Haine environs on 15 December 1941. [RAF/HLA/380 STDB 961-963 15-DEC-1941 Historic England Archive (RAF Photography). Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

By 22 May 1950, the large open-area fields were being used in a similar way as in 1941, but in slightly larger plots. The main cropmark complex area is divided into three sections, indicated by tonal and textural differences. In the righthand section, the conditions are such that some cropmarks have formed. To the south, the position of a double concentric ring ditch (Kent HER: TR 36 NE 652) is the only feature showing as a cropmark with any clarity in its crop. In contrast, none of the archaeological features to the west of the

trackway are showing; the favourable conditions that have affected parts of the eastern area are not effective in the western plantings at this precise time (Fig. 22).

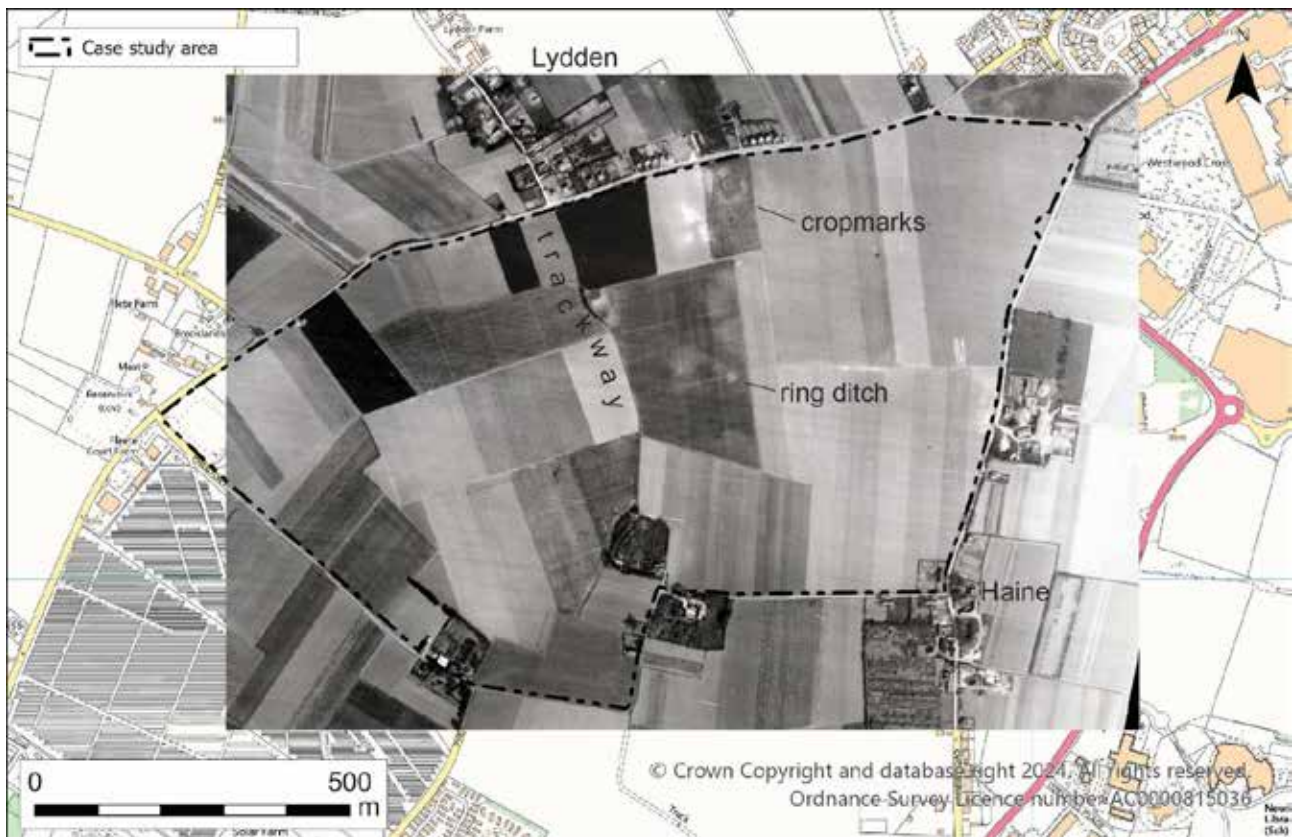


Figure 22: Lydden and Haine environs on 22 April 1950. [RAF/541/508 RS 4034 22-APR-1950. Historic England Archive (RAF Photography). Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Specialist oblique photographs of the area were taken from the late 1950s onwards. The earliest are CUCAP images and thus unfortunately are not available at the present time. A few scans may be seen online. For example, frame ALA74 taken on 4 June 1965⁴ includes much of the eastern part of the case study area. The double concentric ring ditch mentioned above, parts of a nearby trackway and a group of pits are visible as cropmarks in the crop closest to the camera, but the area nearest to Manston Court Road is being used differently and in consequence there is much poorer definition of only a little of the main cropmark complex.

Cropmarks on both sides of the trackway were photographed on 16 July 1979, including much of the main complex to the east and the medieval settlement site alongside Manston

⁴ <https://www.cambridgeairphotos.com/location/ala74/> (accessed 21 February 2025).

Court Road on the west (Fig. 23). There appear to be similar crops in both fields at that time. The eastern field was sown roughly east/west whilst the western field was sown roughly north/south, as indicated by the tractor 'tramlines' visible in the growing crops. Under the prevailing conditions, the apparent lack of cropmarks to the south of the medieval settlement site on the west suggests the 'gap' on that side could be archaeological.

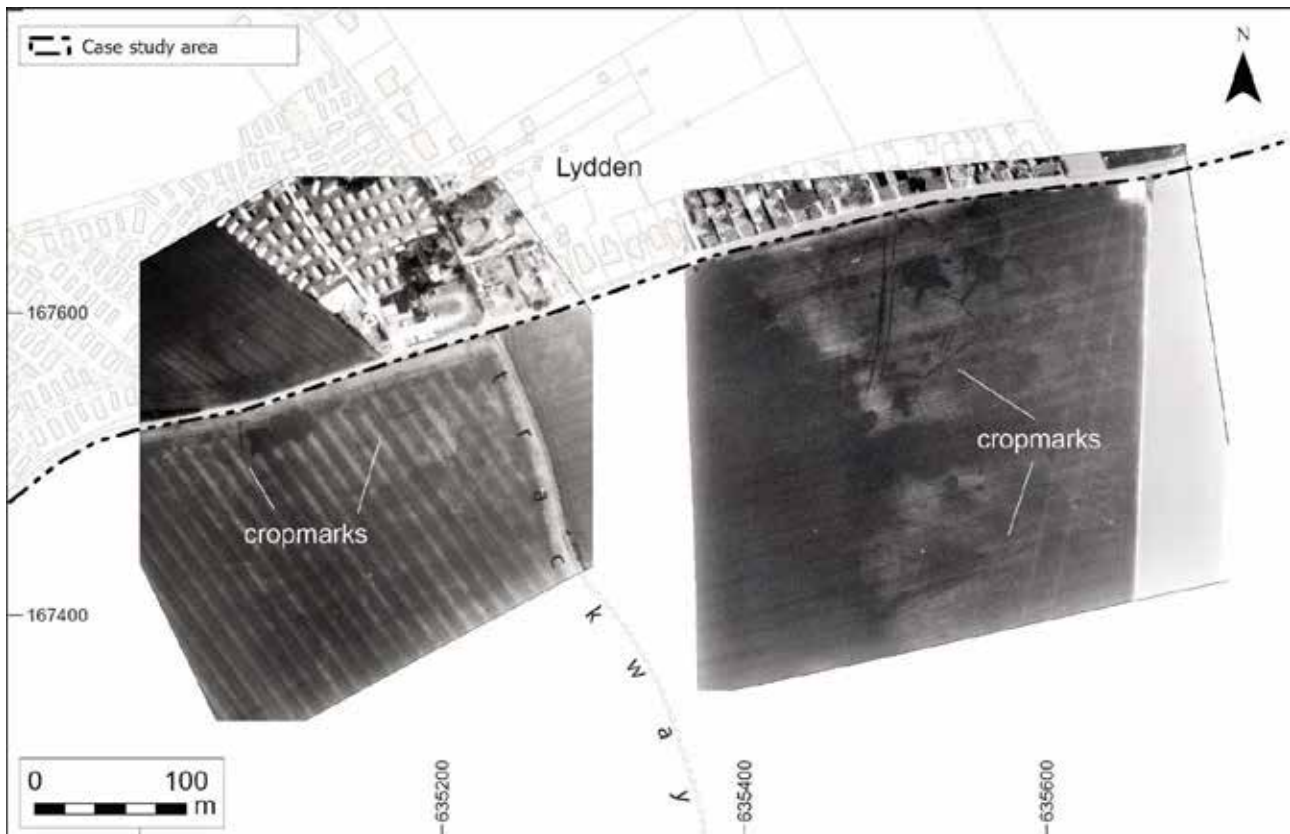


Figure 23: Lydden and Haine environs on 16 July 1979. [NMR 1661/305 and NMR 1661/315 16-JUL-1979 © Crown copyright. Historic England Archive. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Some of the cropmarks in the case study area were mapped from a mosaic of Kent County Council vertical prints flown in the Summer of 1990, available on Google Earth Pro. The 1990 coverage is an interesting contrast to the photography discussed so far, because the main cropmark complex does not show at all. Although the prevailing conditions have caused cropmarks to form over some archaeological features to the west of the trackway, and in the far eastern part of the case study area, the central area is at a different stage of cultivation (bare soil or a recently sown crop) (Fig. 24).

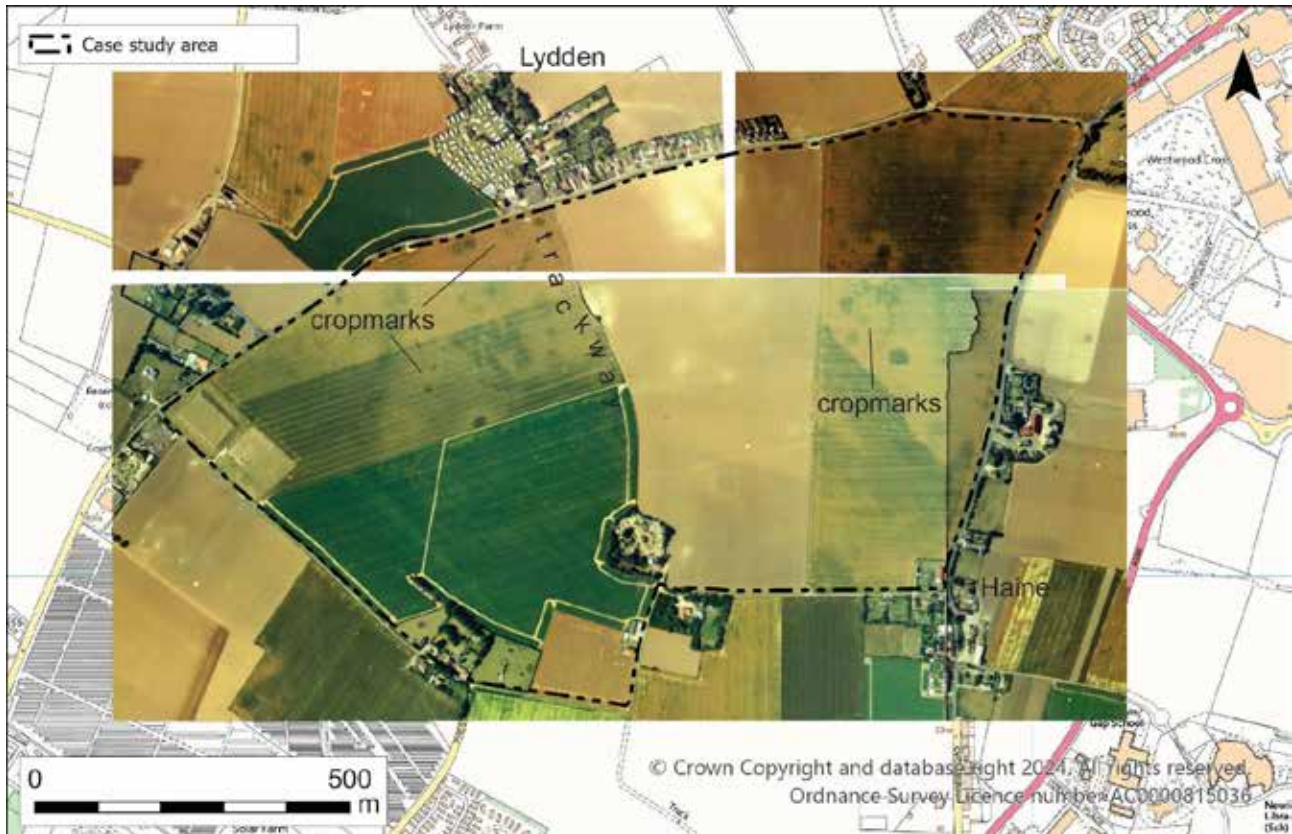


Figure 24: Lydden and Haine environs in Summer 1990. [EARTH.GOOGLE.COM 1990, Maps Data: Google, © 2025 Kent County Council Image Landsat/Copernicus. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Most cropmark feature polygons in the case study area were mapped from APGB imagery flown on 21 April 2007 (Fig. 25). The clarity of the main cropmark complex in that imagery is worth focussing on, because it appears in a cereal crop that can be seen growing over a large area to the east of the trackway. The whole area to the west is bare soil. At what otherwise appears to have been a good moment for cropmark formation, serendipitously captured in the digital orthomosaic, the cultivation regime on the west side means that no features are visible. At the time of the most recent APGB imagery used by this project, dated 7 April 2021, around three-quarters of the whole case study area was given over to Winter Wheat (Rural Payments Agency 2021). Despite that uniformity, the only cropmark that can be seen with any clarity in 2021 is one large extractive pit. Presumably any Soil Moisture Deficit in the fields at that time was too small to yet have an impact on the plants, unlike in the same month in 2007.



Figure 25: Lydden and Haine environs on 21 April 2007. Key cropmarks are annotated including the position of a pit alignment of uncertain date and: a, round barrows; b, Iron Age/Roman enclosures and trackways. [APGB Imagery 21-APR-2007 © Bluesky International Limited and Getmapping Limited 1999-2023]

In this case study area in the environs of Lydden and Haine, cultivation regimes can be seen to have changed over the years from much more mixed cropping in plots of varying size, to larger areas of uniform crop. A consequence of the older patterns is that archaeological features have appeared sporadically, depending on the crop grown in any one plot. Although successional planting practices have continued, the aerial sources since 1979 show a trend towards more uniform cultivation. Under these circumstances, a combination of the prevailing conditions and the timing of flights has an influence on whether or not cropmarks may be observed in aerial sources. The geology, soils and topography of the 'empty' western part of the case study area are suited to cropmark formation, but on the majority of occasions the cultivation regime there has not been appropriate at the time that a camera has been airborne. Although coverage in 1979 suggests that fewer cropmarks to the west of the trackway may be a real archaeological phenomenon, it is inappropriate to draw this conclusion from a single source alone. It remains to be seen whether or not archaeological features are present in the apparent 'gap'.

Archaeological influences

The nature of archaeological sites themselves is an influencing factor in their visibility from the air. This includes how substantial earthwork sites may have been to resist denudation by later cultivation; how desirable or substantial historic structures may have been to avoid demolition; and whether or not now buried features were in use long enough, and were deep or wide enough to promote cropmark formation. Wilson (1982 [2000]) describes some of the ways in which archaeological features influence cropmark and soilmark formation. For example, where the deposits filling cut archaeological features like pits or ditches are very similar to the surrounding subsoil, they will be hard to distinguish as soilmarks and less likely to produce distinguishing cropmarks. Soilmarks will not show where buried features are not cut by the plough (of particular relevance where minimum-tillage or no-tillage farming methods are practised). Slight features, deeply buried features, or features cut into others may not give rise to cropmarks. Small, fine or narrow features may not develop visible cropmarks, even when all other circumstances are favourable, if the plant spacing is too coarse, or when planted rows are parallel with, rather than at an angle to, the buried archaeology (Wilson 1982 [2000], 84–7).

That there may be differences between the picture of a site gathered from cropmarks and the site's features as latterly revealed by excavation has long been understood.

Excavation of the Little Woodbury Iron Age enclosure near Salisbury, Wiltshire (Bersu 1940) was prompted by the crisp, detailed cropmarks captured in an aerial photograph taken on 16 May 1929 (Crawford 1929). The main enclosure ditch and many of its interior pits and hollows were distinguishable in the photograph. However, neither of two narrow, shallow palisade ditches measuring about 0.25m wide and never more than 0.2m deep, nor any of the post-holes that were revealed in plan by Bersu's open area excavation method, were visible as cropmarks (Bersu 1940, 46, 78). In contrast, at the West Kennet Palisades, Avebury, Wiltshire, where excavation trenches were placed with respect to cropmark transcriptions from multiple aerial photographs, a curved ditch of Structure 5 and features that transpired to be large post-holes and part of a badger sett were revealed, all of which had been mapped from the aerial imagery (Barber 2013; Pollard et al. n.d., 19–20). The latter example highlights the importance of viewing all available imagery for any given location, whereas the Little Woodbury project referenced only one photograph.

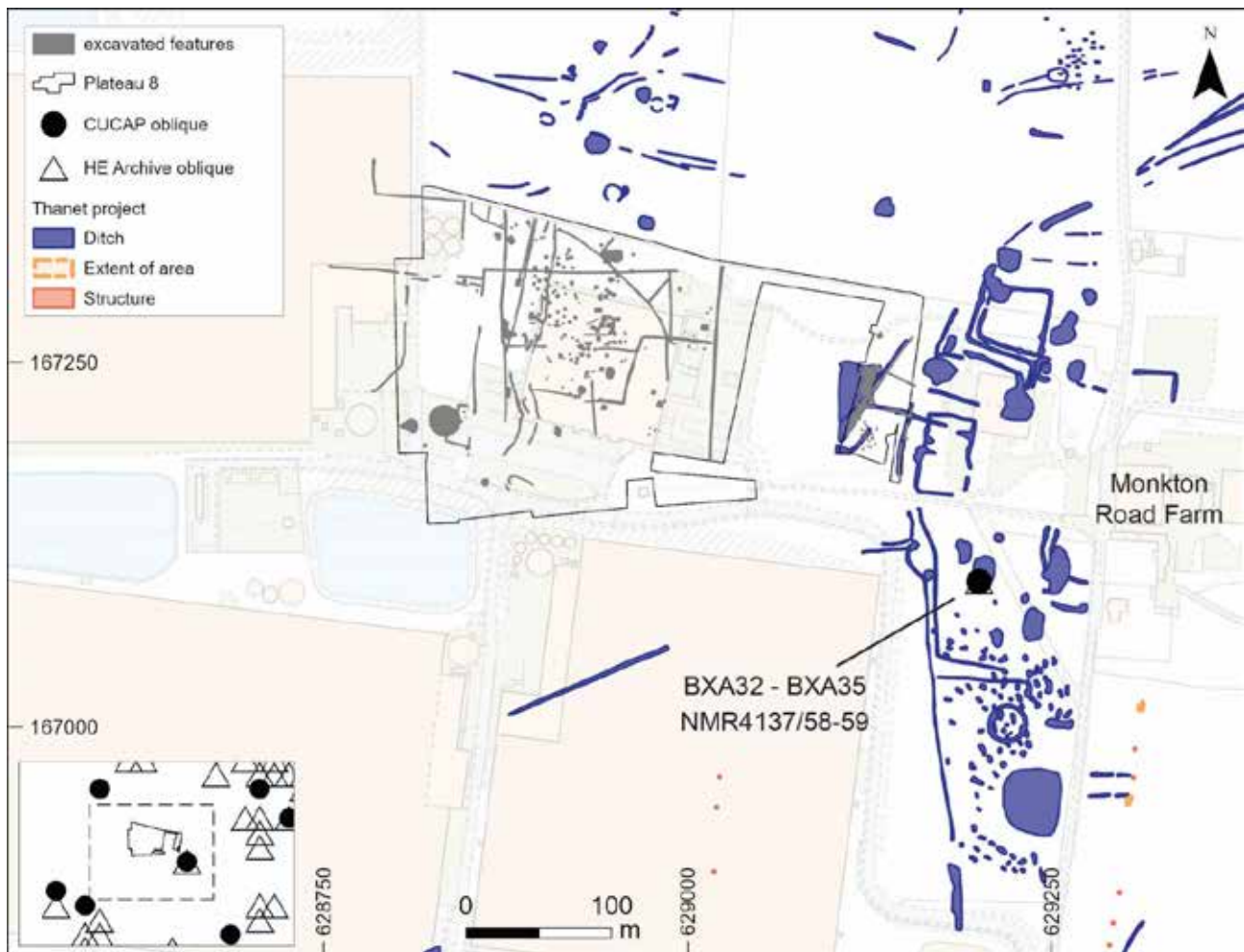


Figure 26: Thanet project mapped features near Monkton Road Farm and the 'Thanet Earth' Plateau 8 excavation area. Inset map bottom left shows the Plateau 8 trench location and main map extent with the position of CUCAP and HE Archive specialist oblique aerial photographs. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

As a case study where the archaeological features themselves might have influenced site visibility from the air, we explore the northern-most area of Thanet Earth, a suite of horticultural glasshouses and their supporting infrastructure at Monkton Road Farm. A cropmark complex was mapped in the environs of the farm, largely to the west side of Seamark Road over an area of land measuring at most 140m from east to west. The cropmarks include Iron Age/Roman trackways, enclosures and field boundaries, an early medieval cemetery, the ring ditch of a Bronze Age round barrow and medieval/post-medieval extractive pits (Fig. 26). Some of these features had previously been mapped and recorded by Alison Deegan (2009). More imagery was available to the Thanet project since that 2009 report and the features were mapped from a combination of: CUCAP specialist obliques BXA32 and BXA34 flown on 04-JUN-1976; APGB orthomosaics (15-

MAY-2012 and 14-APR-2015); vertical frame OS/64018 V 28 12-MAY-1964 and a Google Earth orthomosaic dated to May 2022. Other Historic England Archive specialist obliques flown on 18 July 1988 were consulted but not used for mapping. Of all these sources, only the CUCAP and Historic England Archive obliques and the Ordnance Survey flight pre-date the construction of Thanet Earth and its archaeological mitigation project undertaken by Canterbury Archaeological Trust from 2007 (Holman et al. 2023; Rady and Holman 2019).

The area of mapped cropmarks and the Plateau 8 excavation trench shown in Figure 26 are both over the Margate Chalk Member and Coombe 1 soils and so we might expect cropmarks to form there, depending on the crop regime (see above) (Deegan 2009, 7). A band of clay and silt Head1 fills a slight, narrow valley that passes north-south through the east side of the excavation trench's main area, where the excavators noted archaeological features, including early Neolithic pits, overlain by colluvium (Rady and Holman 2019, 17). There, we might expect cropmarks to form less readily depending on the thickness of deposits overlying archaeological features. In the eastern arm of the Plateau 8 trench, nearest to Monkton Road Farm, both an Iron Age quarry complex and parts of a Roman field system were seen as cropmarks although the graves of a small Late Iron Age cemetery were not, unlike the graves of the early medieval cemetery about 220m to the south-east. In the main area of Plateau 8 to the west, however, none of the excavated features have been observed as cropmarks in the available aerial sources.

It is difficult to determine if the lack of cropmarks is the result of different crop regimes in these fields. The available aerial evidence suggests, however, that since the 1950s the large fields between the Canterbury Road (to the north) and Seamark Road (to the east) have been cultivated in more homogenous patterns than the mixed and often smaller plots explored in the Lydden/Haine case study described above (see Agricultural influences). Under these circumstances, had flights been made at the right time of year and when good conditions for cropmark formation prevailed (including the right kind of planting), cropmarks might have been expected to have formed given the density of features revealed by excavation. Nevertheless, on 4 June 1976 at a time when strong cropmark formation coincided with an aerial reconnaissance flight, the only area photographed for CUCAP was the relatively narrow strip near to Monkton Road Farm (images BXA32 to BXA35). The same thing happened on 18 July 1988, when two Historic England Archive specialist oblique photographs (NMR4137/58–59) were taken (Fig. 26). We can only assume that on those two occasions no cropmarks were visible in the western area of Plateau 8, otherwise photographs would have been taken.

Whilst that may have been due to the crops growing over the archaeology latterly excavated by Canterbury Archaeological Trust, various characteristics of the features themselves that were noted during the excavation could be the reason for the failure of cropmark formation. Many of the features were found to be relatively shallow as a result of significant truncation across the area. For example, the ditches of Bronze Age trackways 10 and 13 were on average 0.5m to 0.8m wide and around only 0.2m deep (Rady and Holman 2019, 107, 115). Pits of the Iron Age settlement that grew up in the area were overall much deeper, but 73% of the pit fills were homogenous, thought to represent the spoil excavated from new pits deposited into old ones (Rady and Holman 2019, 171). Those feature fills may be more like the surrounding subsoil, in which case cropmarks will be less likely to form. Of the fragmentary Bronze Age field systems, the excavators conclude that 'Cropmark evidence does not help here as the rather ephemeral ditches of these fields do not commonly provide any trace' (Rady and Holman 2019, 142). In contrast, in the eastern arm of Plateau 8 a deep quarry (pits G8086–88), ditch G8083 (1.06m deep) and the substantial hollow way of Roman trackway 26, measuring 4.6m wide and 0.4m deep (Rady and Holman 2019, 185–6, 244), were seen and mapped as cropmarks.

Discussion

The multiple aerial sources used by the Thanet project provide a broad temporal and spatial range of images from which to map archaeological features across the District. No single type or date of source is likely to be sufficient to make an adequate record and a great strength of AI&M methods is the consultation of all available imagery. A complex range of factors contributes to the visibility, detection and interpretation of archaeological sites from this dataset and it is important to reflect on the resulting archaeological distributions.

Taken together, the specialist oblique aerial photographs available to the Thanet, Ramsgate HAZ and SE RCZAS projects have provided good coverage of predominantly cropmark sites. Potential airspace restrictions seem to have had a less significant impact on aerial reconnaissance over Thanet than in other areas, such as Lincolnshire (see Carter 1998). Combined with digital orthomosaics, it has been possible in most instances to make up for, or even exceed, the lack of access to CUCAP imagery. There are examples of where CUCAP photographs (as online scans) have been invaluable to cropmark recording, for example in the environs of Thanet Earth (see Archaeological influences, above). A significant lacuna is in areas of farmland developed in the mid-20th century where CUCAP photographs taken in the 1950s and 1960s may provide the best or only evidence for certain cropmark sites.

Vertical aerial photography has been most useful to record Thanet's extensive and intensive military landscape, the archaeological and historical details of which are discussed below. Nevertheless, this imagery has also been used to record earthwork and cropmark sites of other periods. Lidar data has been less significant to the Thanet project. Its principal contribution has been to map fragments of otherwise undocumented post-medieval field systems, extractive industries and salterns. Overall, Thanet District enjoys comprehensive coverage by a variety of aerial sources.

Both cropmark and earthwork sites are found across the District. Geological conditions and the resultant soil Associations are conducive to cropmark formation in general. On the other hand, long term cultivation has resulted in the denudation of earthworks; it has been possible to map earthwork features through a combination of earlier aerial imagery, especially 1940s photographs, and lidar visualisations. Earthwork sites are present on all soil types and cropmarks proliferate in most circumstances, suggesting that the aerial mapping is representative of Thanet's archaeology as a whole. There are two key exceptions. First, in order to address questions about the evolving nature of the Wantsum Channel's littoral zone and its implications for buried archaeology not visible in aerial imagery, a better understanding of the channel itself is essential. Secondly, the presence of Tertiary and Quaternary deposits appears to influence cropmark formation in some places. Cropmarks rarely appear on Newchurch 2 soils but are often seen on the prevailing Coombe 1 and Hamble 1 soils, excepting some areas of Thanet beds and superficial deposits. Apparent 'gaps' in the archaeological record may in some locations be due to soil thickness and/or the depth of buried features. Thinning soils appear to be having a detrimental impact on archaeological preservation, but this is where most cropmarks form and are recorded.

The majority of Thanet's undeveloped land is potentially conducive to cropmark formation. In consequence, it is important to understand the history of cultivation and crop regimes in specific places where there seem to be gaps in the archaeological record as mapped from aerial sources. As the Lydden/Haine case study shows, the right crop, environmental conditions and the luck of flying at the right time have combined to capture some cropmarks; but this happenstance has not prevailed for the whole case study area, which may yet develop previously unseen cropmarks in the future. At Thanet Earth, many features excavated during the early 21st century were apparent on none of the available aerial sources. There, the nature of the archaeology itself has probably played a part in the seeming failure of cropmark formation. When combined with soils (areas of colluvium masking some features) and possibly also the crop regime and conditions at the time when flights were made, a 'gap' is created in the aerial mapping. This highlights the

importance of employing a range of archaeological prospection methods to understand site distributions across landscapes when possible 'gaps' are apparent.

Archaeological results and discussion

Settlement, agriculture and routeways

Bronze Age, Bronze Age/Iron Age enclosures and ditches/field boundaries

The prolific evidence on Thanet for Bronze Age burial practices in the form of hundreds of round barrow ring ditches (discussed below) somewhat distracts from the archaeology of broadly contemporary settlement and field systems which, as Andrews et al. (2015, 61, 107) put it, appears more ephemeral and harder to interpret. Environmental evidence from some Early Bronze Age barrow sites suggests that the monuments were built in pasture (for example, Andrews et al. 2015, 61; Holman et al. 2023, 26, 39, 42); contemporary settlement on Thanet is invariably only hinted at by domestic material culture finds rather than settlement features as such; and a similar pattern plays out in the excavated record for the Middle and later Bronze Age. A still fragmentary yet more illuminating picture of Bronze Age settlement and associated field boundaries on the Thanet Earth site has more recently been reported (Holman et al. 2023, 62–5). Here, we describe a number of features mapped by the Thanet project that are interpreted as possibly earlier – that is, Bronze Age/Iron Age rather than Iron Age/Roman – enclosures and linear ditch systems.

The most complete and extensive remains of probable Iron Age date that have been recorded from aerial photographs lie between Birchington and the village of Acol. These comprise the remains of a long linear ditch system roughly following the 20m contour line around the northern side of a shallow combe extending east-south-east from the head of the inlet of Brooksend Stream, visible as cropmarks (Fig. 27). Further fragmented ditches and enclosures are visible to the south on the opposite side of the valley, but it is not clear if these have any association with the boundary and features to the north.

The linear boundary ditch can be traced for over 1.2km, and though probably much reduced by ploughing, still measures between 2m and 4.6m in width along its course. At its western end the ditch can clearly be seen to closely curve around the southern side of a ring ditch of a probable Bronze Age round barrow (B in Figure 27) – presumably surviving as an extant mound when the ditch was cut – before bending round to form the outer perimeter ditch of an irregular sub-divided, more rectilinear enclosure. The relationship between this barrow and the boundary ditch suggests the ditch post-dates the barrow and is either later Bronze Age or Iron Age in date. The cropmark remains of a number of ring ditches of Bronze Age barrows and three smaller possibly early medieval barrows lie within this enclosure complex. One of these ring ditches (E in Figure 27) has been cut by one of the inner ditches of the rectilinear enclosure. These enclosures appear more

rectilinear in form than the ditch and other attached enclosures (F in Figure 27) suggesting it may represent a later phase than the sinuous ditched boundary

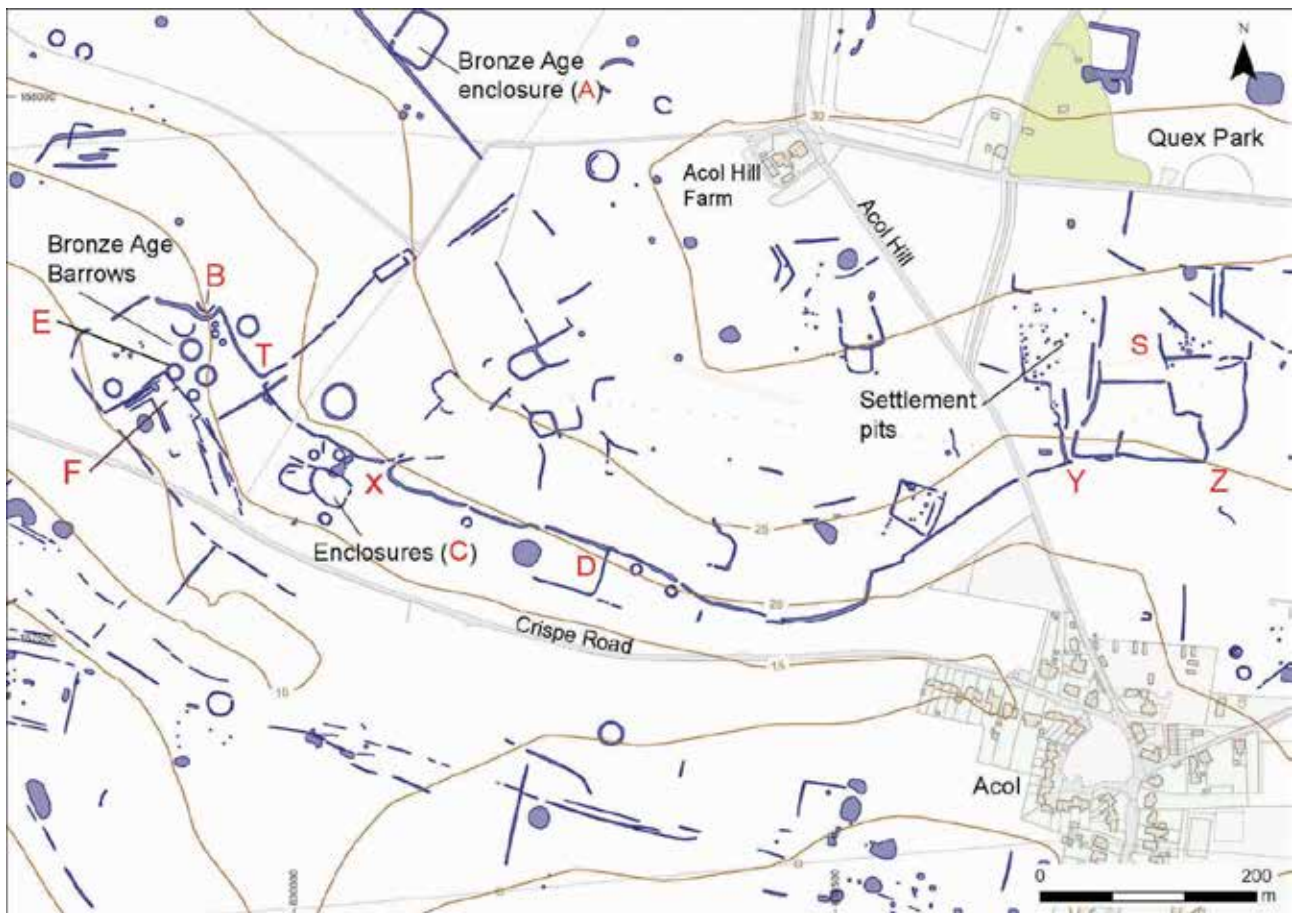


Figure 27: Cropmarks of linear boundary and associated Late Bronze Age/Iron Age settlements north of Crispe Road, Birchington. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

This linear ditch appears to form a boundary between the dry valley to the south and the hillside above. It features four funnel-shaped entrances leading from the southern side, each defined by in-turned ditches to the north possibly designed to move livestock such as sheep, between two different agricultural zones. The western entrance (T in Figure 27) leads from the western enclosure through the boundary ditch, defined on its western side by a continuation of the western side of the enclosure. East of this a second funnel entrance (X in Figure 27) leads north-east through the ditch. There are also several breaks in the ditch, which may represent smaller entrances through the boundary. A rectilinear ditched annexe enclosure (D in Figure 27), along with traces of a second incomplete enclosure to its east, is attached to the boundary ditch mid-way along its length. These are the only structures visibly connected to the southern side of the boundary. Two large

undated conjoined curvilinear enclosures (C in Figure 27), probably of later prehistoric date lie immediately to the south of the entrance (X in Figure 27) through the boundary, the western of the two enclosures is appended to the eastern enclosure.

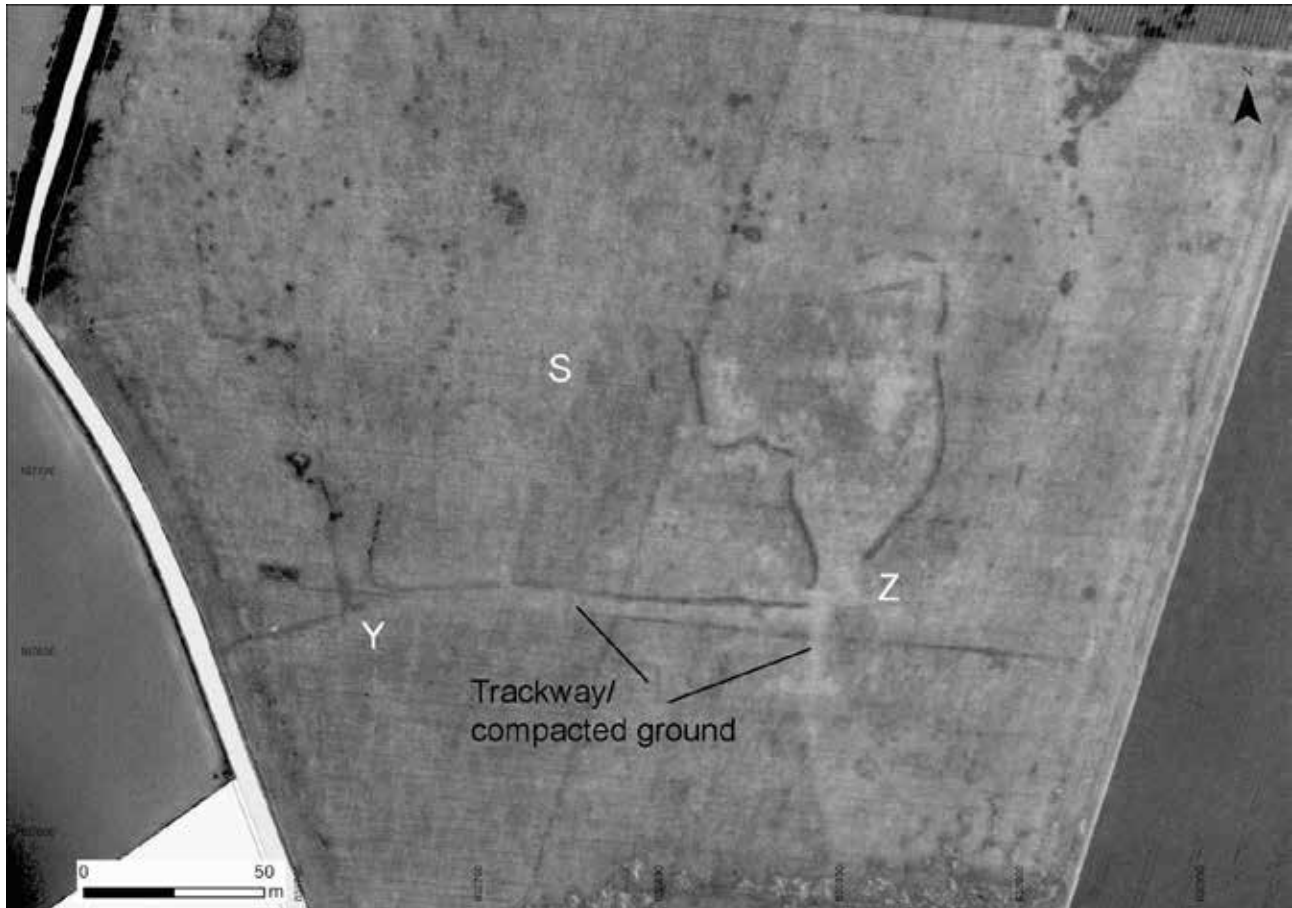


Figure 28: Cropmarks of possible Bronze Age/Iron Age settlement remains associated with the boundary ditch north of Acol with evidence of trampling through the eastern entrance and along the southern side of the boundary appearing as a pale cropmark. [Extract of NMR/3115 140 02-JUL-1986 © Historic England Archive]

Towards the eastern end of the ditch (north of the village of Acol) two further funnel entrances (Y and Z in Figure 28) extend northwards forming two large irregular ditched enclosures (S in Figure 28) reminiscent of banjo enclosures (Middle to Late Iron Age of circa 400 BC to roughly AD 43 in date) (Historic England, 2018b, 1), one containing a distinct area of concentrated pits which may represent the remains of a settlement associated with the boundary. The eastern of these two enclosures has two short interruptions or entrances in either side. The interior of this enclosure appears as a cohesive pale cropmark suggesting compaction of the ground, possibly evidence of prolonged trampling as a result of stock management or corralling. This pale cropmark extends south through the main funnel with traces of further compaction extending

westwards from this entrance following the southern side of the boundary ditch representing the route of a track or hollow way (Fig. 28). This complex, though fragmented and incomplete, still represents an exceptional landscape of Bronze Age/Iron Age boundaries and enclosures.

To the north of the linear ditched boundary, between the western rectilinear enclosure and the eastern funnel enclosures and possible settlement site, there are the cropmark traces of several individual enclosures thought to be of later prehistoric date, but none have been dated and there is no obvious association with the boundary. Just one enclosure MKE124441 (A in Figure 27) to the north-west of this complex has been excavated, by Wessex archaeology, and dated to the Bronze Age (McCraig 2018, 16) (that site is similar in shape and size to a line of three enclosures at St Nicholas at Wade discussed below).

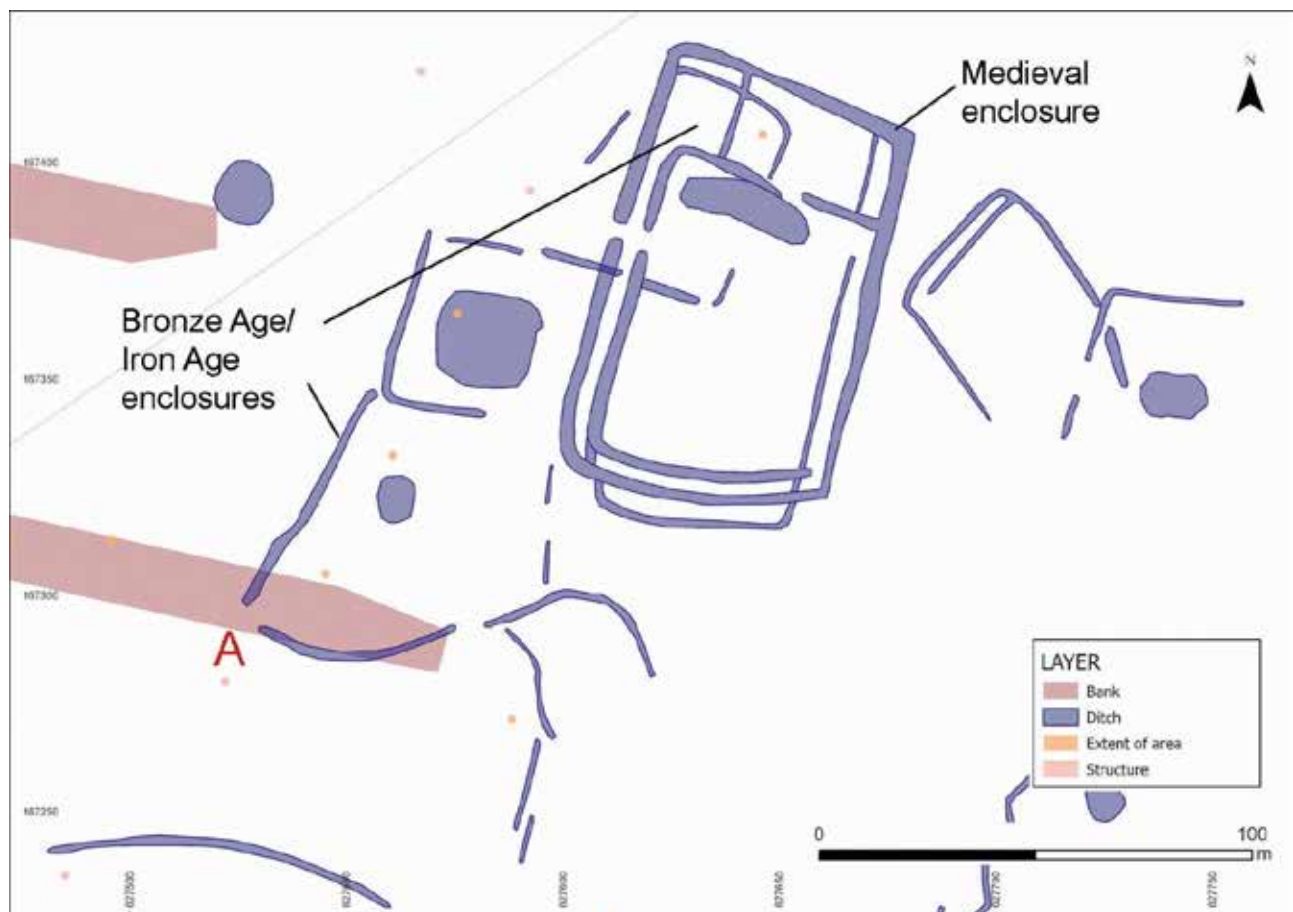


Figure 29: Extract of mapped cropmarks of a medieval enclosure overlying ditches and enclosures of a Late Bronze Age/Early Iron Age settlement. Slight earthwork traces of two banked - medieval/post medieval field boundaries extend into the west of the site. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Other settlement sites are more compact and discrete than the site near Birchington. One such site (Kent HER: TR 26 NE 1042) is located near Nether Hale Farm, north of St Nicholas roundabout (Fig. 29). It appears as a complex of enclosures and ditches from at least two phases visible on aerial photographs (CUCAP BXA30 04-JUN-1976 and NMR 4137/23 18-JUL-1988). Both sets of enclosure share the same orientation but have no common elements linking the two phases. The site was excavated in 1979 and found to comprise a medieval double-ditched enclosure dating to the 10th to 15th centuries (Kent HER: TR 26 NE 74) beneath which were the remains of enclosures with shallow ditches containing pottery dating to the Middle Bronze Age/Early Iron Age within the ditch fill.

That earlier site has been interpreted as a settlement or possibly a farmstead. Traces of this probable prehistoric settlement and further associated enclosures extend westwards of the medieval enclosure (Perkins 1991a). Although the cropmark traces are fragmented, the earlier settlement complex appears to be a group of conjoined rectilinear enclosures and pits. The south-western enclosure is more triangular, or funnel shaped in plan, its western and southern ditches converging to a point with an entrance at the apex (A in Figure 29). This layout suggests it may have functioned as a stock enclosure attached to the settlement (the slight earthwork traces of medieval/post medieval field boundary banks seen on lidar extend into the western part of this complex, overlying the apex of the funnel entrance).

A group of three sub-rectangular enclosures of possible Bronze Age/Iron Age date and a further fragmentary enclosure seen as cropmarks are located to the north-west side of the Canterbury Road south of St Nicholas at Wade (Kent HER: MKE124340, MKE124338, MKE124331 and MKE124336) (Fig. 30). They were mapped from APGB Imagery (14-APR-2015), NMR 26981/41 (01-JUN-2011) and HEA 29754/27 (29-JUN-2015). Each of the complete enclosures is similar in form and area and has one entranceway. Two enclose pit features, suggesting settlement activity in the interiors. They are less rectilinear than many of the Iron Age/Roman enclosures on Thanet and not obviously associated with any field boundaries. There are no phase relationships between the enclosures, but their north-east/south-west alignment suggests that, if not contemporary, they were nonetheless built in reference to one another. They appear similar in size and form to a Bronze Age sub-rectangular enclosure south of Birchington (Kent HER: MKE124441) which has been dated through excavation (McCraig 2018) (Fig. 31). To the north-east of these is a further fragment of a single Bronze Age/Iron Age curvilinear enclosure (Kent HER: MKE123864) located to the south-west of Birchington.

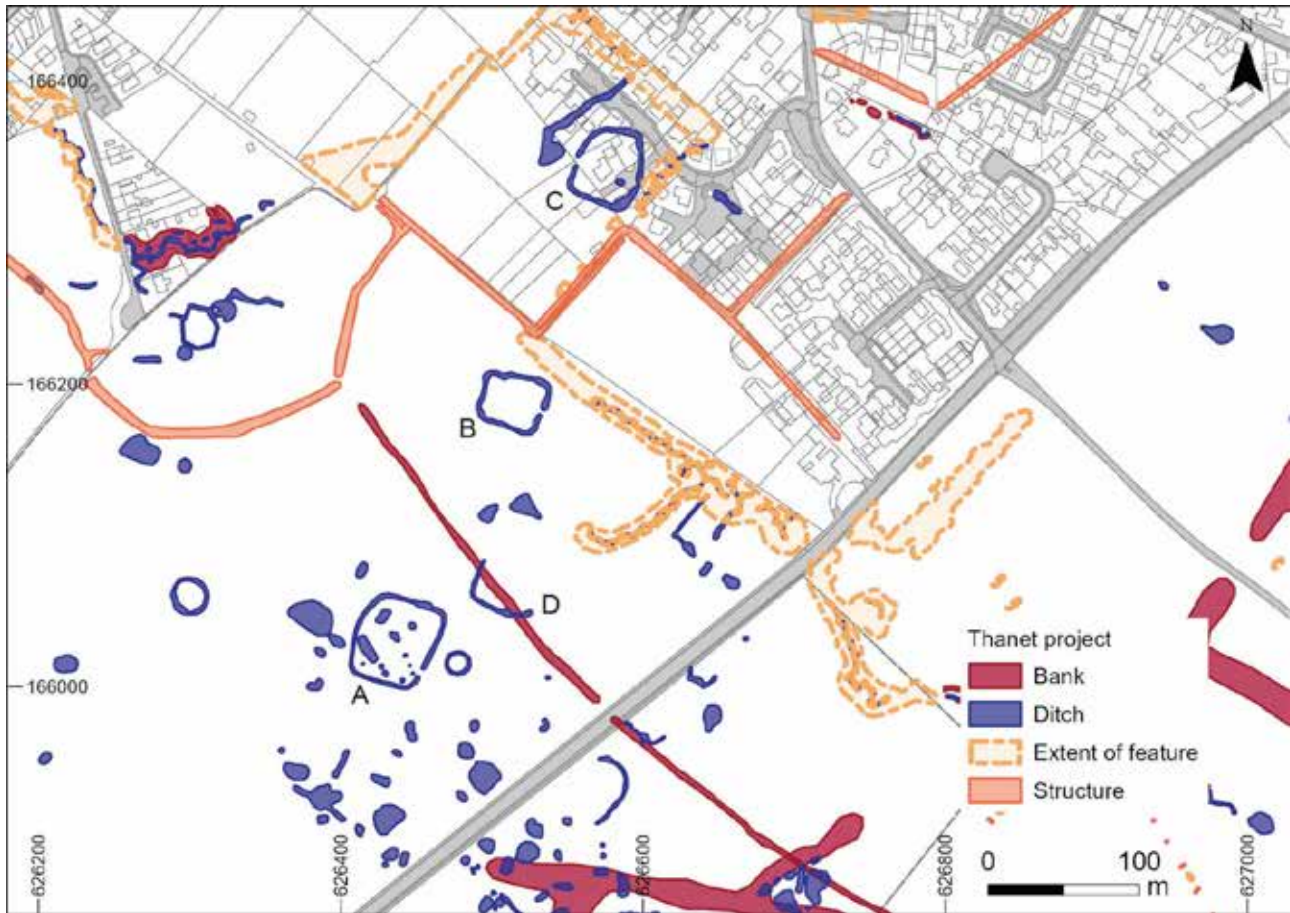


Figure 30: Bronze Age/Iron Age enclosures south of St Nicholas at Wade. A, MKE124331; B, MKE124338; C, MKE124340; D, MKE124336. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

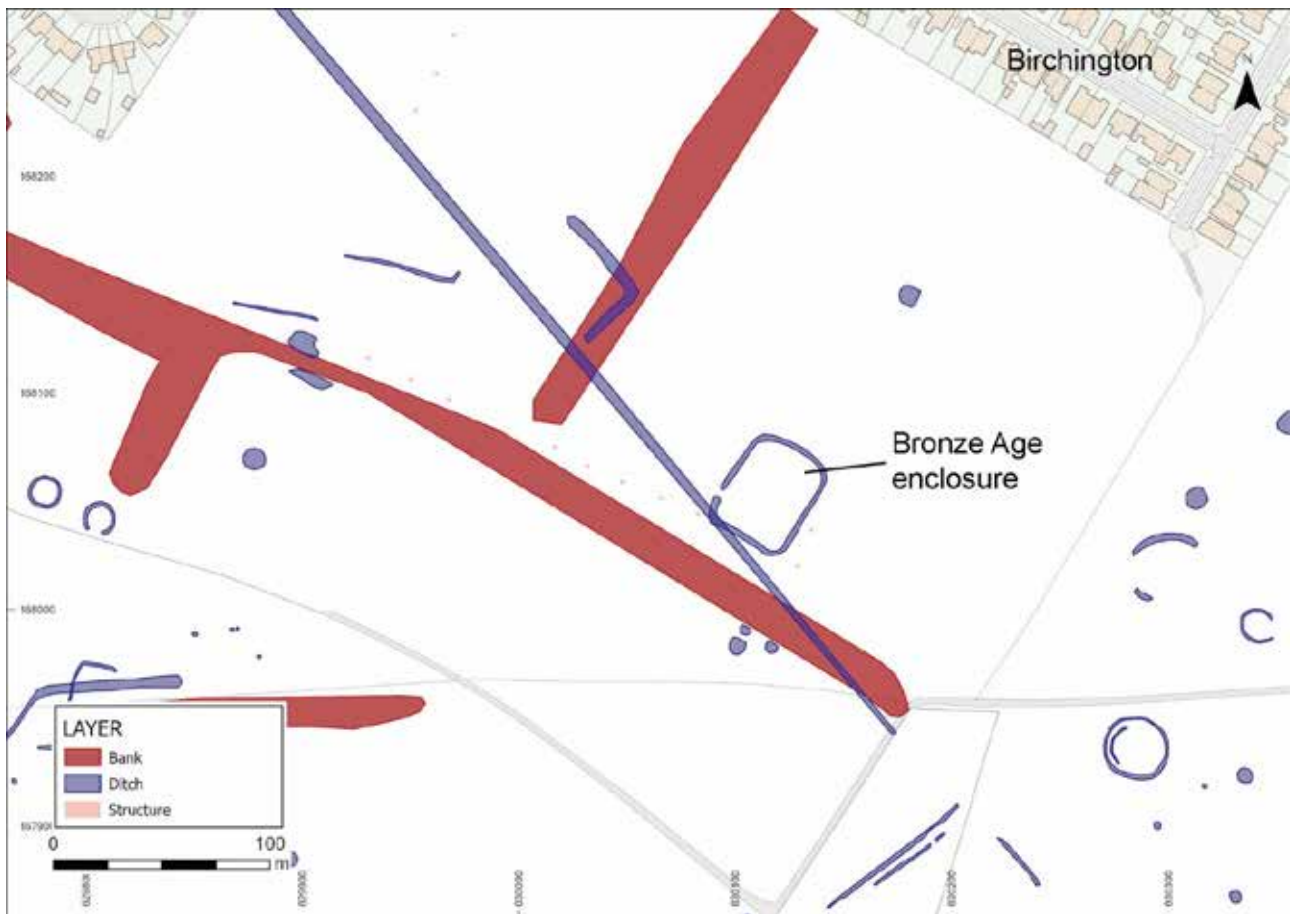


Figure 31: Cropmarks of a Bronze Age enclosure south of Birchington. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Further east, a complex of Early Iron Age ditches and enclosures (Kent HER: TR 36 NW 88) has been recorded as cropmarks in fields bounded on three sides by Westfield Road, Hartsdown Road and Shottendane Road (Fig. 32). The remains comprise a large rectilinear enclosure (A in Figure 32), scatters of pits, two smaller square enclosures, field boundaries and associated midden deposits. Part of the site near Shottendane Farm was excavated in 1995 by the Trust for Thanet Archaeology as part of the Hartsdown Community Woodland Scheme. This dated the main enclosure, pits and ditches to the Early Iron Age and also recorded some Bronze Age finds (Perkins 1996, 268-71).

Peripheral to that settlement site are the cropmarks of several isolated or paired rectilinear enclosures (Kent HER: MKE125736, MKE125717, TR 36 NW 445, TR 36 NW 89) and curvilinear enclosures (Kent HER: TR 36 NW 47). They appear similar in form and scale to other probable Bronze Age/Iron Age enclosures identified elsewhere on Thanet, in particular those seen immediately to the south of St Nicholas at Wade described above

and probably belonging to the same period. As seen across Thanet, cropmarks show the remains of sites from one period lying adjacent to and overlapping sites from other periods, highlighting the intensity and continuity of activity through time. Within the fields at Hartsdown are the remains of, numerous Late Bronze Age/Iron Age enclosures, Bronze Age round barrows and an Iron Age/Roman trackway or road (passing to the immediate north-east of Y in Figure 32). One of the small barrows within this complex (site Y) has been excavated and suggested to be Neolithic in date (Perkins 1995, 268-71) (see Small Ring Ditches).

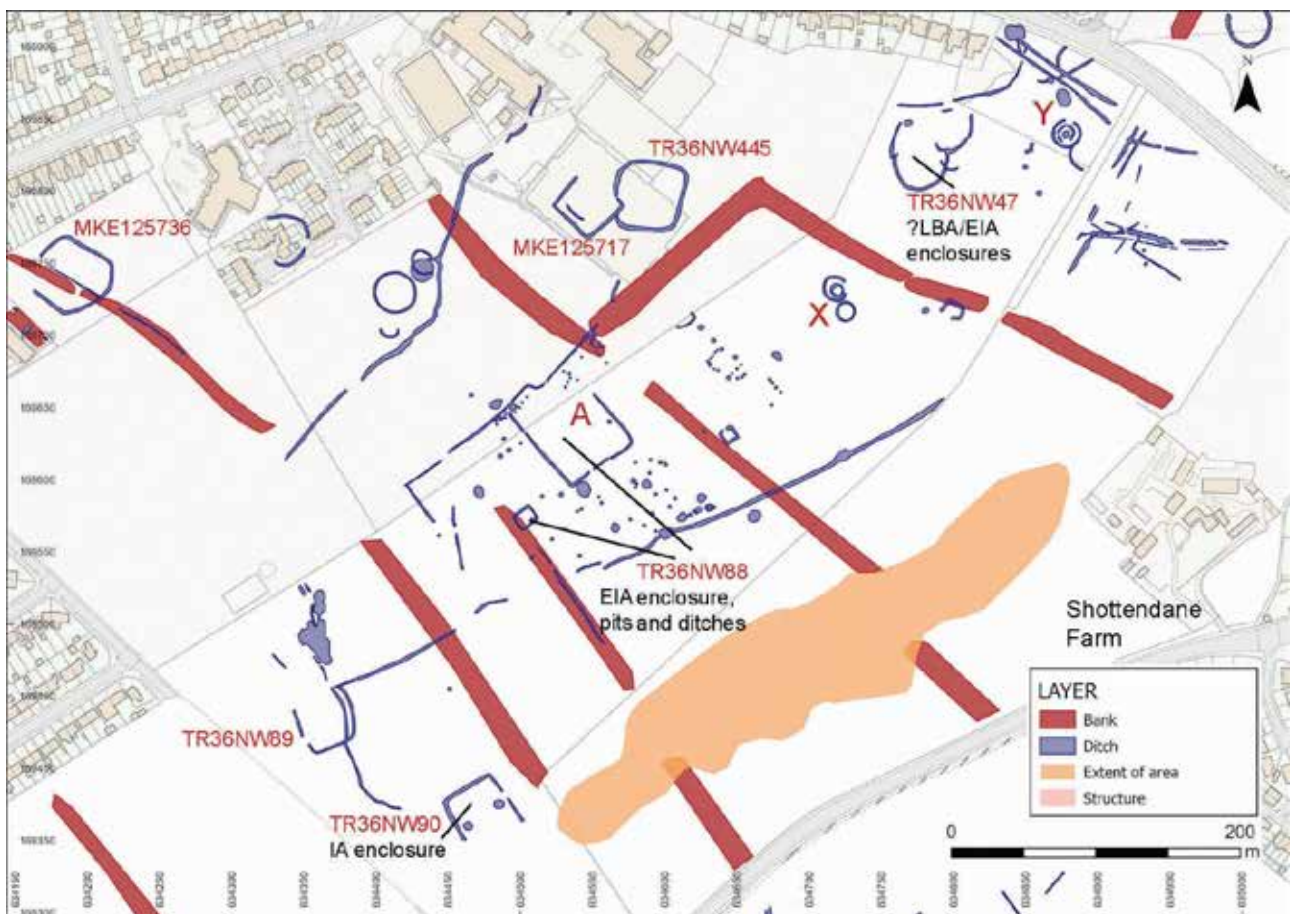


Figure 32: Cropmarks of Early Iron Age settlement enclosures and surrounding Late Bronze Age and Iron Age sites at Hartsdown, Margate. The extent of area to the south is a post medieval clay pit. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

On the eastern edge of Thanet at South Dumpton Down the cropmark traces of two elongated rectilinear settlement enclosures were mapped as part of the Ramsgate HAZ project (Small and Barber 2019) (Fig. 33). Both enclosures have been excavated revealing further details of their form (Perkins 1995, 468–70). However, they now lie beneath modern housing and are presumed to have been destroyed. The southern, more

rectilinear settlement enclosure (Kent HER: TR 36 NE 417) measured 20m by 50m with evidence of occupation in the form of pits and post-holes dated to the Middle Bronze Age (Champion 2007, 104). Both excavation and aerial investigation and mapping have revealed a broad trackway extending south-west from that enclosure. Excavation evidence also suggests a further fragment of another enclosure adjacent to but not attached to the south-eastern side. The fragment may be partially defined on its southern edge by the ditch of the trackway.

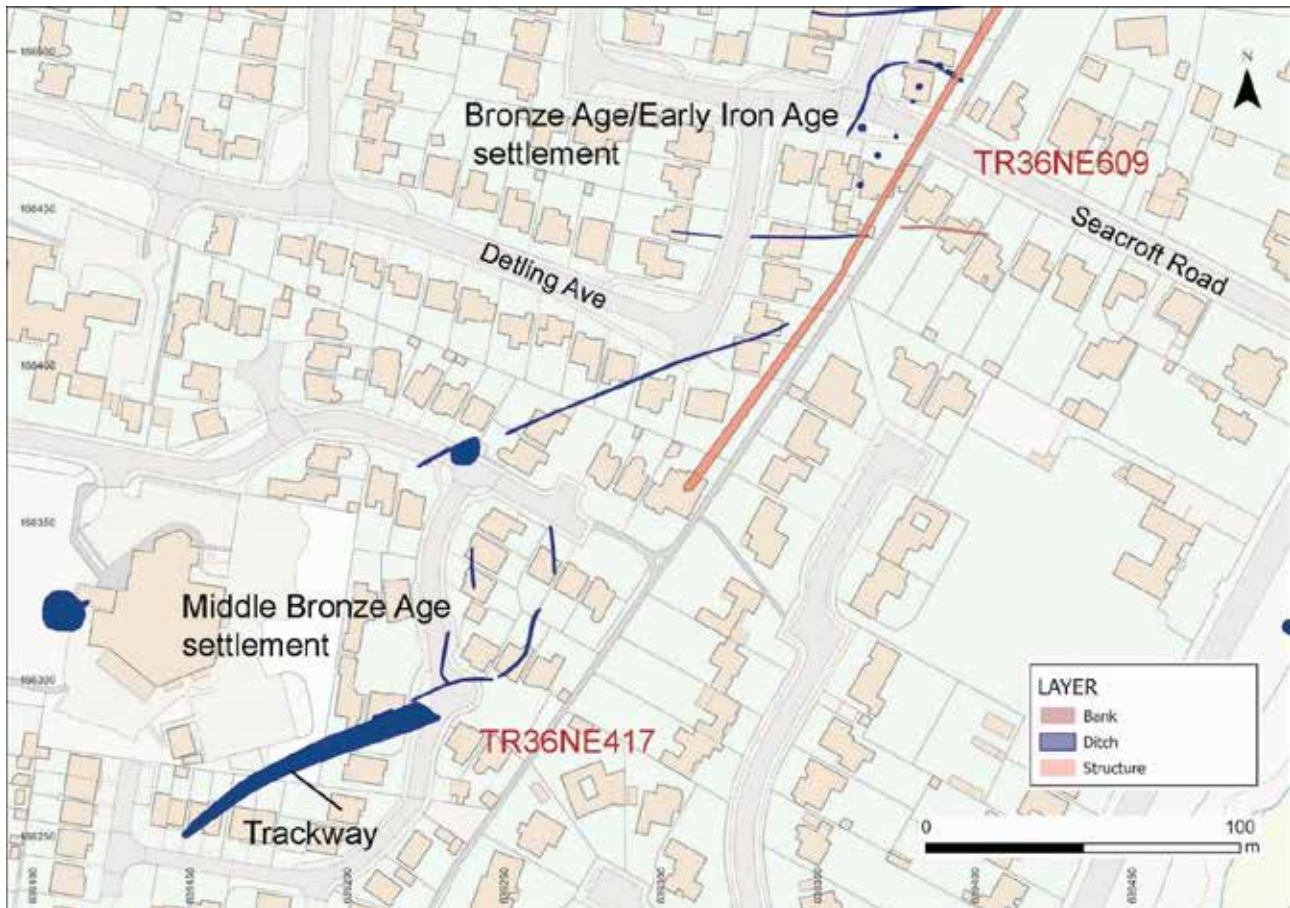


Figure 33: Cropmarks of two adjacent settlement enclosures at Dumpton Down mapped from historic aerial photographs. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The second settlement enclosure (Kent HER: TR 36 NE 609) lies approximately 150m to the north-east of this and was excavated between 1971 and 1972 (Fig. 33). Fragments of Bronze Age/Early Iron Age pottery were found in a gully palisade trench. This feature was cut by pits containing Early Iron Age pottery. Two or three phases of activity were evident on the site and occupation appears to have continued into the Middle Iron Age, but with little evidence for later activity (Trust for Thanet Archaeology 1995).

Segments of a Bronze Age enclosure and a pit excavated during road scheme works south of RAF Manston were mapped from an aerial photograph after the sub-surface deposits were revealed by the excavation programme's surface stripping (NMR 26608/12 06-APR-2010) (Fig. 34). The lengths of the slightly curvilinear enclosure ditch were dated by quantities of Late Bronze Age pottery. Later deposits contained Iron Age sherds, indicating that the ditch gradually filled over time and remained a visible component of the landscape for an extended period. The excavators estimate the enclosure measured 65m across (Andrews et al. 2015, 99–101, 109). This is similar in size to Bronze Age/Iron Age enclosure MKE124331 south of St Nicholas at Wade (about 57m by 51m on plan) (see above).



Figure 34: Segments of a Bronze Age enclosure showing as wide, linear ditches filled with dark soil roughly parallel to the modern roadway. [NMR 26608/12 06-APR-2010 © Historic England Archive]

Several fragmentary ditches to the south-east of Foreness Point may represent the remains of Bronze Age/Iron Age settlement or field boundaries (Kent HER: MKE126062, MKE125987, TR 37 SE 60), as suggested by the discovery of contemporary material culture in the area (such as Kent HER: MKE8197). Those features were mapped from

cropmarks on 1950s RAF photographs. Unfortunately, a fuller understanding of that area is limited by lack of access to CUCAP imagery, which captured the cropmarks prior to suburban development.

Excavation evidence has confirmed the Bronze Age date of some of the mapped enclosures described above, whilst others are interpreted by the Thanet project as contemporary, based primarily on morphological characteristics. The number of known enclosed Bronze Age settlements on Thanet may have increased as a result. In some areas, such as around Thanet Earth or the Monkton Court Farm site (Perkins et al. 1995), limited cropmark formation has thus far provided very little evidence for Bronze Age settlement and field systems that have, in contrast, been revealed through excavation (see Factors affecting visibility, detection and interpretation). This highlights the importance of integrating archaeological methods to address questions about the nature of Bronze Age settlement and domestic lifeways on Thanet. It is an area of research that has, to an extent, been overshadowed by the island's remarkable funerary landscape.

Evidence for Roman Settlement on Thanet

Until recently relatively little appears to have been known about the Roman occupation and settlement of Thanet, despite the proximity to other major settlements at Canterbury and the two major forts of Reculver and Richborough, the latter the official 'Gateway to Britain'. The generally perceived view was that the island was exploited as a predominantly agricultural zone with an emphasis on grain production for the nearby forts with very little population or settlement of any significance (Perkins 2001, 43). A handful of sites had been noted during the expansion of Ramsgate in the 1870s (Hicks 1878), but none were excavated or investigated further and have long since been lost beneath the urban development (Perkins 2001, 43).

Subsequent discoveries of Roman sites and finds across Thanet have typically been poorly recorded, giving rise to the impression of a low level of settlement of any significance on Thanet in the Roman period. This is illustrated by the case of the Tivoli Roman villa, Margate, the site of a high-status Roman villa complex discovered in 1924 during the construction of houses at Tivoli Park Avenue. The site was partially excavated by Dr Arthur Rowe; however, parts of the site had already been built over by a road, rendering them inaccessible. Rowe observed the visible portions of the villa on either side of the road, noting features such as coloured wall frescoes and hypocaust tiles in several rooms. Finds including a razor, bronze fibula and nails were thought to be of 1st-century date. Despite its obvious importance, the site was poorly recorded before being covered over and lost beneath the later housing development (Collingwood and Taylor 1924, 240).

Villa farms

Since the 1980s, the landscape has changed considerably due to increased development and major road improvement schemes. These changes, coupled with the implementation of PPG16, have led to more detailed excavation and improved recording of archaeological sites. This has led to the discovery and identification of numerous new Roman sites across the island. Thanet is now recognised as a populous and productive region of Roman Britain characterised by a network of villa farms or estates interspersed with smaller rural and roadside settlements, all connected by a network of roads across the island. In addition to sites uncovered during development-led investigations, cropmark evidence recorded by this project from across Thanet has revealed extensive remains of numerous settlement sites, spanning later prehistory through to the medieval period. A significant number of these are likely to date to the Roman period. However, few have been subject to detailed investigation, and their precise date remains uncertain or tenuous.

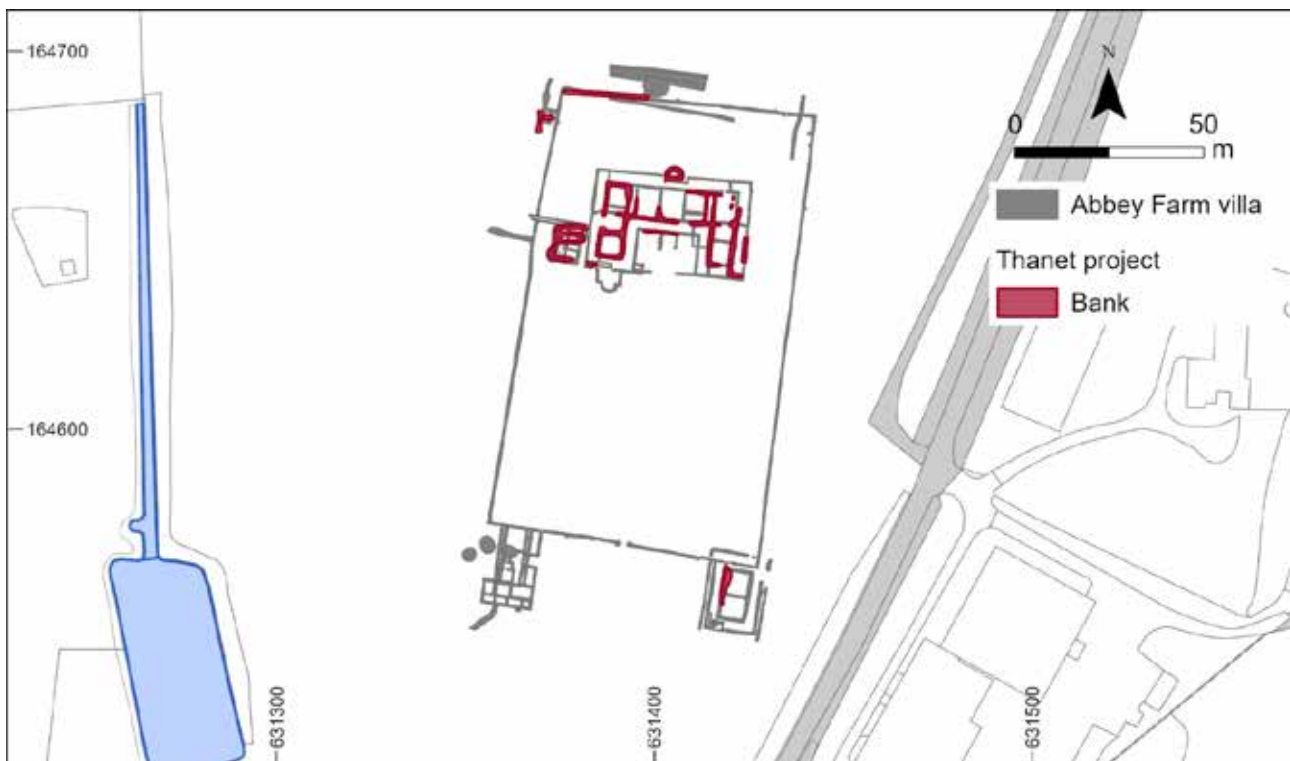


Figure 35: Abbey Farm villa, Minster, Thanet project mapping compared with excavated evidence. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

By the early 2000s over 80 possible Roman settlement sites had been identified through a combination of chance finds, during development, field walking and excavation, 23 of which were probable villas or large buildings. Of these only four had been investigated and only one of this group – Abbey Farm, Minster – had been excavated ‘beyond the level of

sampling' (Perkins 2001, 50). Parts of the Abbey Farm Roman villa complex appear as a cropmark on aerial photographs taken in 1979 (NMR 1661/363 16-JUL-1979) and were mapped as part of the Kent NMP project as well as by the Thanet project (shown in red in Figure 35). Parts of the outline of a large, winged villa and other buildings including a bathhouse and the northern section of the villa's enclosing wall were detected. Subsequent excavations between 1996 and 2004 by Kent Archaeological Society (KAS) fully revealed the plan of the winged villa, which had undergone a number of alterations. The investigations also uncovered the bathhouse and other buildings including a possible corn drier (or a latrine) with heating flues within the walls. Finds including tile, glass, painted wall plaster and tesserae were consistent with a high-status site occupied from the end of the 1st century AD to the early 3rd century, before being abandoned by the late 3rd century. Other finds included pottery, coins and animal bones (including needles, pins and styli) (Parfitt et al. 2009; Lyne 2011; Shaffrey 2019).

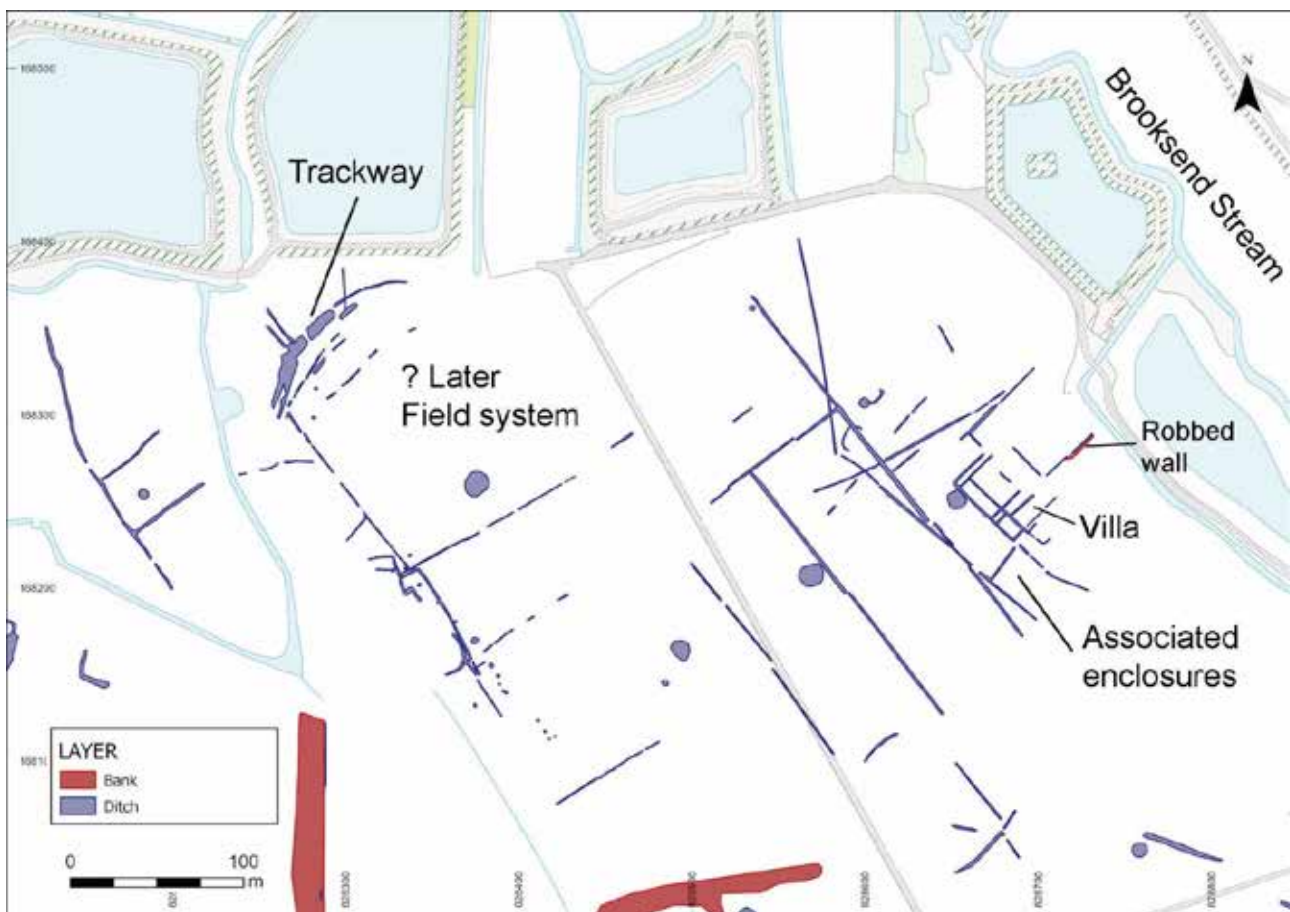


Figure 36: Brooksend Roman villa, adjacent fields from two separate phases, pits and enclosures visible as cropmarks. The red banks are slight earthworks of medieval or post medieval field boundaries, detected on lidar. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Another Roman villa site which appears as a cropmark on aerial photographs is located at Brooksend near Birchington at the western end of Thanet (Kent HER: TR 26 NE 71). The villa is positioned on the south-western side of Brooksend Stream, but when built would have overlooked a small tidal inlet part of the then navigable Wantsum Channel, which silted up in the medieval period. The villa appears as a simple winged villa possibly set within a rectangular ditched enclosure – probably the remains of a robbed wall – fragments of which can be seen as a cropmark. To the rear of the villa a series of ditches from two overlapping phases of enclosure, possibly fields, extend to the south-west. At least one of these sets of ditches, which extend a short way to the south-west of the villa, appears to be on the same alignment and associated with the site (Fig. 36). The villa was partially excavated in 1981 by Thanet Archaeology Unit revealing pits and ditches containing sherds of 1st- and 2nd-century Roman pottery, but it was suggested the ditched enclosures might be later field boundaries (Perkins 1981). These may correspond to the cropmarks of a second set of boundaries on a different alignment, seemingly unconnected to the villa remains. Cropmarks to the west of these include a fragment of trackway to the north-west and further fragments of ditch and rectilinear enclosure.

Large Roman enclosures

A number of more complex probable Iron Age/Roman sites have been identified across Thanet. These sites are typically large ditched rectilinear enclosures of considerable size, some with multiple ditches. Some have been classified as villas, but none have been fully excavated or even investigated beyond the analysis of the cropmarks.

One site (Kent HER: TR 26 NE 119) is located at the north-western end of the island at Gore End Farm, Birchington (Fig. 37). The site has been recorded as a cropmark on aerial photographs from the 1960s to the present day. The main enclosure is defined by a single ditch with straight sides and angular corners. The enclosure tapers slightly towards the south-western end, measuring 168m north to south and ranging from about 160m to 197m east to west. There is an inner ditch visible within the southern side, and traces of internal divisions and numerous pits. The internal enclosures and sub-dividing ditches appear less angular, possibly pre-dating the outer enclosure and suggesting at least two phases of occupation. The site has not been excavated and the only find in the vicinity is an early medieval brooch of about 480–550 AD found 60m north of the north-eastern corner (Portable Antiquities Scheme: KENT-064D3B), probably an unrelated stray find. No obvious building remains can be seen within the complex. The outer enclosure could be Roman or medieval in date. The entire site is cut north-west to south-east by the route of a short-lived early 20th-century railway line linking RAF Manston with the main line at Birchington. The site lies within a large field which has been divided and cultivated under different regimes of crop over the decades. The eastern ditch of the enclosure coincides

with the division between two different cultivation regimes and the eastern field has consistently failed to show traces of that side of the site and any possible adjacent details when photographed.

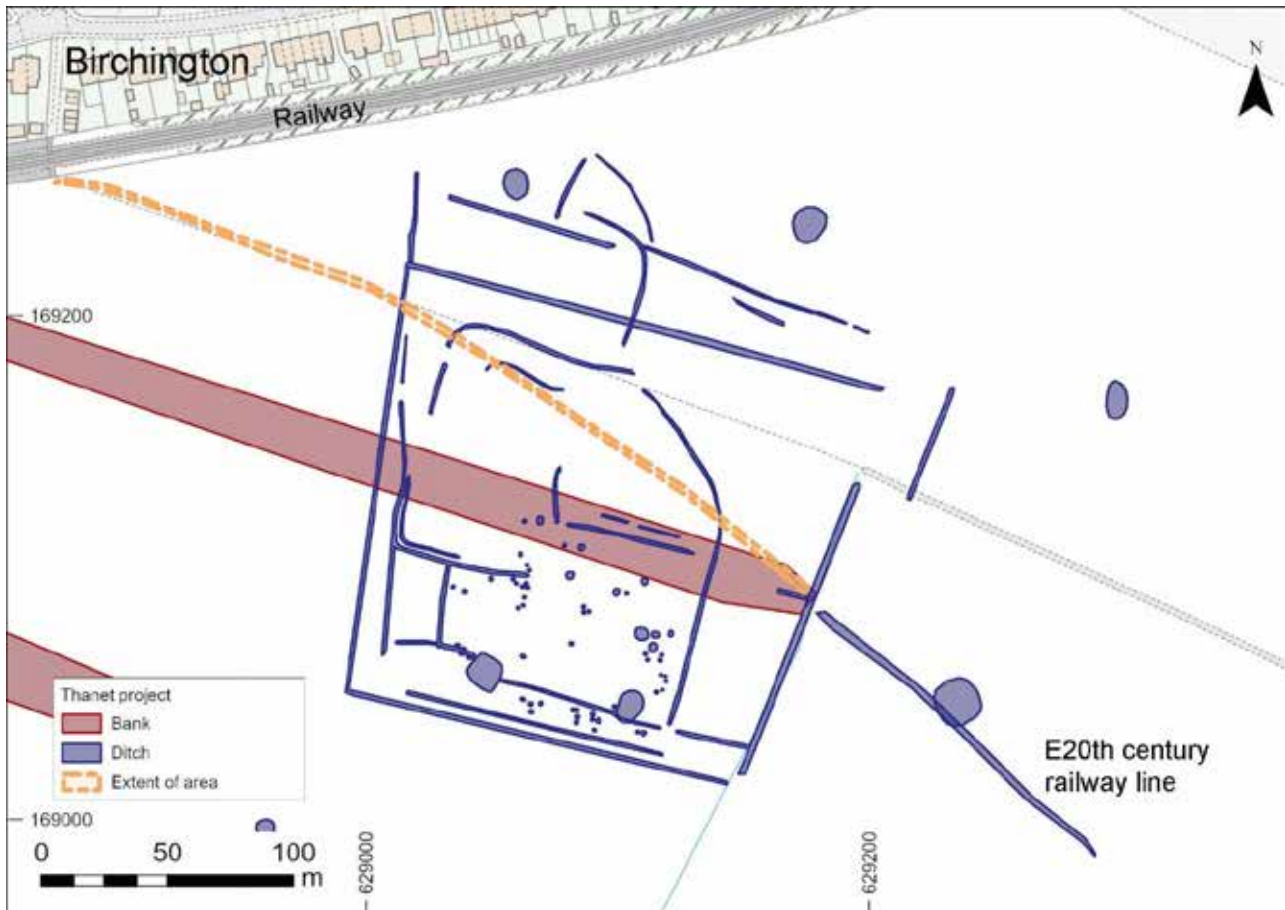


Figure 37: Large rectilinear enclosure near Gore End Farm visible as cropmarks, possibly an Iron Age/Roman settlement or farmstead site. [Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Nearby, another smaller example is located approximately 90m to the west of the Gore End enclosure at Plumpudding Island on the north-west coast of Thanet, west of Birchington. This site is also visible as a cropmark on aerial photographs (Fig. 38). It lies on a narrow strip of ground at 5m aOD between the railway and the sea wall on Minnis Bay. It is surrounded by the complex cropmark remains of numerous features including Bronze Age round barrows, probable later prehistoric enclosures, a 19th-century rifle range and Second World War trenches and anti-landing obstacles (Fig. 39). The site was also covered with extensive lines of barbed wire entanglements during Second World War, placed to defend this particular point on the coast where there is no cliff to impede access from the beach. The 19th- and 20th-century military features were visible as earthworks on

photographs taken in the 1940s, but most have been levelled since and appear as cropmarks amongst the traces of earlier features (see Coastal Defences section below). The enclosure is slightly smaller than that at Gore End but it lies on the same north-north-east to south-south-west alignment. It also has traces of three ditches on the western side and two ditches on the northern and southern sides. The south-eastern corner appears to be constructed against and respecting an earlier sub-rectangular enclosure (A in Figure 39). There are fragments of internal ditches, but it is not clear if these are associated with the enclosure or another phase of development on the site. The enclosure measures approximately 125m by 135m. The site is framed by the cropmark remains of two, and intersected by a third, of five equally spaced parallel linear firing points (aligned almost north to south) of a 19th-century rifle range which extend in a line west-north-west to east-south-east. The eastern ditch appears to cut through a large probably later prehistoric sub-circular ditched enclosure (B in Figure 39) (Kent HER: MKE124049).



Figure 38: Cropmarks at Plumpudding Island west of Birchington showing the remains of a large rectilinear enclosure (Kent HER: MKE 6363) surrounded by numerous ring ditches, enclosures and 19th- and 20th-century military features. [EARTH.GOOGLE.COM 31-DEC-2022 ACCESSED 14-MAR-2025]



Figure 39: A large, possibly Iron Age or Roman enclosure (MKE 6363) west of Birchington at Plumpudding Island, visible as a cropmark on aerial photographs amongst the remains of later prehistoric enclosures, ring ditches and the extensive remains of 19th- and 20th-century military features. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The largest of the Iron Age/Roman enclosures (Kent HER: MKE7829) is located in the centre of the island in a large field to the south-west of Woodchurch Farm House, Woodchurch (Fig. 40). The enclosure has been scheduled as remains of a Roman villa with a possible Iron Age farmstead pre-dating the villa, based on the cropmark evidence visible on aerial photographs (NHLE: 1005135). The site appears as a large multi-ditched rectilinear enclosure of at least four ditch circuits, some more complete and clearly defined than others, traces of which appear as fragments between the inner and outer ditches and may represent at least two phases of ditch construction and alteration to the site. A straight double-ditched linear feature (A in Figure 40), probably a trackway, extends about 275m north-west from the northern side of the enclosure, meeting a broad straight perpendicular ditch (B in Figure 40) aligned north-east/south-west. This has traces of further parallel elements towards its eastern end and may also represent a trackway (C in Figure 40). This

linear also can be traced to the south-west where it leads to a funnel arrangement of ditches (D in Figure 40), possibly a junction of a fragment of ditched trackway at TR 3254 6794. Further fragments of ditch on the same alignment can be traced to the north, east and south of the main enclosure, probably traces of further associated enclosures or fields.

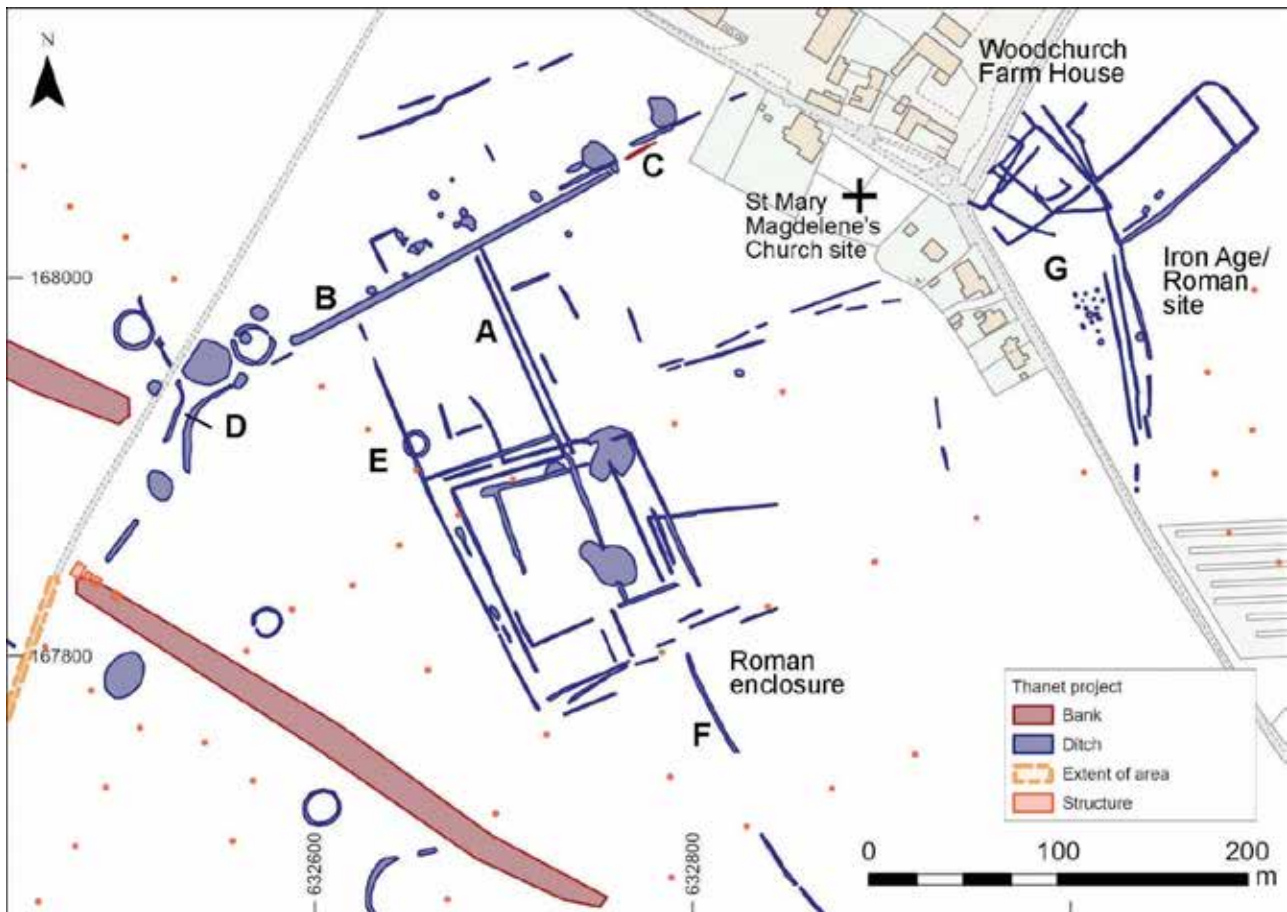


Figure 40: The Roman enclosure at Woodchurch mapped from aerial photographs. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

There are a number of ring ditches around the complex, but these do not appear to be associated with the site; one ring ditch (E in Figure 40) is cut by a ditch extending north-north-west from the north-west corner of the outer enclosure and the others lie some distance from the site and are probably the remains of round barrows. Fragments of further ditches and boundaries are visible to the south and east of the complex on the same alignments, but it is not clear if they are associated with the Iron Age/Roman site. The only additional internal features detected are large pits or depressions visible as cropmarks likely to be the remains of later extraction, quarrying or natural sinkholes.

A long, slightly curving, fragmented linear ditch (F in Figure 40) (Kent HER: MKE7918) extends south-east of the enclosure almost to the edge of the field which could be a boundary or trackway. Just over 50m from the southern end of this ditch is the site of an early medieval inhumation cemetery (Kent HER: MKE124935) visible as a cropmark on aerial photographs (NMR 2602/0215 24-APR-1985), and about 125m south-west of this cemetery is the site of a Roman cemetery, formed of four graves surrounded by a possible fence which were exposed during evaluation trenching in 2005 (Kent HER: TR 36 NW 430).

The site was scheduled in 1980 as the remains of a Roman villa, but no trace of any internal buildings can be seen on aerial photographs. Subsequently, in 1999, Roman finds were discovered during fieldwalking over the enclosure cropmarks by the Isle of Thanet Archaeological Society, who were searching for a medieval settlement linked to the nearby medieval church of St Mary Magdalene at Woodchurch, just to the east. To their disappointment the fieldwalking team failed to identify any medieval finds, but did find five Roman coins (one 3rd century and four 4th century AD), and Roman pottery fragments including Samian ware, black coarse ware and a large piece of tegula (roof tile) (Isle of Thanet Archaeological Society 2000, 5), suggesting the presence of settlement activity and buildings of a Roman date for at least part of the life of the site. The following year, investigations focused on the cropmark enclosures on the eastern side of the road, south-east of Woodchurch Farm House (G in Figure 40) (Kent HER: MKE7900). Romano-British pottery was again identified in two separate ditches, suggesting that these cropmarks represent further Iron Age or Roman activity (*ibid.*, 11–2).

Morphologically this site shares similarities with other known villa enclosures, but the size and complexity of the enclosure, with multiple ditch circuits, is reminiscent of several known and proposed British Roman temple sites with multiple parallel enclosure ditches such as Uley or Lydney (Linford et al. 2018, 9), and is similar in form to a number of sites identified from aerial photographs such as Sandy Lane, Wiltshire (Bowden 2016; Last et al. 2017, 49), Savernake Forest (Crutchley et al. 2009) and a scheduled site at Biggleswade Common, Bedfordshire (Small 2020). The central double-ditched enclosure at Biggleswade is thought to be either a complex Roman villa enclosure, or more likely a temple complex typified by a central structure composed of two concentric elements, the inner forming the cella or religious focus, and the outer square and ambulatory around it (Fig. 41). Temple sites can be square, circular, rectangular or polygonal in plan and vary greatly in size. They frequently stand within a sacred enclosure, or temenos (Historic England 2018c, 3).



Figure 41: Transcription of the possible Roman Temple site at Biggleswade Common. (Green = ditches, red = banks). [Base map © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100019088. Archaeological mapping © Historic England (Small 2020)]

Iron Age and Roman trackways and roads

There is abundant cropmark evidence across Thanet for settlements thought to date from the Iron Age and Roman periods. Many of these settlements have traces of associated trackways running through them. These are typically defined by two parallel side ditches or as a single broad linear cropmark, the remains of a hollow way indicating a long period of use and wear. Though the cropmarks are numerous, evidence for continuity between sites and across several adjacent fields is frequently patchy due to variations between fields under different crops, the time of photography and lack of comprehensive photographic cover coupled with other localised factors such as erosion and deposition affecting the visibility of and formation of the cropmarks. Because of this discontinuity it is difficult to say whether nearby sites are contemporaneous.

In the west of Thanet, the remains of up to five separate trackways, some with associated settlements and enclosures can be seen converging at a point just to the east of the head

of the Brooksend Stream (X in Figure 42), linking the crossing points of the Wantsum Channel with the rest of the island. The course of the Brooksend Stream was originally a tidal creek off the Wantsum Channel before the channel silted up in the medieval period. Unfortunately, the area of a projected junction of these trackways south-east of the A28 between Little Brooksend Farm and College Farm has never been under crops yielding cropmarks on any aerial photographs of the site taken since the 1940s.

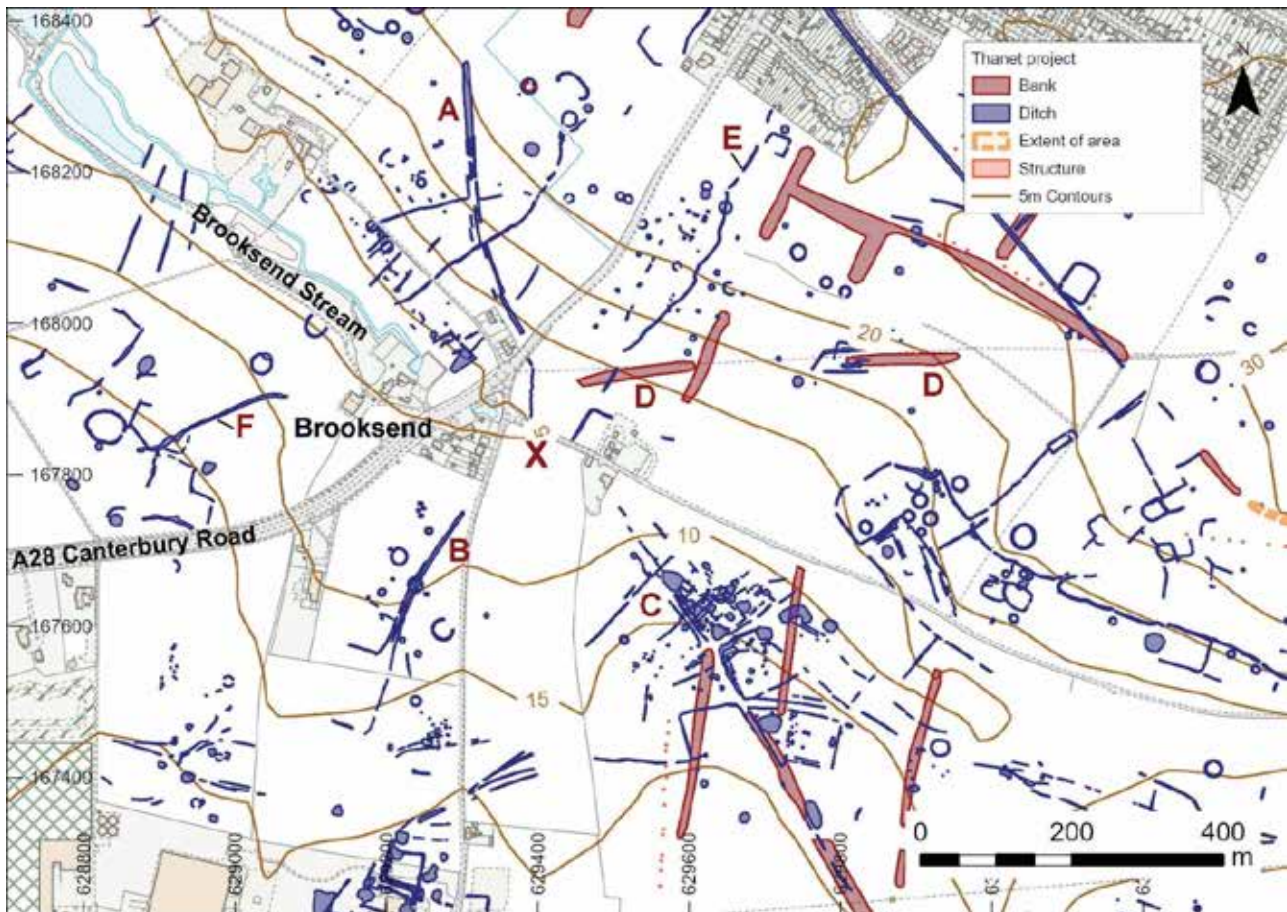


Figure 42: Extract of mapping showing Iron Age or Roman trackways seen as cropmarks converging to the south-east of Brooksend at the head of the Brooksend Stream. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

One of these trackways (A in Figure 42) can be traced northwards from Brooksend for over 360m, striking diagonally up the slope of the north side of the former Brooksend inlet. The cropmark is fragmentary, but it is clearly defined by two parallel side ditches and has two lengths at the northern and southern ends where it appears as a single broad negative linear feature suggesting a hollow way. Mid-way up the slope the side ditches of contemporary boundaries can be seen branching off the side ditches on both sides.

Similarly, a length of cropmark trackway (B in Figure 42) (Kent HER: MKE124373) approaching Brooksend from the south-west has two side ditches and traces of a hollow way between, indicative of prolonged use and wear. This track also appears to cut through the centre of a ring ditch of a probable Bronze Age round barrow which must have been levelled by the time the track was established and the side ditches cut.

The south-eastern and most complete of these settlement and trackway complexes (C in Figure 42) (Kent HER: MKE6382) comprises a trackway which extends through the settlement from the south-south-east with evidence of several side junctions visible as side ditches or defined by the component enclosures which are visible as cropmarks. However, lidar images of the site also indicate a low raised embankment following the course of the southern half of the main axial trackway visible as a very slight earthwork on a different alignment to the three fragments of later field boundary which cut through the settlement.

Extending eastwards from Brooksend, two widely separated sections of low earthwork bank (D in Figure 42) (Kent HER: MKE124398) seen on lidar images follow the line of a current footpath through the fields. The origin of this linear is unclear but it too is cut by the fragmented embanked remains of later, probably post-medieval field boundaries on the southern edge of Birchington. A later prehistoric linear boundary ditch (E in Figure 42) (Kent HER: MKE80550) can also be traced for approximately 380m as a cropmark from the southern extent of Birchington heading south-west in the direction of the convergence point of these trackways and may also be associated with a prehistoric track or routeway. This ditch cuts through the ring ditch of a probable Bronze Age round barrow and may post-date it.

Finally, a 230m long section of broad ditch, possibly part of a boundary or perhaps a trackway was recorded as a cropmark in a field to the south-west of Little Brooksend Farm, extending north-east in the direction of the meeting of the ways to the east of Brooksend (F in Figure 42).

Evidence for Roman roads and trackways across the Isle of Thanet is scant, and the few sections of road or trackway which have been discovered have come to light during road improvement schemes and development. Courses of Roman roads and the places they linked are suggested by Perkins (2001, Fig.1). It is likely that the network of tracks and roads in use during the Roman period had their origins in Bronze Age and Iron Age tracks linking settlements, the sheltered harbours (such as Sarre and Ebbsfleet) and the crossing-point over the Wantsum Channel at Sarre. As with the Iron Age/Roman examples, the cropmark remains of these later tracks or roads have generally been

detected as sections of parallel ditch which have been dated through excavation or by association with dated settlement enclosures and attached ditches and boundaries.

From the Roman period a road linked Canterbury, where Watling Street terminated, to the main crossing point of the Wantsum Channel north-east of the village of Upstreet, opposite the village of Sarre (Perkins 2001, 46). According to Margary this road (Margary RR11) was typically Roman in appearance, being straight and raised throughout its course (Margary 1948, 127). This road is known as the Island Road and follows a low ridge which extends north-east from Sturry to Upstreet, parallel to the course of the Great Stour, which flows along the south side of the ridge towards the Wantsum. The road passes through Upstreet to Wallsend just below the 5m aOD contour mark on the edge of the Sarre Marshes. From this point the road continues over the marshes, carried on the causeway known as the Sarre Wall, crossing the vestige of the Wanstun River via the Sarre Bridge.

On the mainland of Kent, the Roman road to Reculver fort (Margary, RR110) branched off the Upstreet road at a point just beyond Sturry to the east of Canterbury heading in a north-easterly direction. Its course is still largely followed by the current Hoath Road (Margary 1948, 127).

Physical evidence for a number of routes across the island has been found while others may be directly or indirectly referred to or indicated on early maps. In particular, the '*street*' placename is frequently associated with Roman roads surviving into the post-Roman period. A number of examples of this occur across the island in relation to roads, tracks and placenames.

Though no trace of surviving road structures or metalling has been identified, it is generally accepted that the ancient Dunstrete – now forming part of the A253 and A299 from Sarre to Ramsgate via Lord of the Manor – was a principal Roman road across the island, very probably using a pre-Roman route. Evidence for this route is implied by the presence of traces of Roman occupation and cemeteries scattered along its course suggestive of road-side development (Perkins 2001, 47). Just to the east of Sarre the route passes through Gore Street to Monkton where the route then curves around to the north of Minster and continues in the direction of Ramsgate. From Monkton a second southern road extends through Monkton Street, Hoo and Iden to Minster, then through Tattel Street (north of Minster), possibly the course of another Roman route. Other unconnected occurrences of '*street*' names which could indicate lost Roman roads on Thanet can be seen in the hamlet of Spratt Street or Sprattling Street (depending on the map edition) which lies just north-east of Manston and the hamlet of Reading Street which has been consumed by the spread of development of Broadstairs and Margate.

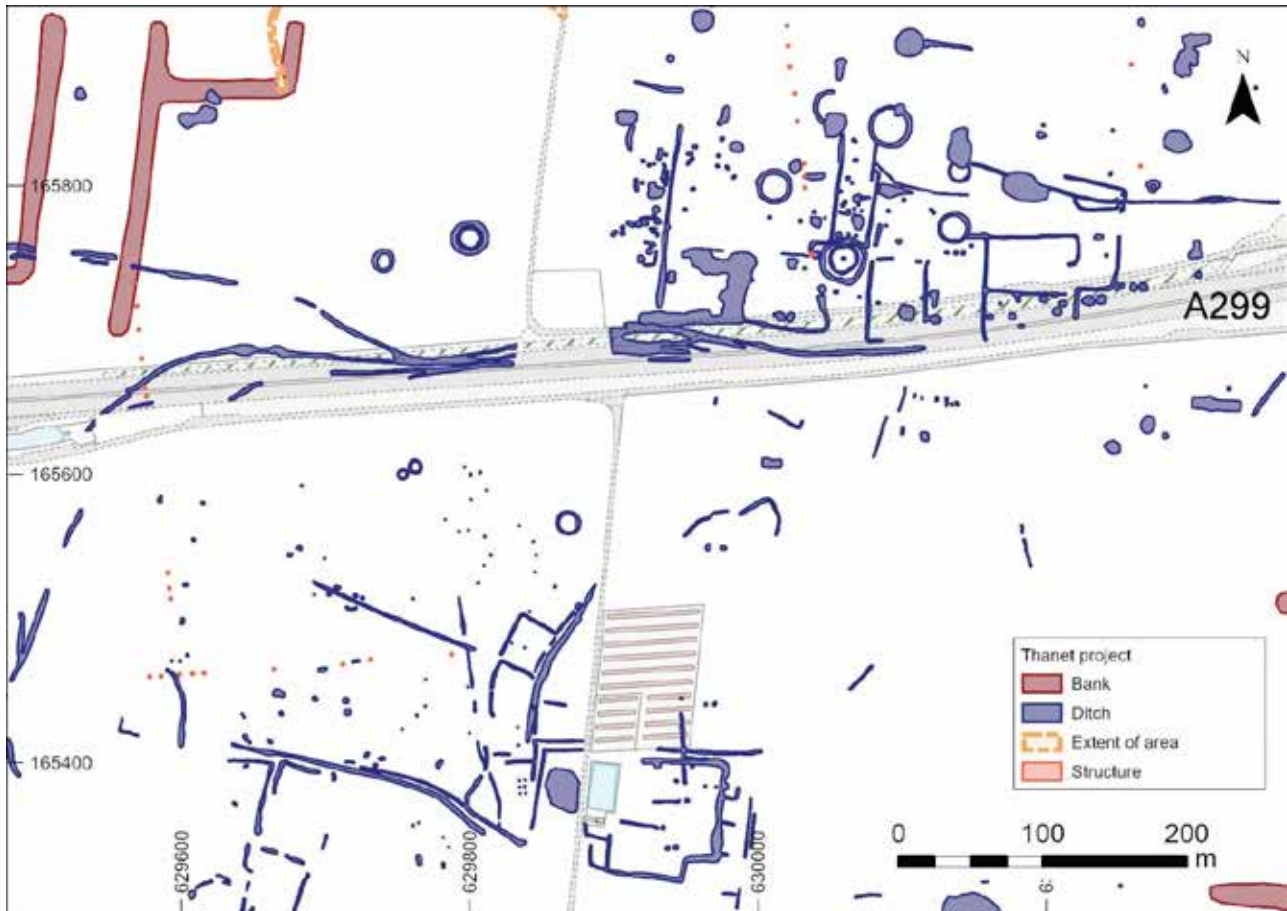


Figure 43: Extract of mapping showing the cropmark remains of the bifurcating trackway/road and associated Roman settlement enclosures on the course of the A253 between Monkton and Minster. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A programme of road widening on the A253 between Monkton and Minster led to a programme of excavation between July 1994 and February 1995 which revealed evidence of extensive Roman settlement situated on a substantial trackway defined by side ditches following the course of Dunstrete and the modern road (Bennett et al. 2008, 6-7) (Fig. 43). The alignment of the road is not particularly straight, possibly suggesting it is an older pre-Roman route. Immediately to the west of the settlement the trackway bifurcates at a junction. Aerial photographs have revealed cropmarks showing the continuation of the settlement excavated during the road scheme, extending over 150m north of the road and over 480m west to east. These settlement remains are interspersed with the cropmarks of numerous Bronze Age round barrows, pits and larger extractive pits of uncertain date. The cropmarks of further settlement remains, probable Iron Age/Roman enclosures with trackways and fields, lie to the south of the junction. The round barrows noted above are a small sample of a concentration of ring ditches which appear to line the course of this

road, the majority to the north, but some also to the south, perhaps placed within sight of travellers on a prehistoric routeway.

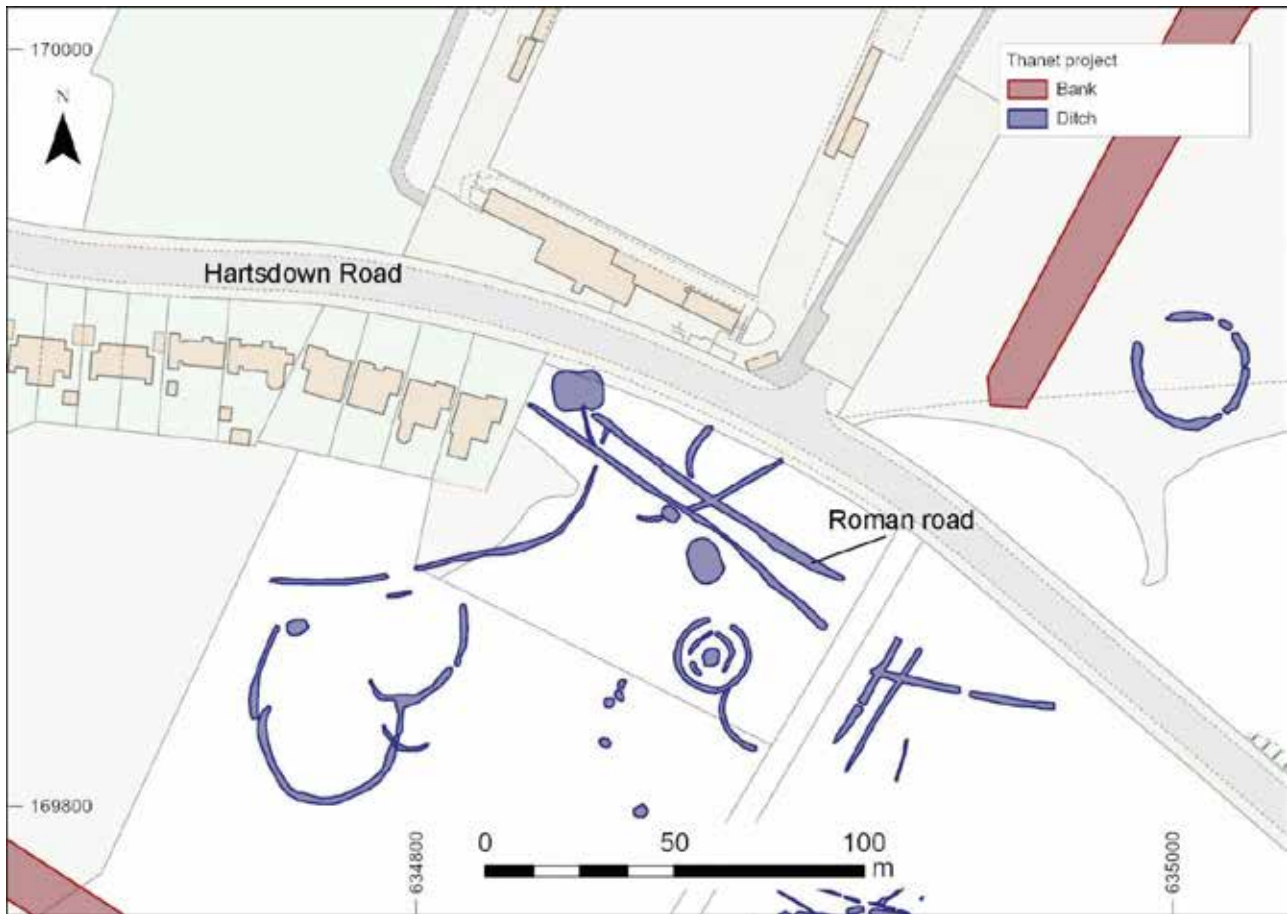


Figure 44: Extract of mapping showing a short length of Roman roadway south of the Hartsdown Road in relation to the remains of prehistoric sites. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The course of a second, north-south Roman road across Thanet, linking clusters of Roman settlement remains at Margate and near Ramsgate, has been postulated. It has been suggested that the northern end of this road is aligned on an Iron Age/Roman complex at Westbrook, Margate (Bennett et al. 2008, 45). It probably also passed close to and served the site of the Tivoli villa (Kent HER: TR 37 SE 9) which lies about 340m to the north-east of this short section of road, across Tivoli Gardens.

Traces of that stretch of the north-south Roman road have been identified as cropmarks running parallel to the south side of the Hartsdown Road on the south-western edge of Margate (Fig. 44). It appears as a pair of parallel ditches 100m in length aligned north-west to south-east and lying about 7m apart, flaring out to 14m apart towards the south-eastern

extent of the road. No further trace of the road either to the north-west or south-east could be seen on aerial photographs but up to 150m of the road, including the length that appears as a cropmark, was identified during evaluation work carried out in 1995 as part of the Hartsdown Community Woodland Archaeological Evaluation. The road structure consisted of a layer of metalling of water-worn flint cobbles associated with Belgic and Roman pottery laid in a shallow chalk-cut slot flanked by the chalk-cut ditches which were visible as cropmark (Perkins 1996, 268-71).

A third possible route is thought to have linked Sarre to Margate, linking the sites of several known large Roman buildings and villas. This route is largely speculative (Perkins 2001, 44) and is thought to have headed northwards along the coast from Sarre before sweeping around to the south-east to the crossing at the head of the Brooksend Creek (see Fig. 42). From there the speculated route strikes east-north-east on a straight course, skirting to the south of Birchington, following the ridge of the escarpment north of the Acol and Shottendane valleys, eventually meeting the north-south route from Ramsgate to Margate at Westbrook. Along this route there are a number of places incorporating 'street' in their names which, like Upstreet on the western side of the Wantsum channel, could be indicative of vestiges or memory of a Roman road continuing into the post-Roman period. These include the settlements of *Street* and *Street Green* to the west of Dentedelion. Additional Street names were recorded on earlier maps of Thanet, adding weight to the Roman origin of this route. The 1872 OS 1:10,560 scale map records a stretch of the road west of Street Green named as *Street Bottom* and the stretch to the east as *Street Hill*. The Andrew's and Drury map of 1769 of the Isle of Thanet records *West Gate Street* west of Dentedelion or Dandelion and Garlinge Street to the east. *Potten Street* on the north-western side of St Nicholas at Wade may also be a vestige of a Roman road heading to a river crossing or mooring location opposite Reculver.

Crossing the Wantsum Channel

The development and status of the Wantsum channel has been much debated. The first mention we have of a channel was in the 2nd century AD by Ptolemy indicating that the Isle of Thanet was separated from the mainland of Kent in the Roman period. The Romans built forts at either end of the channel, suggesting it was a significant navigable routeway, preferable and safer than the route around the north coast of Thanet into the Thames Estuary. Richborough (*Rutupiae*) at the south-eastern end was named from the British word for mud flats or muddy creek. Reculver (*Regulbi/Regulbio*) at the northern end was recorded in the 4th-century text *Notitia Dignitatum*, its name believed to have been derived from British words meaning 'Great Beak', perhaps referring to the shape of the tidal headland on which the Roman fort stands (Moody 2008, 35).

The name *Wantsum* or *Uantsumu* is first recorded in Bede's *Ecclesiastical History* in the 8th century. Bede described 'the large island of Thanet 'divided from the other land by the river Wantsum, which is about three furlongs across and fordable in two places, for both ends of it run in the sea' (Sellar 1907, 36). Bede cited two crossing points but did not specifically say where these were. Historically the main route was between Upstreet on the mainland and Sarre on the Isle of Thanet, crossing through the marshes to the edge of the tidal channel, then wading out to a waiting ferry boat as suggested by illustrations in early maps such as the map of 1412 by Thomas Elham, a monk at St Augustine's, Canterbury, in the *Chronicle of St Augustine's Abbey, Canterbury* (Skelton and Harvey 1986, 123).

As discussed above, the course of the Island Road – the Roman Road from Canterbury – enters the village of Upstreet from the south-west leading to a narrow point in the channel opposite the village of Sarre suggesting this was a long-established route onto Thanet (OS map observation).

These established crossing points would have required a safe passage over the preceding marshy ground and the tidal shallows to a waiting boat. Jetty structures, though more stable for loading and unloading, would have been restricted to use only at high tide. It is likely that a causeway existed through the marshes beyond the end of the Roman road and leading to the edge of the open channel, long before it is first recorded in the 15th century. The first mention of the causeway carrying the road from Canterbury to Thanet appeared in 1485 in perambulation to an Act of Parliament in the reign of Henry VII in relation to a request to construct a bridge to Sarre. It refers to excessive accumulation of mud which was restricting the ferry-crossing to all but an hour at the highest point of the spring tide. Permission was granted for a bridge to be constructed but stipulated that it had to be high enough to accommodate the remaining river traffic still able to navigate the dwindling channel (Moody 2008, 54). The route of the current A28 crosses in a straight line east-north-east from Wall End north-east of Upstreet to Riverside Manor via the embanked Sarre Wall in the reclaimed marshes, where it changes course to the north-east before proceeding over the Wantsum river via Sarre Bridge to Sarre.

However, earlier maps indicate there have been considerable changes to the route over time. The 1801 OS Old Series one-inch maps depict a less direct route over the channel (Fig. 45). The road approached over the marshes from Wall End on the same course as the current road following the Sarre Wall but changed course to a northward direction following the Old Road via Sarre Ferry Cottage to a crossing point north-west of the current crossing at Sarre Bridge. Once over the river it then changed direction again to run parallel to the Island Road/Causeway into Sarre where it followed the main street known as 'Old Road' - through the village in a south-easterly direction to meet the main road to

Monkton and Minster. A subsequent map edition shows a new road and crossing to the south-east following the course of the modern road into the village meeting the south-eastern end of Old Road.



Figure 45: The earlier alignment of the road from near Cut End to Sarre via the old bridge over the Wantsum River. Extract of Ordnance Survey One inch to the mile map (published 1801). [Reproduced with the permission of the National Library of Scotland. <https://maps.nls.uk/>]

The lower crossing of the Wantsum is thought to be at the south-eastern end of the Wantsum Channel from Ebbsfleet via the Stonar Spit, but progressive silting, shifting and deposition around the Stonar Bank has made it difficult to plot the exact course of the approaches to the crossing points on either side of the channel. It has been suggested that Ebbsfleet Lane on Thanet follows the course of the Roman route onto the island from the eastern crossing point, heading for a junction with the main historic road from Ramsgate to Sarre (Walker 1926, 85–6).

St Nicholas at Wade is thought to be named as such because its proximity to the wading place or ford at or near the current crossing to Sarre rather than as a crossing place in its own right, but a crossing point could in theory be established anywhere where there was a safe crossing through the marshes and an accessible point to board a waiting boat to ferry travellers to the opposite bank. The existence of further crossing points from St Nicholas at Wade are supported by the presence of droves and paths leading through the marshes on the western side and the presence of converging lanes on the Thanet side suggesting they too were heading to a crossing point. Pottern Street lies just to the north of Sarre village on a lane which heads west-north-west towards the end of the island, though this is not the shortest and most direct route to the point where the A299 Thanet Way crosses between Wagtail and Warehorn. On the western (mainland) side of the Wantsum the nearest point at Grays Farm and Little Grays, Brook Lane links to the course of the Roman road from Canterbury to Reculver Fort on the coast (OS map observation). The name 'Street' may also indicate the remnant of a Roman road forming Pottern Street which heads north-west out of the village in the direction of the former shoreline and at Chambers Wall. The 13th-century parish church of St Nicholas also acted as a Chapel of ease for the St Mary's church at Reculver providing for those unable to reach the main church (St Nicholas at Wade with Sarre Parish Council 2025) but suggesting there might be a landing point near Chambers Wall for river traffic between Sarre and Reculver in the medieval period.

Medieval and post-medieval settlement and agriculture

Early medieval settlement

It still remains unclear what the mechanisms and implications were to the population of Britain, and specifically south-east Kent, in the transition which occurred following the withdrawal of the Roman army from the fort at Richborough in AD 407 to 411. There is abundant evidence in the archaeological record of Roman military and domestic settlement, roads and material culture, but very few sites and finds attributed to the post-Roman 5th century. It is presumed that to a certain extent the rural communities continued to occupy and farm the land on a local scale for a period immediately after this event (Andrews et al. 2015, 435).

However, the archaeological evidence appears to suggest a wholesale change in the dominant culture of southern Britain through the 5th century. Whether this transition from Roman to Anglo-Saxon England was a gradual change or a rapid take-over by a small group of military elites resulting in complete acculturation of the existing population is not clear (Williams 2007, 194). It has been suggested that the 7th-century ecclesiastical estates in Kent were based on the structure and locations of the Roman villa estates, possibly implying the continuity of the physical estates, but not continuity of the actual

landholdings and people (Brookes 2003, 88; Everitt 1986, 339–41). Although there is no clear evidence of abandonment of settlements, once the last traces of Roman material culture, such as circulating Roman coins and wheel-thrown pottery, fall out of use there is no material evidence of the pre-Saxon population in the archaeological record (Williams 2007, 195).

The remains of Roman society, built up over four centuries of occupation, are abundant and extensive cropmarks revealing their settlements can be seen across Thanet. However, in comparison there is very little evidence for the actual settlements where early medieval people once lived, despite the extensive cemeteries found across Thanet. The sites that have been found by chance are often on south-facing slopes of the chalk ridge (Moody 2007, 170). It is entirely possible that some of the numerous undated settlement sites seen as cropmarks and mapped from aerial photographs are in fact early medieval in date (Birch et al. 1988, 50). In this part of Kent settlements would almost certainly have been located in close proximity to their burial grounds (Birch et al. 1988, 49). The oldest graves would probably have been dug nearest the settlement with later graves added as the cemetery extended away from the village or, if serving a dispersed community, situated within reasonable proximity or view of these dwellings.

These Saxon peoples brought with them new methods of constructing their houses, halls and barns out of wood and roofed in thatch, leaving little foundation impressions other than a wall slot and post holes or a shallow sub-rectangular sub-surface depression of a sunken-featured building (*grubenhäuser*). The interpretation of sunken-featured buildings on Thanet is further complicated by evidence from the results of the Thanet mapping project and recent developer-led excavations, suggesting their use may span a broad timeframe—from the Roman period, through the early medieval, and into the medieval period (Andrews et al. 2015, 40-1). The earliest groups from the early medieval arrivals appear to have rarely used ceramics so left little or no archaeological footprint and only a few scattered finds have been found across Thanet. The only buildings constructed in stone were churches and palaces. Many of these early settlements occupied favourable locations which have been under continuous occupation since and are likely to be lost or lie hidden beneath centuries of subsequent settlement development. The scattered surviving Saxon names are often the only trace of these early settlements (Andrews et al. 2015, 40-1).

In stark contrast to the lack of settlement evidence, there is an abundance of early medieval (mostly Jutish) cemetery sites across Thanet, 12 of which have been mapped from aerial photographs. Many of these cemeteries have been excavated over the last 200 years, yielding an astonishing wealth of early medieval grave goods including decorative

items of jewellery, glassware and weapons as well as less lavish everyday objects (Welch 2007, 209).

Traces of an early medieval occupation site were unearthed north-east of the village of Acol in 1981 during the digging of house footings. Remains of post holes and a sunken-floored hut were found along with pottery fragments and traces of a midden (Thanet Archaeology Unit Records and Perkins quoted in Birch et al. 1988, 48–9). Elsewhere on Thanet a cluster of five sunken-featured buildings were found at Manston Road, on the south-west edge of Ramsgate (Andrews et al. 2009, 207–212) and another single early example dating to the 5th and early 6th century, south-west of Minster (Martin et al. 2012, 48–50).

More recently, traces of a number of sunken-featured buildings have been identified during the detailed excavations undertaken in advance of the East Kent Access road improvement scheme on Thanet. This work identified the truncated remains of four buildings, all of which were of the standard two-post construction seen across the country (Andrews et al. 2015, 236). Three were found in a cluster, but poor dating evidence made it impossible to state if they were contemporary or represented a successive series of buildings at the same site. They all lay in close proximity to two separate inhumation cemeteries spanning the 7th to 8th centuries, lying to the north and south of an early to mid-Saxon hollow way on the alignment of a Roman boundary and also partly aligned with the east-west Roman road through Minster, probably following a pre-Roman trackway (Andrews et al. 2015, 385, 387–8). It is thought that the isolated buildings were individual farmsteads of dispersed rural settlements, with many more remaining to be identified (Andrews et al. 2015, 437).

Post-Norman Conquest settlement

Across Thanet the remains of an unusually high number of settlement enclosures generally thought to be medieval in date have been identified from aerial photographs as cropmarks. A small number have been dated through excavation to the period following the Norman Conquest, though a large number of these sites remain undated and could represent the remains of medieval settlements spanning several hundred years.

These settlement enclosures each represent a single holding or farmstead. Though variable in size and shape, they all share a general form; typically, a rectilinear enclosure defined by a ditch, within which are a variety of features such as traces of internal sub-divisions, possible yards, traces of depressions and pits, occasional evidence of buildings and sunken-featured buildings. Most occur as individual isolated sites and some enclosures have later annexes or evidence of overlapping phases. They vary in size from

around 25m by 25m to 240m by 198m (Thorne Farm, Minster). Though not the largest complex, a settlement site recorded as cropmarks close to St Nicholas at Wade roundabout measured 160m by 52m in plan.

One such site (Kent HER: TR 36 NW 78) lies just to the south of Quex Park and is bisected by the current Manston Road. The cropmarks clearly show an enclosure with buildings around a central yard (Fig. 46). The site was excavated by the Trust for Thanet Archaeology in 2010 (Moody 2010). Within the settlement enclosure the remains of several robbed stone buildings and pottery dating from the 13th and late 14th century were found. There was also evidence of 15th-century pottery and signs of the site being robbed out in the early 15th century, suggesting it had ceased to function as a settlement by this time. The adjacent modern houses and buildings of Sparrow Castle Farm at the junction of Manston Road and Shottendane Road give a sense of comparative scale.



Figure 46: Extract of mapping of a 13th- to 14th-century medieval farmstead enclosure visible as a cropmark at Sparrow Castle, south of Quex Park. [Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

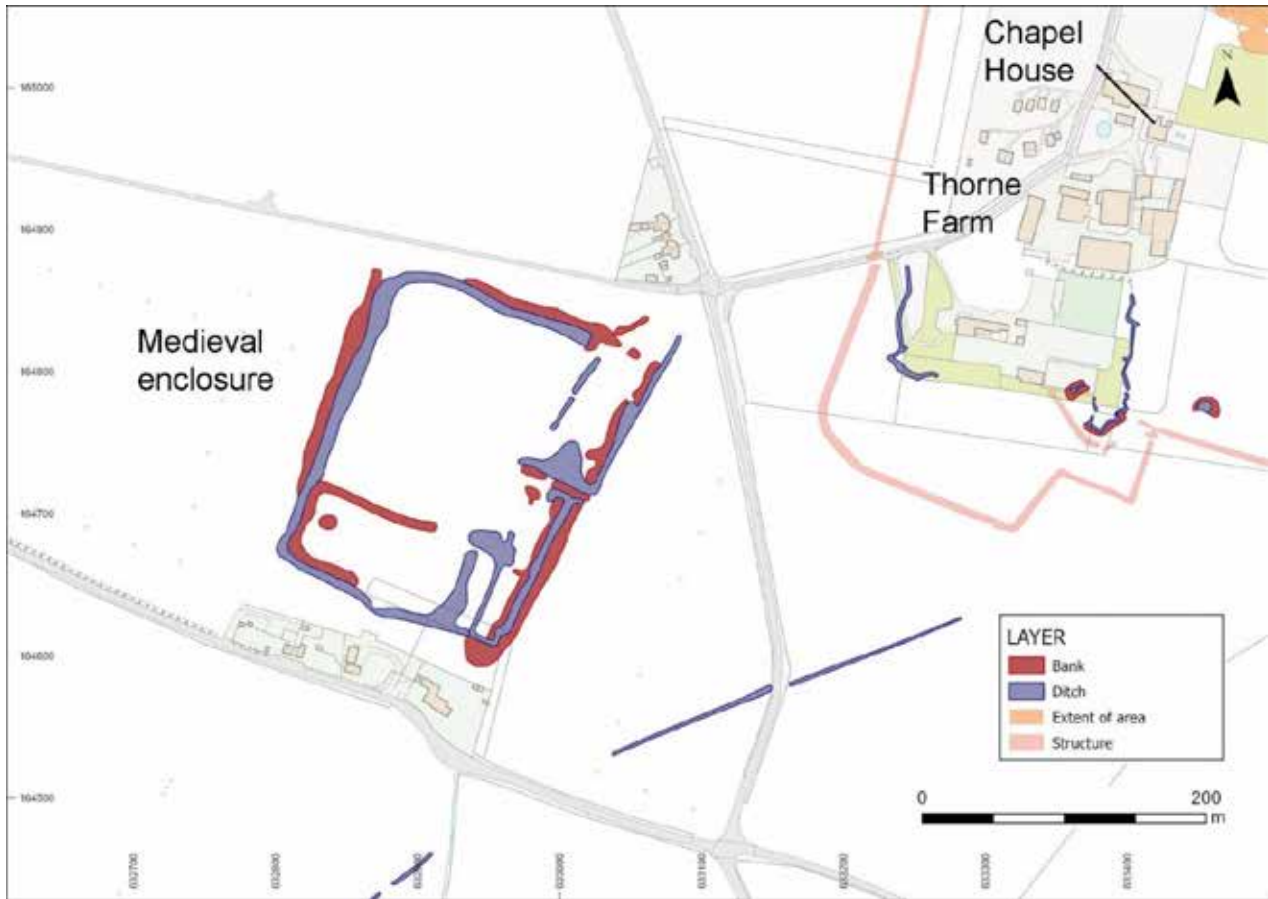


Figure 47: Medieval settlement enclosure at Thorne Farm. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

All but three of the mapped probable medieval settlements or farmsteads have been levelled and are only visible as cropmarks. The largest of the earthwork settlements is a substantial rectilinear enclosure located to the south-west of Thorne Farm, between Minster and Cliffs End (Kent HER: MKE16051) (Fig. 47). That site was mapped as an earthwork from RAF vertical photographs taken in 1946 but has since been plough-levelled and is now only visible on aerial photographs as cropmarks and soilmarks. The enclosure measured about 240m by 198m and was defined by ditches with fragments of both internal and external banks along with traces of at least three major internal subdivisions. In the north-east corner is a funnel entrance. The scale of the site suggests this was a large grange farm, possibly pre-dating Thorne Manor on the site of Thorne Farm immediately north-east of the site. The current farm is post-medieval in date, but Chapel House, within the farm complex, incorporates the remains of the medieval chapel of St Nicholas at Minster. This was built as the private chapel to Thorne Manor in the 14th

century and was much altered in the mid-19th century when the manor was demolished (National Heritage List for England: 1224336).

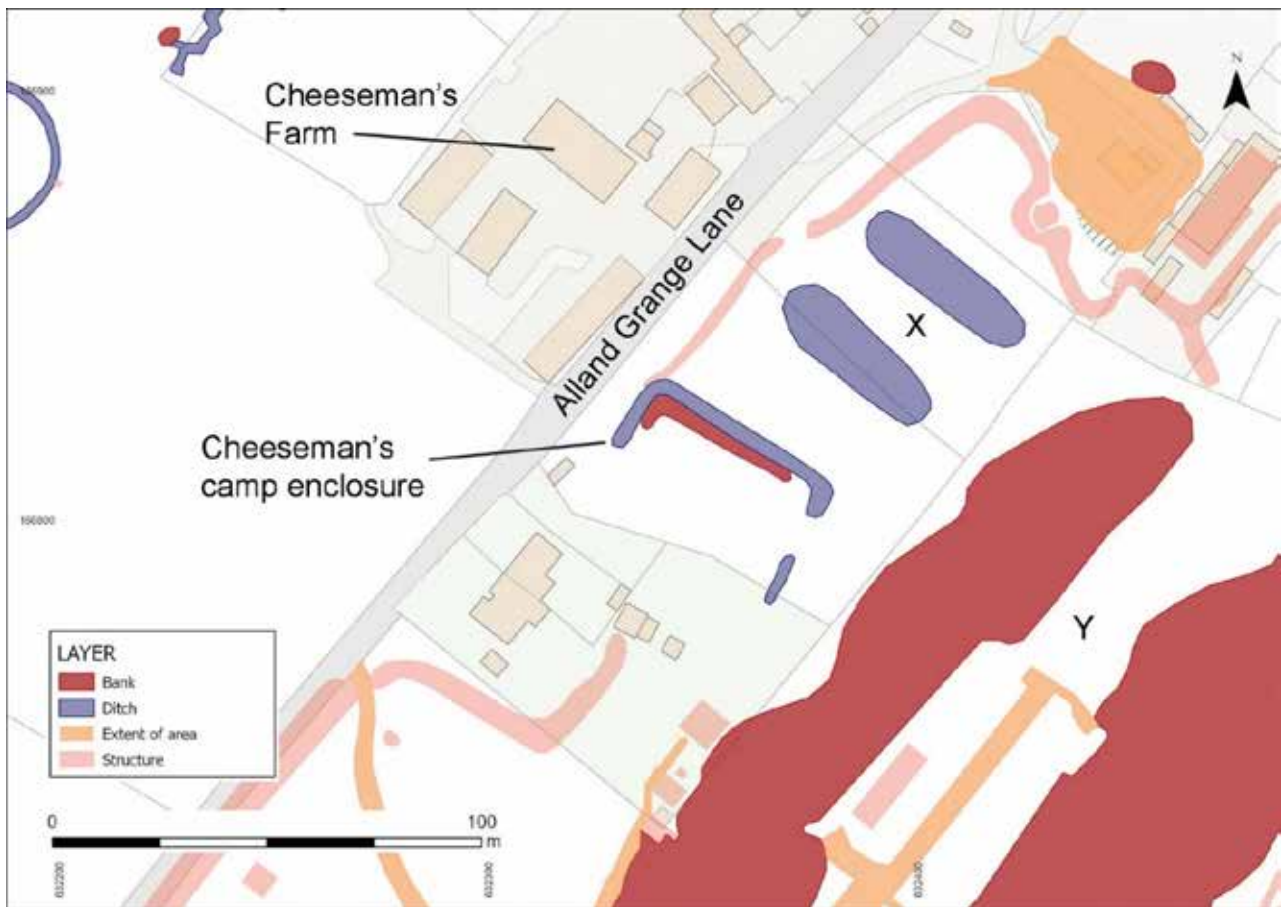


Figure 48: The remains of Cheeseman's Camp medieval settlement enclosure and adjacent hollows, possibly fish ponds (X). Adjacent to this are the extensive remains of a semi-sunken aircraft hangar (Y) constructed during the First World War at Manston [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Cheesman's Camp at Cheesman's Farm, south of the crossroads of Woodchurch Road and Manston Road at Acol, is thought to be the only site to have remained as an earthwork until relatively recent times (Kent HER: TR 36 NW 16) (Fig. 48). It survived as a sub-rectangular enclosure defined by a ditch and bank and was depicted on historical OS maps. It measures approximately 40m by 50m with an entrance via a causeway in the western side. In 1923 OGS Crawford considered the site not to have the appearance of a moat or defensive site and suggested it to be the site of a medieval house, though Roman building fabric and pottery has been found nearby (Kent HER: SKE49231).

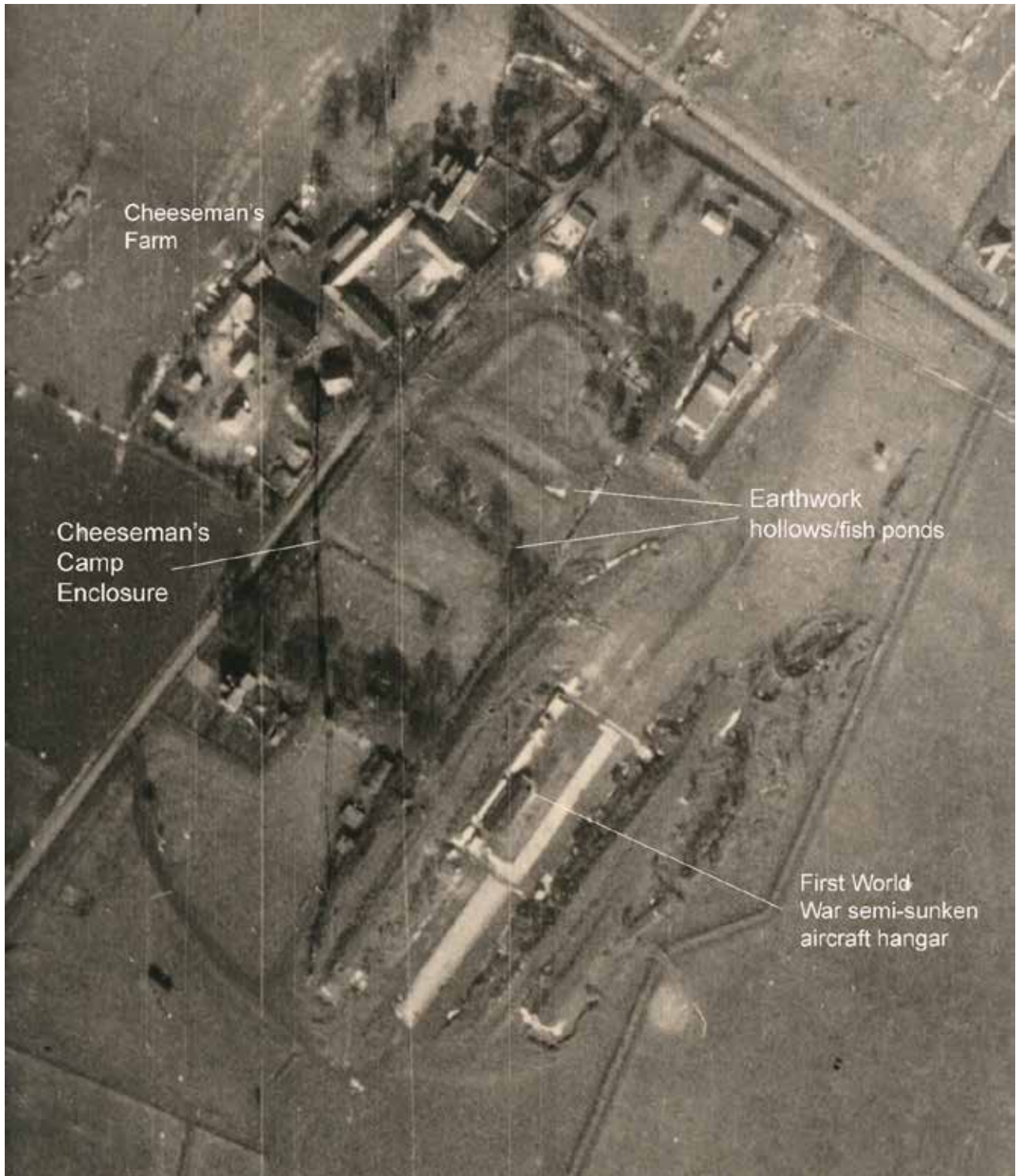


Figure 49: Cheeseman's Farm medieval settlement enclosure visible on RAF photographs taken in 1942 before the site was levelled with traces of two possible fishponds (earthwork hollows).
[Extract of RAF/HLA/407 V 78 24-FEB-1942 Historic England Archive (RAF Photography)]

The site was still visible as substantial earthworks on RAF aerial photographs taken in 1942 (Fig. 49). Two large sub-rectangular hollows, possibly fishponds (X in Figure 48), lay to the north-east of the enclosure, orientated parallel to its north side. The site was largely levelled in the 1980s, but traces of the enclosure can still be seen on APGB vertical photographs taken in 2021. The cropmark traces of a semi-sunken hangar constructed in 1918 to serve RAF Manston extend along the south-eastern side of the site (Y in Figure 48) (see RAF/USAF Manston, below).

A third possible settlement enclosure which still survives as an earthwork is located in the southern half of the parkland of Quex Park. This was detected for the first time on Environment Agency 1m Lidar flown in 2017. It appears as an incomplete ditch-defined rectilinear enclosure about 45m by 43m on plan, obscured on the western side by a band of woodland. Though likely to be the remains of a settlement enclosure, it is not clear if this is medieval or Roman in date because of the morphological similarities observed between sites from these two periods on Thanet (Kent HER: MKE124504).

As well as these individual isolated holdings, at least eight broadly similar linear groupings of settlement enclosures have been identified as cropmarks across Thanet. They are thought to be the remains of deserted medieval hamlets, though only handful of these sites have been excavated and dated. One such site is a group of cropmark enclosures aligned along a surviving trackway which branches off the Manston Road at Sparrow Castle pumping station to south of Quex Park (see Enclosure B, Fig. 57). Excavation by the Trust for Thanet Archaeology yielded finds of 14th-century pottery within the enclosures along with traces of ditches of earlier medieval enclosures (Moody 2010).

Typically, these linear settlements comprise a group of around six individual settlement enclosures of varying size, shape and layout, indicating individual and piece-meal development along a road or boundary. The variation in layout and size of each settlement suggests that none were planned. These grouped settlement enclosures tend to be smaller and slightly less complex than the isolated holdings, perhaps suggesting a different type of dwelling such as a cottage and garden as opposed to a self-contained farmstead or small holding.

As with the isolated settlements, a significant number of these enclosures have traces of large hollows or areas of extraction visible as large dark cropmarks (*maculae*) within the enclosures themselves which may be contemporary with the occupation, possibly yards or perhaps middens; but more likely to be the result of later robbing of the sites. Smaller *maculae* are likely to be the remains of building foundations or working floors. Further

possible settlement sites may be indicated by alignments of similar hollows, but with no trace of surrounding enclosure ditches.

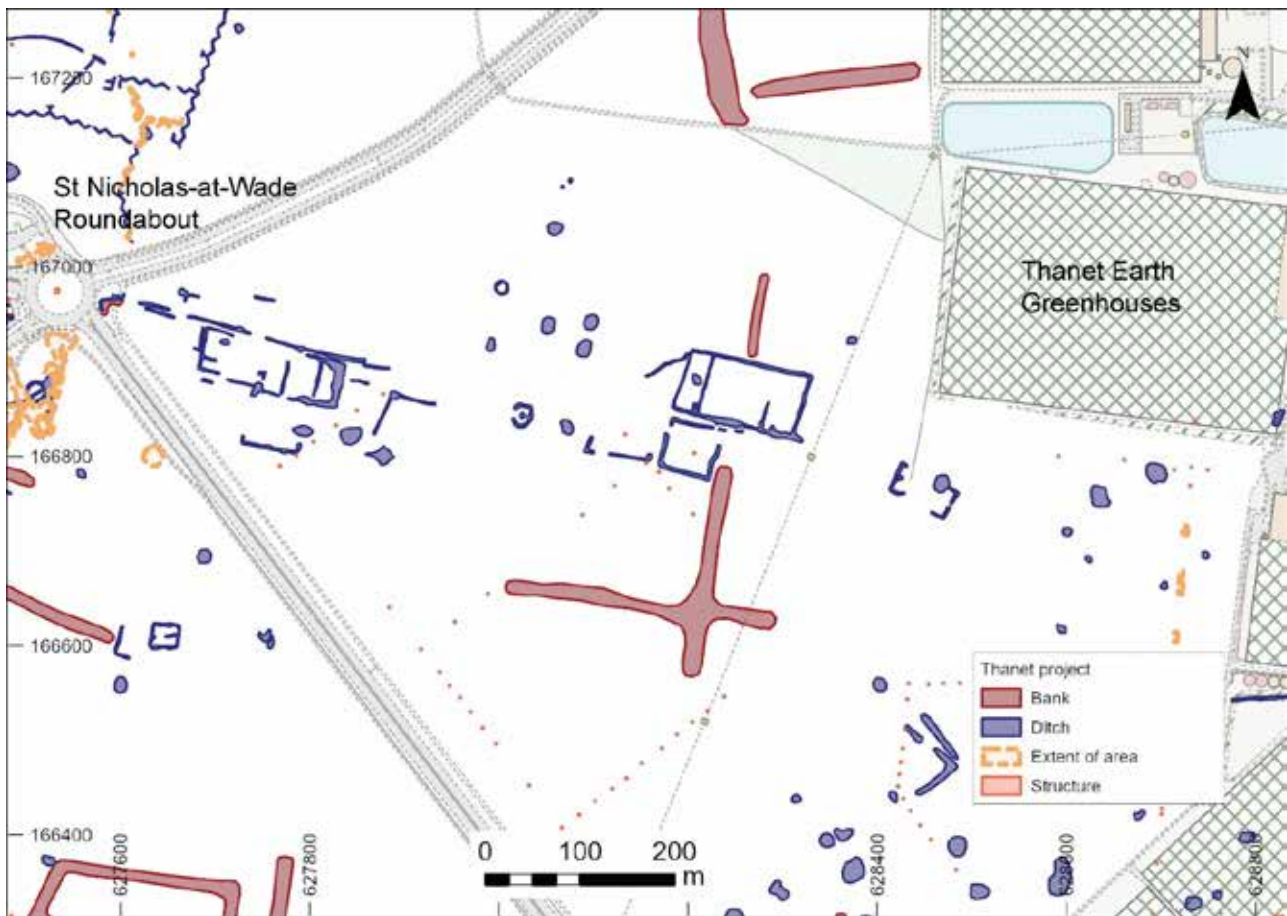


Figure 50: Extract of mapping illustrating a probable linear medieval settlement with the fragmented traces of a central road or trackway located to the east of St Nicholas at Wade Roundabout. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Only one site (east of the roundabout at St Nicholas at Wade) has any visible trace of a trackway, with fragments of side ditches which can be seen extending along the northern side of the most westerly enclosure nearest the modern junction on Thanet Way (Fig. 50). This track was marked as a track or lane on one-inch first edition Ordnance Survey maps and is still marked as a modern-day footpath through the fields in the direction of Seamark Road and the site of the Thanet Earth glasshouse complex. A further line of smaller enclosures is visible to the east, on a slightly different alignment. These enclosures align on another former lane which branched off Seamark Road and is still marked by a footpath on the current Ordnance Survey map. This path continues eastwards of Plumstone Lane as a surviving trackway via Plumstone Farm in the direction of Cleve Court and a junction with the present B2190 to Manston and Ramsgate beyond (Fig. 51).

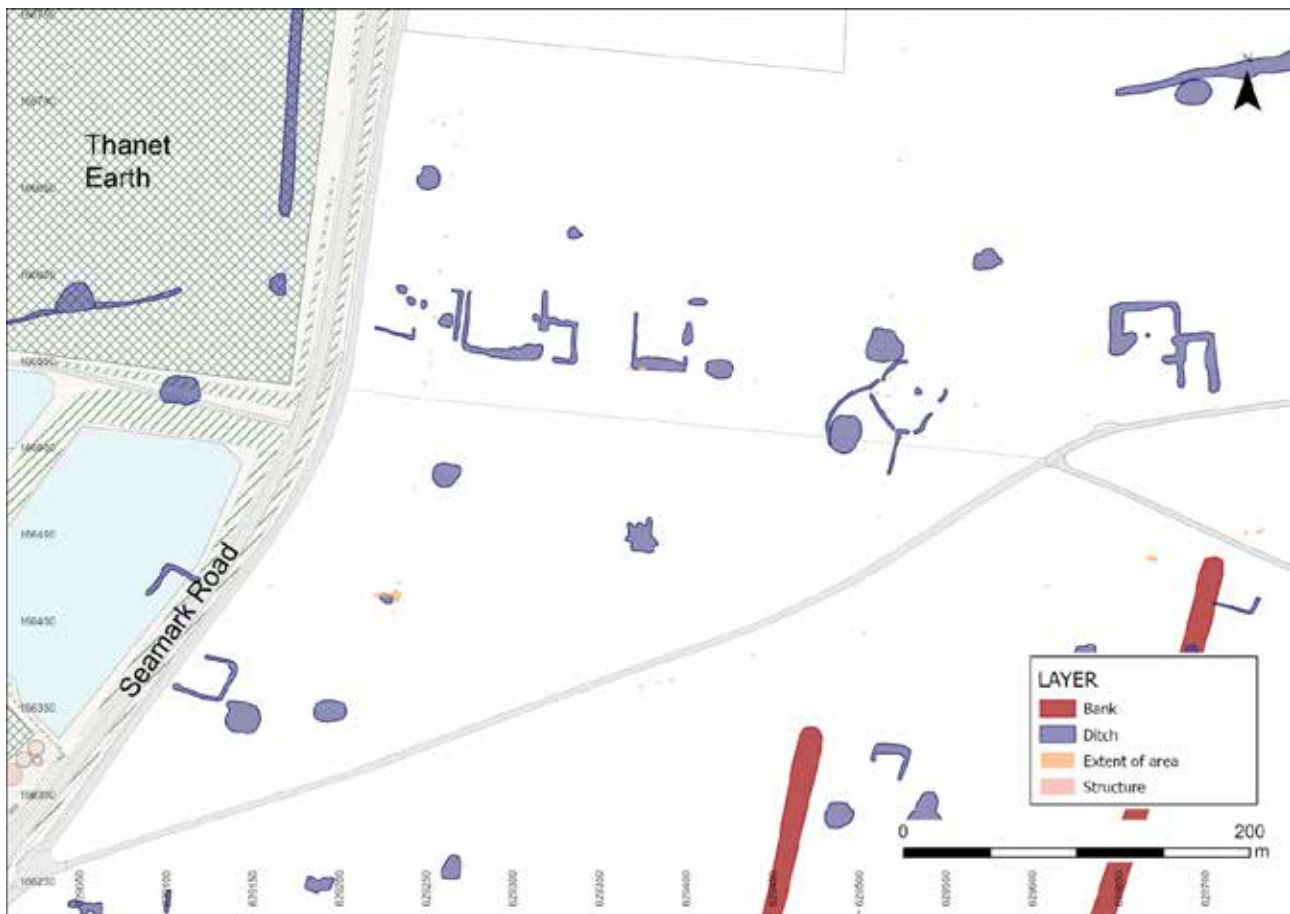


Figure 51: A fragmented linear settlement following a now invisible trackway off Seamark Road, south-east of Thanet Earth. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Another linear settlement or hamlet, located near Zeila Farm south of Garlinge appears to front onto and follow the northern side of the present-day Shottendane Road (Fig. 52). This suggests that the modern road likely follows the course of a road or track that was in use during the medieval period. This settlement appears to lie within a landscape of scattered farmsteads and fields. The complex systems of ditched field enclosures surrounding these settlements appears to have several phases of development, though at the time of writing they remain undated by artefactual or scientific means. Some of the enclosures appear to be associated with elements of the surrounding field system boundaries but not all. This makes it difficult to definitively associate the fields with the settlement enclosure and hamlets.



Figure 52: Medieval linear settlement along Shottendane Road with traces of field boundaries and surrounding field systems and further dispersed settlement enclosures. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A third linear settlement was recorded to the west of Nash Farm between Lydden and Westwood Industrial Estate (Fig. 53). There is no trace of a trackway associated with the settlement, but the north-west to south-east axis is still defined by a modern field boundary. A spur of farm trackway from Manston Court Road to the south terminates short of the southern end of the settlement remains and is possibly a remnant of the former track through the hamlet.

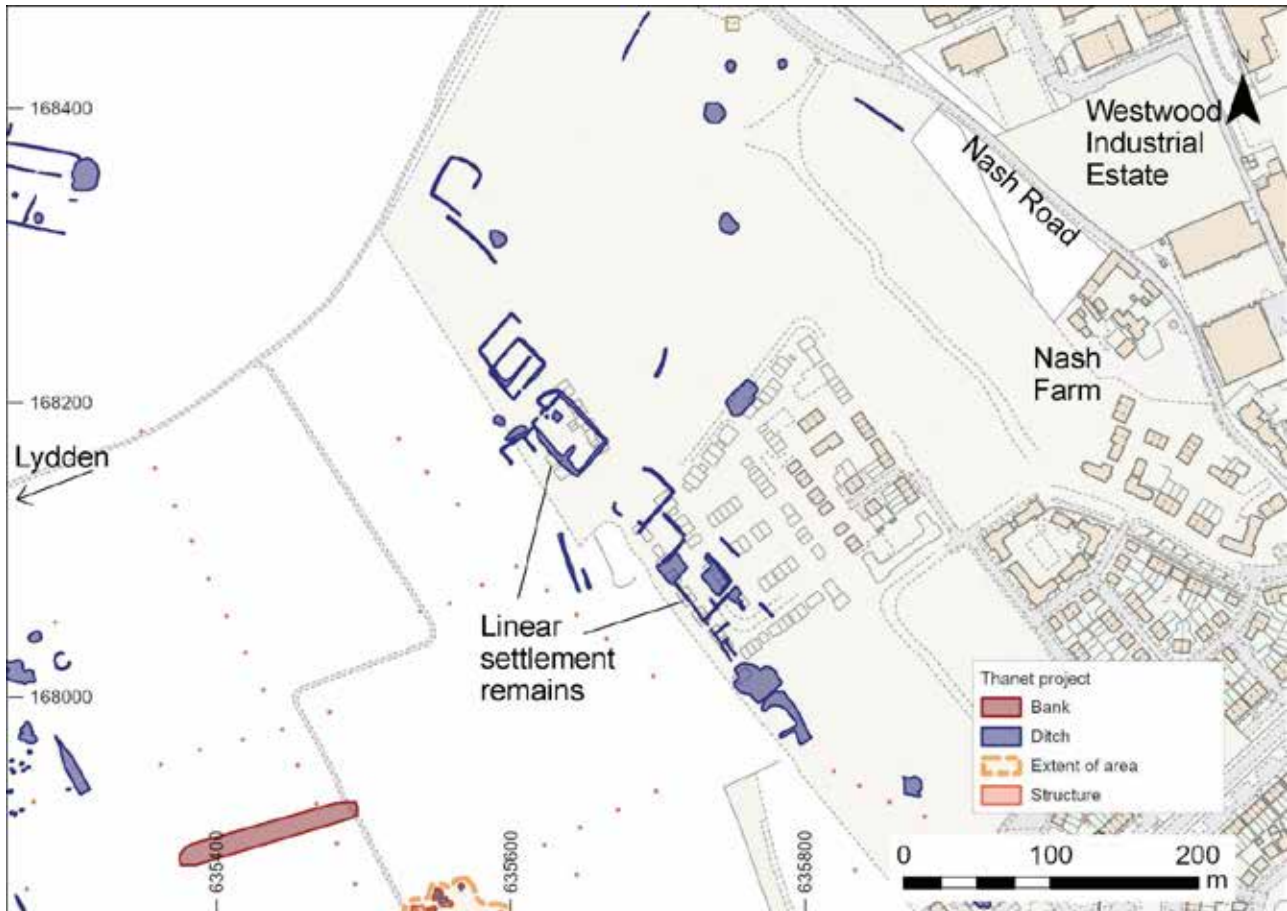


Figure 53: Medieval linear settlement seen as cropmarks crossing fields in a south-easterly direction near Manston Court Road between Lydden and Westwood Industrial Estate. [Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The largest of the linear settlements lies to the east of the village of Woodchurch. This site appears to be located at a junction of two lost roads. The main settlement is aligned north-east to south-west with a second shorter alignment of three well-spaced settlement enclosures extending to meet it from the north-west, just north of Retreat Farm. All but two of the settlement enclosures have large dark cropmark maculae either within or partially overlying the enclosure ditch, suggesting some of these depressions or excavations belong to a later phase than initial construction and occupation. The slight earthwork remains of a probable post-medieval field boundary cut through the north-east to south-west alignment, visible as a T-shaped embanked feature (Fig. 54).

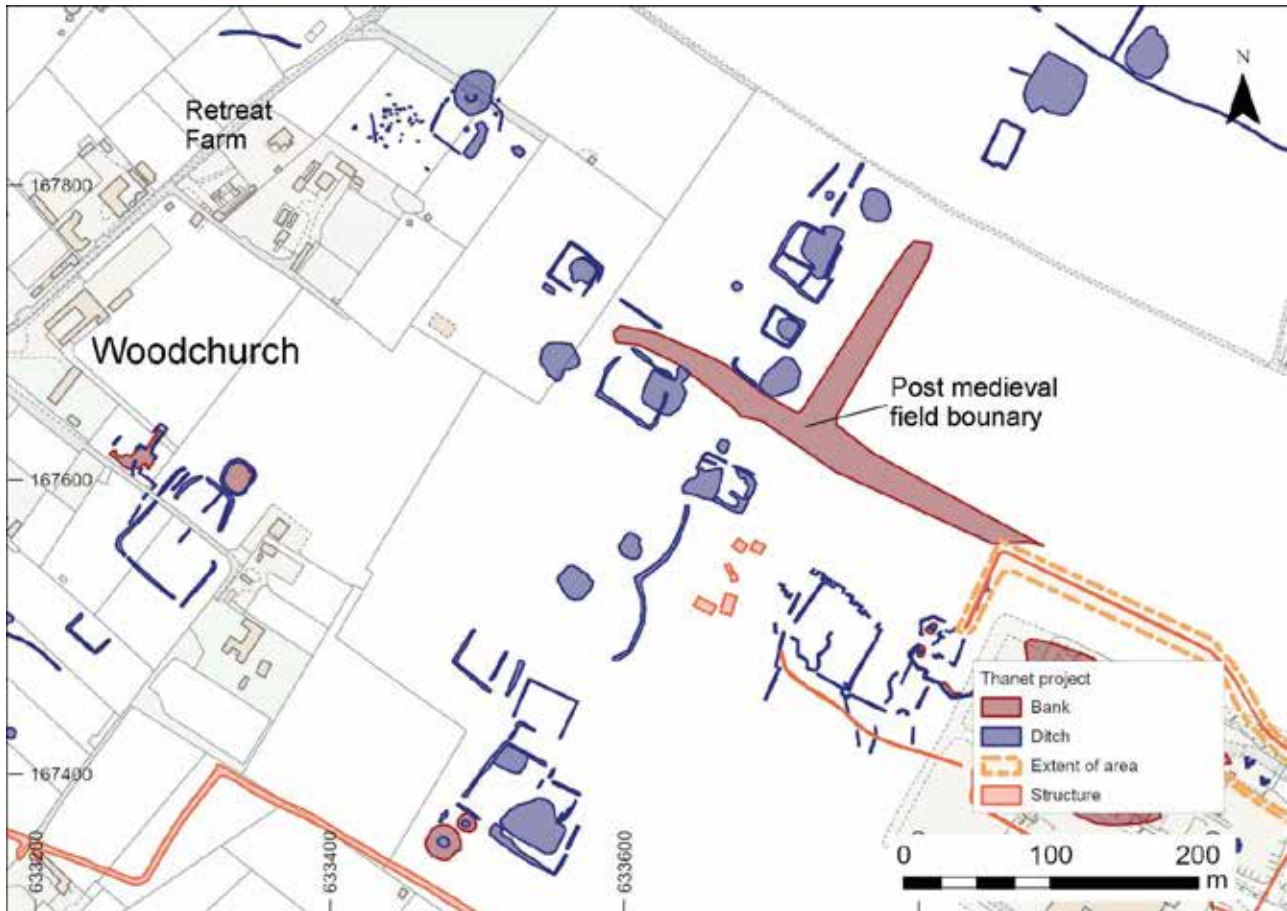


Figure 54: Extract of mapping of medieval linear settlement development, presumably aligned along two lost roads east of Woodchurch. [Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The traces of only a handful of medieval buildings and sunken-featured buildings have been mapped across Thanet. The largest complex (Kent HER: TR 37 SE 362) at East Northdown, Cliftonville in the north-east of the island was excavated in 1999 and 2000 by the Trust for Thanet Archaeology and the Museum of London Archaeological Service. The site is thought to represent an agricultural complex, with trackways, field enclosures and associated buildings, perhaps for agricultural storage, rather than a domestic dwelling. Across the site four phases of occupation from the mid-11th century through to the late 15th century are represented. This includes evidence of ovens or kilns from the 12th century thought to be part of an agricultural site (possibly for malting) rather than an industrial site. A square enclosure contains two rectangular sunken features, either sunken-featured buildings or traces of under floor spaces of buildings which were dated to the mid-13th to mid-14th century. An enclosure system in the western part of the site was excavated in 2000 and found to contain rectangular features that may have been related to

buildings within the enclosures, most of which were dated to the mid-13th to mid-14th century. Intercutting pits across the site dated to the late 14th to the late 15th century (Trust for Thanet Archaeology 1999; Museum of London Archaeology Service 2000).

At the north-western end of the Isle of Thanet, bordering on the Chislet Marshes, the cropmark traces of a series of small settlement enclosures though to be medieval in date can be seen in a line on the northern side of the Brooksend Stream. Spaced between 100m and 150m apart, all were located just below the 5m aOD contour line, closely following the edge of the former Brooksend inlet just above the historic water's edge when Thanet was still an island and this was a tidal inlet of the former Wantsum (Fig. 55).

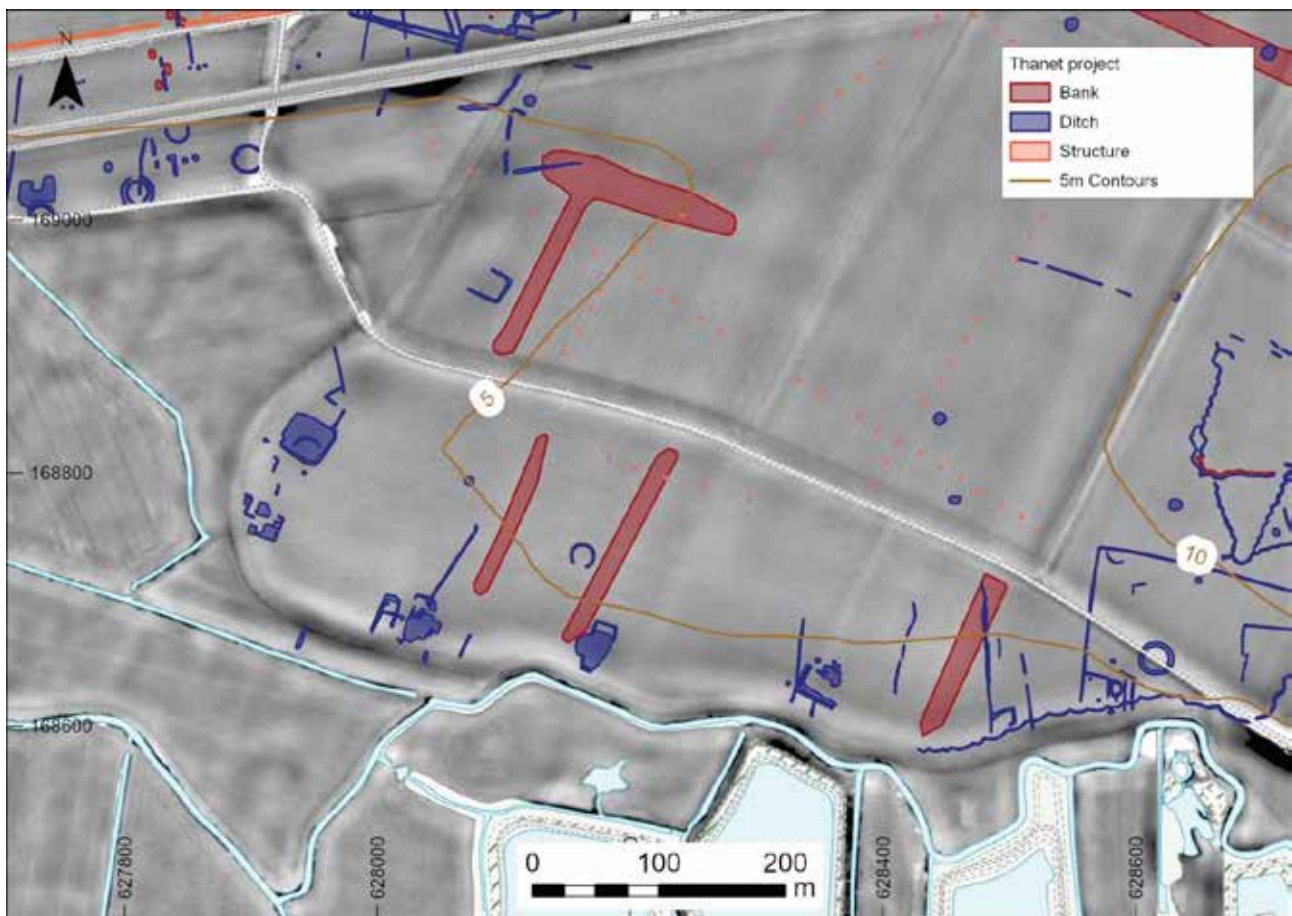


Figure 55: Extract of mapping showing a line of dispersed medieval settlements following the edge of the former Brooksend inlet. [Lidar © Historic England; source Environment Agency. Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Salmestone Grange

All of the examples of possible medieval settlement discussed so far have been isolated rural settlements likely to be individual farmsteads or holdings, or small hamlet-sized

settlement enclosures grouped along a road. The Thanet project recorded a single exception to this, in the form of a Benedictine Grange with an adjacent settlement.

Salmestone Grange is the most complete surviving example of a group of contemporary Benedictine monastic granges on the Isle of Thanet associated with the two religious houses of St Augustine and Christchurch at Canterbury who shared ownership of Thanet (Birch et al. 1988, 55). Situated on the southern edge of modern Margate, the grange was founded by the monks of St Augustine's Abbey, Canterbury during the 12th century. It operated both as the administrative centre and grange farm for the Abbey's extensive, largely arable, estate which covered a large area of the Isle of Thanet, and a place of retreat for the monks. The grange farm was owned and run by the Abbey's monastic community to provide food and raw materials for the Abbey and generate an income from sales of surpluses (Kent HER: TR 36 NE 2392).

Parts of the original grange site, including a 13th- to 14th-century domestic range and a chapel consecrated in 1326, still survive. This range includes the original two-storeyed refectory hall which was built about 1320, and a barrel-vaulted undercroft. The kitchen and dormitory occupy a north-west wing. Following the dissolution of the monasteries in the late 1530s Salmestone Grange became a property of the Crown but was in the possession of the Dean and Chapter of Canterbury Cathedral between 1559 and 1886 before being sold into private ownership. The surviving range has been much altered through time. In the 17th century the north-eastern end was converted into a farmhouse, and by the early 20th century the south-western end had become ruinous but was restored before the Second World War (National Heritage List for England: 1281452; Kent HER: TR 36 NE 2392). The southern half of the site is now occupied by the buildings and playing fields of Saint Gregory's Roman Catholic Primary School.

Immediately to the east of the surviving grange buildings are the traces of a large rectilinear ditched enclosure, probably part of the grange complex, visible as a cropmark. The ditches are probably the robbed-out foundation ditch of a walled enclosure. Within this are further traces of sub-dividing ditches. Beyond this enclosure are the cropmarks of what appears to be a less formally planned arrangement of enclosures, possibly settlement plots or tofts, with traces of several fragmented field or property boundaries, or crofts, extending south-west from the southern boundary of the medieval settlement (Fig. 56). That area was investigated in 2004, revealing traces of a ditched trackway, gullies, field boundaries and a pit containing medieval pottery (Oxford Archaeology 2005).

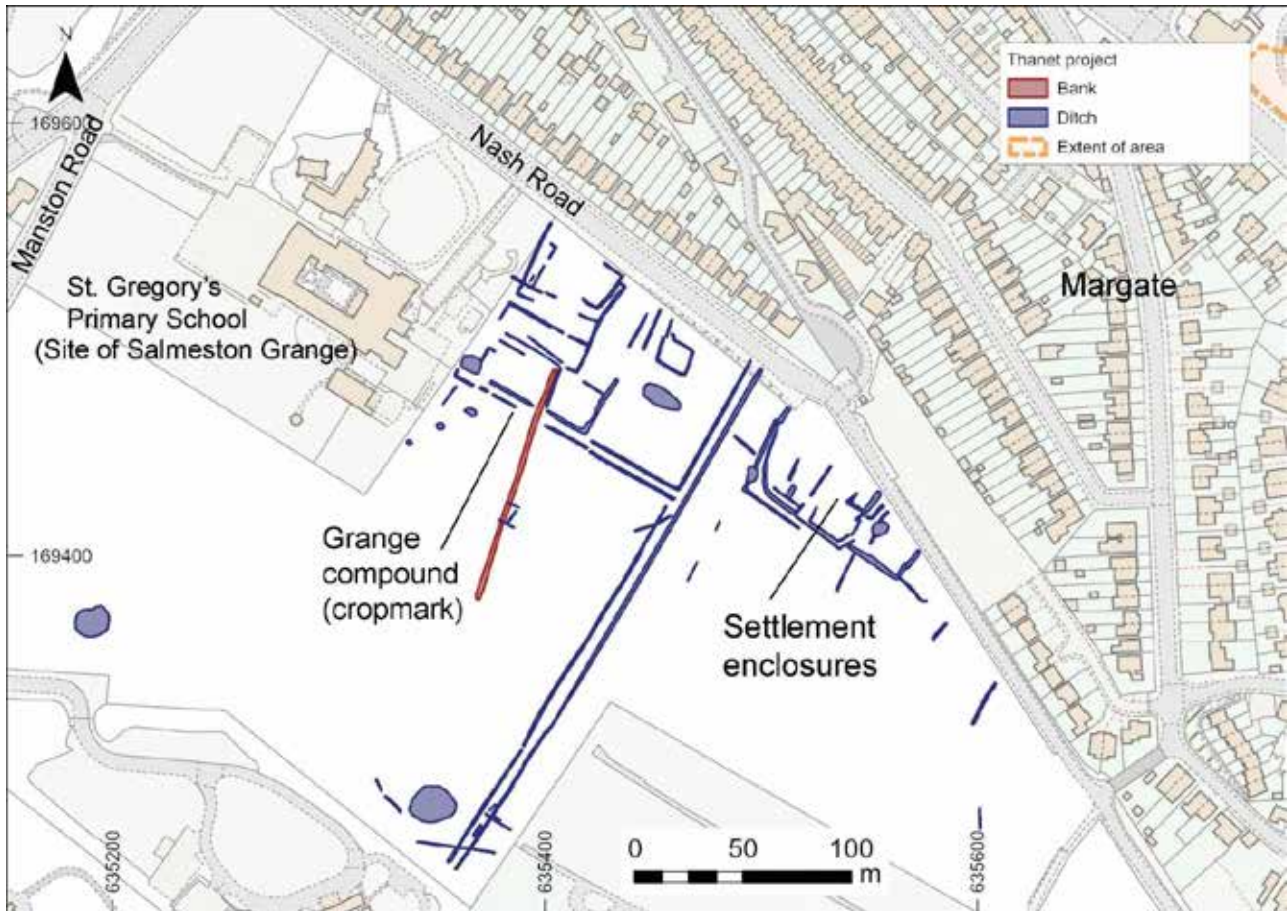


Figure 56: Cropmarks of part of the medieval grange and adjacent settlement enclosures to the immediate south-east of the surviving remains of Salmeston Grange. [Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Ridge and furrow

Despite the abundance of cropmarks across most of the open undeveloped areas of Thanet, and the unusually large number of medieval settlement sites mapped from aerial photographs, there is a surprising lack of evidence for medieval cultivation in the form of ridge and furrow either as earthworks or cropmarks associated with these settlements. Historically, Kent, and Thanet in particular, has been recognised as an important agricultural region, renowned for its high agricultural yields and productive farmland. It has been intensively cultivated for over two millennia, which would have had an impact on the survival of traces of earlier agricultural practices such as medieval ridge and furrow.

Domesday Book records returned for the Hundreds of Chislet, Reculver, Monkton and St Mildred in the Manor of Minster, all list the lands for plough and the number of ploughs in the possession of lords, villagers and smallholders across the island, suggesting an established productive agricultural economy on Thanet (Morgan 1983). Through the post-

conquest period there is no shortage of documentary evidence for arable cultivation in Kent, and more specifically Thanet, of which no visible trace has been found during the course of this survey apart from fragments of ridge and furrow in one field south-east of Shallows Road near Broadstairs (Kent HER: MKE125995).

It is broadly accepted that medieval cultivation practices in Kent differed from the standard open field strip cultivation seen elsewhere in England, especially in the Midlands, where co-aration was the standard practice with each contributor to a joint plough team allotted a strip or strips of land within fields equating to a day's ploughing (Orwin and Orwin 1967; Kain and Mead 1977). In contrast, most lands in Kent were held in severalty – single ownership (Jolliffe 1933, 7,14) – and co-aration was not practiced. Fields in north and east Kent were typically small and irregular and smaller partitioned parcels of land produced numerous small holdings – as seen in the cropmark remains of sites across Thanet (Jolliffe 1933, 28–9).

In the centuries following the Norman conquest, Kent, and the lands adjoining the Thames estuary, played an important economic and agricultural role in supporting the capital. The River Thames and its tributaries along the estuary were vital transport routes between the local ports and market. In the 13th century, numerous grants for fairs and markets were made to towns along the estuary on the Essex and north Kent shores including Fordwich (the port for Canterbury on the Stour), Seasalter on the coast, Reculver at the north mouth of the Wantsum channel and at Sarre on the Isle of Thanet (Galloway 2015, 4). At that time lands at Faversham, and between Canterbury and Sandwich, were considered some of the most fertile in England, producing high yields of grain. Output was further bolstered by two centuries of post-conquest marshland reclamation through a concerted programme of embankment of riversides, the construction of sea walls to exclude the tides and digging networks of drains and sluices to carry away water from the marshes (Galloway 2015, 6).

Post-medieval agriculture

Field systems

Fragments of what was probably a District-wide post-medieval field system were mapped from lidar as low spread banks arranged in coaxial layouts (see for example earthwork banks in Fig. 32, Fig. 42, Fig. 54). They commonly correspond to boundaries that were still extant on mid-19th-century parish tithe award maps but had been removed by the time of later 19th-century Ordnance Survey maps. Agricultural output in Kent increased during the 18th and 19th centuries on the historically rich and productive soils. In particular, the fertile alluvial soils around Faversham, Sandwich and Deal were noted for their good crops of wheat, beans and canary seed, but the chalk ridge through the county was considered less productive (VCH Kent 1908, 58). Yields in eastern Kent, particularly barley on Thanet,

were recorded as some of the highest in the country. These high yields were maintained by a four-course rotation system of fallow, barley, clover and wheat (VCH Kent 1908, 458).

The Kentish turn-wrest plough was widely used throughout the county. That was described at the time as an 'enormous implement' and considered by some to be too heavy and unsuited for use on the level, free-working lands of east Kent. The plough was a heavy wooden machine with two large wheels like cartwheels. It turned furrows with a shifting mould board that encouraged the maintenance of a flat field surface rather than ridging, pulled by four or six horses depending on the heaviness of the soil (VCH Kent 1908, 58). This suggests that the soils of the county were already at that time being heavily ploughed to maintain the yield. That said, the thin soils on chalk lands such as those on Thanet were still described at that time as the best in the county, maintained through copious manuring and seaweed spreading. Sheep were traditionally bred on the uplands of east Kent and fattened in the marshes (VCH Kent 1908, 58). By the latter half of the 19th century there was a marked decline in arable (wheat and barley) and sheep farming across Kent with an increase in cattle rearing. On Thanet, however, barley remained the staple crop, still maintaining a heavy yield and considered of the finest quality (VCH Kent 1908, 158–9).

The combination of the turn-wrest plough and sustained arable (and later, horticultural) practices continually turning over fields likely explains the absence of ridge and furrow on Thanet. The creation of the 'irregular fields bound by roads, tracks and paths' of HLCA 18 (see *The Isle of Thanet in its Setting*), that are not delimited by hedge, fences or walls, must in part date to the 19th-century aggregation of fields shown by the patchy survival of very degraded post-medieval field systems mapped from lidar data.

Stack stands or stock refuge mounds in the marshes

A number of the fields in the reclaimed marshland of the Wantsum Channel have small earthwork mounds which have been recorded from both aerial photographs and lidar. They are evenly distributed across the fields where they occur and have the appearance of constructed features. Similar mounds recorded in the Cliffe Marshes on the Hoo Peninsula, on the north coast of Kent, were thought to be stack stands; but early photographs from the 1940s showed hay gathered in haystacks, not built on the mounds. An alternative suggestion is that some, if not all, of these features might be livestock refuge mounds built to provide refuge for sheep and cattle at times of flooding (Carpenter et al. 2013, 149). Stock refuge mounds were known to have been constructed in some of the Thames marshes during the 19th century for sheep and cattle to take refuge during periodic flooding events (Spurrell 1885, 283). Some or all of the Thames marshes were flooded in 1881, 1897, 1902 and 1905 (Bowler 1968, 335), but despite the construction of refuge mounds hundreds of sheep were drowned during the 1897 flood (Anon. 1897, 6).

During the devastating floods of 1953 around 40,000 acres of farmland in Kent were inundated, with over 10,000 sheep, 1,290 bullocks and 800 pigs lost (Anon. 1953).

Discussion: Roman and Medieval Settlement Morphology

As discussed above, the remains of numerous rectilinear settlement enclosures have been seen as cropmarks on Thanet which date variously from the Iron Age through to the medieval period. Only a small number have been excavated, but excavation has shown that morphology alone cannot be relied upon to date similar sites because of the marked similarity in morphology between sites of different periods.

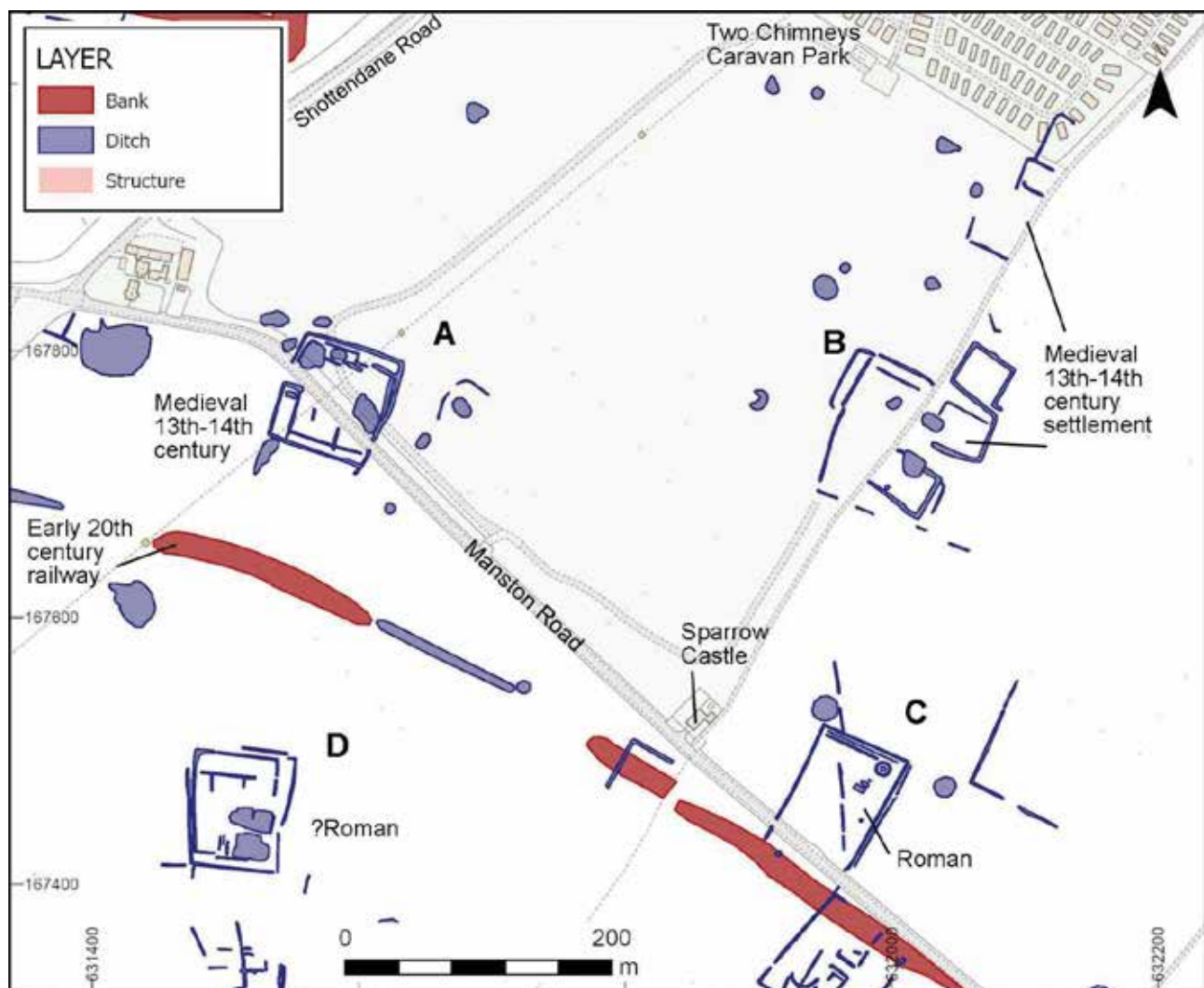


Figure 57: Cropmarks of four adjacent rectilinear enclosures with similar morphology but dating from the Roman and medieval periods. A and B are dated to the 13th to 14th century, C is Roman, and D thought to be Roman based on fieldwalking results. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

This problem of morphological similarity is illustrated by comparing a cluster of four rectilinear settlement enclosures seen as cropmarks on the southern side of Quex Park on either side of the Manston Road (Fig. 57). Site (A) in Figure 57, cut by the road, was identified during an evaluation of the entire field south-west of the Two Chimneys Caravan Park by the Trust for Thanet Archaeology in 2010 revealing remains of several stone buildings and pottery dating from the 13th and late 14th century with evidence of the walls being robbed out in the early 15th century. Site (B) in Figure 57 to the east was also evaluated and subjected to a magnetometer survey and excavation during the same 2010 Trust for Thanet Archaeology evaluations. Rectilinear enclosures within the field were sampled. Pottery finds within the enclosures dated the period of occupation to the 14th century. These enclosures appear to be part of a linear group of fragmented enclosures aligned north-east to south-west along an existing trackway, suggesting the presence of a hamlet of dwelling enclosures strung out along a long-established routeway. Further enclosures identified from aerial photographs lying outside the field boundary to the east of the trackway appear to be part of the same settlement.

Site (D) in Figure 57 to the south of A has a similar appearance to the two medieval sites but has not been excavated. However, the Thanet Sites and Monuments Archive (Kent HER: TR 36 NW 30) reported a number of Roman pottery sherds and fragments of tegulae in the vicinity of this enclosure believed to be derived from this site. The record for this site is complicated further by a report of a modern roofing tile being found at the site and a record of an old barn known as Sparrow Castle is traditionally reported to have stood on this site. Site (C) in Figure 57 is believed to be Roman in date. It differs in form from the other three enclosures appearing more angular and rectilinear with narrower ditches. Internal features are well defined, but it is not clear if the ring ditch with a central pit in the north-east corner is part of the enclosure complex. Part of the enclosure ditch was excavated (unpublished) during a watching brief for the Manston water pipeline. Romano-British pottery was found in three ditches along with animal bones, oyster and land snail shells. A third ditch contained medieval pottery and a piece of human femur, and pits were also sampled yielding bone fragments, seashells and medieval pottery within the fill giving rise to some degree of uncertainty over the date of the overall site (Kent HER: TR 36 NW 205).

Funerary monuments and ritual and religious sites

Neolithic sites

Kent has some of the earliest radiocarbon determinations from archaeological materials for Neolithic lifeways in Britain. Early Neolithic pits excavated on the Thanet Earth site include one that yielded the oldest known UK find of tetraploid free-threshing wheat (Holman et al.

2023, 11–16). The White Horse Stone house near Maidstone and first phases of the Coldrum megalithic tomb were built probably during the 40th century BC (Whittle et al. 2011, 383). Some 20 years ago, David Perkins (2004, 80) commented on the limited evidence for Neolithic burials on Thanet. Yet, given its causewayed enclosures at Chalk Hill (one of the earliest monuments of this type in England, Whittle et al. 2022), Cliffsend and Court Stairs Lodge (Clark et al. 2019; Small and Barber 2019; Moody 2007) and clusters of Early Neolithic pits (Andrews et al. 2015, 28–9) we might expect to see evidence for people building other Early Neolithic monument forms in the District.

A group of cropmark and soilmark sites mapped by the Thanet and Ramsgate HAZ projects provides evidence for possible Neolithic long barrows or mortuary enclosures on Thanet. Near Chilton, Ramsgate, an oval enclosure surrounding a slight mound, interpreted as a Neolithic long or oval barrow about 33m long and 19m wide, was described by Small and Barber (2019, 16–7) (Kent HER: TR 36 SE 42) (Fig. 58 a). This feature has an additional significance because it is situated roughly equidistantly between the Chalk Hill and Cliffsend causewayed enclosures. A similarly-shaped soilmark is located about 250m to the north-east of Walters Hall Farm, Monkton (Kent HER: TR 26 NE 246), visible in APGB imagery (14-APR-2015). A nearly east to west oriented oval or capsule-shaped ditch, positioned between the 15m aOD and 20m aOD contours, encloses an area measuring about 48m by 21.6m on plan. The soilmark of the western side of the enclosure is thickest but least distinct, possibly indicating a wider section of ditch although, alternatively, this may be indicative of soil accumulation towards the nearby field edge. The eastern terminals of the enclosure ditch are slightly enlarged which may be an original feature. A narrow ditch visible as a cropmark in Bing.Com/Maps imagery dating to 2024 closes off the eastern end. Alternatively, the enclosure may have been defined by a complete ditch and the two apparent breaks are the result of loss due to cultivation. There is no clear evidence from the available aerial sources for a central mound (Fig. 58 b).

Parallel ditches visible as cropmarks in APGB imagery (14-APR-2015) may represent the side ditches of a long barrow located about 120m south of Monkton Road Farm, near Thanet Earth (Kent HER: MKE125837). The feature lies between the 25m aOD and 30m aOD contours, oriented east to west, and measures about 28m by 16m on plan. The northern and southern ditches are each mapped in two sections, although the breaks are where the crop is interrupted by tractor tramlines and are not archaeological. The ditches are slightly splayed at the western end, hinting at a trapezoidal form (Fig. 58 c). The cropmark was observed by Alison Deegan (2009, 20) who mapped additional linear features in the immediate environs and interpreted them together as likely medieval rectilinear enclosures. Conversely, Deegan (2009, 17) interpreted a cropmark rectilinear enclosure about 440m north-west of Great Brooksend Farm as a possible Neolithic

mortuary enclosure, its southern end overlain by a Bronze Age round barrow. In the new Thanet project mapping this feature appears less well formed and the linear ditches have been reinterpreted as field boundaries and enclosure boundaries of uncertain or Iron Age/Roman date (Kent HER: MKE124066).

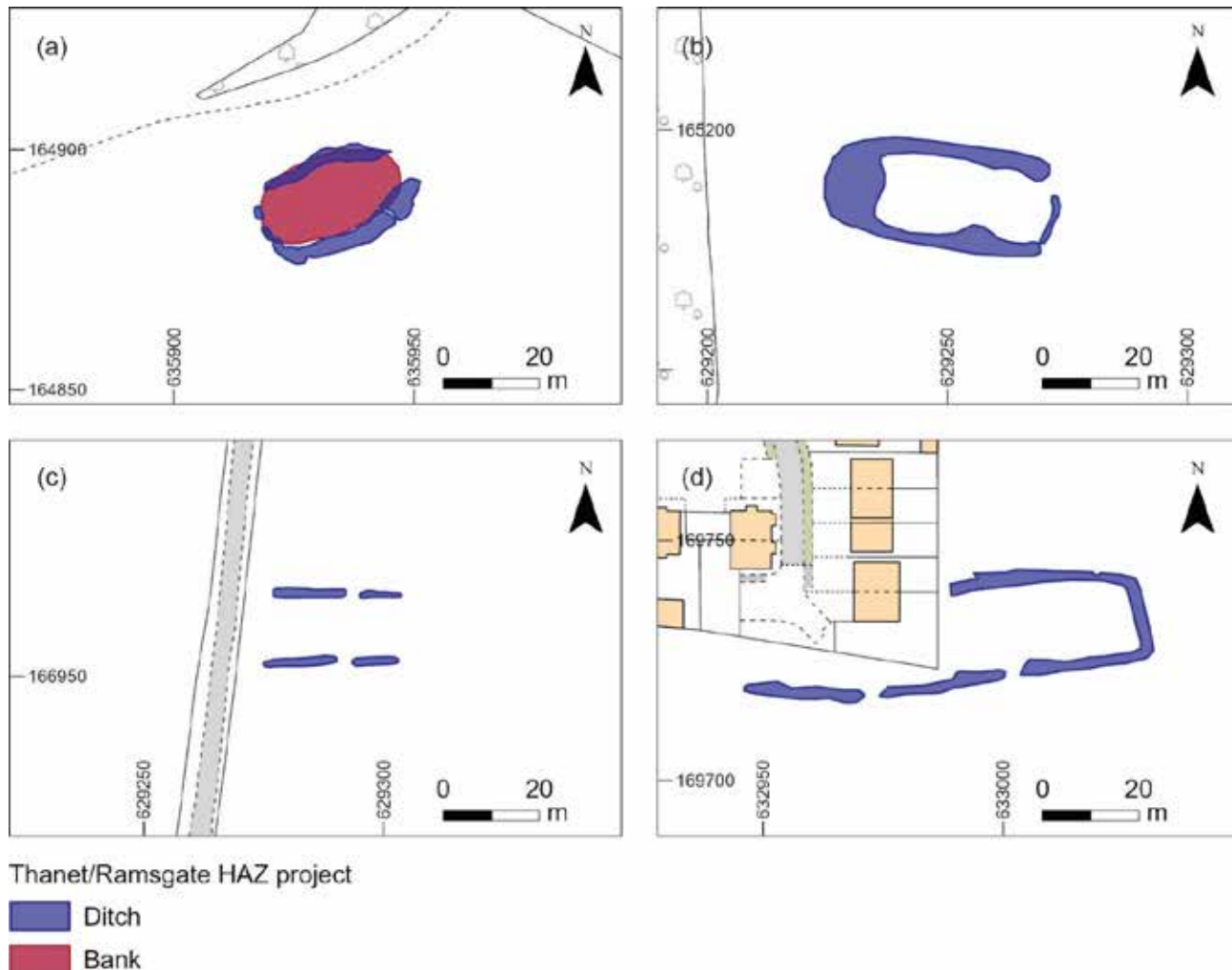


Figure 58: Possible Neolithic long barrows or mortuary enclosures. (a) TR 36 SE 42 (includes Ramsgate HAZ project mapping, without the ring ditch of a round barrow later constructed on the south-west end of the mound); (b) TR 26 NE 246; (c) MKE125837; (d) TR 36 NW 95.

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Finally, cropmark ditches of a rectangular enclosure at Garlinge were visible in APGB Imagery (25-MAY-2012) (Kent HER: TR 36 NW 95). The enclosure is oriented east to west and measures about 19.5m across and at least 84m long; its eastern end and part of its southern side were mapped, the remainder lost beneath the houses of Briary Fields (Fig. 58 d). The part of the enclosure excavated prior to the development of Briary Fields is described in the interim site report as Neolithic in date, awaiting clarification in post-

excavation (Swale and Thames Archaeology 2021). The enclosure is positioned on the gentle west-facing slope of a coombe (now developed) that leads down to the sea at St Mildred's Bay about 750m to the north.

Of these four possible Neolithic long barrows or mortuary enclosures, monument Kent HER: TR 36 SE 42 near Chilton is a strong candidate given its similarity in form and size to other Neolithic oval barrows and the presence of evidence for a mound. Although no evidence for a barrow mound has been observed at the site near Walters Hall Farm, Monkton (Kent HER: TR 26 NE 246), its interpretation as a long or oval barrow or mortuary enclosure is strongly justified on morphological grounds. The parallel ditches south of Monkton Road Farm (Kent HER: MKE125837) are similar in form to those of, for example, the long barrow Winterbourne Stoke 71, Wiltshire and the recently discovered Winterbourne Stoke 86, Wiltshire (Roberts et al. 2018). The interpretation of the Monkton Road Farm features as quarry ditches of a long barrow should be treated more cautiously in the light of additional nearby cropmarks mapped by Alison Deegan (2009, 20) and interpreted by her as medieval enclosures. The fragmented rectangular enclosure at Garlinge (Kent HER: TR 36 NW 95) is the only excavated site of the four, but until its post-excavation assessment is completed the dating and interpretation of this feature remain unclear.

Kent as a whole has few examples of Neolithic long barrows and is best known for the 'Medway megaliths', a group of megalithic funerary monuments clustered either side of the River Medway where sarsen stone boulders were available for the construction of chambered tombs and other stone settings (Ashbee 2000). Other plough-levelled sites and probable earthen mounds are perhaps better comparators for the cropmark and soilmark sites on Thanet, where large boulders were not available for monument building. For example, the better preserved earthworks of the roughly 38m long oval barrow at Shrub's Wood, Elmstead (Kent HER: TR 04 NE 27) and an oval barrow about 35m long revealed by geophysical survey beside the Burham causewayed enclosure (Kent HER: TQ 76 SW 492) are analogous to the nearly plough-levelled monument Kent HER: TR 36 SE 42. The parallel ditches south of Monkton Road Farm (Kent HER: MKE125837) are somewhat reminiscent of the Broadley Road, Northdown Early Neolithic mortuary enclosure (Kent HER: TR 36 NE 2607) and interestingly that monument was superseded by a Bronze Age round barrow (Andrews et al. 2009, 63–7) as was oval barrow TR 36 SE 42. The site near Monkton (Kent HER: TR 26 NE 246) is about twice the size of the more regular cropmark of a possible mortuary enclosure north of Stoneheap Farm, west of Deal (Kent HER: TR 35 SW 98), while the Briary Fields enclosure ditches (Kent HER: TR 36 NW 95) approach a similar length to a rectilinear enclosure near Sutton at Hone (Kent HER: TQ 57 SE 1131), albeit in more fragmentary and curving form than the Sutton at Hone cropmark. The

general impression, in the absence of excavated dating evidence, is one of variety and diversity in monument form and size.

Excavations on Thanet have revealed a range of Early Neolithic mortuary practices. They include disposal of fragmentary human skeletal remains, both unburnt and burnt, in pits such as S10454 and S3942 on the Thanet Earth site (Holman et al. 2023, 14, 18). A complete inhumation associated with plain bowl pottery at Nethercourt Farm, Ramsgate, had been placed in a large pit (Dunning 1966, 8–11). Fragments of human bone contributed to deposits in segment 5 of the outer arc of Chalk Hill causewayed enclosure (Clark et al. 2019, 65–7, 114) and a human leg bone was placed in a segment of Court Stairs causewayed enclosure (Moody 2007). The Early Neolithic burial ‘signature’ of the District, if such can be identified, is therefore mixed and not limited to forms of long or chambered barrows. The cropmark and soilmark features mapped and described here represent only one aspect of the deposit of human remains in the Early Neolithic on Thanet.

Bronze Age funerary monuments

David Perkins (1999; 2004; 2010) drew attention to the proliferation of cropmark ring ditches on Thanet and in an area between Canterbury, Deal and Folkestone, in contrast with the very few observed elsewhere in Kent. Although the county-wide distribution he referred to is in part a product of historic aerial mapping combined with varied geology/soils, land cover and the resulting susceptibility of buried archaeology to be expressed as cropmarks, nonetheless the number and density of cropmark ring ditches on Thanet is often remarked (for example Needham and Anelay 2021, 472). They are part of a wider distribution of these burial monuments constructed on chalk and greensand geologies in south-east England (Field 1998).

Not all of these features are Bronze Age. Ring ditches of large circular monuments with possibly late Neolithic origins were mapped by both the Ramsgate HAZ and Thanet projects (others have been excavated but are not visible in the available aerial sources, see Moody 2008, 72–8). The mapped sites include Lord of the Manor I (Kent HER: TR 36 NE 51) (Moody 2008, 73–4) and Ring Ditch III near Monkton roundabout (Kent HER: TR 26 NE 239) (Bennett et al. 2008, 23–31), as well as two smaller ring ditches at Westgate-on-Sea (Kent HER: MKE7877, MKE124344) (Moody 2011). Described as hengiform monuments dated to the late Neolithic largely on morphological grounds, Last (2019, 9–10) and Andrews et al. (2015, 67–8) urge caution in interpreting these as pre-Beaker period monuments and Barber (2004, 11) notes the problems with defining such large circular monuments as ‘hengiform’ when they do not conform to the definition of a henge. In contrast, the smallest diameter ring ditches are regularly (but not always) interpreted as

the plough-levelled remains of early medieval round barrows. Perkins (1999, 39) observed that small barrows are not necessarily more recent in date, but nonetheless those features are discussed below with early medieval cemeteries (see Small Ring Ditches). Here, we concentrate on the mapped ring ditches interpreted as the quarries for mounds of Bronze Age round barrows.

Some 545 ring ditch feature polygons interpreted as Bronze Age were mapped by the Thanet and Ramsgate HAZ projects. These 545 feature polygons include cropmarks of barrows with more than one concentric ring ditch, but the majority represent a single quarry ditch of a round barrow. The cropmarks include complete ditch circuits, penannular circuits and broken circuits of arcs; these forms may reflect the original construction but incomplete circuits are also functions of poor cropmark formation and poor below-ground survival of archaeological deposits. The 545 mapped feature polygons represent some 426 individual barrows, in contrast with 315 sites recorded by Perkins (2004) and 481 barrows and ring ditches noted by Hammond (a tally compiled in 2008 of excavated and unexcavated barrows known from various sources including cropmarks) (2010, 234). The total mapped by the Thanet and Ramsgate HAZ projects does not represent all Bronze Age round barrows in the District.

It is difficult to compare relative densities of Bronze Age round barrows on Thanet with other chalk landscapes, given differences in recording methods and the ways that study areas have been defined by researchers. The most densely populated 25 sq. km block in Hammond's (2010, 218) dataset for Kent is on west Thanet, with a mean of 6.4 ring ditches/sq. km. In contrast, Woodward (1996) calculates a mean density of 14.3 barrows/sq. km within a 2.6km radius of Stonehenge (approximately 21 sq. km) and 4.2/sq. km within a 3.6km radius of Avebury henge (approximately 40 sq. km). The central territorial unit of the South Dorset Ridgeway described by Woodward (1991, 145), covering approximately 58 sq. km, includes 254 round barrows at a mean density of 4.4/sq. km. Hammond (2010, 218–9) notes that in some 1km grid squares, the density of round barrows on Thanet exceeds the averages of Woodward's Stonehenge and Avebury areas.

There were 173 relevant Kent HER records relating to the ring ditches mapped by the Thanet Project, many of those records being a map point referring to groups of ring ditches visible as cropmarks in aerial photographs. Each mapped feature now has an individual Kent HER record. Of the feature polygons mapped by the Thanet project, 537 (98.5%) were seen as cropmarks, four as soilmarks (0.7%), two with a surviving earthwork

component (0.4%)⁵ and two as excavated features seen as deposits in plan in stripped areas (0.4%). The majority (495, 90.8%) are presumed to survive as buried archaeology that may continue to be expressed as cropmarks in favourable conditions. Thirty-three (6.1%) were recorded as 'destroyed' monuments in the latest aerial imagery, for example where land has been developed. The remainder were seen as soilmarks, earthworks or levelled earthworks in the latest imagery.

At least 26 of the monuments mapped by the Thanet and Ramsgate HAZ projects comprise two or more concentric ring ditches. That is only 6.1% of the 426 round barrows recorded by the projects; Hammond (2010, 248) notes that only 8% of known round barrows in Kent have more than one ring ditch. The 26 monuments are scattered across the District. They include well-known monuments in the Ozengell barrow group at Lord of the Manor (Kent HER: TR 36 NE 51) and at least eight amongst the large number of barrows situated between Mount Pleasant and the Monkton Roundabout. Mapped monuments with two or more concentric ring ditches average about 27.5m in maximum diameter but range from only 11m in diameter (Kent HER: MKE124639) to 45.5m in diameter (Kent HER: TR 26 NE 239, a large hengiform monument interpreted as late Neolithic/Bronze Age (Bennett et al. 2008, 23–31)). That size range suggests that other round barrows, including those with partial ring ditches truncated by long-term cultivation, could have been more complex in plan form but that the evidence is not visible in the available aerial sources. A number of ring ditches also had cropmarks of small internal pits, possibly representing grave cuts. Excavated ring ditches on Thanet have not always revealed evidence for a central barrow mound (for example Andrews et al. 2015, 64) and there are very few examples in the available aerial sources of such earthworks; but the long-term attrition of monuments by ploughing (see above) has presumably had a severe effect on formerly upstanding archaeological remains, including the later prehistoric destruction of barrows (Champion 2007, 88) as well as more recent cultivation.

The mean diameter of all ring ditches mapped by the Thanet and Ramsgate HAZ projects is about 20.5m. Given the partial nature of some of the ring ditches and the complexity of those features comprising more than one concentric ring ditch, that figure was calculated in GIS using Minimum Bounding Geometry.⁶ All the statistics in the following discussion of

⁵ Kent HER: TR 37 SE 19/HERR: 469683 preserved by virtue of being incorporated into a post-medieval folly at Kingsgate and MKE125996, recorded as an earthwork from RAF photography but seen to have been levelled in the most recent aerial photography (2021).

⁶ A circle inscribing as closely as possible the outside of every input feature polygon is calculated using ESRI ArcGIS Pro's *Minimum bounding geometry* geoprocessing tool. HER and HERR uids were used to identify ring ditch arcs that the tool should treat as one monument in order

ring ditch/round barrow size are derived from that calculation and should be treated with caution because they are not necessarily the diameter of the archaeological monument as constructed; nevertheless, a generalised appreciation of the size of these features may be gained.

Table 4: Bronze Age ring ditch diameters, Thanet and Ramsgate HAZ project mapping.

Diameter range (m)	Count (n)	Count (%)
<5	0	0
5–9.9	27	6.3
10–14.9	97	22.8
15–19.9	74	17.4
20–24.9	107	25.1
25–29.9	68	16.0
30–34.9	34	8.0
35–39.9	14	3.3
>40	5	1.2
Total	425	100

Whilst the mean diameter is 20.5m, the range is from 5m to 51m. Some 211 ring ditches (49.5%) are smaller than the mean. Bronze Age ring ditches on Thanet are most commonly between 10m and 25m in diameter (Table 4). Of the 27 smallest ring ditches (under 10m in diameter), 15 are in the environs of Brooksend Farm amongst a large barrow cemetery; the remainder are distributed across the District, in close proximity to other round barrows. Examples of small ring ditches are discussed below (see Small Ring Ditches).

The five largest ring ditches, exceeding 40m in diameter, include both excavated and unexcavated sites. Kent HER: MKE126160 (40m diameter) is located about 550m to the west of Mount Pleasant Chalk Pit amongst the barrow cemetery occupying much of Thanet's chalk ridge and closely surrounded by at least six barrows. It has cropmark evidence for two concentric ring ditches. Kent HER: TR 36 SW 380 (44.5m diameter) at Cliff's End was shown by excavation to be a very large ring ditch with sterile fills, re-cut in the Bronze Age when an inhumation dated 1400–1200 cal. BC was buried in the north-east arc (Andrews et al. 2015). Kent HER: TR 26 NE 239 (46m diameter) near Monkton

to calculate one circle, with resulting circle diameter recorded in a new data field. In this section of text, ring ditch dimensions are rounded to the nearest 0.5m to best reflect likely mapping error margins arising from pixel size and interpolation effects in lidar data.

roundabout was excavated as Ring Ditch III, a double-ditched feature amongst a complex of round barrows, flat Beaker burials and post alignments (Bennett et al. 2008, 23–31). Kent HER: 124944 (46.0m diameter), located near Woodchurch, is a more enigmatic cropmark and with an adjacent, straighter, section of ditch may be a curvilinear enclosure rather than a barrow. Finally, Kent HER: TR 36 NW 40 (51m diameter) between Birchington and Westgate-on-Sea comprises narrow ditch fragments forming an oval enclosure, positioned amongst other cropmarks of linear enclosures and pits within about 350m of other round barrows. Both of the excavated sites mentioned here have been interpreted in excavation as Neolithic hengiform monuments adapted and reused in the Early Bronze Age.

The apparent distribution of ring ditches is to an extent affected by Thanet's built-up areas. The majority of feature polygons (483, 88.6%) were seen in farmland. Of the 62 (11.4%) mapped in built-up areas, most were seen in mid-20th-century photographs pre-dating development, with a very few cropmarks in locations such as sports fields and public parks visible in more recent imagery. Assuming that round barrows would have been constructed in similar locations across the whole of Thanet, we might expect to see more in the environs of Cliftonville, around North Foreland, and on the east-facing slopes of Broadstairs and Dumpton, for example, all of which are now built-up. Excavation has demonstrated this to be the case (Moody 2008, 96). The apparent sparsity of barrows on the south-facing slope of the chalk ridge between Dellside and Cliffsend to the south of RAF Manston/Kent International Airport is less easily explained. That there are fewer specialist oblique photographs covering that area (see Fig. 7) implies fewer cropmark sites have been seen from the air but it is presently unclear where that is a genuine archaeological pattern or to do with other factors such as the prevailing agricultural regimes or soil characteristics.

Figure 59 gives an impression of the broad distribution of Bronze Age barrows across Thanet District. This illustration uses points representing the centroids of mapped ring ditch/partial ring ditch feature polygons⁷ and excludes ring ditches interpreted as either earlier or later in date. It does not include Kent HER records for Bronze Age ring ditches or burial sites known only from non-aerial sources such as excavation. As a result, cemeteries such as South Dumpton Down are not depicted, as it falls out of the scope of this report to curate a complete dataset for Bronze Age burial sites on Thanet. Nevertheless, the features mapped by the Thanet and Ramsgate HAZ projects tend to confirm previous observations that Bronze Age round barrows were positioned on ridgeline

⁷ Centroids calculated using ESRI ArcGIS Pro's *Feature to point* geoprocessing tool with 'inside' unchecked to derive a centroid for every mapped feature polygon.

or upland locations and in places where they could be seen from afar, including from the sea (Champion 2007, 85; Bennett et al. 2008, 96; Moody 2008, 93).

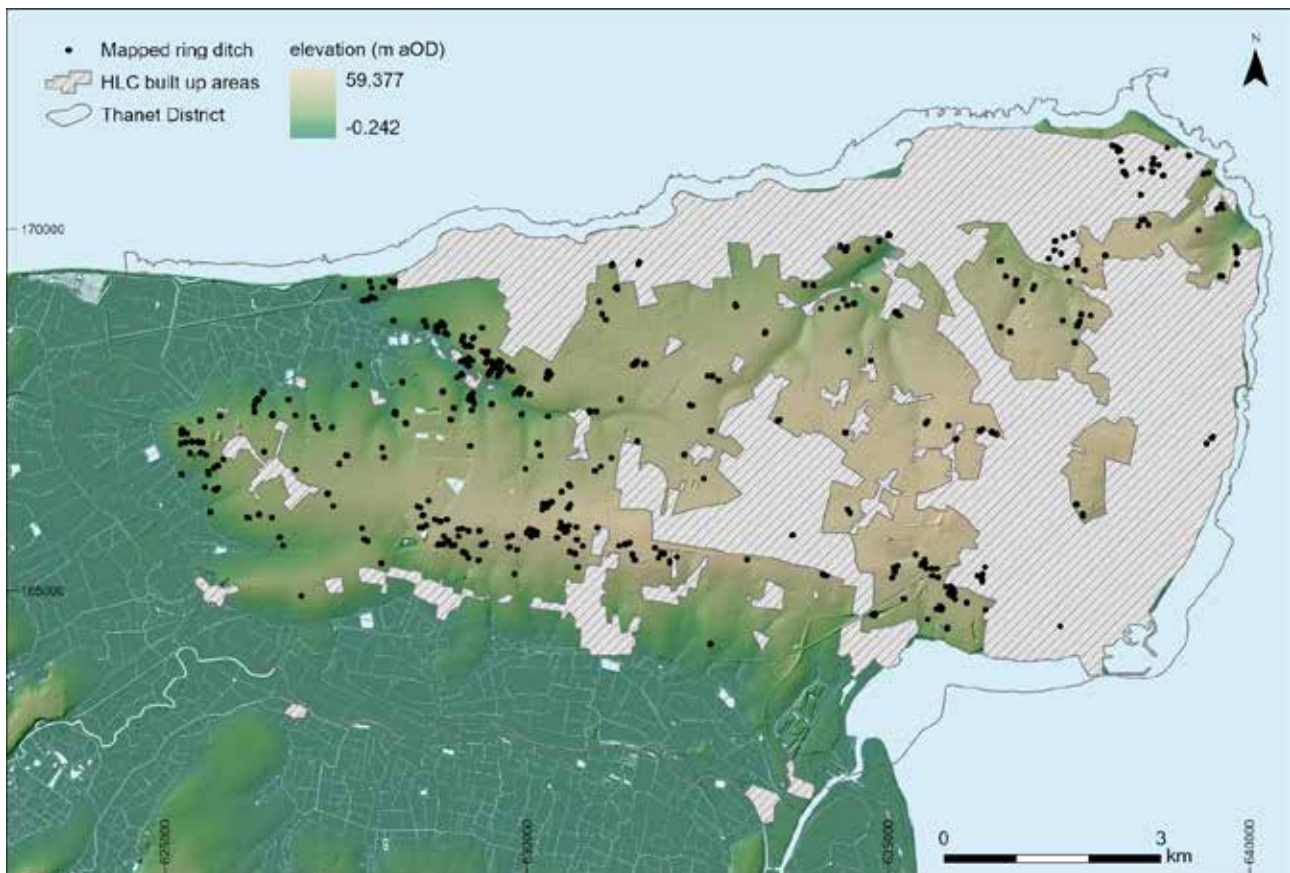


Figure 59: Distribution of Bronze Age barrows (ring ditches) mapped by the Thanet and Ramsgate HAZ projects. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. Ordnance Survey Licence 100024900. HLC data (Munby 2014). Contains data © Environment Agency copyright and/or database right 2022]

The most recent syntheses of Bronze Age barrows on Thanet are the work by David Perkins in his doctoral thesis (1999) and subsequent publications, and John Hammond's doctoral thesis (2010) comparing later Neolithic and Early Bronze Age funerary monuments in Kent, Flanders and the Somme. Perkins (2010) identified both 'barrow groups' (a more spread out group of ring ditches) and 'barrow cemeteries' (a concentrated cluster), but as more features have been identified some of his groupings seem less clear. Hammond (2010, 231–3) extends this analysis in a GIS environment, concluding that round barrows in Kent and specifically on Thanet do cluster in cemeteries. Clearly some barrows are closely positioned and form cemetery-like clusters, such as at Lord of the Manor or on the south-west facing slopes above Brooksend Stream. However, the proliferation of features makes it less easy to decide which should be grouped together in

cemeteries and which might remain as more loosely grouped monuments, except for a very few obvious examples (and see Needham and Anelay 2021, 485).

Perkins (2012, 288–90) observed that most barrow groups and cemeteries in Thanet are positioned on crests and false crests of south- or south-west-facing slopes overlooking coombes or the coastline. That includes the lowest lying monuments positioned roughly between the present-day 5m aOD and 20m aOD contours, for example to the west of St Nicholas at Wade. He identified two cemeteries unusually on north-east facing slopes, at Updown Farm and East Northdown, and a further four positioned more centrally on the Thanet plateau. He reported that most of the cemeteries do not appear to have a bias in orientation.

To examine these characteristics of barrow location in more detail, the elevation, slope and aspect of the features mapped from aerial sources were calculated using the above-mentioned point dataset and a Digital Elevation Model for the whole District derived from Environment Agency 1m lidar (2017 and 2019 DTM datasets) (for a similar methodology see Needham and Anelay 2021, 480–5). This approach has its limitations. First, it includes only the features mapped by the Thanet and Ramsgate HAZ projects and thus excludes other known Bronze Age burial locations that are not evidenced in the available aerial sources. Secondly, the point dataset is of centroids of the mapped feature polygons, which is not necessarily the centre of each barrow as originally constructed (with or without a mound). Thirdly, calculating elevation, slope and aspect from a point does not take into account the complete polygonal footprint of each monument or its former height and three-dimensional form, which for levelled monuments are of necessity unknown. Finally, the DEM provides landform and elevation data for the early 21st century, not for the Bronze Age; that means that data for ring ditches seen on land subject to post-Bronze Age colluviation/alluviation or that has been remodelled (for example, at Thanet Earth or for road schemes), is not a reliable reflection of Bronze Age topography. Nevertheless, a generalised sense of patterns in barrow positioning can be gleaned.

On the whole, the new mapping confirms Perkin's observations. Bronze Age barrows were often positioned just below the highest ground with the potential to be skylined when viewed from the west, south-west or south, like those in the environs of Monkton. Or they are situated on the slopes of coombes and their re-entrants, for example around the headwaters of what Perkins called the Dane river valley (Perkins 2010, 288), potentially skylined when seen from positions lower down the valley. Points representing ring ditch positions range in elevation from close to 2m aOD to 52m aOD. Fifty-five points are positioned below the 10m aOD contour, hinting at the possibility that others may have been positioned on low ground now obscured by colluvium or alluvium. Only nine are

located above 50m aOD. The majority (235, 43%) are positioned between the 30m aOD and 40m aOD contours: they include a number in the environs of Monkton; just over 20 at and around Lord of the Manor; and a scattering of sites across the north and north-east reaches of the Thanet plateau. A similar number (254, 46%) are distributed between the 10m and 30m contours. Overall, these figures agree with previous observations that barrows were built on rising ground, but not necessarily the highest points in the landscape (Fig. 60).

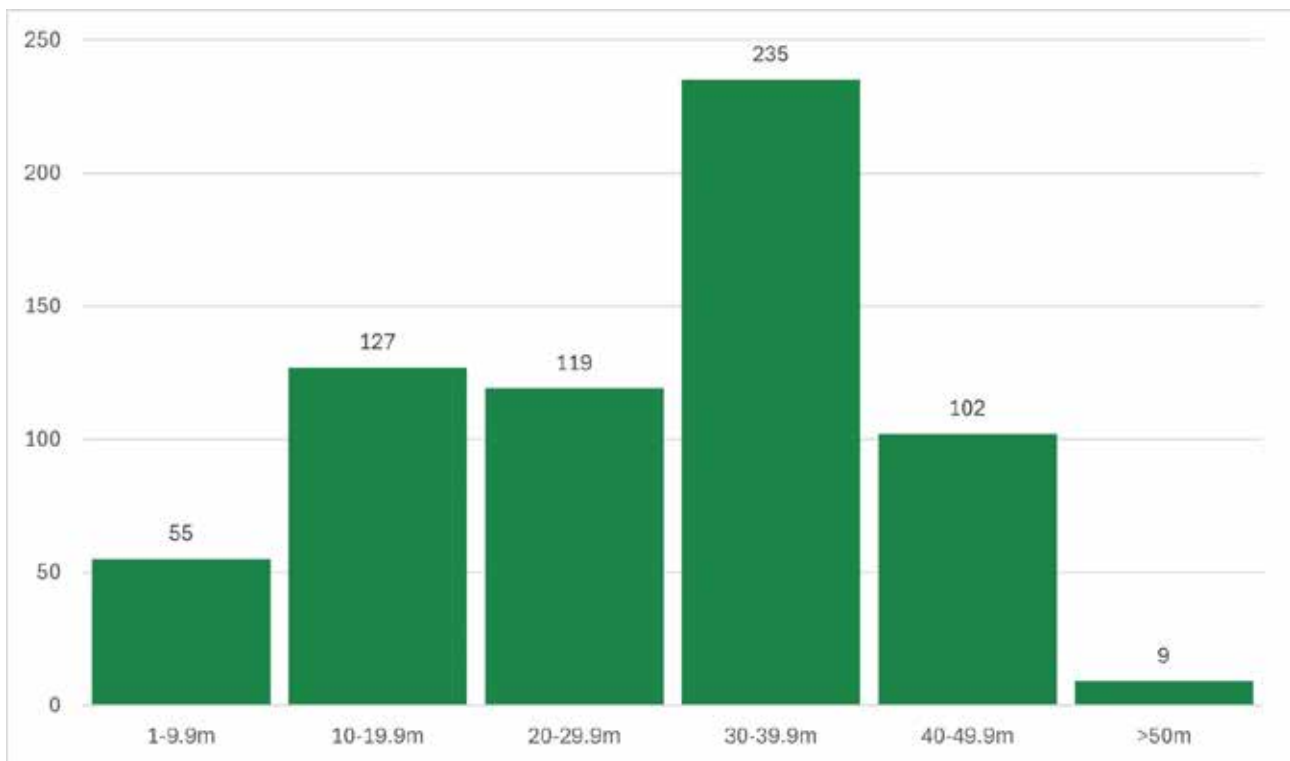


Figure 60: Frequency by elevation (m aOD) of ring ditches mapped by the Thanet and Ramsgate HAZ projects.

Discounting the data for 13 sites where the land surface is known to have been remodelled in recent times, slope⁸ calculation shows that the majority of mapped ring ditches are on flatter or gently sloping terrain. The mean percent of slope is 2.1 but 305 (57%) of the points are positioned on shallower slopes than that. More steeply placed ring ditches (228, 43%) are defined here as those on a percent of slope greater than the 2.1 mean (a

⁸ Slope of the target DEM cells calculated using ESRI ArcPro's *Surface parameters* tool and then identified for each point in the ring ditches dataset using the *Extract values to points* tool. This results in a percent rise for each point, that is, a value indicating steepness. The lower the slope value, the flatter the terrain, such that a slope of 45° has a percent rise of 100 and steeper slopes tend to infinity.

pragmatic choice made to enable discussion). They are located across the District at a mean elevation of 25m aOD but the range of elevation of these 228 points is from about 3m aOD to 48m aOD (Table 5). This calculation of slope does not take into account the likely complete footprint of each monument or any assessment of possible barrow mound height and shape, so it is not informative about the likely visibility of the barrows. Rather, slope data reflects Thanet's overall gently rolling chalkland landscape and the positioning of barrows on coombe sides and on slopes overlooking the Wantsum Channel and Pegwell Bay.

Table 5: Slope and elevation data for Bronze Age ring ditch points.⁹

	Percent of slope (mean)	Percent of slope (range)	Elevation (mean, m aOD)	Elevation (range, m aOD)
All ring ditch points	2.1	0.11 – 6.97	27	2 – 52
Ring ditch points on mean percent of slope >2.1	3.3	2.12 – 6.97	25	3 – 48

Although Perkins (2010, 288) noted that Thanet's barrow groups and cemeteries do not on the whole have a particular bias or trend in orientation, nonetheless there is a sense that monuments were placed to be seen from certain directions. Calculating barrow aspect¹⁰ is a simple way to investigate this (viewshed analyses would also be possible, if assumptions were made about the likely height and three dimensional forms of the monuments, but are beyond the scope of this report). The overall trend is that the centroid points calculated for mapped Bronze Age ring ditches are oriented to the south and west or to the north (Fig. 61).

⁹ In this section of text, elevation has been rounded to the nearest 1m to better reflect possible error margins resulting from the interpolation of gridded Environment Agency 1m lidar survey points.

¹⁰ Aspect of the target DEM cells calculated using ESRI ArcPro's *Surface parameters* tool and then identified for each point in the ring ditches dataset using the *Extract values to points* tool. For each point this results in a measurement of the direction that the downhill slope faces, expressed in degrees. The measurement is performed clockwise from 0 (due north) to 360 (due north). Flat areas are given a direction of -1 (for example, bodies of water).

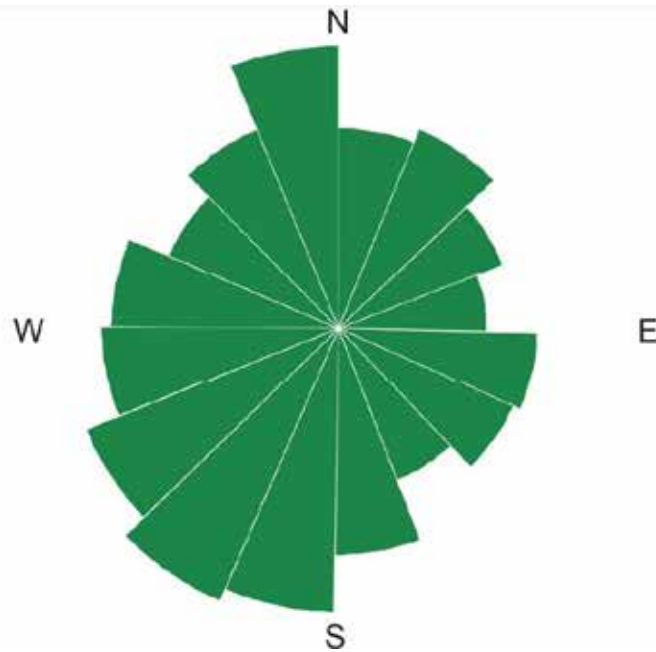


Figure 61: Aspect of mapped Bronze Age ring ditch points in Thanet District displayed as a polar chart annotated with cardinal points. Each chart segment represents one-sixteenth of the compass. The longer the segment, the more ring ditches with that aspect.

On the one hand, this is a reflection of the large numbers of barrows built on the slopes overlooking the Wantsum Channel. Many of those barrows may have been visible, potentially skylined, from ground on the opposite side of the channel, or from the watercourse itself. In part this is determined by the west-east trending chalk anticline of the underlying landform, presenting roughly north- and south-facing slopes along the main Thanet ridge. Nevertheless, the large numbers of barrows built to take advantage of the south slope implies a visual relationship with mainland Kent.

On the other hand, many of the south-west-facing monuments were built on the north-east side of Brooksend Stream. There, some may have been visible from high ground near Reculver but most are likely only to have been seen from the formerly tidal inlet and its south-west banks. In that area, a visual relationship with mainland Kent is less secure and Perkin's (2010, 294) suggestion that cemetery morphology was related to the ways that people moved through the landscape and around the island (both on land and at sea) is perhaps more pertinent. That observation also applies to the barrows built around the headwaters of coombes in north-east Thanet and the east and south-east coastal zone (Fig. 62).

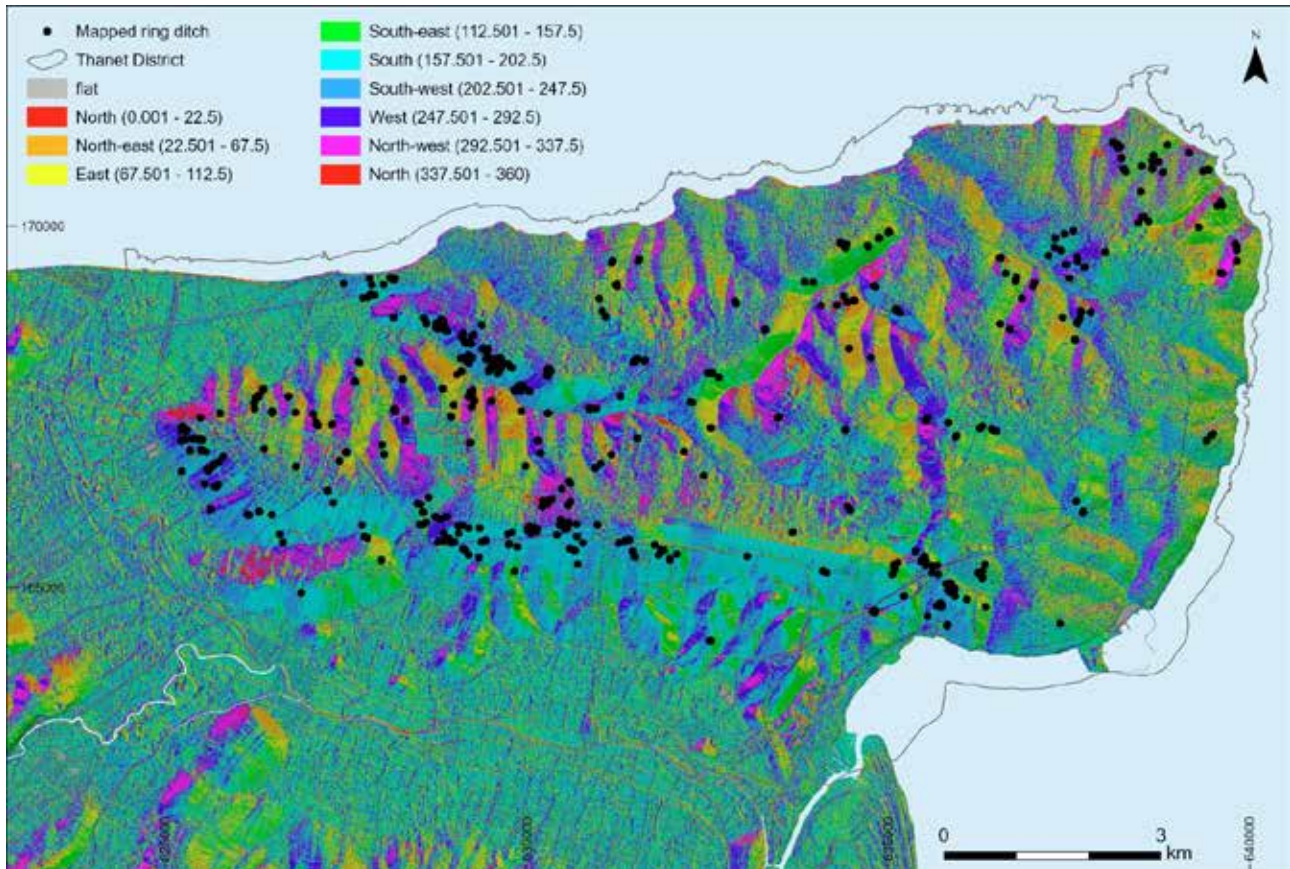


Figure 62: Aspect of mapped Bronze Age ring ditch points in Thanet District displayed topographically. [Archaeological mapping © Historic England. Includes data © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900. Contains data © Environment Agency copyright and/or database right 2022]

Field (1998) suggests that a strong relationship between geology and geography and barrow location in south-east England arose from the varied character of certain areas or zones; for example, few Early Bronze Age barrows were raised on the sunlit North Downs chalk scarp compared with the darker, differently vegetated South Downs chalk scarp that may have been viewed as a symbolic boundary, where funerary activity was appropriately placed. Thanet, becoming an island as a result of rising sea levels and coastal erosion by the Early Bronze Age (Moody 2008, 92), might have been seen in a similar light as a place apart.

Field (1998, 322) does, nonetheless, comment that the specific placement and context of individual barrows is likely to have been significant; perhaps more significant than a general principle of intervisibility. Woodward (2000), for example, describes a variety of differently arranged cemeteries in Britain where barrow positions seem to have been related to headwaters and springs or to valley bottoms (perhaps related to seasonal grazing grounds); or positioned to be seen from settlements; or occupying watersheds,

perhaps as territorial markers. Garwood (2003) observes the importance of a mix of influences on barrow cemetery design on the Sussex chalk downs including cosmology, topography, relationships with earlier monuments and between the people interred. For 466 round barrows in Hampshire's Rother Region, Needham and Anelay (2021, 480–2) calculated similar aspect and slope preferences to the Thanet barrows and similar variety in elevation and topographic position. They emphasize the likely importance of barrow visibility from lower ground and from passes, routeways or activity focal points but encourage caution in how to read correlations between topography and barrow position, concluding that the most common characteristic of the Rother barrows is the way that they demarcated or guarded essential spaces at a variety of scales (Needham and Anelay 2021, 484–5, 489, 512).

Watson (2001) emphasizes the likely importance of late Neolithic thought and monument building practice to Early Bronze Age round barrow cemetery development in Wessex, pointing out that barrow positioning in areas without substantial pre-existing late Neolithic monuments is not readily explained by his interpretations. That is a point mentioned by Perkins (2010) in relation to Thanet and it is important not to lose sight of other aspects of Early to Middle Bronze Age archaeology in the District. Our analysis uses only those sites seen and mapped as a feature in aerial sources, not the total population. Overall distribution data from which the statistics described in this report section were derived lack chronological nuance and it must be remembered present a pattern that in fact developed over centuries of barrow building and use. Although perceived as an Early Bronze Age funerary landscape, the District does have examples of contemporary field systems such as at Monkton Road, Minster (Kent HER: TR 36 SW 131) (Martin et al. 2012), Westward Cross, Broadstairs (Kent HER: TR 36 NE 536) (Wessex Archaeology 2006a) and Thanet Earth (Holman et al. 2023, 53–4). The round barrows mapped by the Thanet project nearest to the Early Bronze Age Monkton Road site are on the higher ground to the north within about a kilometre radius, but there is limited cropmark evidence for the extent of the fields revealed by excavation given in particular the built-up areas of Minster town itself. Thanet was not solely a burial place in the Early to Middle Bronze Age and relationships between barrow locations, settlements and field systems remain to be more thoroughly explored.

Later prehistoric 'ritual' sites

In addition to Thanet's Neolithic causewayed enclosures (Small and Barber 2019) and the funerary monuments discussed above, the District has examples of presumed later prehistoric pit alignments which may be interpreted as 'ritual' monuments or as some form of boundary (as land divisions, they are most common in the Midlands and Yorkshire,

Historic England 2018d). Here we describe the monuments mapped by the Thanet project, including post alignments and pit alignments, and discuss them in the context of similar features in Kent.

An east to west oriented alignment of 18 post-pits (Kent HER: TR 26 NE 240) was excavated north of Monkton (Bennett et al. 2008, 13–4). Fifteen of the post-pits and two similar features, slightly out of alignment on the north side, were seen and mapped as excavated features in OS/95018 V 3002 10-MAR-1995. Oval in plan, the post-pits measured 0.75m to 1.0m long, up to 0.9m wide and in excavation were found to be 0.3m to 0.4m deep. A distinction was made by the excavators between slightly differently aligned eastern and western sections, but the majority of pits included a post-pipe and had clearly held upright timbers (Bennett et al. 2008, 13). Scant evidence means that the alignment's date is unknown, but the excavators drew attention to its proximity to two Beaker burials that may be comparable with Beaker burials inserted into the late Neolithic West Kennet Avenue stone setting at Avebury (Bennett et al. 2008, 92). Possibly of greater significance, the western end of the alignment approaches the south-east arc of Ring Ditch III (Kent HER: TR 26 NE 167), a Late Neolithic/Early Bronze Age henge-like monument (Bennett et al. 2008, 23–31, 96–8) (Fig. 63 a).

A north-west to south-east oriented alignment of ten pits in two sections (Kent HER: MKE124080) to the north-west of Great Brooksend Farm was mapped as cropmarks from APGB Imagery (14-APR-2015). The north-west section of six pits measures about 18m long. Its pits range from 0.9m to 1.5m in maximum diameter and are spaced from 1.5m to just over 3m apart. About 17m away, the south-east section of four pits measures about 13m long. The pits are similar in size on plan to those to the north-west but are more irregularly spaced. The far ends of the alignment are approximately oriented on pits of uncertain date and the whole alignment is surrounded by cropmark ring ditches of Bronze Age round barrows (Kent HER: TR 26 NE 25) (Fig. 63 b).

Two pit alignments in fields between Down Barton Farm and Huckleberry House near St Nicholas at Wade were mapped as cropmarks from APGB Imagery (14-APR-2015). The north-west to south-east oriented alignment (Kent HER: MKE124487) comprises 14 pits with a fifteenth at the south-east end offset to the west. Overall, the alignment is just over 43m long. The mostly sub-oval pits range from 1.6m to 4.5m in maximum diameter on plan and are closely spaced. The north-west end of the alignment is just under 3m away from the south-eastern arc of a fragmentary ring ditch, presumably of a Bronze Age round barrow; inside the ring ditch, two pits on the same alignment may be part of the whole linear arrangement, or coincidentally positioned burial cuts within the barrow. The south-west to north-east oriented pit alignment approximately 75m to the south-east (Kent HER:

MKE124489) comprises a looser arrangement of 11 pits, with two further pits to the north side that may represent the remains of a double row. The pits are nonetheless a similar size on plan and on the whole similarly closely spaced (Fig. 63 c).

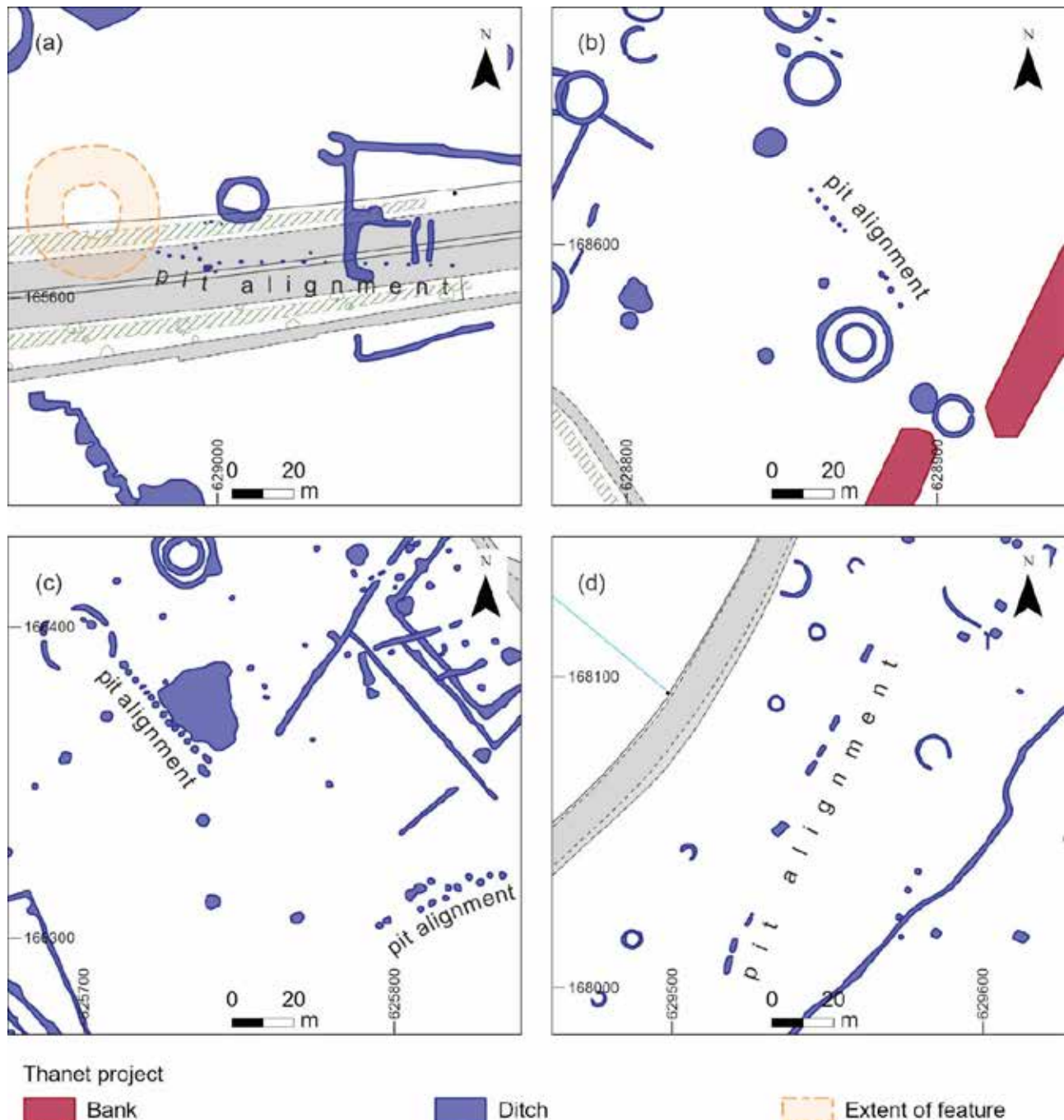


Figure 63: Pit alignments mapped as cropmarks by the Thanet project. (a) north of Monkton, TR 26 NE 240; (b) Great Brooksend Farm, MKE124080; (c) near St Nicholas at Wade, MKE124487 and MKE124489; (d) near Birchington, MKE124260. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A slightly less usual pit alignment north of College Farm, Birchington (Kent HER: MKE124260) was mapped as a cropmark from HEA 29844/20 (20-APR-2016). Eight sub-rectangular pits oriented north-east to south-west appear over about 115m. The pits range from about 3m to just over 6m long on plan and are about 1.5m wide. They are relatively widely spaced and may be the remains of a heavily truncated ditch, although a later prehistoric boundary ditch is clearly visible as a cropmark in whole just 60m to the east (Kent HER: MKE124249). The alignment is roughly parallel to a line of small ring ditches to the west (Kent HER: MKE124250 to MKE124255) and is positioned amidst numerous larger ring ditches of a presumed Bronze Age round barrow cemetery (Fig. 63 d).

Two pit alignments were mapped and reported by the Ramsgate HAZ project in the south-east of the District (Small and Barber 2019). They include a north-west to south-east oriented alignment of seven pits at Newlands Farm, West Dympton extending over about 77m and a 54m long north to south alignment of 12 small pits running almost perpendicularly from a Roman trackway to the south of Lydden (Small and Barber 2019, 23, 28–9); a further four pits, more widely spaced to the north, and two to the south, may also be part of that arrangement. The Newlands Farm alignment appears to curve slightly around the north side of the ring ditch of a Bronze Age round barrow, suggesting that it was constructed when the ring ditch was open and visible. Small and Barber (2019, 28) suggest the Lydden alignment represents a former boundary, also commenting that it is oriented on a double concentric ring ditch of a large Bronze Age round barrow to the south.

There are six other records of pit alignments elsewhere in Kent. Approximately 1,670m to the east of the post-pit alignment north of Monkton (Kent HER: TR 26 NE 240, see above), an east to west alignment of three irregularly spaced post-holes each about 0.7m in diameter was dug during the same excavation campaign. It is possible that other pits had been present but were removed by ploughing in this truncated area. Ten Neolithic artefacts were recovered from the eastern-most post-hole including fragments of a polished stone axe and two flint blades (Bennett et al. 2008, 12), perhaps supporting an interpretation of an early date for the features comprising the longer alignment to the west.

An undated alignment of unspecified length and number of pits was recorded at Joyce Green, Dartford (Kent HER: TQ 57 NW 128) during the North Kent Coast Rapid Coastal Zone Assessment project (Wessex Archaeology 2006b, 65). Also in west Kent, a pit alignment was found to form some 18m of the south-east side of an Iron Age rectilinear enclosure at Queen's Farm, Shorne (Kent HER: TQ 67 SE 336) (Gollop 2003, 7). An alignment of seven pits extending over 22m was oriented on the ritual pool of the Roman Springhead complex at Northfleet (Kent HER: TQ 67 SW 1395) (Andrews et al. 2011, 73–

5). Possibly also of Roman date, by association with a nearby villa complex and road, two fragmentary double pit alignments extending more than 150m in overall length were detected by geophysical survey at Bourne Park, Bishopsbourne (Kent HER: TR 15 SE 385). They may represent 'the formal edges of a [Roman] trackway or approach' although there is the possibility that they are the remains of previously undocumented post-medieval garden design features, such as avenues of trees (Wallace et al. 2014, 24). At Allhallows-on-Sea, nine large pits oriented in two sections (Kent HER: TQ 87 NW 1200) were mapped from aerial sources during the Hoo Peninsula project (Carpenter et al. 2013). The alignment was interpreted as a later prehistoric monument positioned just to the east of an Iron Age/Roman trackway and enclosures of uncertain date.

This mix of undated, Neolithic/Bronze Age, later prehistoric, Iron Age and Roman monuments illustrates the inherent uncertainty in dating the pit alignments mapped by the Thanet project. Long pit alignments which can extend for as far as 1km may have been territorial markers or boundaries of timber posts. Examples date from the Mesolithic to the Iron Age but are less common in southern England (Historic England 2018d, 8). They have been thought of as 'permeable' boundaries but a few earthwork examples in upland areas include banks parallel to the pits, which may thus have been the quarry for impermeable boundary banks (Historic England 2018e, 4). Pit and post alignments are very often seen as cropmark sites and are not easily distinguished from short stone or timber alignments usually thought to be Neolithic or Bronze Age in date, often with a focus on an existing monument (Historic England 2018d, 7).

There is no evidence in the aerial sources for accompanying banks to the mapped Thanet District pit alignments, but they are associated with Neolithic/Bronze Age monuments, in particular ring ditches signifying the presence of round barrows. The alignment north of Monkton (Fig. 63 a) is the only monument of the five mapped by the Thanet project to have been excavated and is associated with both a hengiform monument and Beaker period burials. The other alignments are located amongst presumed Early Bronze Age barrow cemeteries and, like the two mapped by the Ramsgate HAZ project, appear to be oriented on, or to respect, the position of funerary monuments. The pit alignments on Thanet may all be of an earlier date, perhaps similar to other types of alignment such as stone rows which are often associated with features such as cists and cairns (Historic England 2018f, 9). However, field systems established from the Middle to Late Bronze Age onwards are often oriented on earlier features (for example Fowler 2000) and Thanet's pit alignments could represent such boundaries.

Early medieval inhumation cemeteries and small round barrows

Although, as discussed above, there is relatively little trace left of everyday life from the early medieval period there is an abundance of evidence for the burial practices of these peoples with numerous large inhumation cemeteries furnished with lavish grave goods found across east Kent including Thanet (Birch et al. 1988, 41). Many of these cemeteries appear to have been in use for over two centuries, reflecting the productivity of the agricultural land and a period of prosperity and relative stability.

Evidence from these early medieval cemeteries forms the bulk of the archaeological evidence of the post-Roman societies from this period, but even since the increase of developer funded excavations in the 1990s, only a small handful of results from excavated sites across the county have been published (Williams 2007, 210–1). The graves and cemeteries identified on Thanet range in date from the 5th to 8th centuries, though the dates and span of activity vary from site to site. From the few published sites, it appears there is a shortage of evidence of 5th century AD burials of any form in East Kent. A few cemeteries around coastal areas and coastal rivers of Kent have yielded grave goods attributed to the later 5th and early 6th century, including a small number of graves at Sarre and Ozengell on Thanet (Richardson 2005, vol.1, 65). These early burial assemblages suggest a mix of immigrants, including Saxons and Angles. Elsewhere in the county 5th-century cremations have been found at a handful of sites and it has been noted that early graves tended to have fewer grave goods (Williams 2007, 210–1). It is entirely possible that this relative scarcity of grave goods with the more discrete nature of the cremations, coupled with the degree of erosion which has been noted at sites such as Ozengell, may have a contributory effect on the low number of these earlier graves being located and identified.

Broadly speaking the majority of cemeteries on Thanet date from the 6th to 7th centuries with a few sites extending into the 8th century, but individual cemeteries across the island have different date ranges and periods of use. The earliest grave at Monkton cemetery was dated to the early 6th century (Moody 2008, 161). Elsewhere on Thanet a group of 24 6th-century graves have been identified on a hilltop at Cliffsend (Hamel and Lambert 2011). At Thorne Farm a small group of graves yielded a late 6th century date (Perkins 1985). The earliest dated burials at the cemetery at St Peter's, Broadstairs (Hogarth 1973; Richardson 2005) and the cemetery at Bradstow School (Hurd 1914; Richardson 2005) were of late 6th century date. At Half Mile Ride, Margate the earliest graves are of 7th century date (Perkins 1987) and at Mount Pleasant just west of Manston a group of late 7th- to 8th-century graves, probably part of a much larger cemetery, were excavated during the dualling of the A253 Thanet Way (Bennett et al. 1996; Richardson 2005).

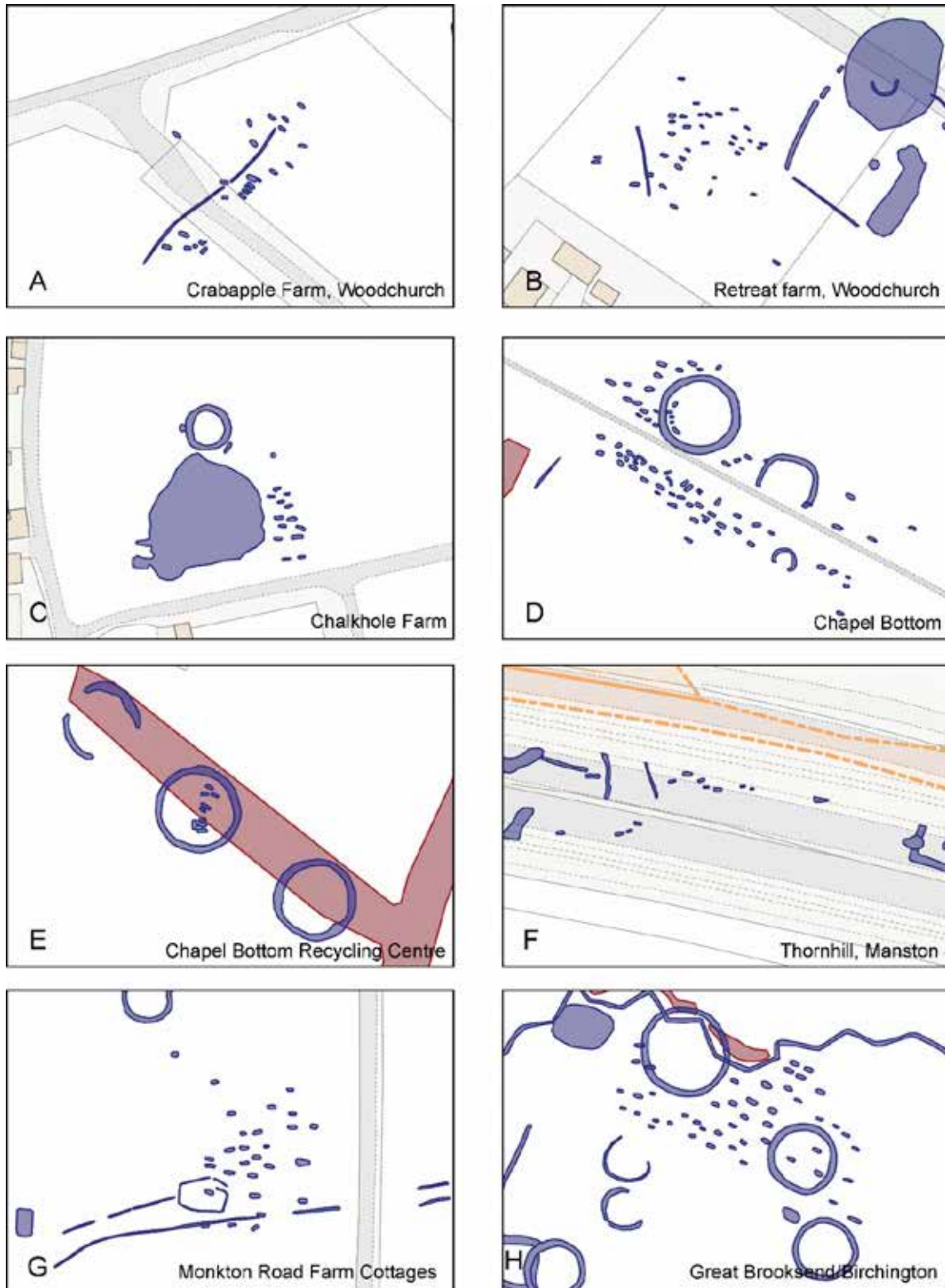


Figure 64: Traces of eight early medieval inhumation cemeteries on Thanet visible as cropmarks. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Over the last couple of centuries over 20 Saxon grave groups and large cemeteries have been found across Thanet. Traces of a number of these cemeteries of varying size have been mapped from aerial photographs by the Thanet project. In some instances the mapping represents only a small part of the known extent of a cemetery where the rest of the site has been found through excavation or lies beneath areas of development. Cropmark traces of cemeteries have been identified at the following sites, some of which have been illustrated: Ozengell (Lord of the Manor) (Kent HER: MKE7631), St Peter's (Broadstairs), Hoo Farm (Minster), Sarre, Monkton Road Farm, Crabapple Farm Stables, Woodchurch (Kent HER: MKE124935) (Fig. 64 A), Retreat Farm, Woodchurch (Kent HER: MKE124953) (Fig. 64 B), Chalk Hole Farm, Flete (MKE40301) (Fig. 64 C), Dene Chapel (Kent HER: TR 36 NW 23) (Fig. 64 D), Chapel Bottom Recycling Centre (Kent HER: MKE125619) (Fig. 64 E), Thornhill, Manston (Kent HER: TR 36 NW 1144) (Fig. 64 F), Monkton Road Farm Cottages (MKE112170) (Fig. 64 G), Great Brooksend, Birchington (Kent HER: MKE115207) (Fig. 64 H), and Crispe Road (Birchington).

At all of these cemeteries the majority of burials are simple flat inhumations in graves, though a number of graves at several cemeteries have been found to lie within complete or penannular ring ditches suggesting the presence of burial mounds (Welch 2007, 227). Many of these also had traces of a posthole in or close to the gap in the penannular ring ditch. On Thanet several examples of such enclosed burials have been excavated at the 7th-century cemeteries of St Peter's Tip at Broadstairs, at Ozengell and Bradstow School (Moody 2008, 162).

The occurrence of additional structures constructed over individual graves is not common outside Kent, but on and around Thanet beam slots, ledges and post holes within graves interpreted as the remains of covers and canopies over the grave (similar to stone and tile memorial structures built over Roman graves, Moody 2008, 161) have been found at least four cemeteries on Thanet. Evidence of grave structures was seen at three graves at Mount Pleasant (Perkins 2008, 293–4), at 30 graves at St Peter's, Broadstairs (Hogarth 1973), four at Ozengell and a number at Sarre (Haith 2008, 293; Richardson 2005; Perkins 1992a, 98). Such structures may have been present but unrecorded at other sites excavated in the 19th century or lost due to severe truncation of the graves through ploughing and erosion as seen at the cemetery at Monkton (Moody 2008, 161). Traces of wooden coffins were also found in graves at several sites including Mount Pleasant (Perkins 2008, 293).

Many of these cemeteries lie close to or over the remains of Bronze Age round barrows which are also visible as cropmarks. At several cemeteries there are clusters of graves around Bronze Age round barrows, clearly indicating the presence of an extant barrow

during the early medieval period (although there is rarely evidence for surviving barrow mounds in the available aerial sources). This is particularly clear at Ozengell where graves were placed around the base of two former barrows, across the barrow ditch but not through the presumably extant barrow mound (Moody 2006, 162, 167) (Fig.65), and similarly at Cliffs End near Ramsgate (Welch 2007, 227). At other cemeteries, graves are clearly clustered around and cut into the mounds of former Bronze Age round barrows. This is most clearly seen at a group of three adjacent Anglo-Saxon cemeteries focused on three of five round barrows in an east-west alignment of north of Saltwood, Folkestone. Graves of two cemeteries established in the 6th century, and continuing into the 7th century, are concentrated on the eastern and western barrow mounds, whilst the central barrow forms the focus of a cemetery established at the start of the 7th century. The two intermediate barrows may have been levelled by that stage (Welch 2007, 229).

Three further relatively small cemetery sites were seen as cropmarks on Thanet with graves whose position presumably cut into the mounds of Bronze Age barrows (Fig. 64, sites: D, E and H). The first site at Dene Chapel lies on a north-facing slope between Chapel Bottom Road and Shottendane Road near Margate. The cropmark remains of linear swathe of graves can be seen extending down the slope, clustered around the ring ditches of two large Bronze Age round barrows. A few of the graves are cut into what may have been the edge of the western barrow mound and one grave is cut through the eastern side of the eastern ring ditch (Kent HER: TR 36 NW 23) (Fig. 64 D). Another nearby site at Chapel Bottom Recycling Centre (Kent HER: MKE125619 – Fig. 64, E) appears as line of three large ring ditches with the traces of a small cluster of graves presumably cut into the centre of the middle barrow mound.

The third example from Thanet seen as cropmarks at Great Brooksend, Birchington (Kent HER: MKE115207) (Fig. 64 H) again shows a swathe of graves seemingly focused on two Bronze Age round barrow ring ditches, the majority of graves located around and between the barrows. Graves are cut through the centre of the south-eastern barrow, but apart from two graves cut across the barrow ditch, the north-western barrow appears to have been respected by the early medieval grave diggers. It has generally been assumed that where there is an absence of graves within the ring ditches of Bronze Age round barrows that are otherwise surrounded by early medieval graves, that this is deliberate avoidance of a barrow mound still extant in the early medieval period. However, it is also possible that graves cut into the higher parts of a barrow mound may have been lost as the barrow was reduced and levelled though ploughing, leaving only the grave cuts in the lower flanks of the barrow mound and across the ring ditch.

Most of these early medieval cemeteries developed over at least two centuries, laid out over time in a number of distinct patterns and grave alignments – in clusters and in lines – and some with at least two nodes of simultaneous development. Graves tend to be cut on the same approximate alignment but vary from cemetery to cemetery. Placement and alignment of graves can be less ordered at the peripheries (Moody 2008, 160). Most sites appear as an undefined swathe of graves, but it is likely that most of these cemeteries were enclosed in some way to separate them from the settlement and surrounding farmland. Traces of possible enclosures have been identified at a few sites including Bradstow School, Broadstairs where a curving causeway ditch appears to act as the southern boundary to a cemetery in use from the 6th century onwards. One particularly broad causeway with rounded terminals to the ditches has been interpreted as the entrance. The ditch is filled with the remains of a bank created from the upcast and though undated is thought to be contemporary with the cemetery. The graves themselves are cut into the remains of four large Bronze Age round barrows. An absence of graves in the centre of one of the barrows may indicate the presence of the barrow mound (Dawkes et al. 2019, 15).

The picture of sites visible as cropmarks on aerial photography is frequently less complete than that derived from large-scale excavations of the same site because many of the individual graves fail to appear as cropmarks due to local conditions and the depth of the grave cut, resulting in a sparse and fragmented view. Other sites have been entirely or partially built on or destroyed by development since discovery. That is the case at St Peter's, Broadstairs where what is thought to be the largest cemetery on Thanet was excavated by Hogarth between 1969 and 1971 (Hogarth 1973, 164; Kent HER: TR 36 NE 60; *Capt. Hogarth* (OS Card Reference)). The site was discovered during preparation for an extension to a municipal rubbish dump between Dane Valley Road and the railway line. A total of 388 flat graves, some ring ditches of burial mounds and evidence of grave structures dating from the 6th to 8th centuries were excavated during the rescue dig. The site yielded quantities of grave goods including a Kentish round brooch, glassware, beads weapons, and both handmade and wheel turned pottery (Surrell 1970, 188; Wilson and Hurst 1970, 160; Hogarth 1973, 104–19).

At this and many other excavated Anglo-Saxon cemeteries many graves showed signs of contemporary grave robbing. However, despite the extent of the cemetery, only a small handful of graves can be seen on aerial photographs as cropmarks in the remaining field to the west of the area of landfill. What remains of the site has been scheduled.

Most of these early medieval cemeteries are thought to serve a nearby settlement, but at least two sites (Kent HER: TR 36 NW 1160 and MKE92008) identified during the

excavations undertaken as part of the East Kent Access Road are thought to be roadside cemeteries. Both lie adjacent to the route from Ramsgate to Minster which was formerly a Roman road (with evidence of Roman roadside cemeteries Kent HER: MKE125503 and TR 36 NW 1146-7) and is thought likely to be an established pre-Roman route across the southern side of the island (Andrews et al. 2015, 387–8) (Fig. 64 F).

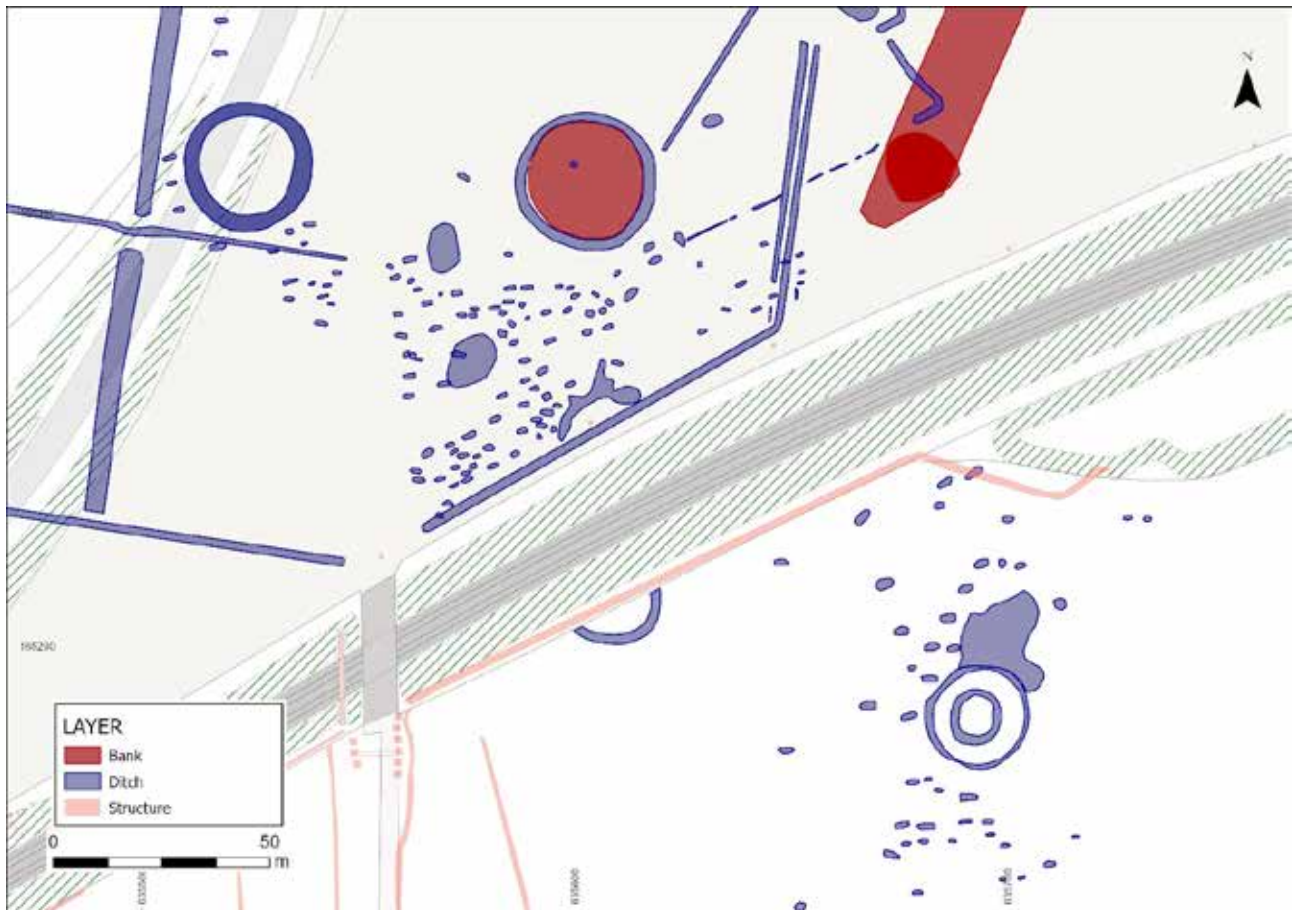


Figure 65: Ozengell early medieval cemetery showing graves visible as cropmarks appearing to respect the presumably extant Bronze Age round barrow mounds. This represents only part of the extensive cemetery. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Ozengell (MKE7631) to the west of Ramsgate is one of the larger cemeteries on Thanet and was discovered in 1846 during the digging of the railway cutting for the Deal to Ramsgate line. After reports of the rich grave goods being found by the workmen, William Rolfe excavated 13 graves, all of which yielded a range of valuable and interesting finds including weaponry such as swords, spears and shields along with glassware, jewellery and coins – the latest of which were minted after AD 600. Further graves were excavated during water pipeline works in 1966 which located numerous graves, a group of which were cut into a Bronze Age barrow (Birch et al. 1988, 42). Subsequent excavations by the

Isle of Thanet Archaeology Unit in 1976 investigating nearby Bronze Age round barrows found Jutish graves amongst the barrows. The cemetery was again investigated by Thanet Archaeology Unit between 1977 and 1981. As a result of all investigations, it is thought the cemetery contains between 300 and 500 graves spanning the late 6th to 7th centuries, serving a relatively stable affluent community (Birch et al. 1988, 42–3).

Over 150 individual graves of the Ozengell cemetery were mapped from aerial photographs as part of the Ramsgate HAZ survey, with oblong grave cuts seen extending over 150m to the north-west and 100m south-east of the railway cutting, representing a fraction of the known number and extent of the site. The graves can be seen extending between the cropmarks of several large Bronze Age round barrows, suggesting the barrow mounds were still extant to some degree during the life of the later cemetery. Most graves appear to be dug on or close to an east to west alignment (Fig. 65).

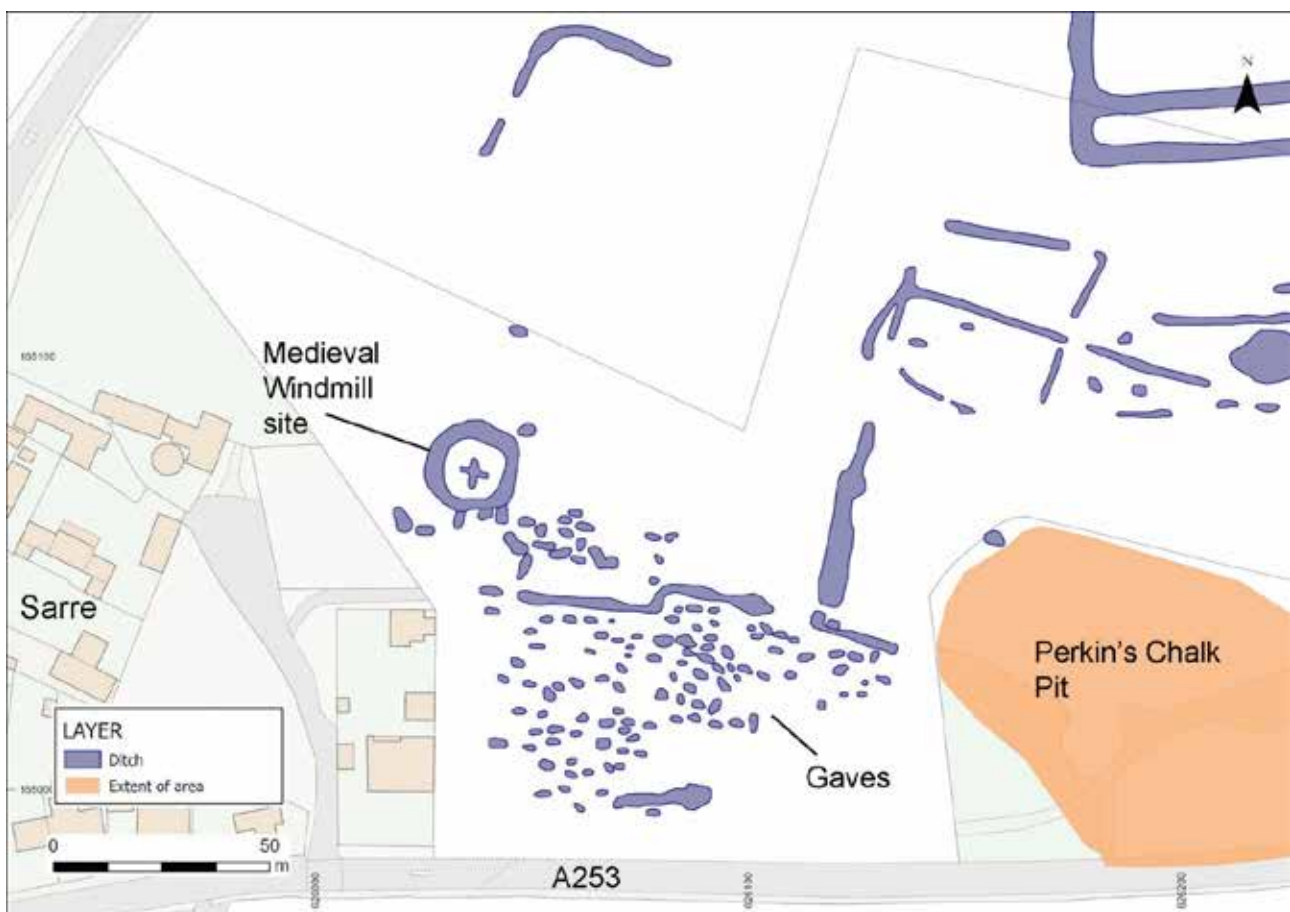


Figure 66: Part of the extensive early medieval inhumation cemetery at Sarre with traces of the medieval windmill mound and other ditched enclosures visible as cropmarks. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Another extensive inhumation cemetery at Sarre (Kent HER: TR 26 NE 11) has been known for almost as long as Ozengell and records from the 19th century indicate there were still extant traces of barrow tumuli at the site (Birch et al. 1988, 44). The burial ground was discovered in the mid-19th century and excavated in by John Brent in 1863 under the auspices of Kent Archaeological Society (Brent 1864–5, 157–85; Perkins 1991b, 139–40). Brent produced a plan of the cemetery, identifying and excavating graves located through systematic probing rather than stripping the topsoil. Though probed graves were excavated, no detailed excavation plans or drawings of the individual graves and structures were published. A plan produced at the time of Brent's excavations by a Rev. Drake in 1863 depicted graves extending in a broad west-north-west to east-south-east band from Sarre Mill to Perkin's Chalk Pit north of the A253. Aerial photographs taken in April 1990 recorded as cropmarks fewer than half the number of graves prospected by Brent. However, they also showed the site of a medieval post mill and indicated the presence of additional graves to the north and north-east (north of the chalk pit), along with a complex of rectilinear ditched enclosures thought to date to the Iron Age or Roman period (Perkins 1991, 140) (Fig. 66).

Further graves were located and examined during rescue excavation in advance of the installation of mains drainage for Sarre in May 1991. Like the cemetery at Ozengell, the cemetery at Sarre was in use through the 6th and 7th centuries. As well as several graves, the pipeline excavations uncovered a ditch suggested to be part of the southern boundary of the cemetery and a sunken-floored hut site. The absence of other contemporary settlement remains suggests the site of early medieval Sarre probably lies beneath the modern village close to the original shoreline (Perkins 1991b, 144, 158).

Traces of a further 11 smaller cemeteries (all of which were already known about and may be the visible parts of much larger sites) have been recorded from aerial photographs across Thanet. Most sites appear as clusters of graves with no visible evidence of other structures or encircling ring ditches. The only recorded exception is a grave which appears to lie within a ditched polygonal enclosure (see G in Figure 64) (Kent HER: MKE112170) at the small cemetery located west of the Seamark Road between Little Brooksend Farm and Monkton Road Farm, but it is possible that the grave and the enclosure are not contemporary features. The graves at this site are all aligned east-west, unlike those at a nearby larger cemetery (Kent HER: MKE78227) which lies c. 300m to the south. Here the graves appear to be randomly placed, and all overlie the remains of both a Bronze Age round barrow and an Iron Age/Roman settlement (Kent HER: MKE6383) west of Monkton Road Farm and Seamark Road (Fig. 67).

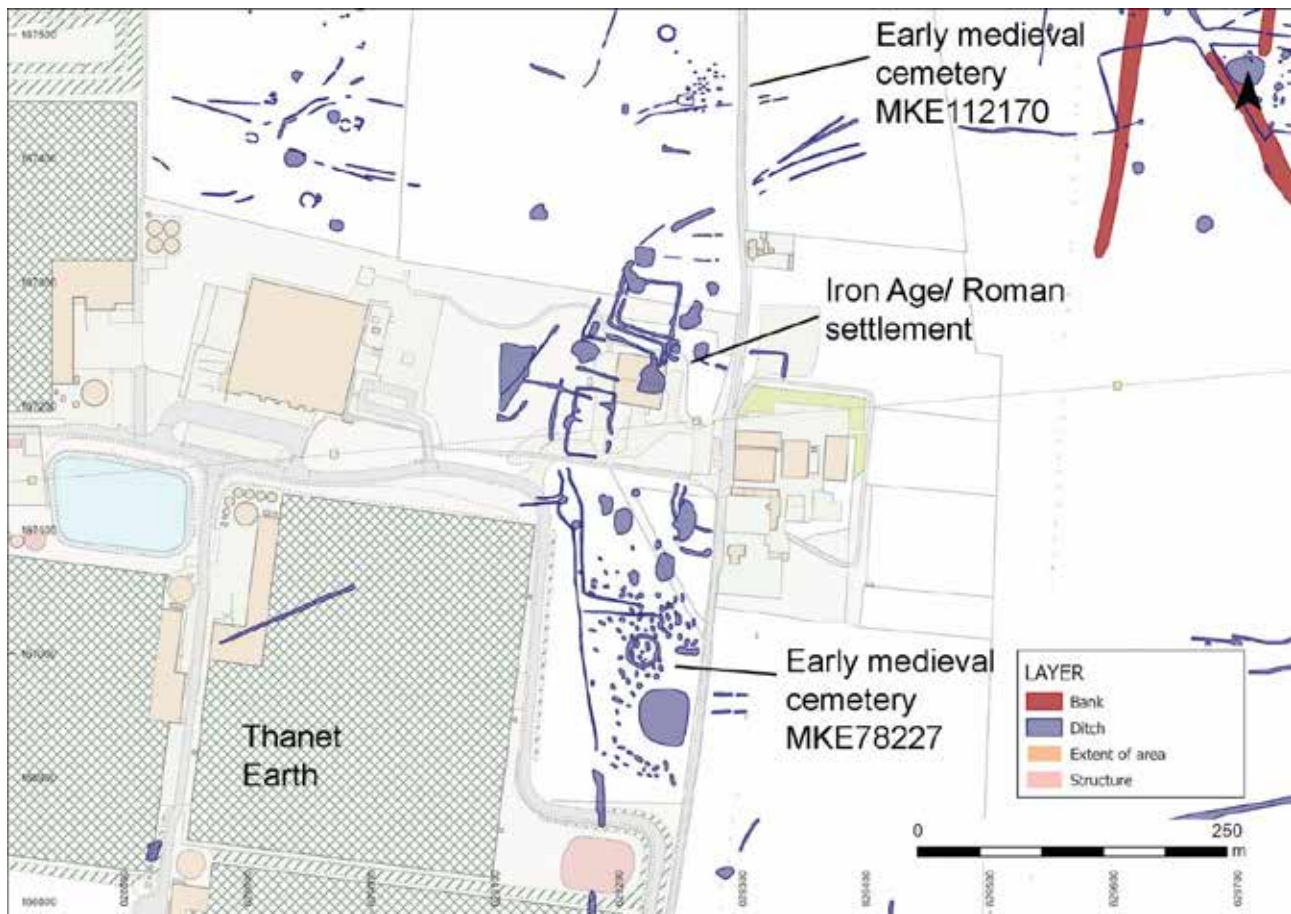


Figure 67: Two adjacent early medieval inhumation cemeteries visible as cropmarks.
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Small Ring Ditches

The cropmarks of a number of small ring ditches measuring less than 10m in diameter – considerably smaller than the average Bronze Age round barrow ring ditch – have also been recorded across Thanet. Some occur amongst early medieval graves, but most occur singly or in small groups or linear arrangements. Though none has been excavated, it has been suggested that these smaller barrows are the remains of early medieval burial mounds rather than the remains of small Bronze Age round barrows (Edis and Horne 1989, 3.2.12). It is entirely possible that some or all of these smaller barrows are simply smaller barrows of Bronze Age date. This is backed up by excavations carried out at Bradstow School, Broadstairs where a barrow measuring 6.5m in diameter was found to contain four crouched inhumations of Bronze Age date (Hart 2007; Moody 2008, 95). A handful of these smaller barrows on Thanet are thought to date from the Early Neolithic so these sites must be treated with some degree of caution until an actual date has been obtained for them. Every one of these has only been recorded as a ring ditch on aerial

photographs and no trace of an internal pit or burial has been identified on available aerial photographic sources at any of these examples.

For example, one of a pair of ring ditches (Y in Figure 32), has been suggested to be a Late Neolithic/Early Bronze Age barrow on the basis of a causewayed entrance and penannular inner ditch on the more complete ring ditch of the north-eastern pair, as well as its similarity to sites identified elsewhere on Thanet; excavation did not produce a conclusive date for the ring ditches, but they were thought to have been infilled by the time they were cut through by an Iron Age ditch, and the ring ditch fill contained prehistoric sherds, animal bones, flints and calcined flint nodules (Perkins 1995, 268-71). The second pair (X in Figure 32) to the south-west comprised one oval outer ditch and offset irregular inner ditch with an adjacent single ring ditch. Neither were sampled during the above evaluation but were referred to on the basis of the unusual morphology with the offset inner circuit.



Figure 68: Cropmarks of ring ditches of Bronze Age round barrows and smaller ring ditches north-east of Brooksend, adjacent to the Canterbury Road. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

To the east of the Canterbury Road between Brooksend and Birchington are the cropmark traces of a loose grouping of ring ditches, probably Bronze Age round barrows (Kent HER: TR 26 NE 75) (Fig. 68). Amongst them are a number of smaller ring ditches similar in size to ring ditches seen around some early medieval inhumation burials. It is thought that some of these smaller barrows may be the remains of early medieval burial mounds rather than small Bronze Age barrows. This group of barrows forms two distinct very straight parallel linear north-east to south-west alignments set about 110m apart. They are perpendicular to the general alignment of Bronze Age round barrows sited on the north-west to south-east aligned ridge to the north. The western group of six ring ditches, all measure in the region of 4.7m in diameter, and the group extends over 160m. The eastern group comprises a line of four slightly larger ring ditches between 6.6m and 7.5m in diameter which extends over 120m. Amongst them are a number of sub-rectangular pits of uncertain date, and running parallel 20m to the east of the western line of barrows is a long linear arrangement of oblong pits of uncertain function and date. However, the proximity and similarity in the alignment suggests that this could be associated with the barrows.

Just over 300m to the south-east is a second possible early medieval barrow cemetery, visible as small ring ditches, which appears to be superimposed on a Bronze Age barrow cemetery located on the northern side of Crispe Road between Brooksend and Acol (Kent HER: TR 36 NW 46) (Fig. 69). Much of this group of barrows is contained within the remains of an undated ditched enclosure. The enclosing ditch clearly curves around one of the larger possibly Bronze Age ring ditches on the north-western corner, respecting an existing extant burial mound. The northern ditch of the enclosure extends eastwards as a substantial linear boundary broken by a distinctive funnel entrance to the north. Further similar small ring ditches have also been suggested to be early medieval in date (Edis and Horne 1989, 3.2.12) but are visible at intervals along the southern side of this boundary, some amongst the larger Bronze Age barrows and may also be Bronze Age in date.

A scattering of similar small ring ditches is visible as cropmarks in a swathe to the south of Brooksend, including two or three located close to an inhumation cemetery directly south of Little Brooksend Farm (Kent HER: MKE124363 and MKE124369). Cropmarks of three further small ring ditches are visible in the field immediately to the west, just to the east of the northern greenhouse of the Thanet Earth complex (Kent HER: MKE124175, MKE124178 and MKE124179). Another group of three small ring ditches lies further to the west of these, visible as cropmarks in the field between Netherhale Farm and the A28 west of Thanet Earth (Kent HER: MKE124123, MKE124124 and MKE124125).



Figure 69: Ring ditches of Bronze Age round barrows and smaller ring ditches north of Crispe Road. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Medieval Religious Houses and churches on Thanet

In keeping with Kent's continuing role as a 'gateway' to Britain through history, the east coast of Kent saw the arrival of St Augustine, sent by Pope Gregory from Rome in AD 597. His mission was one of considerable importance to both Kent and England, to re-establish Christianity as the country's religion following the invasions by non-Christians of the 5th and 6th centuries and re-connect the country culturally with Rome – still essentially the capital of the Western World – and the rest of the continent. Christianity had survived in Wales and Ireland following the withdrawal of the Roman army, but the Celtic church had long since been separated from Rome and the rest of Christendom (Bing 1949, 108, 113).

Augustine's mission is believed to have been directed at Kent because of the marriage of Ethelbert, King of Kent to a Frankish princess Bertha who was a Christian and would be more welcoming than other parts of the country. Augustine is believed to have landed with a band of 40 companions on or close to the Isle of Thanet. The exact location is not

known, but Thorne, a 14th-century chronicler of St Augustine's Abbey, Canterbury stated that Augustine and his companions 'came to the island of Taneth at a place called Retesbrough.' It is thought this was in fact the island of Richborough which lay within the Wantsum Channel at the time of Augustine (VCH 1926, 4).

On arrival, Augustine was instructed to stay on Thanet to await a meeting with Ethelbert and his chief advisers. At the open-air meeting, Ethelbert, though unwilling to embrace Christianity himself, gave permission for the mission to cross to the mainland and preach their gospel. They arrived in Canterbury where they were given lodgings and use of the church of St Martin which had been restored for the use of Queen Bertha. King Ethelbert was converted and baptized that same year and gave a grant of land in the city for the site of the future Cathedral and monastery of Christ Church, possibly on the site of an earlier Roman church. Conversion throughout Kent appears to have happened rapidly with one source citing the baptism over 10,000 either in the Swale or Medway rivers by Christmas AD 597, though there are tales of resistance by the people of Rochester being brought down by Augustus's appeal for divine intervention and the promise by Ethelbert to build a church at Rochester bridge (Bing 1949, 111–2).

The Pope granted Augustine authority over the future bishops to be created in England, sending his reply with two priests – Laurentius and Peter – accompanied by a band of missionaries to spread the word far and wide through the country. By AD 604 a second Kentish See was established at Rochester and Christianity began to spread further west into the Kingdom of the East Saxons but failed to join with the established Celtic Church – something which would take another two centuries (Bing 1949, 113).

A few Roman churches are known (such as the church at Silchester, a simple aisled building with an apsidal end), but it is unlikely much remained of these structures in the following two centuries, and remains of a Roman church have yet to be found on Thanet. However, this Romanesque style of construction was used for five of the seven churches connected with Augustine which can still be traced. The eastern orientation of churches was a later development (Bing 1949, 120). Migrating Germanic peoples brought with them a tradition of building in wood, typically with no foundations to speak of, so many of the earliest churches constructed from wood have left little archaeological trace and many were superseded by later stone churches.

From the 10th century most land on Thanet belonged to the two great religious institutions in Canterbury – the monks of St Augustine or the Brothers of Christchurch at Canterbury (Birch et al. 1988, 55). A map of about 1412 on velum believed to have been drawn and annotated by Thomas Elham, a monk at St Augustine's Abbey, Canterbury, depicts the

Isle of Thanet with detailed drawings of 13 ecclesiastical buildings or churches linked by roads and marked with landmarks and a few topographical features. Included are the churches of St Nicholas (Wade), All Saints Birchington, St John (Margate), St Lawrence (Ramsgate), St Peter, Minster, Monkton, Minster Abbey and the lost churches of All Saints (Shuart), St Giles (Sarre), Wood or Acol (Woodchurch) and Stonar. Though not illustrated, the sites of the Benedictine monastic grange of Salmestone, situated today on the southern edge of Margate and Aldelond Grange (an early spelling of Alland Grange to the north of RAF Manston/Kent International Airport of which nothing remains today), are also named on this map (Skelton and Harvey 1986, 120, 122–3).

Seven of the original 13 churches illustrated on the map survive today. The majority are much altered and enlarged but have traces of original fabric dating back to the 11th and 12th centuries, though almost certainly some were built on the site of earlier wooden churches such as the case of St Mary Magdalene at Monkton where two churches were listed in Domesday Book (Morgan 1983). The sites of two of the lost churches, All Saints (Shuart) and Wood or Acol (Woodchurch), are known and the approximate location of the church of St Giles at Sarre is also known.

The chapel of St Nicholas at Woodchurch

The ruins of the medieval church of St Mary Magdalene and site of the earlier chapel of St Nicholas are located at Woodchurch. When visited by Edward Hasted in the late 18th century, he observed that the chapel had been long since demolished with only parts of its wall remaining and noted the outer yard covering half an acre around the church surrounded by its original walls. The foundations of the church were still visible (recorded by Hasted as 84ft x 56ft [25.5m x 17m]) with the remains of the church tower visible as an 8ft to 10ft (2.3 to 3.0m) high mound in the centre (Hasted 1800, 311).

Fragments of the church still remain within the fabric of a wall built of rough flints and layers of Caen stone. Traces of a rammed chalk foundation, fragments of medieval floor tile and coffin nails as well as three graves similar in style to those located at All Saints Shuart were identified during excavation of the site in 1981 (see Kent HER: SKE44546). A subsequent investigation in 2015 located rammed chalk wall sub-foundations and cobble wall structures thought to be the outer walls of the church (Trust for Thanet Archaeology 2015). However, the site has consistently failed to appear as a cropmark, probably due to the rammed foundations and chalk walls lying directly on the chalk bedrock creating no differentiation with the surrounding chalk.

All Saints' Church, Shuart

The church or chapel of All Saints lay close to Shoart or Shourte House near St Nicholas at Wade in north-west Thanet. The chapel dates back to the mid-10th century and according to John Leland (1535–43) was in ruins by the 16th century (Smith 1964, 48). It was completely demolished by the time the Kent antiquarian and historian Edward Hasted wrote his *The History and Topographical Survey of the County of Kent* (1778–99).

The chapel of Shuart is thought to belong to a small parish of that name, after a recorded account by a John London in 1435 and John Strethend in 1471 who both described themselves as 'of the parish of All Saints, near Wade in the Isle of Thanet' and John London desired 'to be buried in the Church of All Saints aforesaid' (Hussey 1911, 252–3). The site of the church is visible as a faint cropmark on an aerial photograph taken in 1973 (CUCAP BMT93 04-JUN-1973) located on the southern edge of the large field to the east of Shuart which shows as the faint outline of three phases of the churches foundations including the earliest cell at the eastern end (Kent HER: TR 26 NE 1) (Fig. 70, left).

The site was excavated in 1978–9 by Thanet Archaeological Group revealing five phases of construction, the first of which dated to AD 949. The primary church was added to in the late 10th to early 11th century, both represented by chalk foundations. A third masonry Norman phase of enlargement occurred in the first half of the 12th century. A further program of alterations was completed around 1250. The church was recorded as ruinous by about 1450, with reports of no visible masonry surviving above ground by the mid-1730s (Detsicas 1981).

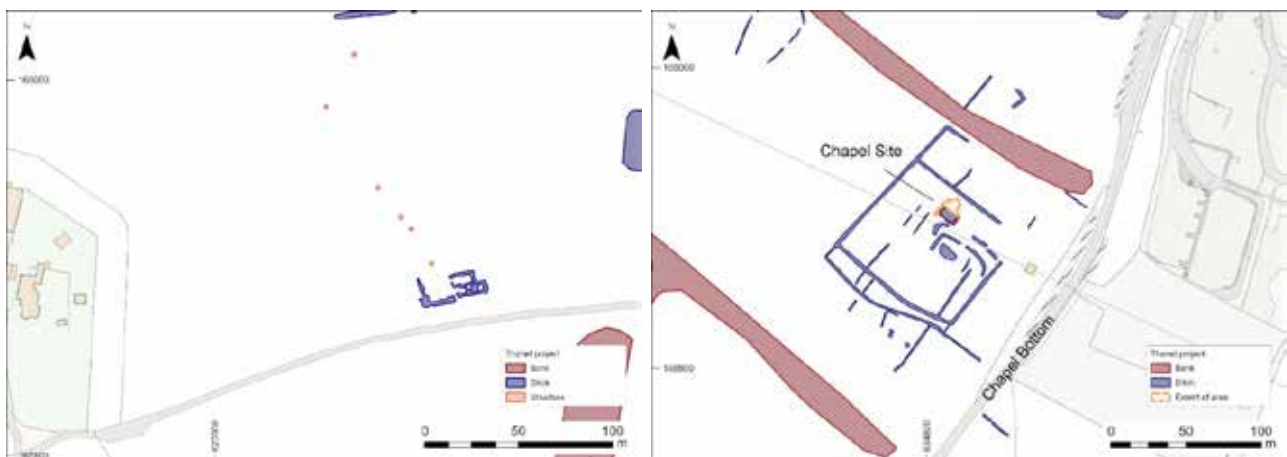


Figure 70: Extract of the mapping of the cropmark traces of All Saints, Shuart (left) and Dene Chapel in Chapel Bottom within a ditched rectilinear enclosure (right). [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Dene Chapel at Chapel Bottom

In addition to the churches and chapels established by the religious houses in Canterbury that held authority over the Isle of Thanet, there is record of at least one private chapel constructed to serve a wealthy manor on the island. In the first half of the 13th century Sir Henry de Sandwich, a knight, was granted licence to build a private oratory at his manor (which lay within the bounds of the land of St Augustine's on the Isle of Thanet) by Robert de Battle, Abbot of St Augustine's Abbey at Canterbury sometime during his tenure between 1224 and 1235. The chapel has long since been ruined and levelled by centuries of ploughing, but its presence is recorded in the valley known as Chapel Bottom on the north-western side of the road between Margate and Minster (Hussey 1911, 246).

No above surface remains are visible, but the site is still marked on the OS maps as Dene Chapel (Kent HER: MKE7803). The outline of a small building, presumed to be the church, within a large, ditched enclosure is visible as cropmarks on aerial photographs (Google Earth 2007 and 2017) (Fig. 70, right). The church appears as a small rectangular cropmark feature on a north-west/south-east axis measuring 10.5m by 5.5m on plan, surrounded on three sides by traces of its buried wall foundations with the traces of buried building material extending north-eastwards. The surrounding rectilinear enclosure is on the same axis and has traces of sub-divisions and further ditches and enclosures to the north-east and south-west. Within this complex are further fragments of ditches of a large incomplete sub-rectangular enclosure which appears to represent a different phase of enclosure.

St Giles, Sarre

There are records suggesting the presence of a church dedicated to St Giles at Sarre by the 11th century. At that time Sarre was an important port on the Wantsum Channel and a member of the Cinque Port of Sandwich. In the late 11th century, the manor belonged to the Norman family of Crevequer. However, the combined effects of the silting of the Wantsum channel during the 14th century and the devastating effects of the Black Death the port failed, and the village was depopulated. The church fell into disrepair and was derelict by the 16th century. The parish eventually amalgamated with St Nicholas at Wade. All above ground traces of the church had disappeared by the early 18th century.

The church is thought to have been located on a hill to the east of village of Sarre north of the road to Monkton (Kent HER: TR 26 NE 12). Traces of what were thought to be the foundations of the church were located in excavations undertaken in 1982 by Thanet Archaeological Unit. The walls of a building were orientated north-south, but despite this orientation were thought to be the remains of the church of St Giles (Perkins 1988). None of the cropmarks observed in this field appear to relate to the church building.

Later prehistoric and Roman defence

North Foreland

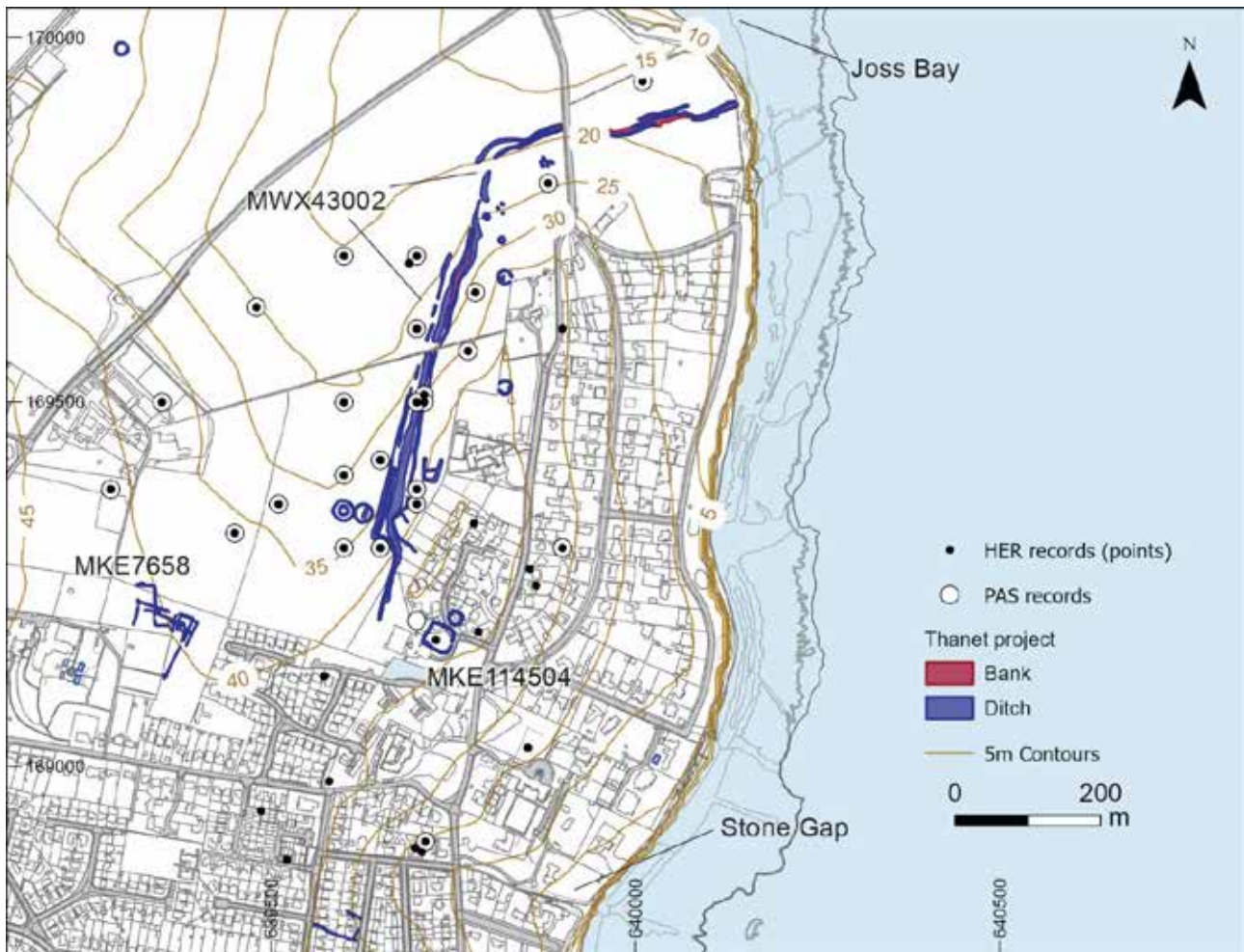


Figure 71: Later prehistoric and Roman monuments on North Foreland, including Iron Age and Roman HER records and Iron Age findspots recorded by the Portable Antiquities Scheme (PAS). [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Cropmarks of a long, multiple ditch and bank linear feature (Kent HER: MWX43002) on North Foreland were first sketch-plotted and published by Perkins (1993). At that time, soilmarks and cropmarks on the western slopes of the spur of land extending north from Broadstairs had been observed in aerial photographs, with slight traces suggesting that at the spur's north end the linear feature turned towards the coastline. The spur comprises high ground rising to around 40m aOD to 45m aOD on which stands the North Foreland lighthouse. It is defined to the east by sea cliffs and to the west and north by the coombe descending from the environs of Reading Street into Joss Bay. Although the east and

south areas of the spur have been developed, the west side is a mix of cultivated fields and paddocks (Fig. 71).

The linear ditches and banks were mapped as cropmarks from a range of sources including Royal Air Force and Meridian Airmaps vertical photographs and numerous Historic England specialist obliques. Fragments of bank were apparent as parched areas between some of the northern ditches. It is likely that earthwork banks were present amongst the southern stretch of ditches, constructed from ditch upcast. No bank material was observed during excavations made to section the ditches, probably because considerable truncation by cultivation has occurred. Despite that loss, two parallel ditches still measured 2m wide by 0.81m deep and 5m wide by 1.5m deep in section, suggesting that they had been substantial and potentially defensive in scale (Hogwood 1995, 475).

From the cliff edge at Joss Bay, the linear earthwork follows the 20m aOD contour to the west for about 345m before turning south. It then runs along the west-facing slope of North Foreland for about 550m, gently rising to about 35m aOD. Following a sharp kink to the east in the environs of two round barrows (visible as cropmark ring ditches), the linear earthwork continues south for another 100m. It was not visible on the available aerial sources beyond the land now occupied by Broadhall Manor. It is likely that the sharp kink mentioned above was in response to a pre-existing feature in the landscape, possibly one or more round barrows. Cropmark ring ditches suggest that there was a Bronze Age cemetery on the spur and on the sloping sides of the coombe to Joss Bay. The linear earthwork may have continued to the coast at Stone Gap, thereby fully enclosing North Foreland (Fig. 71). It has been interpreted as a defensive structure of ditches and ramparts, analogous to a hillfort or promontory fort of likely Late Bronze Age or Iron Age date (Perkins 1993, 413). It is not clear from the cropmarks if all the ditches were contemporary and they may represent phased construction, given the recutting observed during excavation (Hogwood 1995, 475).

There is considerable evidence for Iron Age and Roman settlement on North Foreland including within the putative defended area. Remains of a possible Roman structure were uncovered in the 19th century (Anon. 1878, xxxiv) but more recent excavations revealed Iron Age burials that had been inserted into a Bronze Age barrow, and post-holes containing Iron Age pottery (Perkins 1993). An Early to Middle Iron Age enclosure (Kent HER: MKE114504) with four-poster structures and pits, mapped as a cropmark from vertical imagery dating to 1990, was positioned just to the south-east of the southern end of the linear earthwork. Pits and post-holes containing Iron Age pottery (Kent HER: MKE39936 and MKE90796) were situated about 150m north-east of that enclosure, and a similar cluster of Late Iron Age/Roman features about 155m to its north (Kent HER:

MKE89613). In locations that may have been just outside the defended area, finds suggest the presence of a Roman building (Kent HER: MKE89604). Cropmarks of an Iron Age/Roman settlement (Kent HER: MKE7658) hint at the agricultural basis of the economy and there have been numerous finds of Iron Age coins in the environs.

Moody (2008, 118) suggests that, taken in context of Iron Age archaeology across Thanet District, the evidence from North Foreland is part of an undefended settlement pattern. In this context, he concludes that the linear earthwork should be reinterpreted as the ditches of a hollow way descending the north-west facing slope of the coombe to Joss Bay. Moody (2008, 120) theorises that as a hollow way, the route would have linked Joss Bay beach to high ground and eventually to trackways crossing the chalk plateau including the ridgeline route to Sarre. In Moody's (2008, 121) modelling of the spur and its archaeological features, however, the northern part of the linear earthwork is not depicted. Mapped fully first by the SE RCZAS and now in greater detail by the Thanet project, it is clear that the cropmarks do not extend to the beach at Joss Bay but follow the 20m aOD contour as far as the cliff top which is currently about 15m high (Fig. 72 a).

Possible post-holes were observed in one of the ditch sections excavated in 1995, suggesting that part at least had been palisaded (Hogwood 1995, 475). Although the linear earthwork is clearly considerably truncated by cultivation, on balance it is thought to have formed a later prehistoric defensive or territorial feature to North Foreland. It is tempting to imagine that it had a southern end, lost to development, that joined the coast at Stone Gap (Fig. 72 b) where there have been finds of Iron Age/Roman date in the environs, including further settlement evidence of four-poster structures and ditches with domestic animal bone assemblages and cereals (Kent HER: MKE78740, MKE78741).

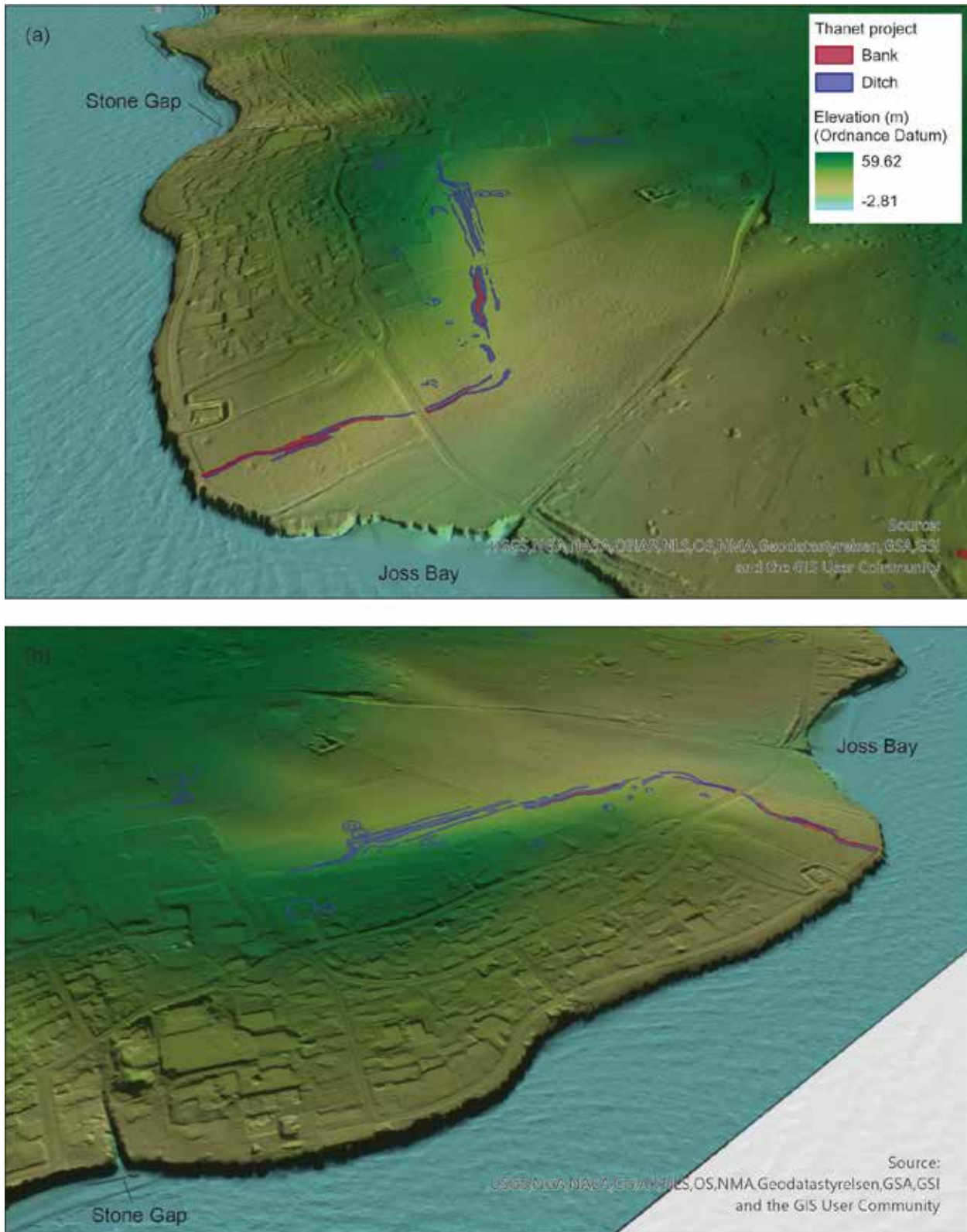


Figure 72: North Foreland linear defences with other later prehistoric and Roman cropmarks mapped by the Thanet project, (a) from the north; (b) from the south-east. [Archaeological mapping © Historic England. Contains data © Environment Agency copyright and/or database right 2022]

Ebbsfleet Enclosure

The Romans invaded the British Isles on two separate occasions. The first invasion by Julius Caesar following the initial landing in 55 BC, took place in 54 BC. This was short-lived expedition ending with retreat back to Gaul. The second invasion in AD 43 by Claudius heralded the beginning of a full-scale invasion and occupation which lasted four centuries.

The later invasion by Claudius in AD 43 is known to have taken place in Kent, landing close to the site of the subsequent fort of Richborough, then on an island at the eastern end of the Wantsum Channel, south of the Isle of Thanet which at that time was a true island surrounded on all sides by water. There Claudius built his primary bridgehead defence surrounded by ditches, the remains of which were excavated and identified by Bushe-Fox in the 1920s and 1930s (Bushe-Fox 1932, 10) and also recorded as cropmarks on aerial photographs (Small 2002, 10). Following the initial fortification, a permanent fort of Rutupiae (Richborough) was constructed on the site, becoming the official gateway to Roman Britain with a port and graced by a triumphal arch encased in highly prized Carrara marble imported from the marble quarries in Italy (Millet 2007, 142), the massive foundations of which still survive within the fort.

However, attempts to pinpoint the location of the earlier invasion of 54 BC proved more problematic. The location of the landing point of Julius Caesar's invading fleet in 54 BC has been researched and debated for many years with efforts to match the contemporary account of the fleet's journey from Gaul to Britain, their descriptions of the coast and landing site and details of the ensuing battles with the local British tribes to the modern topography at a number of potential sites around the coast of the south-east of England. The lack of placenames in the account and changes to the coastline over two millennia have hampered the search further.

In the Roman period the Ebbsfleet peninsula extended south from the south-eastern shore of the Isle of Thanet. Pegwell Bay and the beach lay immediately to the east of the Ebbsfleet peninsula, before changes sea level and the processes of silting of the Wantsum Channel left the sea over 1km away. The bay with its wide, shallow beach shelving gently out to sea was ideal for beaching the keeled Roman fleet and matches the contemporary description of the crossing and landing of the invading fleet from Gaul (Fitzpatrick 2019, 150).

In Caesar's account of the first day after landing his fleet he led his army inland and defeated the local Britons at a hillfort, thought to be Bigberry near Canterbury (Thompson 1983). In the meantime, a severe storm had damaged much of the fleet. On hearing this

Caesar led his troops back to the shore and instructed them to haul the ships ashore and build a single line of defence around the camp and the ships on the beach before he regathered the army to set off inland again to continue his advance (Fitzpatrick 2019, 153–4).

Excavations on the neck of the Ebbsfleet peninsula on the south-east corner of Thanet in advance of a new water pipeline 2005 identified sections of ditch thought to be parts of a mid-Late Iron Age rectilinear enclosure suggested to cover at least 14 ha. Further sections of enclosure ditch were located in 2008 in advance of the construction of a pond for the Weatherlees Waste Water Treatment Works (Egging Dinwiddy & Schuster 2009, 112). This ditch appears to have enclosed the extensive remains of a mid-Late Iron Age settlement (Oxford Wessex Archaeology 2011; Andrews et al. 2015) which occupied the prominent promontory jutting into the eastern mouth of the Wantsum channel with Pegwell Bay and the English Channel to the east.

Further evidence of this enclosure came to light during excavations undertaken in advance of road construction for the Gateway Project. This branch of new road extended south from a junction with the A299 west of Cliffsend, along the north/south ridge of the Ebbsfleet peninsula to meet the Sandwich-Canterbury Road, passing immediately to the east of Ebbsfleet Farm. Further evidence of the large infilled defensive Late Iron Age enclosure was identified (Fitzpatrick 2015, 194). Sections of the Iron Age ditch were identified and all found to have been re-cut by a later ditch about 5m wide and 2m deep with distinctive 45-degree angled sides and flat bottom with strong construction parallels to Roman defensive ditches of large areas identified on the continent from Caesars Gallic wars in the 1st century BC (Fitzpatrick 2019, 150). The ditch was dated through coin and pottery finds, and radiocarbon dating to the 1st century BC, strongly suggesting this was a Roman ditch linked to the Caesarean invasion in 54 BC and that this could be the site of the primary bridgehead, re-using an existing British defended settlement enclosure enclosing about 20ha. Furthermore, the Gateway excavations also identified a second smaller outer re-cut ditch in ten of the infilled Iron Age ditch sections which were similar in construction to the Claudian ditches at Richborough and also yielded Roman Claudio-Neronian military finds from the 1st century AD suggesting this site was used again as a bridgehead enclosure in AD 43 (Fitzpatrick 2019, 152, 154).

The combined results of the Weatherlees Waste Water Treatment Works and Gateway excavations identified parts of the southern side of the enclosure extending about 140m south-west from the road to the south of Ebbsfleet Farm, a short section of the eastern side in the pipeline cut to the east of the new road and a northern section cut by the new road and old road. A programme of geophysical survey (Andrews et al. 2015) was also

undertaken to the west of the new road, north of Ebbsfleet Farm, that identified the continuation of the northern ditch which changed direction to the south-west forming the north-western side of the enclosure. This could be traced for over 300m to the northern extent of woodland north of the farm. The overall known plan is of an irregular rectilinear enclosure 310m north-west/south-east by at least 265m south-west/north-east with the low hill of the peninsula located in its western half.

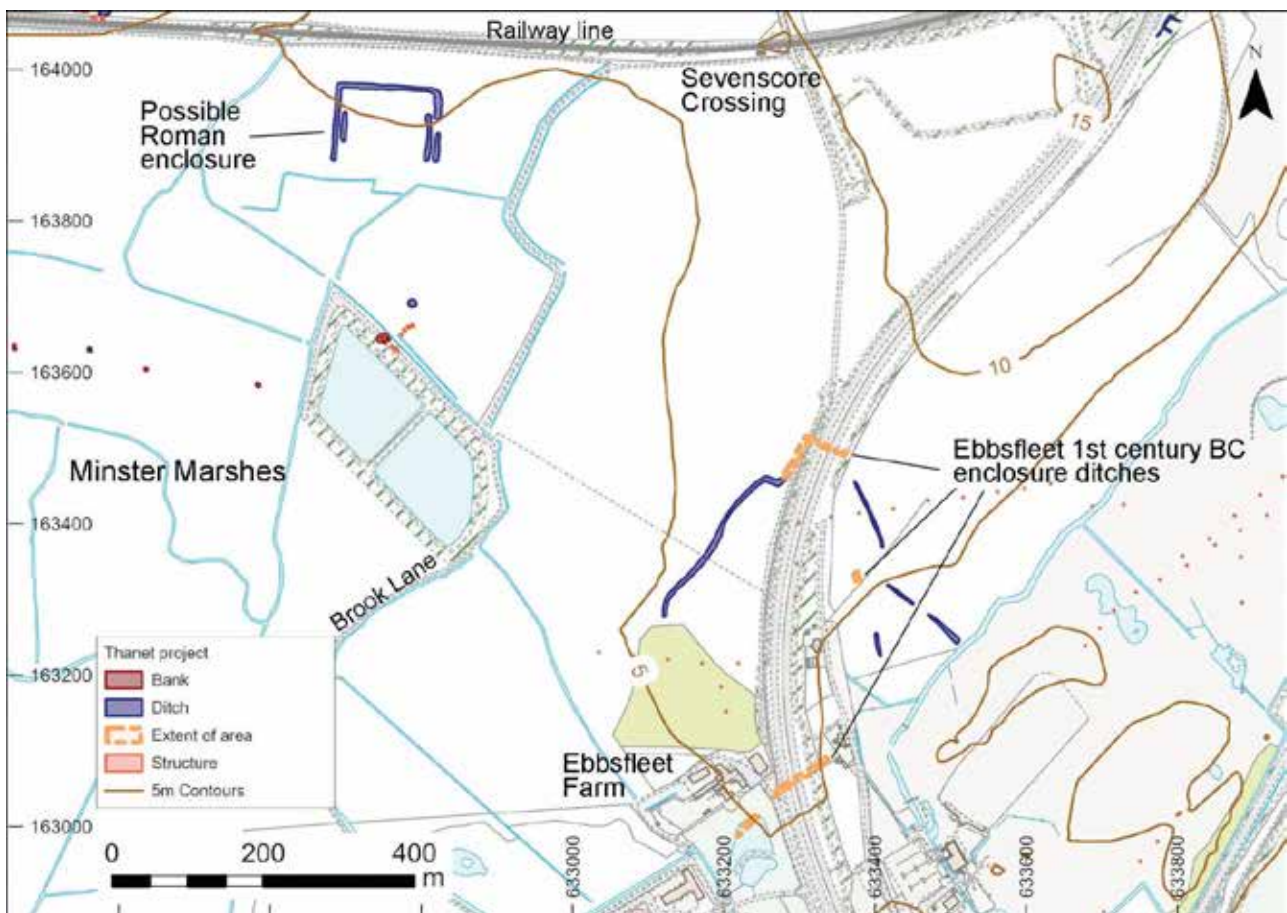


Figure 73: Extract of mapping showing the location of the Ebbsfleet Roman enclosure (Kent HER: MKE125960) and the possible Roman enclosure to the north-west (Kent HER: TR 36 SW 202). [Archaeological mapping © Historic England. © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

This northern section of the enclosure ditch was also identified as a cropmark on APGB aerial photographs taken in 2003 and mapped by the Thanet project. Slight traces of the Iron Age settlement identified by the geophysical survey were also visible but were too faint to map any detail. None of the earlier aerial photographs taken before the woodland north of Ebbsfleet Farm was planted, or lidar, revealed any trace of the continuation of the ditch southwards to the farm. APGB photographs taken in 2015 indicate a number of faint

ditches visible as cropmarks to the east of the road, but only one of these is on the correct alignment and could be a possible section of the eastern side of the enclosure (Fig. 73).

Possible Roman enclosure

Some 650m to the north-west of the enclosure at Ebbsfleet the cropmarks of a second enclosure (Kent HER: TR 36 SW 202) have been identified on aerial photographs taken in 2007 (Fig. 73). This site is located just to the south of the railway line, west of Sevenscore Crossing. It sits on the 5m aOD contour on what would have been the edge of the southern shore of the island of Thanet before the Wantsum Channel silted up in the medieval period.

The entire northern side, two corners and parts of the western and eastern sides are visible as cropmarks. The maximum width of the enclosure is about 140m east/west. The western side can be traced for about 100m southwards and the eastern side for about 95m. Both have traces of interior parallel ditches suggesting the enclosure was double-ditched. What may be an original opening of about 20m interrupts the outer eastern ditch. The fourth (south) side could not be seen in the available aerial sources, possibly due to strong tractor 'tramlines' interrupting crop patterns and medieval/post-medieval field drainage ditches that may have obscured traces of that side of the enclosure (Fig. 73).

In plan form, the enclosure is similar to other features on the Isle of Thanet of probable medieval date including the rectilinear enclosure at Thorne Hill about 850m to the north (Kent HER: MKE16051), but it is also similar to enclosures of probable Iron Age/Roman date such as the settlement sites Kent HER: MKE7829 (north-west of Woodchurch), Kent HER: MKE780 (south of Westgate-on-Sea) and Kent HER: MKE6372 (near Birchington). In this context, it is interesting to note the proximity of the site to the findspot of an Iron Age coin of the Atrebates tribe (Kent HER: MKE74453) and the Iron Age and early Roman settlement area and 1st-century BC Roman defensive enclosure at Ebbsfleet. The site is located close to the former Roman shoreline about 850m north-west of the Ebbsfleet enclosure and could be considered as a candidate for a Roman camp or fort on the protected leeward shore of the Ebbsfleet peninsula.

Industrial Archaeology

The economy of the Isle of Thanet has traditionally been based on agriculture, particularly for arable crop production. Small scale and local industrial activities such as stone and chalk quarrying, and later brick manufacturing occurred here as was common in rural communities up and down the country through history. Just to the west of Thanet on the Kent mainland, coal was mined in the 20th century from the extensive coal seams of East

Kent Coal Field. The nearest mine was at Chislet where boring operations were begun in 1913 by Anglo-Westphalian (Chislet Kent) Colliery Ltd (Ritchie 1919, 241) and carried on after the outbreak of war under the name North Kent Coalfield Ltd (Gee 1990-91, 9-14), finally closing in the 1980s. Today, very little trace of that industry remains. The only activities historically carried out on an industrial scale on Thanet were salt extraction in the marshes of the Wantsum Channel, brickmaking and bulk mineral extraction, including chalk quarrying.

Salt Production

Salt has been extracted from sea water and salt-rich muds and sands in the British Isles since at least the Bronze Age with numerous historic salt production sites identified along the coast, tidal inlets and marshes. Salt was important in the leather tanning process, but before refrigeration salt was the main method of food preservation and as a result was a vital commodity. Salt was extracted from heated sea water or brine obtained from washing salt-rich sands and muds which were then evaporated in coarse ceramic pans set on clay pedestals (collectively known as briquetage) over fires. The accumulation of burnt earth and waste and briquetage built up to form red oxidised mounds known as 'redhills'.

Salt extraction sites and production methods appear to be similar in Essex and Kent (Fawn et al. 1990). The earliest known salt production sites in Kent are known from excavations and finds at Minnis Bay, Birchington on Thanet where open rectangular brine troughs have been recorded (Worlford 1943, Fig. 8, no.10) and clay pedestals from Hoo St Werburgh on the Hoo Peninsula (Moore 2002, Fig. 4) which date to the Late Bronze Age. (Champion, 2007, 110). Iron Age brine troughs have also been found at Highstead (Bennett et al. 2007).

Many of the sites in Essex are redhills of Iron Age and Roman date which differ in form, colour and composition from medieval sites. In contrast, the medieval sites are mostly made up of large accumulations of silt and clay (Kenney 1994, 5) though some redhill deposits have been identified on Thanet (Perkins 2007, 254). Redhills are the remains of the actual working area where brine was heated and evaporated. Where salt was derived from washing salt-rich sand and tidal muds in the marshes to produce a brine, large quantities of the waste sediments were disposed of at the site, building up into mounds of considerable size and height known as salterns. Many of these developed into curvilinear, lobed or floriate mounds, but there are also numerous elongated ridges of accumulated sediment. Dating salterns is difficult based on form alone and there is a wide range of sites of different dates and forms found across the country. A large number of these saltern mounds have been recorded by the Thanet project in the low-lying marshlands within the former Wantsum Channel. They appear to comprise two different types of mound possibly

attributed to different periods, methods and scales of working. A concentrated band of small oval mounds typically between 30m and 50m across extends along the middle of the of the marsh west of the River Wantsum. Other small mounds occur in patches on Wade Marsh and scattered across the marshes. Larger more linear mounds occur in a broad band on the eastern side of the Wantsum between the river and the western shore of Thanet. The largest of these linear mounds measures about 500m by 100m and represents decades, or even centuries, of salt extraction.

The salterns appeared as well-preserved mounds of some considerable size and height when recorded from RAF vertical photographs from the 1940s (Fig. 74), but most have since been heavily ploughed and reduced in the intervening decades. However, despite this the spread remains many mounds still survive as significant earthworks which are clearly visible on lidar (Fig. 75).

Salt working sites from different periods have been identified across north Kent. Romano-British saltworks have been identified on the north Kent coast at Iwade near Sittingbourne and nearby Funton. Medieval saltworks have been excavated on Harty Marshes on the Isle of Sheppey (Kenney 1994, 5). Others at Seasalter, near Whitstable, have been dated to 12th to 13th century (Thompson 1956), indicating a long history to the salt industry in the area. Though only a small number have been dated, the salt workings on in the marshes of the Wantsum Channel are almost certainly medieval in date.

At the time of the Domesday survey the north Kent marshes still lay open to the tides. The Domesday returns of 1086 for the Hundreds of Chislet, Reculver, Monkton and St Mildred in the Manor of Minster record a total of 54 salthouses (also recorded as salinae or saltcotes), 47 of which were in the Chislet Marshes, suggesting the salt industry was firmly established in the marshes flanking the Wantsum Channel by the mid-11th century (VCH 1908, 7, 9). The few sites in the Wantsum which have been excavated have yielded medieval dates from the 12th to 14th centuries with no earlier pre- or immediately post-conquest sites currently identified. This may simply be because evidence of the earlier sites was not recovered, possibly lying at a greater depth beneath the accumulated mounds.



Figure 74: Saltern mounds on Chilset Marshes visible as earthworks in 1946. [RAF/106G/UK/1724 RS 4038 10-SEP-1946 Historic England Archive (RAF Photography)]

Salterns from two different groups within the marshes have been sampled, returning different dates. The first of these were two saltern sites in the Chilset Marshes,

investigated during road widening on the Thanet Way revealing numerous clay-lined pits and features associated with salt production. Pottery dating to the 13th century was recovered from mounds suggesting these salterns were still in use at that time and the depth of the mounds' stratified silt layers indicated they had been built up over a considerable length of time (Bennett 1989, 336–7). Further to this, a record of 15 saltcotes exists amongst the tithes of the vicar of Chislet in 1345, providing evidence of continued salt manufacturing in the area into the 14th century (Davis 1934, 554).

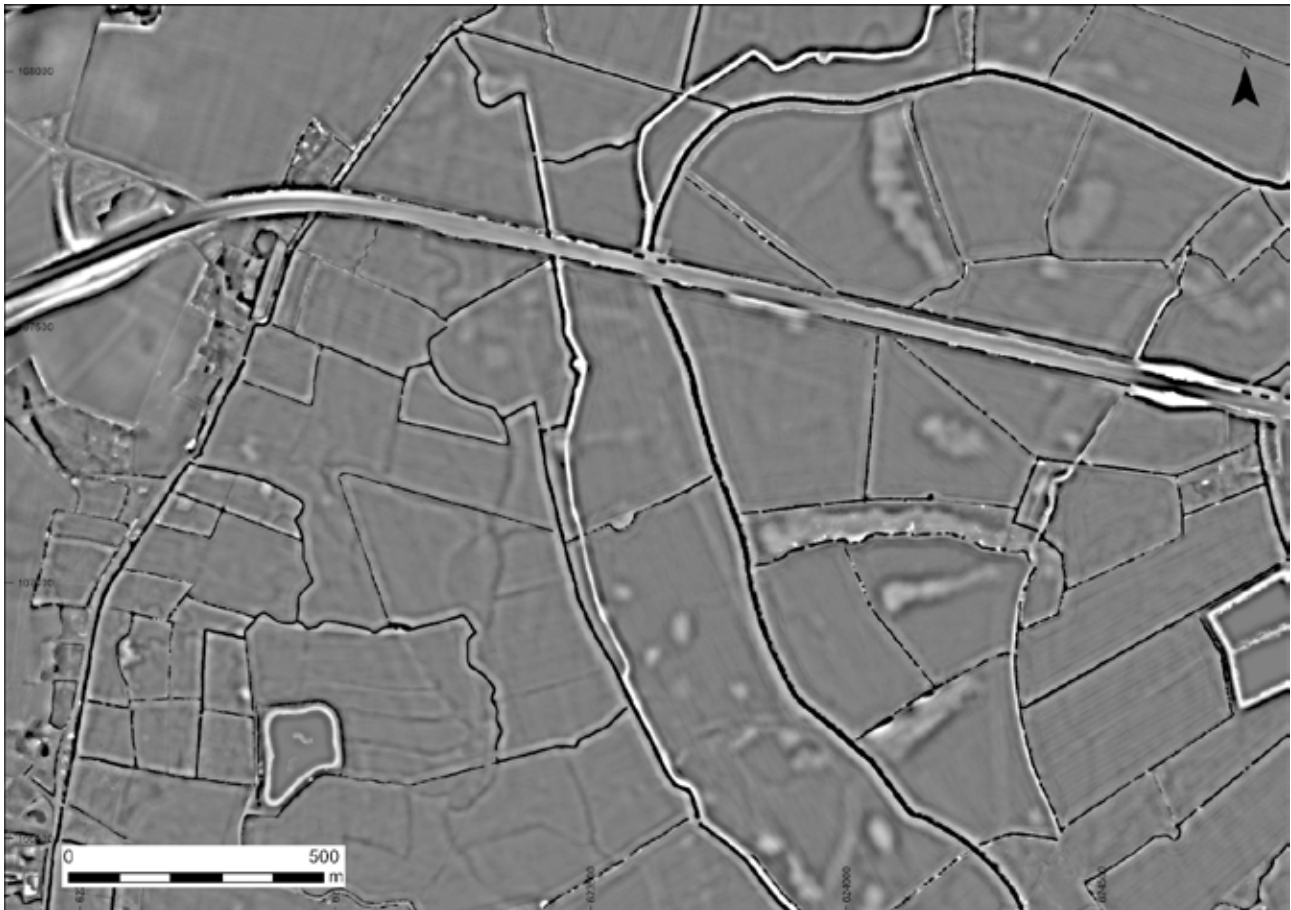


Figure 75: The remains of saltern mounds in the Chislet Marshes west of St Nicholas at Wade visible as pale linear and smaller oval features despite severe levelling through prolonged ploughing. [Lidar © Historic England; source Environment Agency]

At the second site, two saltern mounds were sectioned by a pipeline trench dug between Wall End and Sarre in 1987, parallel to the course of the Sarre Wall causeway (a post-medieval flood defence which carries the road to Sarre). Stripping of the topsoil revealed two mounds of 20m and 35m in diameter and 0.8m in height. Unlike the Chislet Marsh salterns these were both composed of bright red burnt soil with a sub-ceramic consistency containing fragments of briquetage and pottery sherds of local shell-tempered fabric dated

to AD 1150–75 (Perkins 2007, 254). This site is of particular interest due to the similarity in construction and the presence of briquetage within the two mounds, which closely resemble Roman Red Hill sites found along the Essex coast yet, intriguingly, they date to the 12th century.

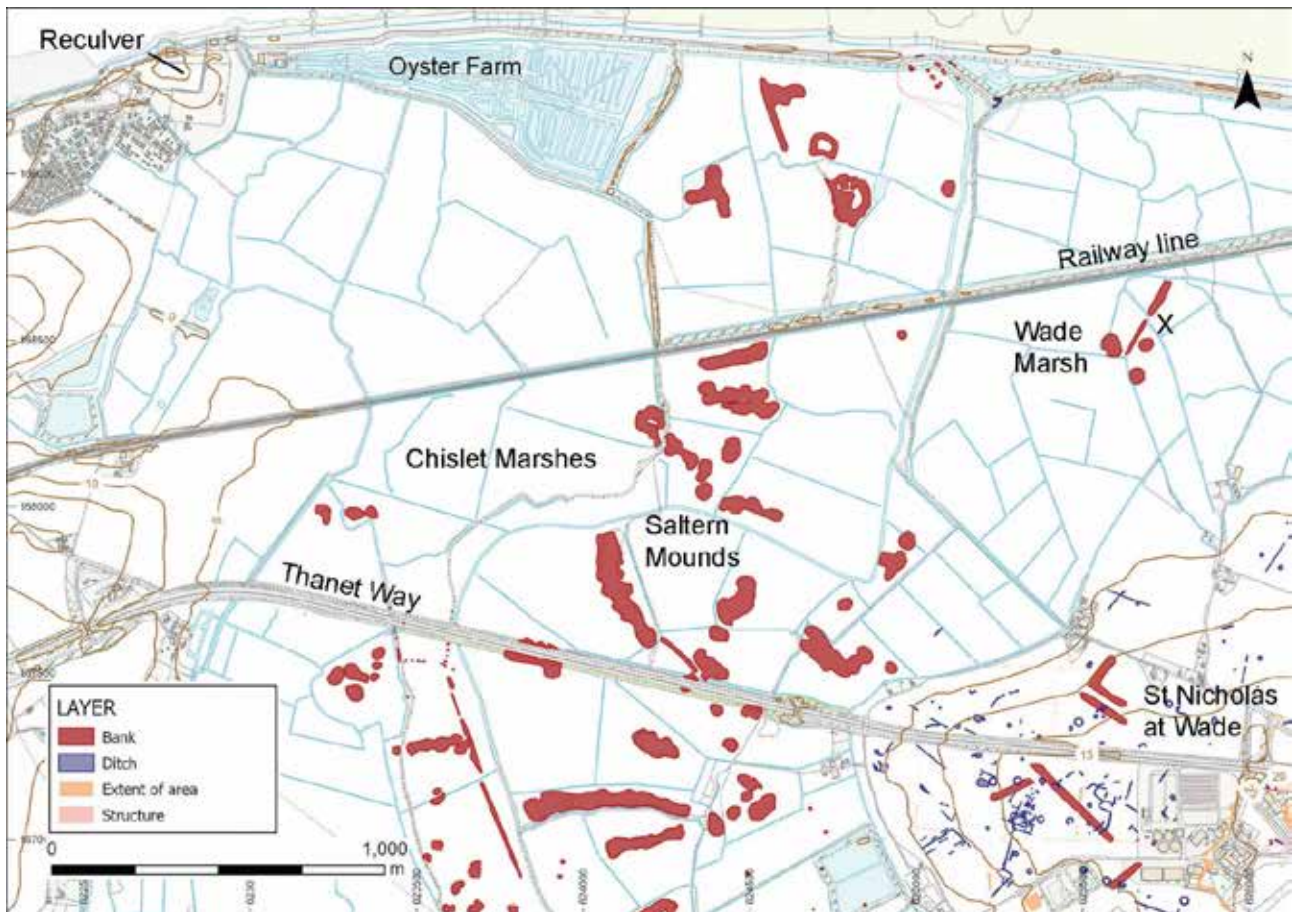


Figure 76: Medieval saltern mounds in Chislet and Wade Marshes in the drained and reclaimed northern Wantsum Channel. The site of a medieval building lies adjacent to salterns – X in Wade Marsh. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A third cluster of probable medieval saltern mounds was observed in the Wade Marshes north-west of Wade Farm to the east of the current course of the River Wantsum (Fig. 76). Adjacent to two of these mounds, traces of a medieval building were revealed by ploughing over the northernmost mound in the 1980s (X in Figure 76). The building remains included foundations of ‘clunch’ (hardened clay), flints, ragstone and local sandstone slabs. Numerous sherds of 14th-century glazed pottery were also found (unpublished, Kent HER: TR 26 NE 143). It is possible that these represent the remains of a saltcote building, if contemporary with the saltern mounds.

The operation of salt extraction, reliant on the regular influx of salt-rich tidal water, was ultimately killed off by the progressive medieval programme of inning of the north Kent marshes. This was a process which was begun in the 11th century by the monks of the two religious houses of Canterbury who controlled much of Thanet and the salt workings. The scale of the salt extraction operation and the size of some of the saltern mounds indicate a long period of use for many of the Thanet salt production sites. Ultimately, the landowners were willing to sacrifice the salt works for expansion and improvement of agricultural land suggesting salt had become less important than agricultural output (grain and sheep) or that cheaper alternative sources were affecting the market for local salt (Fig. 77).



Figure 77: Plough-levelled saltern mound in the Chislet Marshes east of Snake Drove still visible rising above the far horizon 08-OCT-2024. The crest of the mound is marked by the black dashed line. [© Fiona Small 2024]

Mills and windmills on Thanet

The earliest reference to windmills in England occurs in the late 12th century. Prior to that all milling was carried out using manual quern stones or water mills, powered either by the tide or by running water (Wailes 1948, 2). At the time of the Norman conquest over 6,000 mills were recorded across England in the Domesday Book, the majority of which would have been water mills (Watts 2000, 11) with a few hundred beast mills powered by oxen. It is estimated that around one in three villages had a mill, but the majority of grain was

milled on domestic querns (Moore 2010, 13). Inland, mills utilised rivers and streams, but into the 1300s tidal mills (tapping the daily influx and reflux of the rising and falling tide) were widely used to grind corn on most tidal rivers and inlets, and many of the mills in areas such as the River Thames and River Wantsum would have been tide mills (Galloway 2015, 6). Tide mills are known to have been located at Reculver and Dover (Watts 2000, 11, 23). Once the programme of marsh inning and reclamation along the Wantsum Channel was started in the 11th century, many of these tidal mills would have been cut off from their tidal power source and effectively put out of use (Galloway 2015, 6).

In the 12th century, windmills began to appear in England and Europe and by the end of the 12th century there were more than 50 windmills recorded in England (Moore 2010, 13). While windmills are not reliant on water sources, they are prey to the fluctuations in the wind. The earliest type of windmill adopted in England was the post mill which comprised a wooden box-like structure covered in weatherboarding, carrying the sails and housing the milling mechanisms within. This was mounted and rotated on an upright post set on a horizontal cross-trees which either rested directly on the surface or were sunken in a cross-shaped slot into the ground. Later examples were raised off the ground on piers, sometimes encased in a brick roundhouse. The whole mill could be manually rotated on its post to bring the sails into the wind. A number of former mills which are depicted as post mills are recorded on old maps from the 16th century onwards. Due to the scale and accuracy of these early maps, the locations of these mills can only be approximated. Eventually, the smock mill became the most predominant form of mill in Kent (Wales 1948, 2), four of which still survive; one of these in the village of Sarre on Thanet. Sarre mill was built in 1851 but was the last mill of several to have been constructed in the village.

Though no early post mills survive on Thanet, the sites of three former medieval post mills have been identified as cropmarks. The first site lies on the eastern edge of Sarre, adjacent to the church. Just 50m to the east of the surviving smock mill are the cropmark traces of a second, much older mill. The site appears as a roughly circular ditched enclosure 21.5m in diameter, enclosing traces of the central cross-trees trench which would have supported the central post and the weight of the entire mill (Fig. 78). Pottery fragments from the ditch suggest the windmill was in use during the 13th to 14th centuries (National Heritage List for England: 1018879). This medieval windmill was built over part of an extensive early medieval burial ground and numerous graves are also visible as cropmarks adjacent to the windmill remains. Several graves appear to be cut by the windmill ditch, and it is conceivable that the windmill reused an existing Bronze Age or early medieval barrow as suspected at two other sites, one at Great Brooksend and a second north of Minster (Figs. 79 and 80).

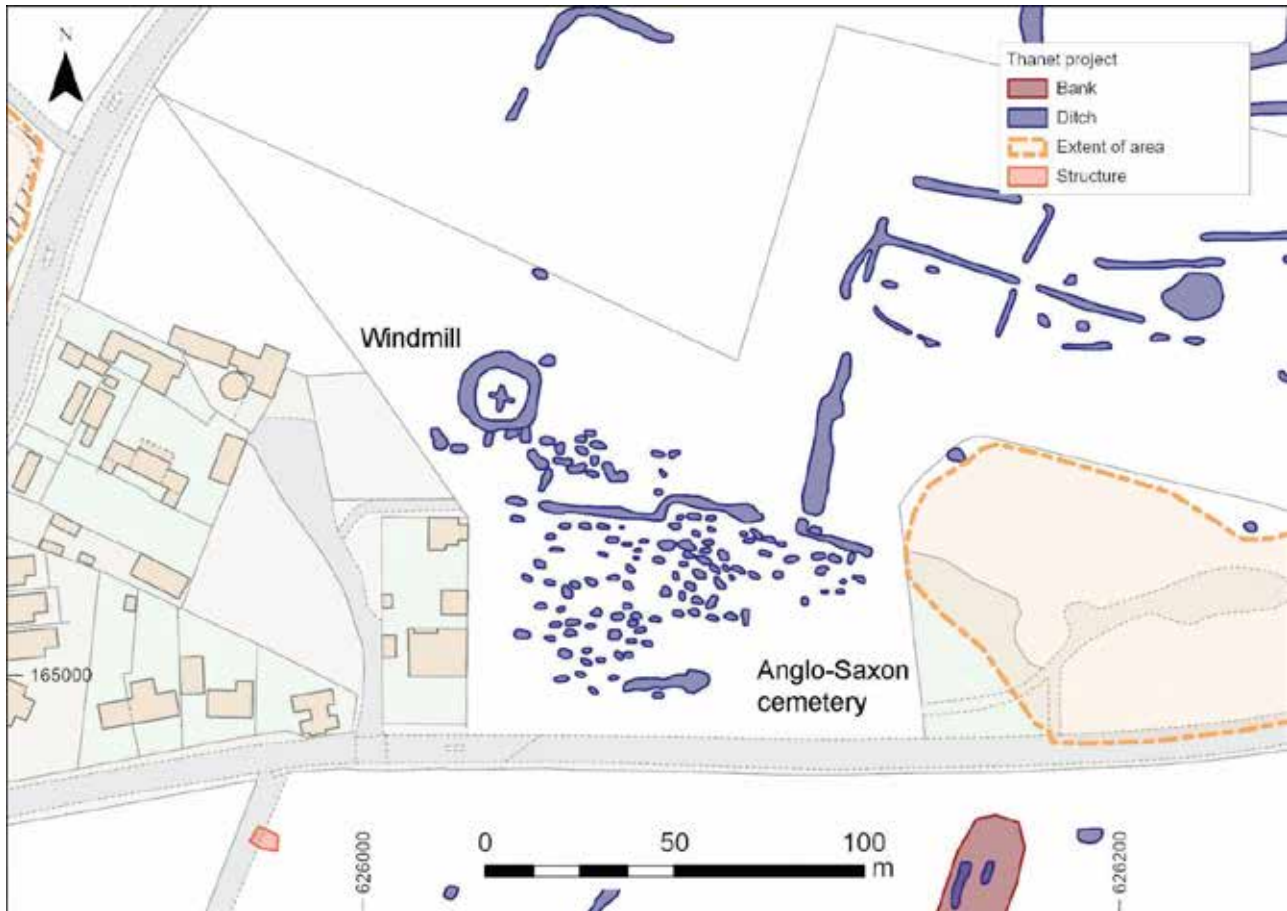


Figure 78: Cropmarks of the site of a medieval post mill adjacent to the cropmarks of numerous graves of part of an early medieval cemetery at Sarre. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A second windmill site lies at the top of a south-west facing slope just to the north-east of Great Brooksend Farm, Birchington on the southern edge of a series of large hedge-less fields. The site appears as a very slight earthwork mound of about 29m in diameter, which is only perceptible on lidar images, and an arc of ditch 24m in diameter which can be seen as a cropmark around the south-eastern edge of the mound. A further fragmented arc of broader ditch around the outer edge of the northern quarter of the mound could be an incised ditch caused by the action of the sweeping tailpole as the mill was turned into the wind. At the centre of the mound are the cropmark traces of the heavy timber cross-trees suggesting this is also the site of a post mill (Fig. 79). It lies within the extensive cropmarks of a complex of archaeological remains from the later prehistoric to the Second World War.

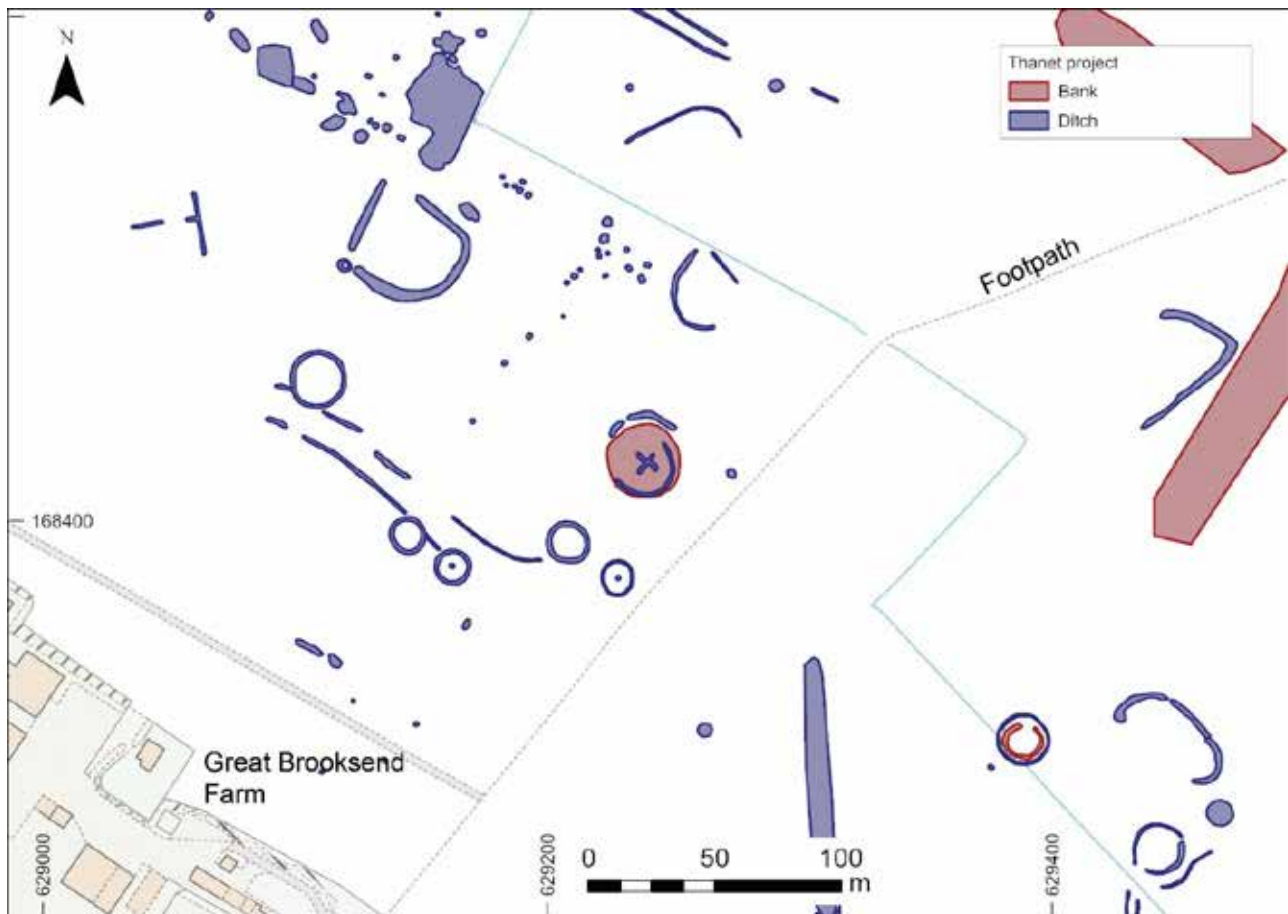


Figure 79: Cropmarks of a medieval post mill site amongst the remains of barrows, pits and enclosures to the north-east of Great Brooksend Farm. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Of note are the numerous round barrows of varying size which extend along the south-west facing slope overlooking the former inlet of the Brooksend Stream. It is possible that the windmill was placed on the surviving mound of one of these barrows, protecting it from the plough during the life of the mill, which has subsequently been ploughed and the mound reduced and spread. The site lies just off a footpath, formerly a trackway leading from the historic crossing point of the Brooksend Stream to the village of Birchington known as Mill Road, now Mill Row. However, this probably refers to the later Hudson's mill on the edge of the village about 500m north-east of the cropmark site which is marked on the Ordnance Survey 1:10,560 scale map of 1872 and was demolished around 1900. This mill is said locally to have originally stood to the east of Quex Park and was allegedly moved to the western side of Birchington because the path of the wind was being obstructed by trees from the park (Finch 1933, 166).

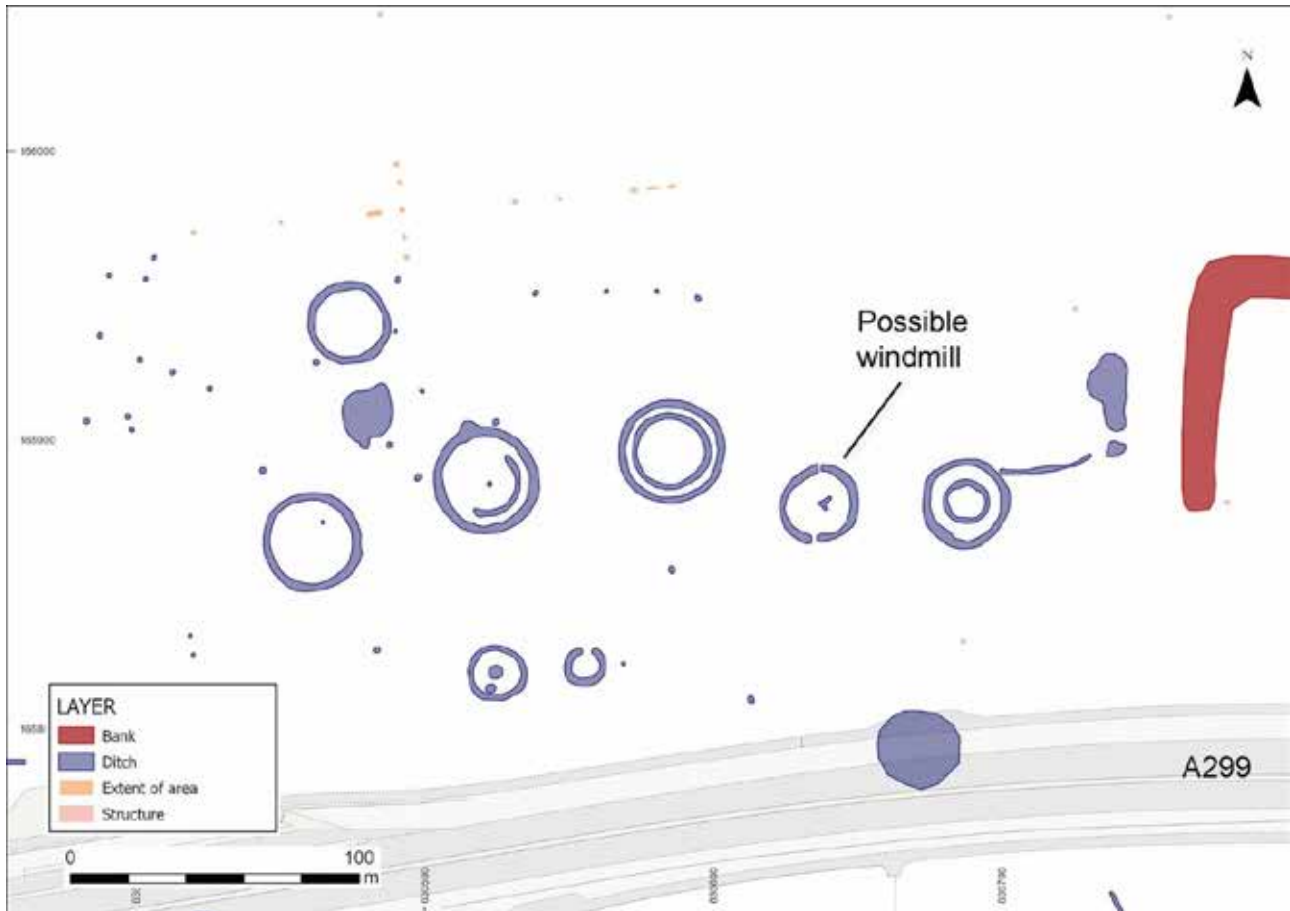


Figure 80: Transcription of a number of Bronze Age round barrows north of Minster visible as cropmarks, one possibly reused as a medieval post mill site. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A post mill is depicted on several old maps, including the historical one-inch map, standing on the south side of the Shottendane Road on the south-eastern side of Quex park, north-east of Sparrow Castle Farm (see Fig. 84). The earliest record of a mill there is a depiction of a post mill on the 15th-century map of all the ecclesiastical buildings on Thanet drawn up in around 1412 by the monk Thomas Elham, in the *Chronicle of St Augustine's Abbey, Canterbury*. The mill is drawn adjacent to the depiction of two houses labelled 'Parker', the first mention of the manor house at Quex Park before it came into hands of the Quex family (Skelton and Harvey 1986, 120). The Tithe map of 1839 also records a 'Mill Field' at this location which further supports the siting of a mill in the vicinity (Tithe Apportionments, 1836-1929). No trace of the mill at Quex could be detected on aerial photographs and the site is now considered destroyed by foundation works for a golf course adjacent to Birchington Vale Holiday Park in 2010 (Moody, 2010).

The third possible site of a medieval post mill lies to the north of the A299 north of Minster village. The site appears as a single ring ditch, one of an east-west aligned group of five Bronze Age round barrow ring ditches. This site has an internal L-shaped ditch visible as a cropmark which is thought to be the partial remains of the foundation trench of post mill cross-trees, reusing the remains of the prehistoric barrow mound as seen at the site near Brooksend Farm (Fig. 80).

A number of other mills referred to in historic documents or depicted on historic maps have variously been lost under urban expansion across Thanet and the runways of RAF Manston/Kent International Airport.

Brick production

Earthworks of former brickworks were mapped by the Thanet project: one area on the north side of Westwood Road near Rumfields Gap (Kent HER: TR 36 NE 366) and the other to the south-east of Westwood Road (formerly Westwood Lane) near Fairfield (Kent HER: TR 36 NE 364). Others were mapped by the Ramsgate HAZ project and are not reported on here, and more brickworks were in operation in Thanet District as can be seen from lists of brick and tile manufacturers in local directories (for example, Kelly's Directory 1891).

The mapped sites are positioned within about 700m of one another at roughly 45m aOD. The site to the west (Kent HER: TR 36 NE 366), near Rumfields Gap, was not recorded by the Ordnance Survey until the revised 1:2,500 County Series map sheet published in 1896; two areas of extractive pits and associated buildings were depicted at that time, presumably working a localised brickearth deposit of the Head2 superficial geology that is mapped here (British Geological Survey 2024; Tann 2020, 126–7). The Ordnance Survey recorded the brickworks' expansion in the map revision published in 1936. The extents of the clay pits were mapped from RAF/541/152 RS 4033 04-SEP-1948, along with the earthwork remains of two kilns, a spoil heap and numerous roughly rectilinear features, interpreted as former ponds (Fig. 81). The rectilinear ponds are similar to one identified at Castle Hill Brickworks, Tonbridge, Kent (Allen and Martin 2021, 11, 15). The brickworks were already out of use by the time of the 1948 photography and the site was in operation for perhaps fewer than 50 years.



Figure 81: Part of brickworks near Rumfields Gap (TR 36 NE 366). Extract from RAF/541/152 RS 4033 04-SEP-1948. [Historic England Archive (RAF Photography)]

The site to the east (Kent HER: TR 36 NE 364), near Fairfield, was not mapped by the Ordnance Survey until 1907 (1:2,500 County Series). It included the earthwork remains of a kiln mapped from visualisations of Environment Agency 1m Digital Surface Model (07-DEC-2017) and rectilinear former ponds, building platforms and a pond mapped from RAF/541/152 RS 4032 04-SEP-1948. A small building was also present at the time of that photography. A large, sub-square platform mapped from visualisations of Environment Agency 1m Digital Surface Model (07-DEC-2017) that partially overlay the position of a pair of former ponds may represent the spoil from site clearance. This complex was in operation for a similar duration as the Rumfields Gap brickworks.

By 1903, Doughty Brothers and Samuel Stiff were operating brickworks at Rumfields whilst Paramor and Sons had a site at Westwood Lane (Kelly's Directory 1903, 857–8). In 1839, Mary Paramor owned the arable field where the westernmost brickworks site later became established (Tithe Apportionments, 1836–1929). By 1913, six brickmakers were recorded in the environs of Rumfields and Westwood, including: Jasper and Walter Bugden; C.E.

and F.J. Doughty; Jesse Last and Co; William Martin; John T. May; Samuel Stiff (Kelly's Directory 1913, 960). Those probably family businesses were presumably operating in the sites mapped by the Thanet project and at other places in the environs, either mapped by the Ramsgate HAZ project (Small and Barber 2019, 25–7) or which do not appear in the available aerial sources due to redevelopment. Given the short lifespan of these brickworks, they likely served the late-Victorian and Edwardian expansion of Thanet's coastal fringe settlements.

Chalk quarries and pits

Between them, the Thanet and Ramsgate HAZ projects mapped 627 feature polygons interpreted as extractive pits, quarries and chalk pits ('Chalk pit' has been used to index features where information from Ordnance Survey mapping, existing HER records or other data warrants the identification) (Table 6). It is possible that some of these features seen as cropmarks will, on further investigation, be resolved as ponds or karstic features (although few ponds were noted from historic OS mapping). Excavation has uncovered infilled dolines in the chalk, including for example the depression utilised for a Bronze Age funerary monument on the Thanet Earth site (Holman et al. 2023, 44–5).

The majority of the mapped extractive pits are thought to be medieval/post-medieval in date (556, 88.7%), given their morphology and the increased use of earth materials for agricultural purposes in those later years. Leland, writing in the early 16th century, commented that Thanet was at that time 'full of good quarries of chalk' (Smith 1964, 61). That most features were visible as cropmarks (572, 91.2%) hints at their likely age, having been filled in and reverted to agricultural use some time ago. The features range in area from the smallest at 3.2sq m, to the largest at 4.95ha. The mean area is 628.7sq m but 526 (83.9%) are smaller than the mean and some 207 (33.0%) are under 100sq m, suggesting that most represent small-scale extraction for local use on farms and in the villages.

By far the majority (582, 92.8%) are positioned on the Margate Chalk Member, of which 212 (33.8%) are additionally over superficial deposits. Depending on the specific nature of the superficial deposits and their thickness, those 212 extractive pits may have been dug to win local brickearths or other bulk minerals. Many, however, were likely dug down into the underlying chalk to extract it as a soil improver to counteract the slight acidity of soils developed over superficial deposits; although no examples of characteristically regular patterns of small marl pits in field centres were noticed (see for example Whitaker 2021 for this patterning in the chalk Chiltern Hills, Buckinghamshire).

Table 6: Summary by period of extractive pits and related monument types mapped by the Thanet and Ramsgate HAZ projects.

	Extractive pits/quarries (all materials) (N)	Extractive pits/quarries (all materials) (%)
Second World War	1	0.2
19th century	1	0.2
Post-medieval	49	7.8
Medieval/post-medieval	556	88.7
Medieval	5	0.8
Bronze Age	1	0.2
Uncertain	14	2.1
Total	627	100

To explore this significant element of local economies, we focus on two brief case studies all within the Thanet project area: the largest extractive pits and quarries; and extractive pits in the environs of Sarre and St Nicholas at Wade.

The largest extractive pits and quarries, here defined as more than 0.5ha in area (Table 6), were all mapped as earthworks except one un-named site in fields to the north of Hoo (Kent HER: MKE124923). That cropmark site was not visible on the ground to the Ordnance Survey making the first edition 1:2,500 County Series map and its use must therefore have long pre-dated the 1870s. No pit is shown in that location on the 1805–19 Original one-inch Ordnance Survey map, suggesting that it is 18th century in date at the latest. On that map, two pits are shown nearby to the north-east and east; taking discrepancies in the historic map rectification into consideration, those features may be represented by extractive pits mapped as a cropmark (part of record Kent HER: MKE124926) and as an earthwork (Kent HER: MKE124245). Both latter features are depicted alongside routeways passing through the fields between Monkton Street and Mount Pleasant. All three pits – the cropmark site and the two neighbouring pits depicted on the historical one-inch map – are located in an area of complex geology comprising the intersection of the Seaford Chalk Formation, the Thanet Formation and Head1 mantling Thanet's south-facing scarp slope. Given their positions, the pits in this area may have been convenient sources of agricultural lime to apply to soils developed on the argillaceous Thanet beds and Head1.

Table 7: Extractive pits/quarries greater than 0.5ha in area with presence/absence on Original one inch Ordnance Survey mapping, land use from parish Tithe Apportionments and the pit/quarry instance of first use and/or first disuse as noted on 1:2,500 historical Ordnance Survey maps.

Name	Kent HER reference	Area (ha)	Appears on 1" OS mapping (1805-19)	Use in Tithe Apportionment (year)	Use in 1:2,500 OS mapping
Sarre	TR 26 NE 217	4.95	No	Pasture (1841)	'Chalk pit' 1872 'Old chalk pit' 1896
Miller's Lane Chalk Pit, Monkton	TR 26 NE 219	3.57	No	Chalk pit field (1840)	'Chalk pit' 1872 'Pit (disused)' 1970
Sarre Court Chalk Pit, Sarre	TR 26 NE 216	1.41	?	Chalk pit field (1841)	'Chalk pit' 1872 'Old chalk pits' 1896
Mount Pleasant Chalk Pit, Minster	TR 36 NW 337	0.83	Yes	[no tithe award online]	'Chalk pit' 1873 'Chalk pit (disused)' 1939
Perkin's Chalk Pit, Sarre	TR 26 NE 222	0.69	Yes	Chalk pit (1841)	'Chalk pit' 1872 'Chalk pit (disused)' 1896
Cliffsend Crossing Chalk Pit, Cliff's End	TR 36 SW 111	0.68	No	Arable (1840)	'Old chalk pit' 1873
Monkton Chalk Pit, Monkton	TR 26 NE 214	0.67	No	Arable (1840)	'Old chalk pit' 1872
-	MKE124923	0.55	No	[no tithe award online]	Closure pre-dates first edition
Shallows Road Chalk Pit, St Peter's	TR 36 NE 373	0.54	?	Arable (1839)	'Chalk pit' 1880 'Old chalk pit' 1896

Only three of the very large pits had been established by the time of the Tithe Apportionments of the 1830s and 1840s and of these, only the Perkins Chalk Pit at Sarre is clearly depicted on the Original one-inch Ordnance Survey map of 1805–19. Six features were described as ‘Chalk pit’ by the Ordnance Survey on the respective first edition 1:2,500 map sheets (1870s and 1880) and were presumably active at the time (Table 7). These largest extractive pits all seem to have been for chalk and most were not opened until the mid- to late 19th century.

The Cliffsend Crossing and Monkton Chalk Pits, not opened until after 1840, had already stopped working by the time of the first edition OS mapping. Both pits were therefore short-lived and most of the remaining pits were out of use only a few years later by 1896. The only exceptions were the Miller’s Lane Chalk Pit that was worked into the mid-20th century, and the Mount Pleasant Chalk Pit that appears not to have closed until the inter-War years (Table 7). Most of the pits outlined in Table 7 operated over only a few decades during the second half of the 19th century. Only the Mount Pleasant Chalk Pit, Perkins Chalk Pit and the unnamed pit to the north of Hoo were definitely older. Although only the Mount Pleasant and Perkins Chalk Pits certainly had limekilns (mapped by the Ordnance Survey), it is likely that the large but relatively short-lived pits were producing lime construction products for Thanet’s contemporaneously expanding residential areas; although it is possible that large pits in rural locations were supplying agricultural lime for regional distribution (Eve and Stead 1998, 8).

Substantial chalk pits were dug into the Margate Chalk Member outcrop in the environs of Sarre, including pits around the northern arc of the village, the Perkins Chalk Pit and the Mile Road Chalk Pit (Kent HER: TR 26 SE 206) and Gore Street Chalk Pit (Kent HER: TR 26 NE 220) nearby in Monkton parish. They were mapped as earthworks from RAF/541/484 RP 3027 07-APR-1950 and RAF/106G/UK/1378 V 5087 04-APR-1946. Numerous smaller extractive pits in the fields between Sarre and St Nicholas at Wade were mapped as cropmarks from various aerial sources. They were interpreted as medieval/post-medieval in date, as discussed below. There are examples on the chalk outcrop and others in clay-silt Head1 mantling the chalk. Unlike the larger sites at Sarre which remain as extant earthworks or, like the Mile Road and Gore Street Chalk Pits, were only filled in after the Second World War, the small pits are of less certain date. One of the cropmark features possibly appears as a pit on the Original one-inch Ordnance Survey map of 1805-19 (Kent HER: MKE124289) but none of the rest are depicted amongst the areas of open farmland shown in that mapping, at that small scale.

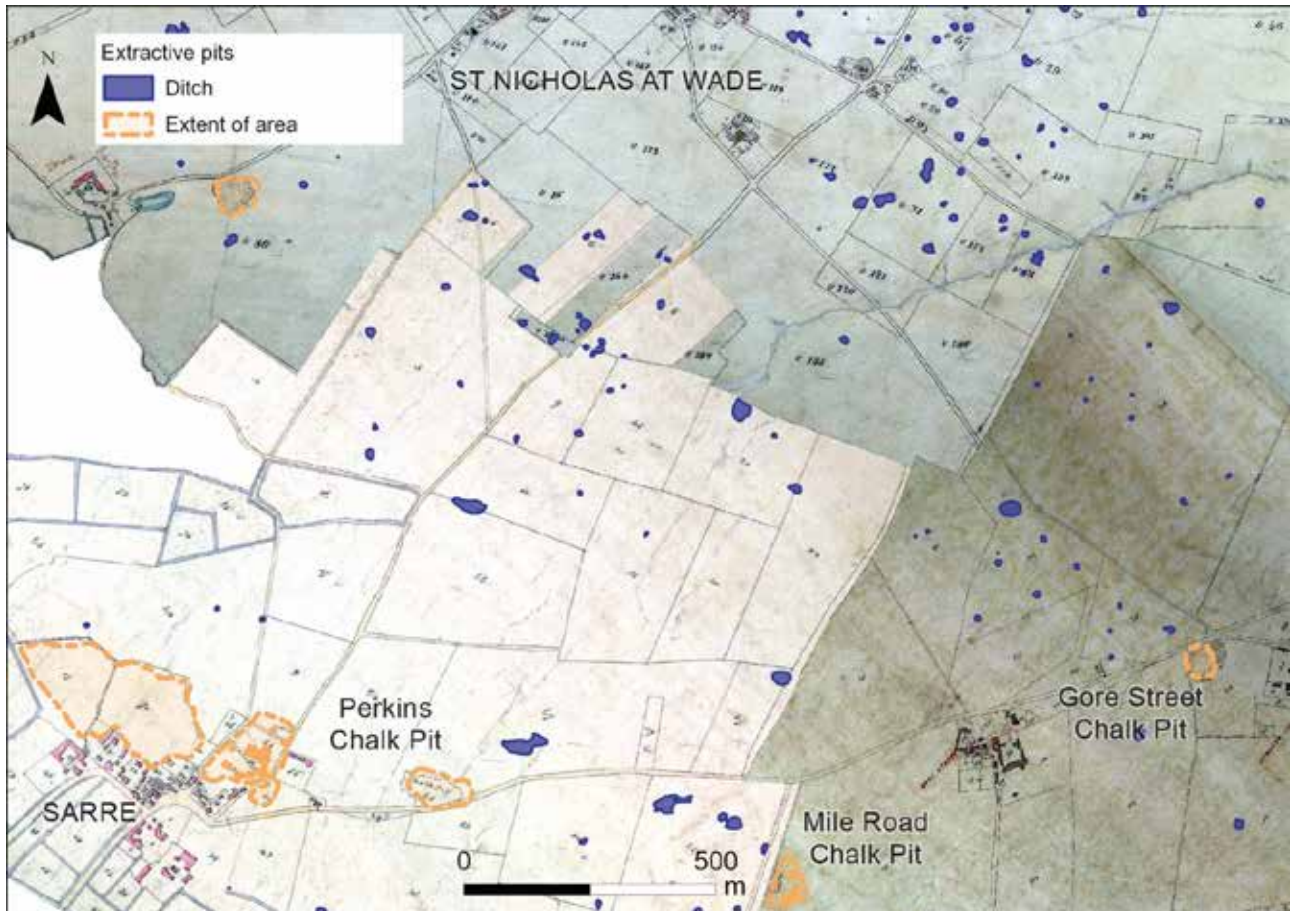


Figure 82: Extractive pits in the environs of Sarre and St Nicholas at Wade and parish Tithe Apportionment maps of the 1830s and 1840s. [Archaeological mapping © Historic England. Tithe Award maps © Kent County Council, with permission]

Marling seems not to have been as important to 18th- and early 19th-century farmers on Thanet as in other areas enjoying innovations in agricultural Improvement – fallowing was used as a way to maintain soil health with seaweed, marsh soils, animal dung and town manure reported as common fertilizers (Marshall 1798, 13, 15–6). However, when compared with larger scale Tithe Award maps, it becomes clear that many of these smaller pits were positioned at the edges or corners of fields, often against field boundaries, with other more scattered pits seen across usually the larger enclosed fields (Fig. 82). The larger fields may have been post-medieval creations given the ‘remains of neglected hedges’ observed on Thanet by Marshall (1798, 6). At field edges, pits would have been less inconvenient to cultivation (it should be noted that deneholes and chalkwells, narrow shafts dug to access deeper chalk in the medieval and post-medieval periods, were commonly placed at field edges for this reason, for example Clinch 2001). Further into the fields, pits may have been what remained as field boundaries were removed, or represent pits opened up to serve different areas in the larger fields. This distribution of cropmarks of

smaller extractive pits suggests that either they were part of the medieval agricultural economy or, despite Marshall's (1798) observations, that substantial quantities of chalk were being dug locally as a post-medieval soil improver (Eve and Stead 1998, 6).

Designed Landscapes

In addition to the high proportion of land given over to agriculture and horticulture, Thanet District is a leisure landscape comprising a mix of small, private, estates and the coastal holiday scene of beaches, seaside attractions and public parks. Here, we reflect on Quex Park, Kingsgate and Dreamland from the aerial perspective, although it should be noted that improved understandings of designed landscapes and pleasure grounds of all periods can come from reference to available aerial sources (see for example Carpenter and Evans 2025).

Quex Park

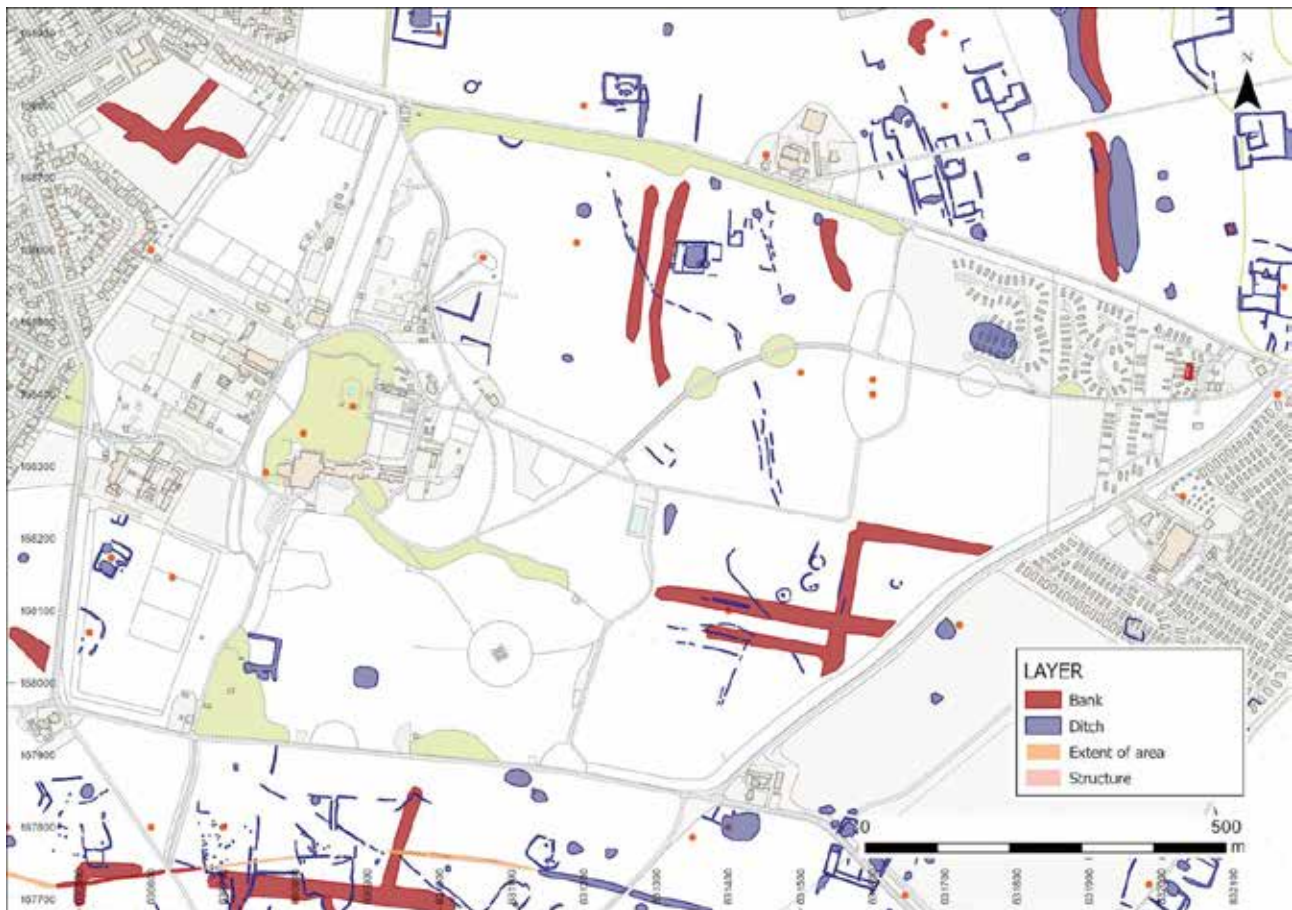


Figure 83: Quex Park overlaid with all archaeological sites variously dating from Bronze Age through to the post medieval period, most seen as cropmarks on aerial photographs.

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Quex Park in the parish of Birchington is the only complete example of surviving parkland around a substantial house on Thanet and covers approximately 250 acres (Fig. 83). The earliest record for the medieval manor of Quekes, or Quex, dates back to the 14th century. Though still referred to as Quex Park, the house was not originally owned by the Quex family and has since passed through a number of family members and then into the hands of unrelated owners.

The first recorded owners were the Parker family in the 14th century before it came into the hands of the Quekes family in the 15th century, becoming the family seat of the Quex family – variously recorded as Queyk, Quek, Queke and latterly as Quex. They first appear as occupiers or owners of land in the Isle of Thanet in 1334/5 (Ed. III). In that year Tho. (Thomas) Queyk paid 1s. 0d. and Wm. (William) Queyk 2s. 10½d. for the fifteenth and tenth, a tax on property (Walker 1969, 1–2).

The original medieval manor house is believed to be recorded on the 15th-century map of all the ecclesiastical buildings, depicted as detailed elevations, on Thanet drawn up in around 1412 by Thomas Elham, a monk at St Augustine's, Canterbury, in the Chronicle of St Augustine's Abbey (Skelton and Harvey 1986, 123).

The house (possibly two buildings) appears as the only secular building to be depicted and named on the entire map, labelled as 'Parker' located close to 'Berchingone' and adjacent to illustrations of a windmill and a beacon (Skelton and Harvey 1986, 123). Hasted refers to a family named Parker of Birchington. Two 15th-century wills linking the Parker family to the Quekes survive. One, the will of John Parker of Birchington of 10 February 1411/12 willed to be buried in the Church of All Saints, Birchington bequeaths '£6 to the fabric of the church to the churches of Birchington, and 10s to the fabric of the Church at Wode' (St. Nicholas at Wade or Woodchurch) (Skelton and Harvey 1986, 123) with the residue of his goods left to his wife Cecilia. Cecilia is recorded donating money to the church in 1426/7, '£15 6s. 8d. was received from the widow of John Parker for one window made in the chapel of Byrchynnton by the receivers of the money for the new work of Christ Church, Canterbury'. On her death in 1428, she also bequeathed '6s. 8d. to the Church of Birchington and 6s. 8d. to the altar, 40d. to the Light of the Blessed Mary in the Church of Wode, and 40d. to the Light of the Torches of Wode' and named John Queke as her overseer. As there is no record of the transfer of the property to a Quek owner, it would appear that John Quek married Cecilia, either the widow or heiress of the Parkers, thus obtaining possession of the estate (Walker, 1969). John Quek's son Richard Queke refers to the house in his own will of 1459 as his 'Father's mansion house' suggesting the house had by this time passed from the Parker family to the Quekes family (Skelton and Harvey 1986, 123).

John Quekes built his manor house, replacing the original house, in 1449. The estate was subsequently acquired by the Crispe family who enlarged the house in the 16th century. The estate was then sold to John Powell in 1777 (Fig. 84). The second manor house gradually fell into disrepair and was demolished in 1789 and a new Regency mansion, the third known house on the site, erected in 1808-13 by the then owner John Powell-Roberts, nephew of John Powell.



Figure 84: Extract of OS one inch to one mile Map of Quekes Park published in 1801. [Reproduced with the permission of the National Library of Scotland. <https://maps.nls.uk/>]

The house then passed to his nephew Henry Perry Cotton. Museum galleries of the now Powell-Cotton museum were added to the house between 1895 and 1973, housing an eclectic collection of curios including thousands of archaeological finds from Thanet, objects from across the world, photographs, documents and many thousands of preserved animals set in dioramas. The park as we see it today comprises a formal garden around the house laid out in the early 19th century by John Powell -Roberts.

That garden featured lawns, specimen trees, a sunken pond, fountain garden and a walled garden. There is no obvious trace of earlier garden layouts visible within the grounds. The

current parkland is now a mixture of grassland and cultivated areas between belts and clumps of trees replanted in the 1990s in to emulate a Victorian/Edwardian style of park and garden. Within the park are two 19th-century constructions. The Waterloo Tower stands in the southern half of the park. This is a brick and cast-iron tower built in 1891 said to be inspired by Faversham church, containing 12 bells. North of the house is a brick tower built around 1830.

During the First World War Quex Park was one of many houses opened as a hospital to receive wounded and invalid soldiers. It opened on 14 October 1914, providing 46 beds under Mrs Hannah Powell Cotton acting as Voluntary Aid Detachment Commandant with 37 ladies as helpers and nurses. The hospital finally closed on 31 January 1919 (Birchington Heritage Trust 2025).



Figure 85: Extract of US/7PH/GP/LOC286 V 5010 19-APR-1944 showing Quex Park in 1944. [Historic England Archive (USAAF Photography)]

During the Second World War Quex was the site of a tented camp for British soldiers, but it is not clear if the house was also used (www.bbc.co.uk/history/ww2peopleswar). It is recorded as one of the sites on Thanet, alongside Birchington and Manston, used for

training sabotage units in intelligence gathering and various methods of sabotaging nearby RAF Manston in the event of a German invasion (Stilwell 2016, 91). A transmitter station (Kent HER: MKE124808) was located in the far eastern corner of the park; the masts and its bundled transmitter building are visible on the 1944 vertical aerial photograph and are discussed below (see Military Archaeology). This same photograph shows the park under cultivation with traces of anti-landing poles placed in the larger fields without clumps of ornamental trees (Fig. 85).

Kingsgate

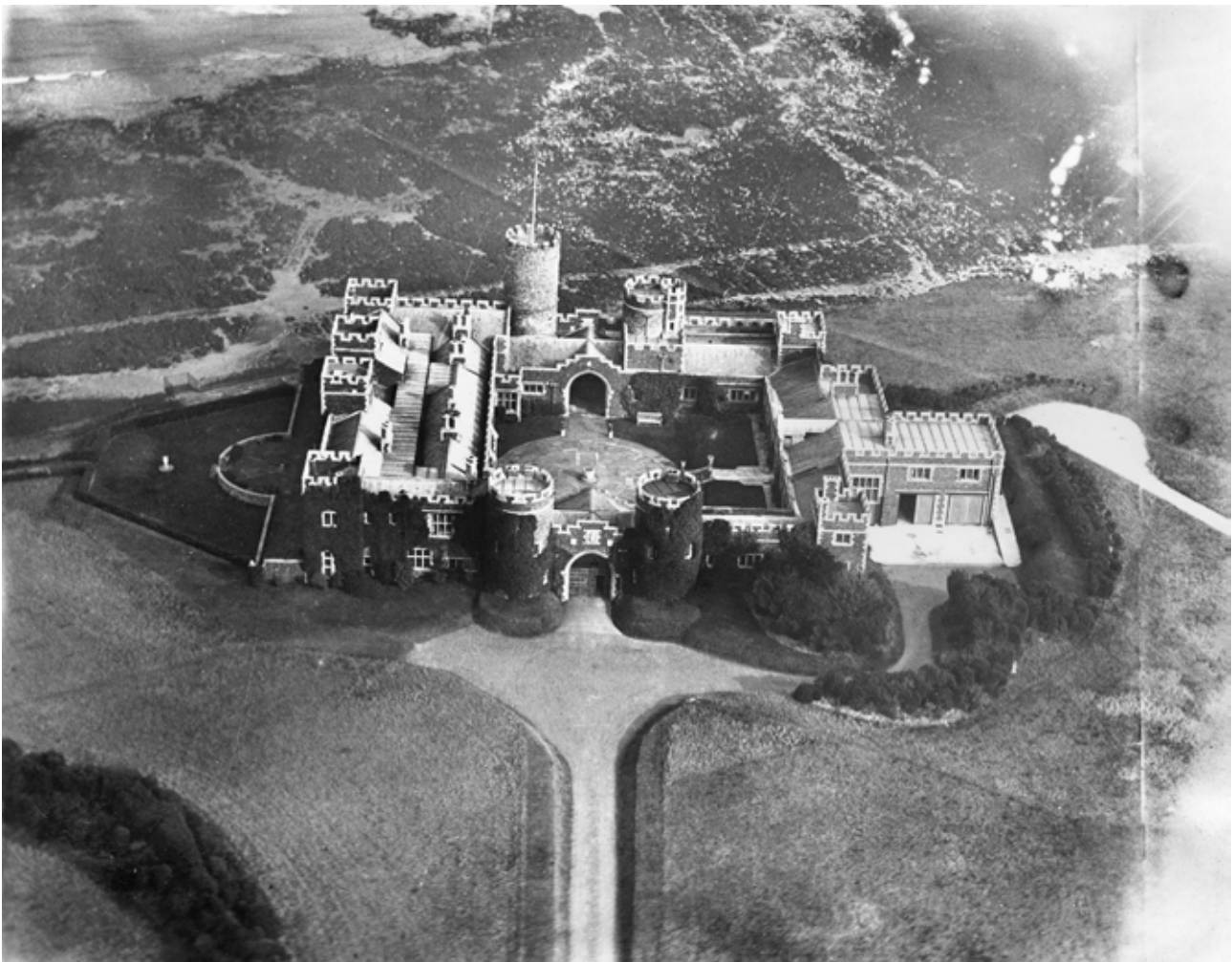


Figure 86: Kingsgate Castle from the east in 1920. [EPW000138/AFL192002 XX-FEB-1920 © Historic England Archive. Aerofilms collection]

A group of follies in the environs of Kingsgate, mapped from a mix of aerial sources, are testament to Lord Holland's estate at Kingsgate (Jessup 1957). Lord Holland's late 18th-century designed landscape is today far less legible than Quex Park, with fewer surviving elements. The former Kingsgate House stood on low ground at the mouth of a coombe

overlooking Kingsgate Bay, with gardens to the rear on the south-west side. The follies that Lord Holland built around the house are recorded on an estate map of 1774 (Kent Archives R/U1063/E1, reproduced by Cousins 2000a, 7). Modern extant iterations of four were not mapped for the Thanet project: the Noble Captain Digby public house, the Convent of St Mildred, the Countess Pillar and Kingsgate Castle (Fig. 86). The Temple of Neptune was lost to coastal erosion in the early 19th century and only inscriptions salvaged from the King's Gate archway survive, displayed on a structure in the grounds of the Convent (Cousins 2000b, 7–8). The remains of follies mapped from aerial sources thus include the Harley Tower (Kent HER: TR 37 SE 273), Arx Ruochim (Kent HER: TR 37 SE 1002), Countess Fort (Kent HER: TR 37 SE 279), the Hackendown Monument (Kent HER: TR 37 SE 19) and Whitfield Tower (Kent HER: TR 36 NE 2356).

The Harley Tower was built in 1768 in honour of Thomas Harley, Lord Mayor of London. It comprised a round tower atop a square base (Cousins 2000a, 13). In the early 1920s a sound receiving station was installed in the tower as part of the Joss Bay experimental acoustic early warning station (Scarth 1999, 64–7). The base was visible in RAF/58/619 Vp1 5033 11-APR-1951 but was recorded as demolished in the latest available imagery (APGB Imagery 07-APR-2021). The tower stood about 240m to the north-west of Kingsgate House on the 25m aOD contour. Arx Ruochim on White Ness (mistakenly labelled as Neptune's Tower on historic Ordnance Survey maps) mimics the form of Henrician coastal forts (Cousins 2000a, 10). Its standing remains were mapped from the latest available imagery (APGB Imagery 07-APR-2021); it stands on the cliff top about 400m to the north-west of Kingsgate House.

Countess Fort was built after 1768, reputedly as an icehouse, in the form of a ruined round tower surrounded by low stone defences; cliff falls around 1817 may have removed parts of the structure (Cousins 2000a, 7). The Fort stands on the cliff top about 100m to the south-east of Kingsgate Castle. The remains of what may be the outer stonework were mapped from the latest available imagery (APGB Imagery 07-APR-2021) (Fig. 87). Further inland, the Hackendown Monument of 1767 was erected in the grounds of the Convent on top of a round barrow that Lord Holland had opened in June 1765, hoping to discover archaeological items similar to those excavated from the neighbouring barrow in May 1743 by a previous landowner (Cousins 2000a, 12–3). The monument included a crenelated round tower, converted into a clock tower in the early 1800s with an encircling wall added as a kerb to the barrow mound; the ruined remains were mapped from RAF/58/618 V 5110 11-APR-1951 and APGB Imagery 07-APR-2021.



Figure 87: The location of Countess Fort (ruined) in relation to Kingsgate Castle and the former Kingsgate House in 1923. [EPW009169 AFL1923/EPW009169 XX-XXX-1923 © Historic England Archive. Aerofilms collection]

Finally, the final iteration of the Whitfield Tower was mapped from RAF/106G/UK/1378 FV 7038 04-APR-1946. Lord Holland had the original memorial to Thomas Whitfield built in 1768, located on a high point nearly 2km south-west of Kingsgate House at 48.6m aOD. It was rebuilt by Trinity House as a daymark having been blown down by a gale in 1818. Following Second World War damage, that structure was destroyed in 1978 by another storm (Cousins 2000a, 6).

Lord Holland drew on a combination of his interest in local history, his politics, and his international travel experience to specify the folly designs (Cousins 2000a). The landscape positions of the follies were also carefully chosen. As well as forming eye-catchers from Kingsgate House and its approach roads, Lord Holland also took into consideration views from the sea (Cousins 2000a, 10) (Fig. 88).

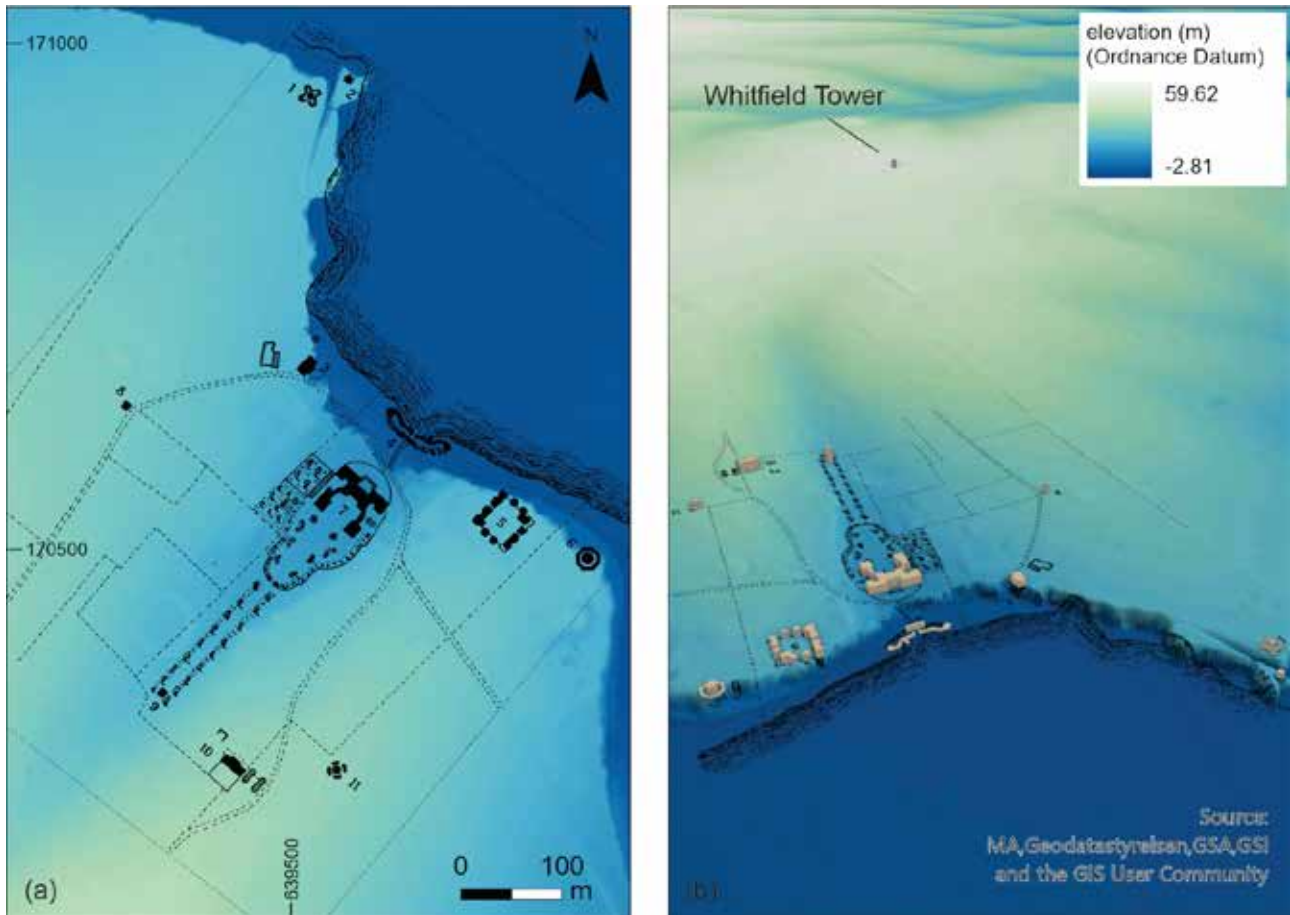


Figure 88: Kingsgate House and follies in their topographic context. (a) Plan of Kingsgate House and grounds after the 1774 survey by I. Hodkinson (published in Cousins 2000a, 7); (b) View to the south-west from Kingsgate Bay over Kingsgate House towards the Whitfield Tower (estimated building heights) 1, Arx Ruochim; 2, Temple of Neptune; 3, Captain Digby; 4, King's Gate; 5, Kingsgate Castle; 6, Countess Fort; 7, Kingsgate House; 8, Harley Tower; 9, Countess Pillar; 10, The Convent; 11, Hackendown Tower. Approximate effects of coastal erosion may be gauged from the difference between the 1774 and present-day cliff lines (the curved 'gun battery' walls either side of King's Gate erroneously appear on the beach in when in fact they were built on the former clifftop). [Includes data © Environment Agency copyright and/or database right 2022]

Dreamland

Thanet plays an important part in the history of the British seaside town (Barker et al. 2014) and aspects of 19th- and 20th-century expansion of holidays for working people and greater accessibility afforded by the railway network are clear in the aerial sources. Here we contrast the designed landscapes of Quex and Kingsgate with that of Dreamland, Margate, a quite different sort of pleasure ground. Unlike the private park at Quex, or the follies built out of Lord Holland's personal amusement and interest, the commercial public entertainments of Dreamland have their origins in the later 19th century (Barker et al.

2014, 42). Named 'Dreamland' from 1920, the site came to include rides, the scenic railway and entertainments such as a large cinema (Fig. 89).



Figure 89: Dreamland, Margate, from the south-west in 1931. [EPW035464/AFL193105 XX-MAY-1931 © Historic England Archive. Aerofilms collection]

Military Archaeology

Thanet is also an extensive military landscape with a remarkable density of 20th-century features recorded by the Thanet, Ramsgate HAZ and SE RCZAS projects from available aerial sources. Beginning with First World War early warning systems at Joss Bay and the Royal Naval Air Service station at Manston, and ending with the Cold War Rotor site on Foreness Point, we outline the range and extent of this rich historical record.

Coastal sound mirrors

A military acoustic station was established at Joss Bay by 1918 to listen for hostile German Air Force aircraft approaching on a route from the continent to Britain (Scarth 1999, 24) (see Fig. 9). The First World War sound mirror site (Kent HER: MKE125633) was mapped as an earthwork from RAF/26J/BR194 VB 31 10-JAN-1941. Only the platform cut into the cliff face is visible in the available aerial photography (Fig. 90).



Figure 90: Joss Bay sound mirror platform. [RAF/541/508 RS 4005 22-APR-1950 Historic England Archive (RAF Photography)]

A fixed sound mirror was cut into the cliff wall at the rear of the platform and faced with concrete. It was possibly the first of this type to have provided an early warning function in the First World War (Fig. 91). An experimental, moveable, sound mirror was also installed on the cliff top. The Joss Bay and Fan Bay (Dover) sound mirrors were part of the Dover Anti-Aircraft Defence system and were used successfully to detect incoming aircraft during bombing raids on London in Spring 1918 (Scarth 1999, 24–7).



Figure 91: Joss Bay fixed sound mirror in about 1918. [d31029, Dover Museum and Bronze Age Boat Gallery, reproduced with permission]

A unique disc sound locator was also trialled successfully at Joss Bay in 1918 to 1919. The moveable, vertically-mounted structure was positioned in front of the cliff face on a staging above the beach. It used a hot wire microphone to detect the sounds transmitted through the disc structure. The disc was camouflaged to mimic the cliff face. A control hut was situated nearby (Scarth 1999, 28–34). No evidence of the disc position or hut was visible in the available aerial sources, but terrestrial archive photographs record these structures.

Experiments in direction-finding by sound collection and transmission continued at Joss Bay after the First World War. Despite proposals to move the acoustic station further south onto North Foreland, the Joss Bay installations were abandoned in mid-August 1922 when apparatus was transferred to Hythe (Scarth 1999, 55–68). The platform in the cliff was recorded as lost to coastal erosion on the latest aerial imagery (APGB Imagery 07-APR-2021). The Joss Bay acoustic station was an important early stage in the development of

military early warning systems prior to the construction of much larger sound mirrors at Hythe and Romney Marsh and, eventually, radio direction finding.

RAF/USAF Manston

The history of Manston airfield (Kent HER: TR 36 NW 432) from its inception as a Royal Naval Air Service (RNAS) station in 1916 to its conversion to a civilian and Royal Air Force aerodrome in 1946 and subsequent transfer to the United States Air Force (USAF) in 1950, is well documented (Ashworth 1985, 196–214; Bamford and Williams 2013; Bamford, Williams and Gallagher 2015; Bamford, Williams and Gallagher 2016; Lee 2010, 206–17; Stockman 1986). The site opened as Kent International Airport in 1989 and the final RAF station closed in 1999 (Lee 2010, 216–7). Following a brief rehearsal of the airfield history up to the immediate post-War years that focusses on its physical development, key features of the station are identified and it is examined in its broader landscape context. The aim is to show how the airfield was an integral part of Thanet's wider First and Second World War military landscapes.

RNAS Manston was established in 1916 to replace the deficient landing ground at Westgate on the north Thanet coast. The new landing ground was laid out on the chalk plateau at about 45m aOD to the west of Manston village and existing buildings were co-opted as offices and quarters. Purpose-built, permanent facilities were gradually added as a domestic and technical area was developed on the west side, the Manston War Flight became settled on the east and a training flight was established (Bamford and Williams 2013, 37–40, 49) (Fig. 92).

The introduction of the Handley Page Training Flight in particular initiated a building programme of permanent hangars, huts, workshops, sheds and other structures, although tents and Bessonneau hangars were used for a number of years (Ashworth 1985, 199; Bamford and Williams 2013, 63). In 1918 a railway was constructed from the North Kent mainline at Birchington for supplying *matériel* including fuel for the station's coal-fired power station (Bamford and Williams 2013, 105–6). By the end of the First World War, the site included its grass airfield, aircraft and motor transport sheds and workshops, the main domestic and training area to the north-west and the War Flight on the east extending over 263ha (Ashworth 1985, 200–1; Bamford and Williams 2013, 104). Three semi-sunken hangars were excavated and constructed in early 1918 and a fourth begun but not completed (see below).



Figure 92: RAF Manston and immediate environs on 1 June 1942. Key areas brigaded around the airfield are outlined. Semi-sunken hangars: H1, Alland Grange; H2, Cheeseman's Farm; H3, Manston Road; H4, Manston Road (unfinished). North to top, unscaled composite image. [RAF/HLA/564 V 6012-16, 6020-1, 6027-9, 6033-8, 6041-5 01-JUN-1942. Historic England Archive (RAF Photography)]

More accommodation was created as personnel numbers at RAF Manston rose during the RAF Expansion period (1934 to 1939). The trend was continued by preparations for the Second World War, accompanied by the installation of defensive works including gun posts, slit trenches and so on (Ashworth 1985, 202). A previously unrecorded, short-lived, arrangement of anti-landing obstacles was laid out across the grass airfield in two phases of contrasting orientation (Kent HER: MKE125104). E-type fighter pens were dispersed

around the old perimeter track (Fig. 92). RAF Manston was bombed on numerous occasions, despite the construction of a decoy 'Q' site to the south (Kent HER: TR 36 SW 221) (Ashworth 1985, 203–5). Although the grass landing strips had been extended to the north-east, they were inadequate for the airfield's developing role as a refuge for bombers returning from continental air raids and proposals were taken forward to provide a new, concrete, emergency runway with electrical lighting and a fog dispersal system (see below) (Ashworth 1985, 205; Bamford and Williams 2016, 87–9). Construction of the 2.7km long emergency runway along Thanet's chalk ridge in 1943 to 1944 resulted in the obliteration of some features of the earlier airfield layout.

Personnel and freight were processed through RAF Manston following the end of the Second World War but the station was transferred to USAF (Strategic Air Command) control in 1950; the emergency runway was adapted for USAF use and new hard-standings were constructed (Ashworth 1985, 211). Numerous aspects of the adaptation of the station from First World War and inter-war period uses to early Second World War requirements, and from the pre-emergency runway to post-emergency runway dispositions of station facilities, are observable in the available aerial sources. Some of these changes are discussed below.

As RNAS/RAF Manston developed, a light railway (Kent HER: MKE124211) was built linking the airfield to the Southern Railway mainline near Birchington, described as a unique feature by Bamford and Williams (2012, 105–6). Some 7.3km of the track bed was mapped from various aerial sources, seen predominantly as a cropmark but occasionally as an earthwork bank, and some sections may survive as very low earthworks (Fig. 93). A junction with the mainline was identified at TR 2888 6925, roughly 820m to the west of Birchington train station. From there, the line went south-east, crossing the Canterbury Road (A28) near what is now Broadley Avenue. It traversed the south side of Acol Hill between the 25m aOD and 30m aOD contours, turning more easterly towards Manston Road (B2050) before running alongside the south-west side of Manston Road past Cheesemans Farm and into the airfield. The line split, with one branch serving the large coal yard (Kent HER: MKE125658) and other tracks passing the power station (Kent HER: MKE125654), training flight hangar and school buildings (Kent HER: MKE125655, MKE125661) to a long platform (Kent HER: MKE125515).



Figure 93: Route of RAF Manston light railway track bed. [Archaeological mapping © Historic England. Includes data © Historic England; source Environment Agency and data © Environment Agency copyright and/or database right 2022. Contains data © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

It is unclear from the available aerial sources precisely when the railway went out of use. The line was depicted on an airfield plan drawn up in 1922 and revised in 1930 (MFC/78/24/0883, RAF Museum Hendon). It is noticeable on the OS 1:2,500 County Series map that the north-east garden boundaries of houses on Broadley Avenue, Birchington, built not long before that map was published in 1939, respect the course of the track bed. Networks of anti-landing poles (Kent HER: MKE124357) mapped from US/7PH/GB/LOC286 V 5010 (19-APR-1944) were arranged alongside and over the track bed in places and fragments of the track bed are visible within the airfield in RAF/HLA/407 V 78 (28-FEB-1942). Relationships between the line and airfield structures are well-illustrated by a model on display in the RAF Manston History Museum (Fig. 94).

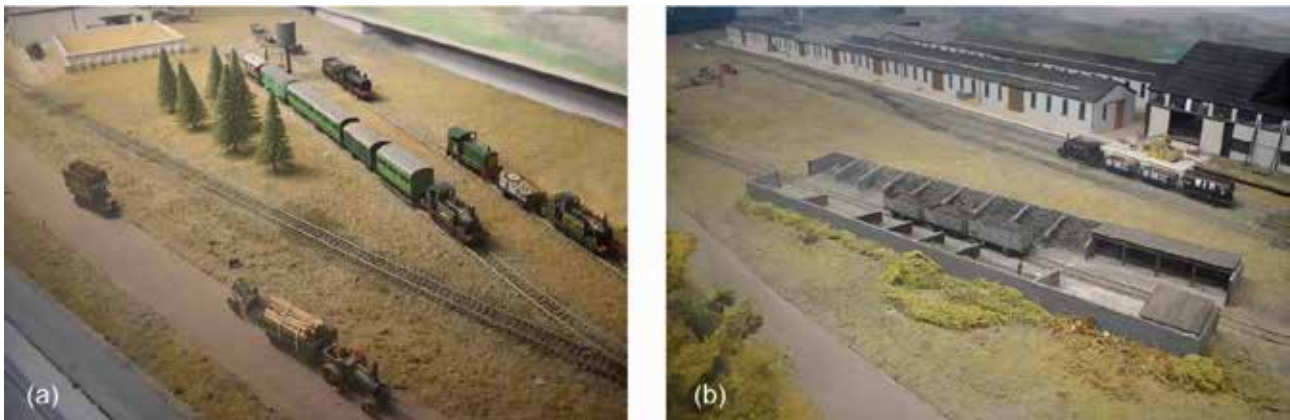


Figure 94: Model railway, RAF Manston History Museum. (a) View looking south-east, the railway enters the airfield to the south-west of Manston Road and divides. (b) Track passes through the coal yard, sidings serve the platform on the north-east side of aircraft sheds and training school buildings. [© Katy Whitaker 2024]

RAF Manston's semi-sunken hangars appear to be another unique innovation at the airfield. Reports of how many were constructed in 1918 vary (Ashworth 1985, 199; Bamford and Williams 2013, 102–3; Stockman 1986, 12–14) but it is clear from the available aerial evidence that three were built and groundworks for a fourth begun but not completed. The features were mapped largely from early 1940s RAF and USAF photographs. The hangars were positioned in an arc around the north-western flank of the station (Fig. 95). Large rectangular areas with ramped entrances were excavated into the underlying chalk and the spoil was thrown up to either side. Historical ground photographs on display at the RAF Manston History Museum show the full span curved roofs that covered the excavated areas, fitted with sliding hangar doors. The spoil banks of the Alland Grange hangar survive and the present-day agricultural or equestrian facilities in its below-ground area may make use of some of the later Second World War structures installed in the space, but the other three sites have been levelled.

By the Second World War, the three completed semi-sunken hangars were unroofed but had been adapted and incorporated into airfield defence. The hangar at Alland Grange (H1 in Fig. 95) was accessed by trackways from Alland Grange Lane and Spitfire Way. A pillbox (Kent HER: MKE125415) guarded the southern entrance to the buildings that had been erected in the below-ground area. In places the surrounding spoil banks were held back by retaining walls. A weapons pit, a gun emplacement and another pillbox (Kent HER: MKE125417, MKE125419, MKE125416) were situated on the east side of the former hangar and the whole installation was enclosed by barbed wire entanglements (Kent HER: MKE125430) defending the airfield's west and north-west flank. The hangar near Cheeseman's Farm (H2 in Fig. 95) underwent a similar treatment, with small buildings

erected both inside and on the west side of the former hangar (Kent HER: MKE125425, MKE125426, MKE125421, MKE125424), a pillbox and two gun emplacements to the south-west inside the barbed wire entanglement (Kent HER: MKE125429, MKE125427, MKE125428) and a gun emplacement dug into the north-east end of the eastern spoil bank (Kent HER: MKE125423).

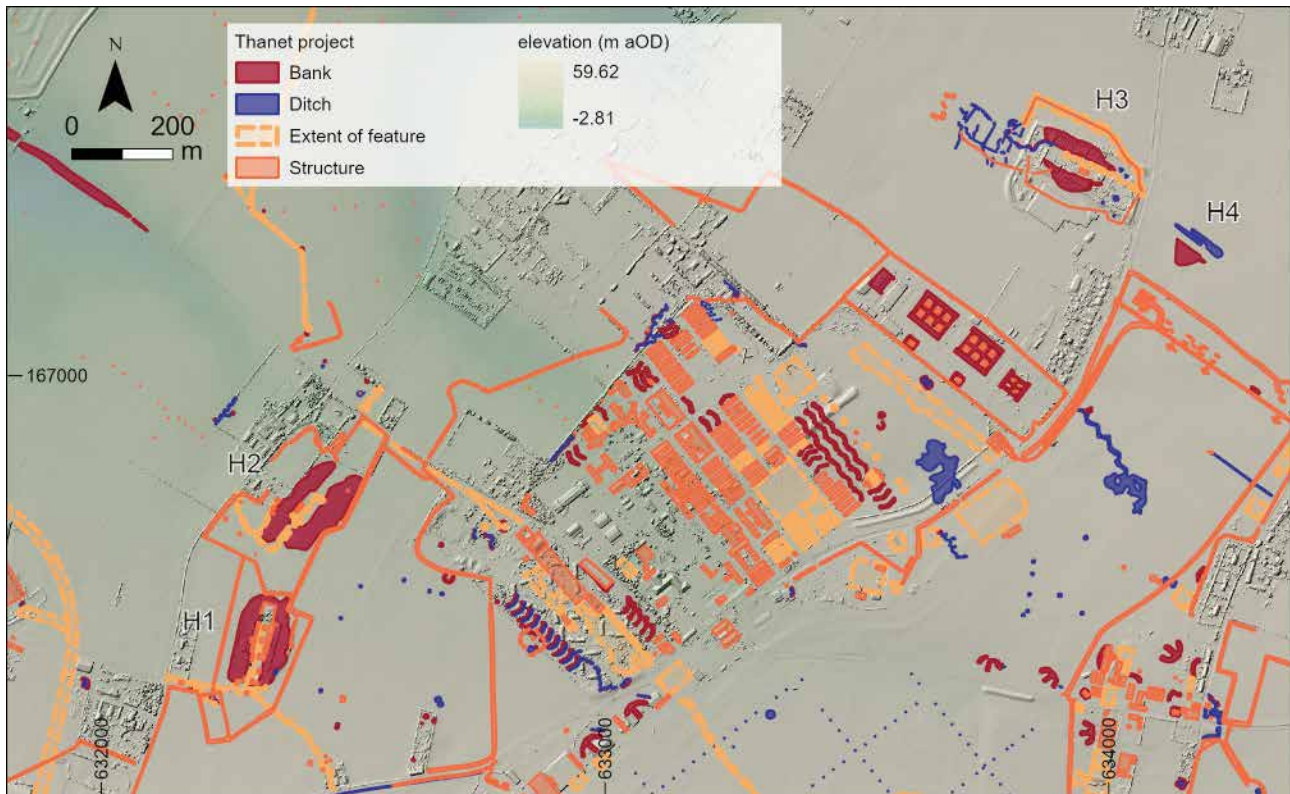


Figure 95: Semi-sunken hangars at RAF Manston. H1, Alland Grange; H2, Cheesemans Farm; H3, Manston Road; H4, Manston Road (unfinished). [Archaeological mapping © Historic England. Includes data © Historic England; source Environment Agency and data © Environment Agency copyright and/or database right 2022. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The former hangar on the north-west side of Manston Road (H3 in Fig. 95) was enclosed by a barbed wire entanglement (Kent HER: MKE125404) protecting at least one building erected in the below-ground area and three gun emplacements and two slit trenches close to the roadway (Kent HER: MKE125403). In addition, a complex defence work of trenches, seen largely as cropmarks in more recent aerial photographs, was dug leading from the below-ground area to the north-west (Kent HER: TR 36 NW 1289, MKE125397). The fragments of straight and crenelated trenches that included two gun emplacements hint at a more extensive system, which may have had First World War origins. At least six military buildings were situated nearby in the large field between Queen Down Farm and Vincent

Farm (Kent HER: MKE125396). Two excavated linear pits and a corresponding spoil heap (H4 in Fig. 95) show where a fourth semi-sunken hangar was begun but never completed.

The southern side of the airfield was completely remodelled to accommodate the emergency runway constructed during 1943–4 (Fig. 96). The runway and associated features, including evidence for construction processes, were mapped mainly from US/7PH/GP/LOC286 V 5010 (19-APR-1944). The 2.7km long concrete runway with grass overshoot/undershoot extensions at each end was just over 233m wide with salvage bays and a perimeter track on the south side and large dispersal loop at the west end. The new facility at RAF Manston complemented two existing emergency airfields at RAF Carnaby, Yorkshire, and RAF Woodbridge, Norfolk, enabling emergency landings by Bomber Command and other aircraft in distress (Bamford, Williams and Gallagher 2016, 88).

Construction entailed making changes to the existing water supply and roadways (Bamford, Williams and Gallagher 2016, 89). A radio direction finding installation (Kent HER: MKE125085) and defended localities to east (Kent HER: MKE125188, MKE125081) and west (Kent HER: MKE125769, MKE125770, MKE125771, MKE125772, MKE125777, MKE125778) were removed to accommodate the runway approach, grass overshoot/undershoot areas and services. Fighter pens, slit trenches and other early Second World War features to the south of the War Flight area were demolished (Kent HER: MKE125172, MKE125157, MKE125159, MKE125180, MKE125181, MKE125183, MKE125177, MKE125178, MKE125175, MKE125173). A complex arrangement of inter-war, early Second World War and possibly First World War slit trenches, buildings and gun emplacements in the south-west quarter of the former grass airfield were levelled (Kent HER: MKE125058, MKE125059). Long slit trenches covering the south side of the airfield were also abandoned at that time, although they were to an extent already redundant by at least 1942 (Kent HER: TR 36 NW 1151, TR 36 NW 1161).



Figure 96: RAF Manston's emergency runway and loop under construction with service trenches to west, south and east. North to left. [Unscaled extract from US/7PH/GP/LOC286 V 5010 (19-APR-1944). Historic England Archive (USAAF Photography)]



Figure 97: RAF Manston FIDO fuel pipeline and storage tanks. [Archaeological mapping © Historic England. Includes data © Historic England; source Environment Agency and data © Environment Agency copyright and/or database right 2022. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Parts of the emergency runway's electrical lighting, numerous cable trenches (Kent HER: TR 36 NE 724), mechanical and electrical plinths (housing transformers and switchgear), and infrastructure for a fog dispersal system were mapped from US/7PH/GP/LOC286 V 5010 (19-APR-1944). RAF Manston's Fog Investigation and Dispersal Operation (FIDO) system was installed from late 1943 as Petroleum Warfare Department XII. Nearly 200 Mark IV Hagill burners were aligned in double rows along the sides of the emergency runway, with intersecting runway burners channelled below surface level at each entrance to the salvage bays. The burners were fuelled from four large bunded tanks with pumphouses at Cliffsend (Kent HER: TR 36 NW 1335). The fuel tanks were themselves supplied by a pipeline about 2.7km long from a pump house on a specially-built siding on the railway mainline to the east of Minster. Trains of fuel tanks delivered supplies via 25 standpipes in the siding (Williams 1996, 135–9). The route of the pipeline was mapped as a cropmark from 1940s RAF photographs and the pump house and an associated storage

building appear to be extant structures in APGB Imagery 07-APR-2021 (Kent HER: MKE125137). A repair shop, office and latrine for duty FIDO personnel were also mapped near the fuel tanks (Kent HER: MKE125142), as were two emergency water supply tanks and a small hut (Kent HER: MKE125141) (Fig. 97).

Lines of lit fuel along the emergency runway and its approach 'box' at the east end were intended to help disperse fog in the event that the airfield was obscured. When deployed, the system was also an effective visual aid to pilots attempting landings. FIDO deployment was delayed by the conversion from Hagill burners to a new, more powerful, HADES system of sub-surface burners. That work was completed in May 1945, by which time more than 23km of pipework had been installed. The system was used under trial conditions until it was mothballed in 1958 (Williams 1996, 135, 138–42, 151). In addition to the FIDO infrastructure that was mapped, evidence of its use is also visible in aerial photographs (Fig. 98).



Figure 98: Scorching on RAF Manston salvage bay entrances resulting from FIDO burns (indicated by stars). North at top, unscaled extract from RAF/106G/UK/1378 V 5076 04-APR-1946. [Historic England Archive (RAF Photography)]

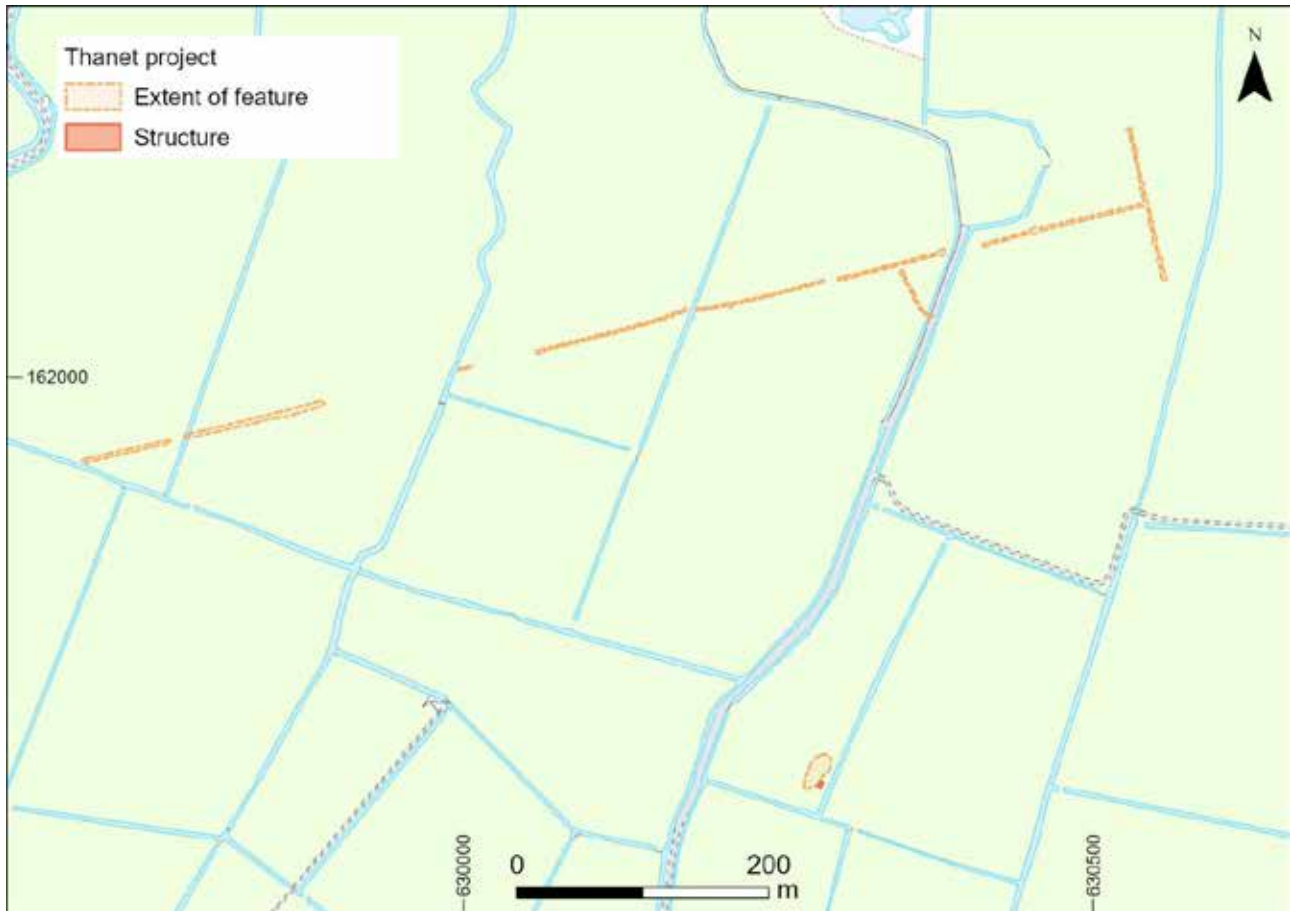


Figure 99: RAF Manston 'Q' Site, Ash Level. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

RAF Manston was surrounded by a number of related military installations. Two 'Q' sites are reported as decoys for the airfield (Dobinson 2000, 247). One, at Monkton, has not been traced and no evidence could be seen in any of the available aerial sources. One record claims it was closed by 16 July 1942 (Airfields of Britain Conservation Trust 2025). Stilwell (2016) suggests that the Monkton 'Q' site was on the chalk hills to the north of the village and although there are no clear indications in the available USAF and RAF 1940s images, a subterranean structure excavated on the site of Thanet Earth could represent a former control room (Holman et al. 2023, 181). The 'Q' site number 50(b) on Ash Level in the Wantsum Channel, about 4.6km south-west of RAF Manston's emergency runway, was mapped from RAF/2C/UK925 V 35 (05-JUN-1942) (Kent HER: TR 36 SW 221). It comprised decoy lighting in a T-layout on plan, with a bundled control room positioned about 400m to the south. The head of the 'T', to the east, was about 120m long, from which extended a perpendicular line of lighting oriented roughly east-west, of which about

870m could be mapped (Fig. 99). This was apparently a variant of a 'Drem Q' site (Dobinson 2000, 44, 150–4).

Airfield operations relied on various area, long-range and approach and landing radio navigation aids, especially when Bomber Command policy moved from daylight to night bombing raids in late 1939 (Berry 1996, 35). Five direction finding installations associated with RAF Manston were mapped from 1940s RAF and USAF vertical photographs. One small site to the south-east of the old airfield and War Flight area was demolished in 1943–4 for the construction of the emergency runway. The features were mapped from RAF/HLA/564 6029 (01-JUN-1942). An anti-aircraft gun emplacement just to the south had already been removed by the time of that imagery. The direction finding installation comprised a small building standing in a square fenced enclosure (probably the location of the aerial system with operator) with two nearby huts, presumably crew quarters (Kent HER: MKE125085) (Fig. 100).



Figure 100: Radio Direction Finding installation (Kent HER: MKE125085). [Extract of RAF/HLA/564 V 6029 01-JUN-1942, Historic England Archive (RAF Photography)]

Minster High Frequency Direction Finding Station (HFDF) was located beyond the west end of the emergency runway in fields to the south of Plumstone Farmhouse (Kent HER: MKE125038). Although none of the available aerial photography is early enough to capture its construction, the site was established by the time of US/7PH/GP/LOC295 5010

(20-APR-1944) from which it was mapped. It included three direction-finding towers and four small huts, the largest of which was presumably the crew quarters (Fig. 101). Sites usually had one tower but some multiple tower sites like Minster were built, of which two are also in Kent (Farningham and Wittersham) (Frontline Ulster 2024). The installation had been dismantled by 1954 (RAF/82/1066 F62 0009 31-AUG-1954).

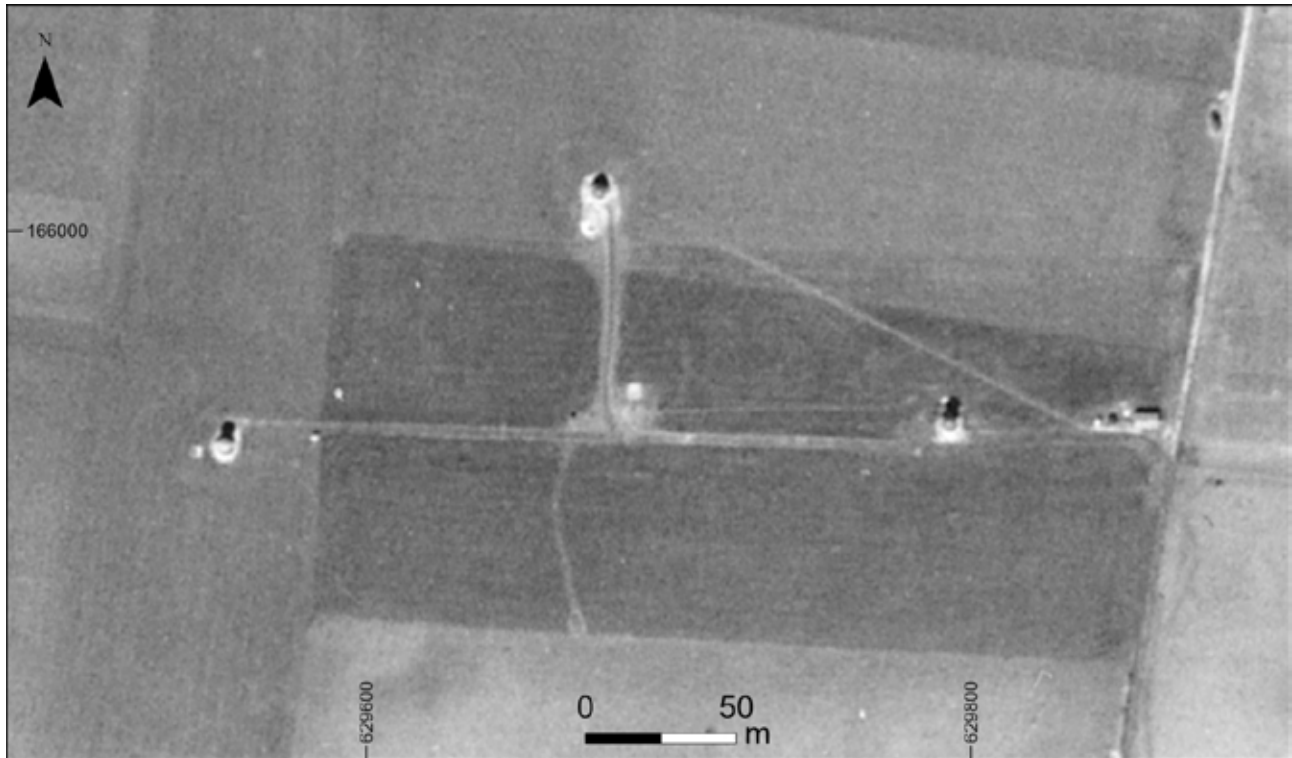


Figure 101: Radio Direction Finding installation (Kent HER: MKE125038). [Extract of US/7PH/GP/LOC295 V 5010 20-APR-1944, Historic England Archive (USAAF Photography)]

A Very High Frequency (VHF) Fixer Station closer to the airfield, at the end of the western grass overshoot area, was mapped from RAF/106G/UK/1378 5080 (04-APR-1946) (Kent HER: MKE125782) (Fig. 102). The site was previously occupied by a barbed wire entanglement enclosing a former anti-aircraft gun battery to the south of Cleeve Court. The installation comprised at least one fenced building in line with another structure and area of hardstanding oriented with the centreline of the emergency runway. Nearby parchmarks in the grass represent the location of service trenches, observed being dug in photography dating to 1944 (US/7PH/GP/LOC295 5010 20-APR-1944), indicating that the station was built in association with the emergency runway. The site is described as 'VHF Main Beacon' on a mid-20th-century plan of RAF Manston (RAF Museum, Hendon, reference X004/2380) but was recorded as demolished in the latest imagery (APGB Imagery 07-APR-1921).



Figure 102: Radio Direction Finding installation (Kent HER: MKE125782) and service trenches showing as parchmarks. [Extract of RAF/106G/UK/1378 V 5080 04-APR-1946, Historic England Archive (RAF Photography)]

A further site that included at least two radio masts was positioned in fields to the north-west of RAF Manston's domestic and technical area (Kent HER: TR 36 NW 1320). Previously suggested to be a Chain Home station, this inland site is more likely to be an additional radio direction finding station for airfield operations. The two masts and adjacent small buildings were positioned at the north end of a long path, with other small structures and gun emplacements to the south-west. The features were mapped from US/7PH/GP/LOC286 V 5010 and 5012 (19-APR-1944). Some 800m south of the masts the path terminated at two gun emplacements that had been partially enclosed by a barbed wire entanglement (Fig. 103). The wire, which seems to have been part of the defence system around Cheesman's Farm on the north-west flank of the airfield, had been removed by 1944. The installation was removed following the end of the war.

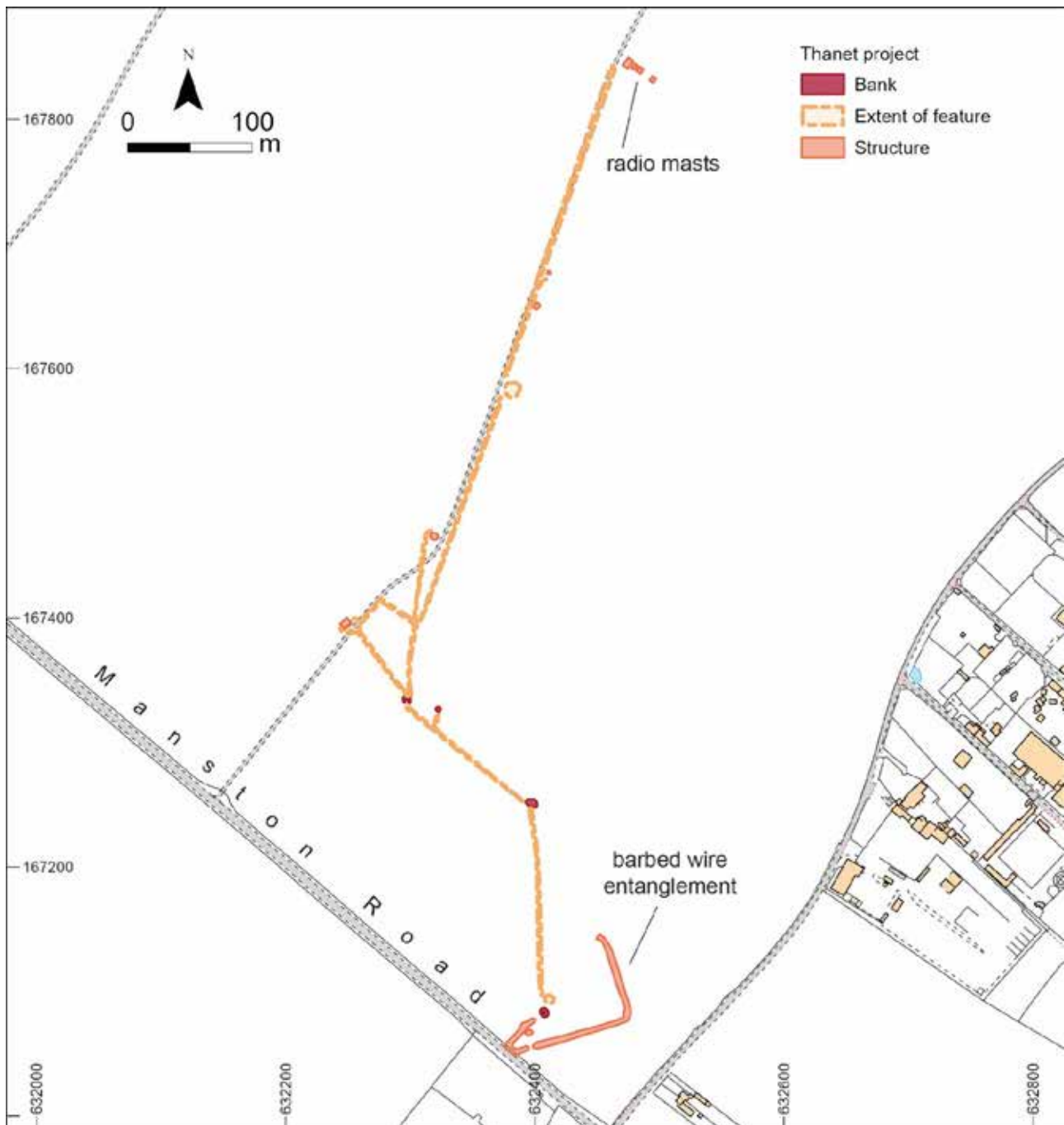


Figure 103: Radio Direction Finding installation (Kent HER: TR 36 NW 1320). [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

A transmitter station in the eastern corner of Quex Park was mapped from US/7PH/GP/LOC286 V 5010 19-APR-1944 (Kent HER: MKE124808) (see Fig. 85). Positioned about 740m to the north-west of the radio masts recorded in Kent HER: TR 36 NW 1320 (above) but still more than 1.6km inland, the role of this station is less clear. It

comprised five dispersed masts, small buildings and a central bunded transmitter building, all of which had been demolished by April 1951 (RAF/58/643 Vp2 5086 20-APR-1951). The site is now occupied by a caravan park (Fig. 104). In RAF Manston History Museum's list of radar stations, it is noted as 'Lodge Cottage, Quex Park.'



Figure 104: Radio transmitting station in the eastern end of Quex Park (Kent HER: MKE124808). [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Various civilian buildings were requisitioned in both the First and Second World Wars to service RAF Manston, including Cleve Court to the west and Thorne Farm to the south. The military installations at both farmsteads were surrounded by Second World War barbed wire entanglements and incorporated into RAF Manston's defences and the District-wide anti-landing defence network.

The military installation at Cleve Court included an anti-aircraft gun battery (Kent HER: MKE125778) positioned to the south of the walled garden (also see below, Heavy Anti-Aircraft Batteries). The battery comprised numerous huts, some of them bunded, and perhaps six gun emplacements with additional small weapons pits and slit trenches, as well as a football pitch. First World War guns had been installed (RAF Manston History Museum display; Stilwell 2016, 25–6). The site appears to be in transition in RAF/HLA/564 V 6010 (01-JUN-1942) from which it was mapped; large, substantial gun emplacements

had been removed or partially demolished and three guns only were in position by that time. The battery was surrounded by a barbed wire entanglement (Kent HER: MKE125777) that articulated with another to the south-west protecting a military installation on Telegraph Hill (Kent HER: MKE125770, MKE125771, MKE125772) and also with the entanglement around Cleve Court itself, forming an interlinked network on RAF Manston's west flank. Defences around the farmstead included two pillboxes (Kent HER: MKE125774, MKE125776). The system thus controlled passage along a length of Minster Road between Acol and Mount Pleasant, and at Mount Pleasant the former chalk pit housed military huts (Kent HER: MKE125794) with weapons pits and slit trenches covering the environs (Kent HER: MKE125793, MKE125795, MKE125796, MKE125797) (Fig. 105).

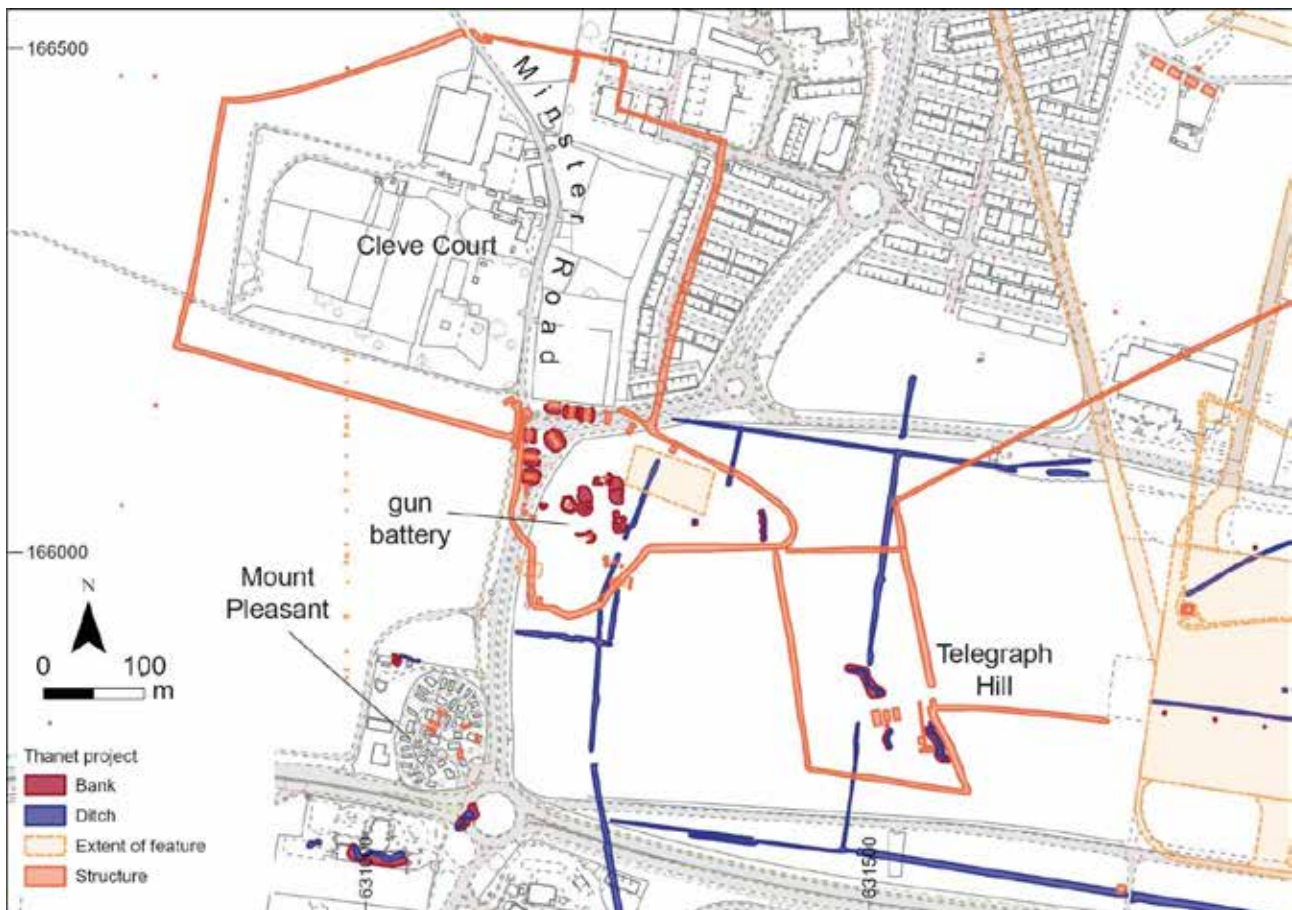


Figure 105: Military installations at Cleve Court and environs. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

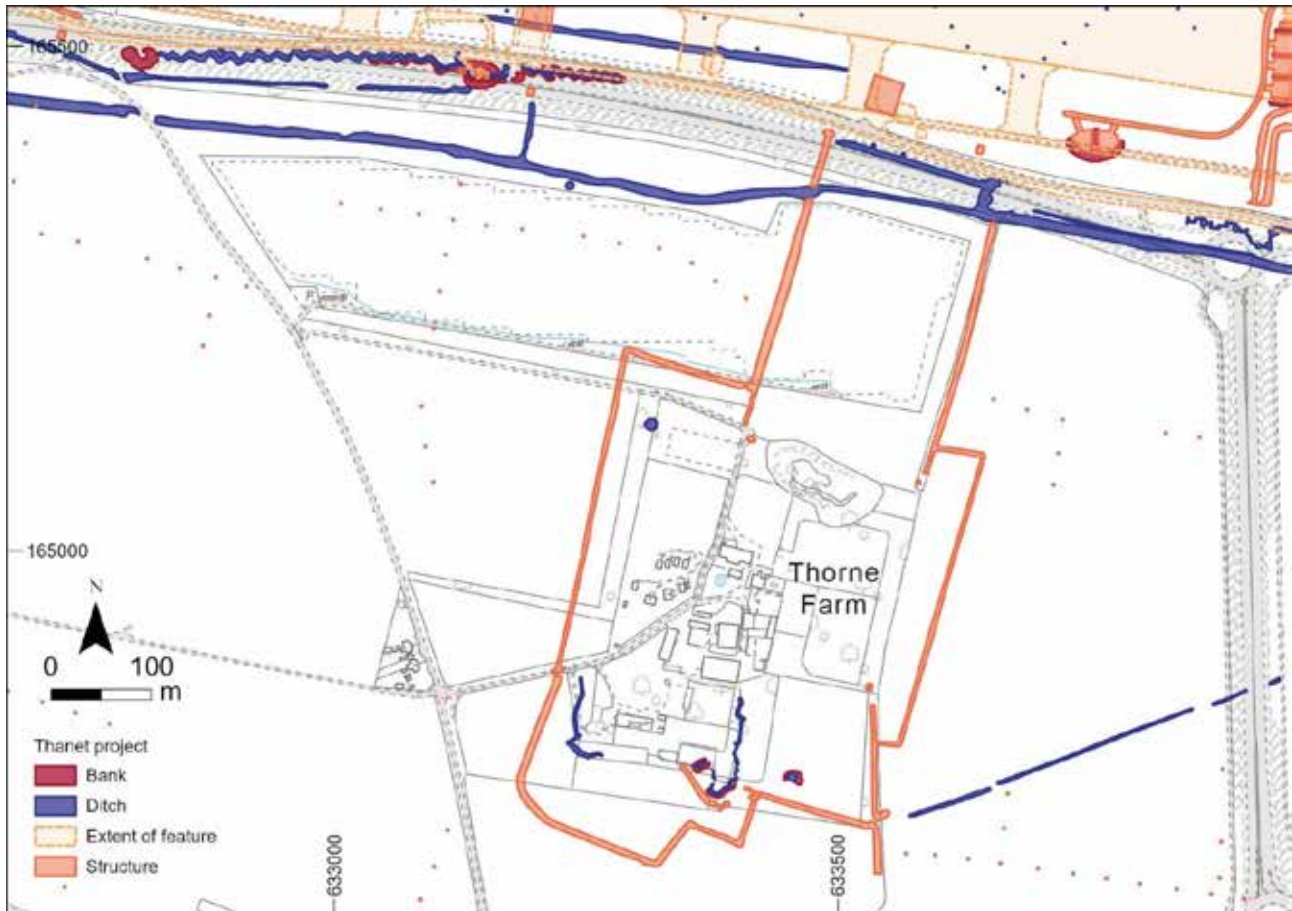


Figure 106: Military installation at Thorne Farm. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

The purpose of the Thorne Farm military installation is less clear. It has been described as a 'citadel headquarters' (Kent HER: TR 36 NW 1291) although it is not as extensive or complex as the Defended Areas of Sarre or St Nicholas at Wade (see below). It comprised a barbed wire entanglement (Kent HER: MKE125130) surrounding the farm, left unenclosed to the north where the wire reached the RAF Manston perimeter track. Weapons pits and pillboxes inside the enclosed area were positioned from about 40m to 55m within the wire, covering the north and east flanks (Kent HER: MKE125126, MKE125127, MKE125128, MKE125129). The south flank was additionally protected by a more complex arrangement of slit trenches and weapons pits dug in amongst trees (Kent HER: TQ 36 SW 1225) (Fig. 106). The features were mapped from a combination of RAF and USAF photographs dating from 1942 to 1946; most were visible in imagery dating to 1 June 1942 but summer tree cover obscures some of the details and there may have been more defensive earthworks, since levelled. Thorne Farm is situated towards the top of the scarp slope overlooking the Wantsum Channel and may have provided a good position to

observe the low-lying ground and in particular Pegwell Bay to the south-east, especially in the context of an invasion threat. Certainly, the Manston (Maize) Auxiliary Unit Patrol had an underground Observation Bunker at Thorne Farm (British Resistance Archive 2009–2025; Stilwell 2016, 89, 98).

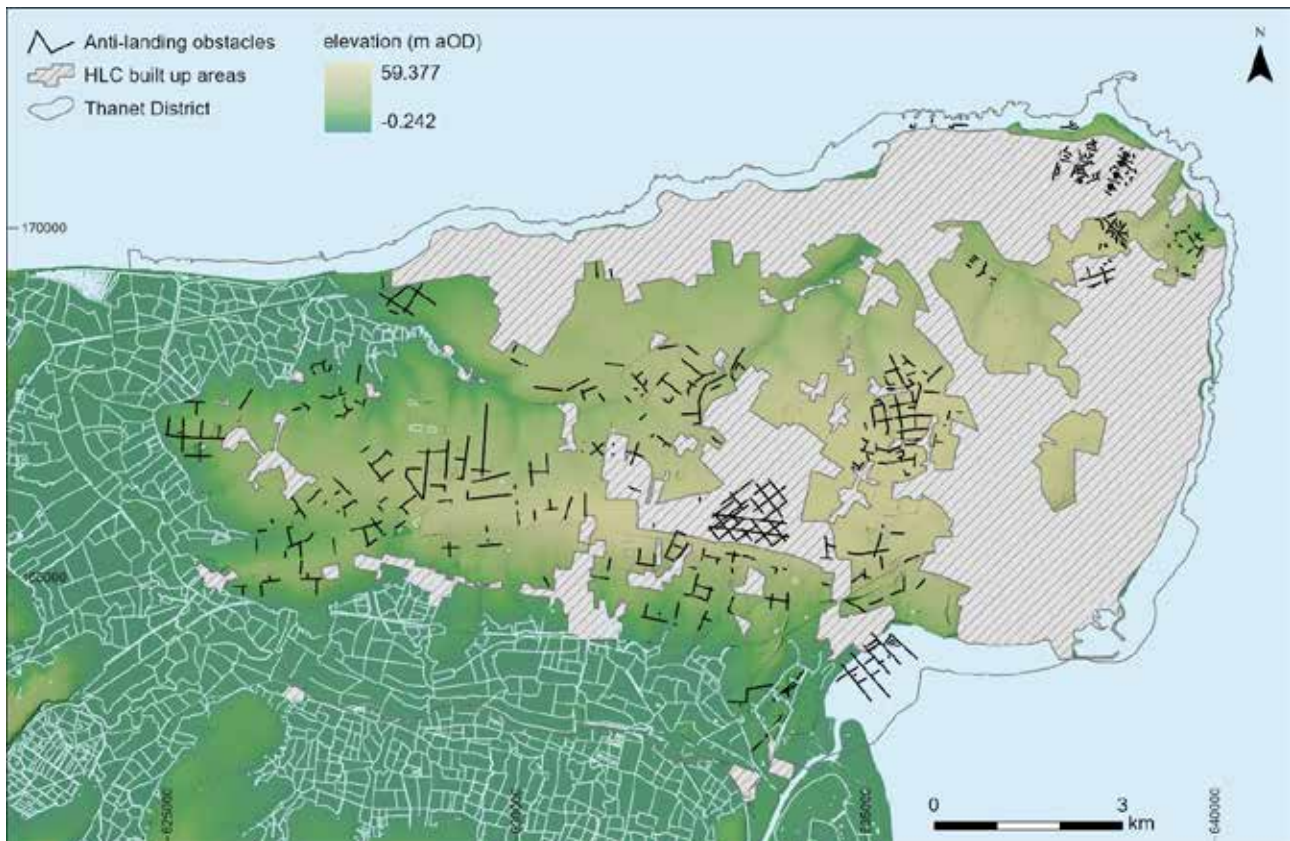


Figure 107: Anti-landing obstacle network on Thanet. [Archaeological mapping © Historic England. Includes data © Historic England; source Environment Agency and data © Environment Agency copyright and/or database right 2022. HLC data (Munby 2014). Contains data © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

It is possible to partially reconstruct the District-wide network of anti-landing obstacles that incorporated RAF Manston (Fig. 107). More than 1,800 anti-landing poles were mapped by the Thanet and Ramsgate HAZ projects from 1940s RAF and USAF photography. Tell-tale signs of arrangements of posts in geometric patterns across fields include the shadow cast by each upright, and un-cut vegetation growing around the base of poles. The majority were visible in vertical photographs dating to 1941, 1942 and 1944, although there is evidence that by 1944 some of the installations had been removed or at least reduced. Some poles were visible on the northern beaches near Margate; undoubtedly there were more, obscured in the available aerial photographs by high tides or deep cliff shadows. Land between Margate and Kingsgate that at the time was undeveloped was covered by

an especially intense arrangement of closely placed poles, likely to have formed part of the defences of the Chain Home stations on Foreness Point (see below). The arrangement of poles in Pegwell Bay was mapped by the Ramsgate HAZ project (Small and Barber 2019, 49–51). A few poles were mapped from 1946 photography, but by that time most of the network had been dismantled.

On RAF Manston's airfield, marks on the ground were visible signifying pits where poles had once stood. There were at least two layouts, one comprising two parallel east-west lines of poles and the other a diamond pattern of north-west to south-east and north-east to south-west oriented lines. The patterns may indicate phased designs, but they can only have been very short-lived because the airfield was operational. They may date to a brief period around the Munich Crisis of September 1938. At that time, all RAF stations were in a state of emergency; at RAF Manston all normal training was suspended and airmen were set to excavating slit trenches and building airfield defences (Bamford, Williams and Gallagher 2015, 106).

Gaps in the mapped pattern of anti-landing obstacles are therefore due to four main reasons. First, not all of the District was covered by the earlier 1940s imagery. Any evidence for the network in fields not photographed until 1946 had largely been destroyed by immediate post-war re-cultivation. Secondly, four areas were occupied by Defended Areas: St Nicholas at Wade, Sarre, Hengrove and Plumpudding Island. In those locations, the anti-landing obstacle network was linked to arrangements of barbed wire entanglements, slit trenches and other defences (see below). Thirdly, the network was not necessary in built-up areas, apart from on golf courses (as at Kingsgate, for example). Finally, the close network of drainage ditches in the Wantsum Channel performed the role of anti-landing obstacles across the low-lying ground. In that area there is some additional evidence in 1940s RAF aerial photographs for ditch clearing that, as well as keeping water moving, may have been intended to ensure the effectiveness of the ditches as obstacles in the event of invasion. Certainly, the network of anti-landing poles reached the edge of the Wantsum Channel, such as north-west of St Nicholas at Wade and along the south-facing chalk scarp.

The available aerial sources covering RAF Manston, and the 1940s flights in particular, provide a rich resource to record and analyse the development of the airfield and its environs. The airfield was integrated with an extensive defence network across Thanet, further elements of which are described below.

Coastal defences

With the onset of the Second World War, measures to counter any threat of an imminent German invasion and aerial and coastal attack were rapidly put into place across the country. Between 1939 and 1941, spurred on by the fall of France and retreat from Dunkirk in June 1940, a country-wide programme of coastal and inland defence construction was initiated.

The key concern was to the ability to resist an invasion force equipped with tanks, armoured vehicles and artillery using layers of defences to impede landings at the coast and onward movement inland. Artificial obstacles were constructed, incorporated with natural features to create a continuous obstacle or defensive 'crust'. Miles of concrete blocks, barbed wire, minefields were put in place along beaches punctuated by pillboxes and gun emplacements. Elsewhere, existing sea walls and barriers were incorporated into the anti-invasion defences (Lowry 1996, 78, 87). In this early phase (December 1940 to 1941) barriers of scaffolding (Z1 Anti-tank scaffolding) were also tested on exposed beaches to prevent landing but were replaced by other defences later in the war (Chris Kolonko-Weet pers. comm. 2024).

Provision of anti-invasion defences was of the utmost importance in Kent and other south-eastern coastal counties due to their proximity to the English Channel and the constant threat of invasion from the sea and air. Located at the eastern tip of Kent and at the mouth of the Thames Estuary, it was vital to protect the Isle of Thanet from being seized and fortified by an invading force. To this end Thanet was designated as a Restricted Military area controlled by the military. The defences put in place around the coast and inland were designed to make the island into a defended fortress with access controlled at the two crossing points off the island at Sarre and St Nicholas at Wade (Stilwell 2016, 1).

The population of Thanet had steadily fallen in 1940 due to the increase in bombing and the collapse of the tourism industry, closing hotels. The schools were closed, children were evacuated and people moved away to safety. A special permit was required to enter the Restricted Area of Thanet and regular censuses were conducted to monitor who was on the island. In May 1940 all alien citizens of German and Italian heritage were moved out of the area and sent to internment camps. By July 1940 approximately 11,500 residents remained in Thanet and to assist the Air Raid Wardens white crosses were painted on empty houses (Stilwell 2016, 1–3).

RAF aerial photographs taken in November of 1941 recorded beach scaffolding in place along the beach at Walpole Bay, Margate in a number of sections extending over 700m, varying from 5m to a maximum of 16m in depth. Similarly, scaffolding was erected across

the beaches at Viking Bay and Louisa Bay, Broadstairs, two of the few accessible beaches between the cliffs in the channel-facing shore of Thanet. Traces of the scaffolding there were visible on RAF vertical aerial photographs taken in May 1942.



Figure 108: Trenches and gun emplacements along the north coast of Thanet at Birchington.
[Extract of RAF 26J/BR/194 VC 01 10-JAN-1941 Historic England Archive (RAF Photography)]

Along the cliff edge around the north side of Birchington an almost continuous line of zig-zag trenching was dug to enable concealed movement of troops along the seaward-facing cliff (Fig. 108). At intervals short spurs of trench, or saps, extended closer to the cliff edge giving access to embanked gun emplacements and lookout points. Most of this trenching would have been dug between 1939 and 1940. The trenches here are similar in plan to those dug during the First World War, with construction methods only changing to modular defence systems at some point after 1940 (Kolonko-Weet pers. comm. 2024).

Much of the coast of Thanet is lined by cliffs which offered a natural deterrent and protection from a coastal assault, ideal for positioning gun emplacements and batteries. Low points such as bays and beaches along the north and eastern coast were vulnerable to attack and required reinforcement to prevent access inland from the shore. The cliffs around the island are also punctuated at intervals by steps or passages cut through the

chalk bedrock to the beach below. These points of access to and from the beach were further strengthened with sandbagged gun emplacements.¹¹

In addition to gun emplacements, Petroleum Warfare Sites were constructed along the coast. A total of nine such sites is recorded around the coast of Thanet in the Kent HER database. Several types of flame weapons were developed by the Petroleum Warfare Department during the Second World War. Many of these were mobile installations, either hand-held or fitted to vehicles, leaving little trace and difficult to identify on aerial photographs. Flame Fougasse installations were semi-permanent explosive devices consisting of a concealed drum of petrol, oil and rubber which could be ignited remotely (Lowry 1996, 91). Based on their descriptions, most of these installations on Thanet are probably the former – flame throwing rather than explosive – and were probably positioned on the beach or at the top of the incised ways up from the beaches. One such site is noted in the vicinity of Friends Gap stairs at Foreness Point (Kent HER: TR 37 SE 1139). There were other sites also noted on either side of the headland west of Palm Bay, possibly guarding Sackett's Gap and Hodge's Gap. Further west, one site is recorded close to Newgate Gap leading down to Walpole Bay (Kent HER: TR 37 SE 1117), and another site is recorded as 'on beach, Epple Bay, N of Birchington' which is close to the narrow cut down through the cliffs to Epple Bay at Birchington (Kent HER: TR 37 SW 1062).

A total of 318 individual gun emplacements and weapons pits, and 80 pillboxes were recorded from aerial photographs across the Isle of Thanet. The majority were in coastal positions, with the remainder around RAF Manston, military installations, defended areas and roadblocks. There will of course be numerous unrecorded sites which were not visible on aerial photographs due a number of reasons such as lighting conditions, camouflage, the relative size of the features and the scale of the photographs and the availability of photographic cover.

All accessible routes from beaches, bays and slipways were also obstructed with concrete anti-tank cubes as were the entrances to roads leading from the front in all the coastal towns to block off any vehicular access from the beach in the event of an assault from the sea. Records of some of the preparations and the men involved give insight into the scale of the task to be undertaken within a short period of time. The war diaries for July 1940 of the Canadian 198th Infantry Brigade record preparations to defend the beaches of Thanet

¹¹ Pillboxes, though a prevailing feature throughout and after the war, were only actively used for a period of 18 months having been declared obsolete by February 1942, replaced with small company-sized gun positions within sandbagged or earthen defences, Kolonko-Weet pers. comm. 2024).

as part of the Defence Scheme for East Kent, outlining instructions to block the slopes from the beach at Margate, St Mildred's Bay and Westgate Bay, employing contractors to provide pillboxes and anti-tank (A/Tk) bocks. It also gives instruction to square off the faces of the cliff and remove all beach huts at Joss Bay, Bethlehem Farm and to construct a line of concrete blocks between Cliffsend and the River Stour. At Birchington, instructions were given to block private tunnels linking a number of houses to the beach and place anti-tank obstacles on the beach to block the access at either end with concrete cubes joined together with steel cabling (TNA: PRO WO.166/1051/1).

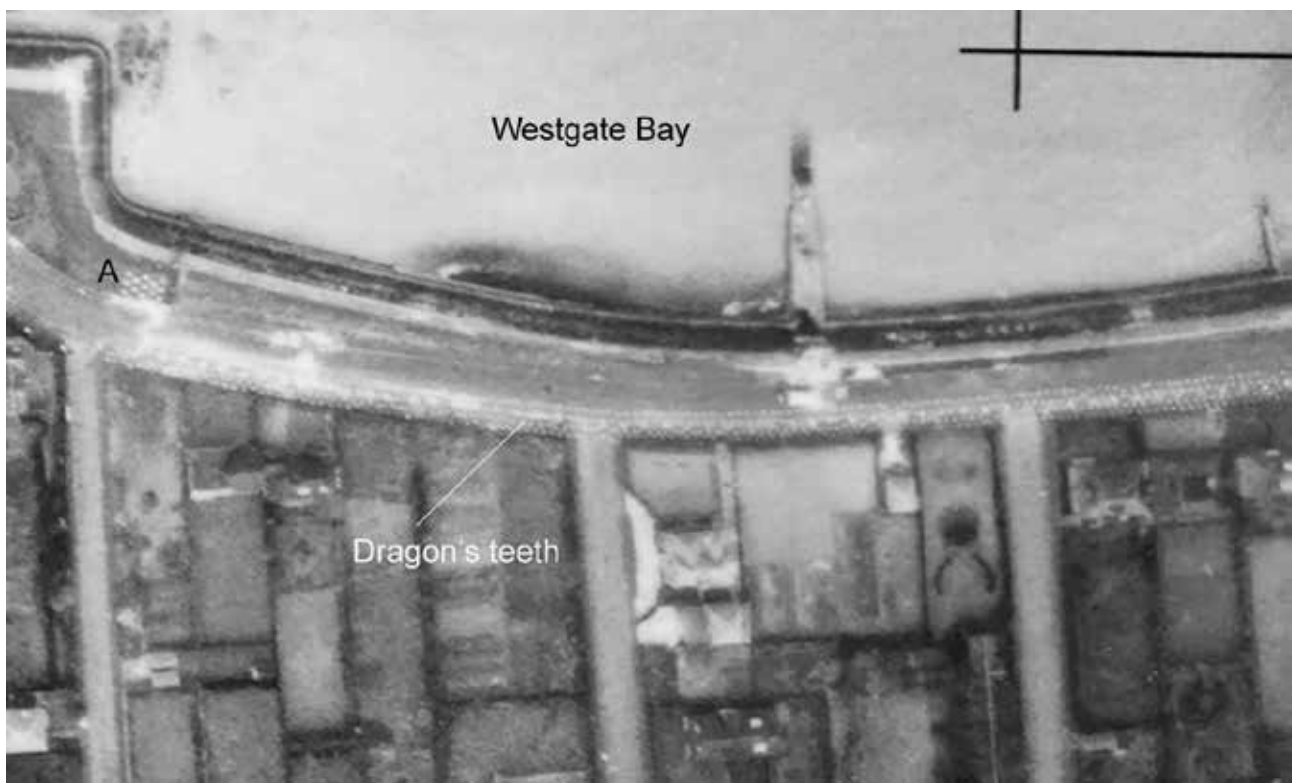


Figure 109: Dragon's teeth placed along the south side of Sea Road at Westgate-on-Sea blocking access to Hengist Road and Dane Road to the south and larger anti-tank blocks on the Esplanade (A). [Extract of RAF/S647 V 43 06-NOV-1941 Historic England Archive (RAF Photography)]

Evidence for some of these actions can be seen on RAF aerial photographs taken in 1941 and 1942. At Westgate-on-Sea, Westgate Bay offered easy access from the beach to Sea Road, the road skirting the bay. A four-deep line of small anti-tank cubes were placed on the southern (inland) side of the road blocking access to side roads and gardens. Further cubes were placed across the wide verge on the western edge of the bay to prevent access to the grassed headland. At the eastern end of the bay, access to the slipway and front was also blocked with concrete cubes. The beach at Westbrook Bay, Margate is surrounded by a broad raised promenade backed by a low cliff and a significant rise in the

ground to the Royal Esplanade, the road around the beachfront. The concrete slipways from the beach onto the Promenade were all blocked with concrete cubes as were all the roads and wide paths linking the Promenade to the road above. Access from the slipway at the western end of the bay was also protected by barbed wire entanglements and gun emplacements (Fig. 109).

In Pegwell Bay, a wide, gently sloping beach leading to low cliffs and accessible coastline (already the scene of a number of historic landings by the Romans and St Augustine), additional anti-invasion precautions in the form of a network of anti-tank posts known as 'Asparagus' were placed in the intertidal muds exposed at low tide to impede landing craft and troops. Traces of these posts around the bay were visible in the exposed mud on aerial photographs taken at low tide (RAF/HLA/540/V 6052-3 17-MAR-1942). Further layers of defences included lines of barbed wire entanglements placed in the western half of the bay, initially below the high-water mark early in 1940, but found to become fouled with seaweed so were later moved up the beach to above the HWM (Chris Kolonko-Weet pers. comm. 2024).



Figure 110: The visible coastal defences constructed in Pegwell Bay seen in April 1944. [Extract of US/7PH/GP/LOC286 V 5008 19-APR-1944 Historic England Archive (USAAF Photography)]

That barbed wire entanglement was replaced by a more robust anti-landing craft obstacle extending across the western bay from the River Stour's course within the mudflats to just west of Cliffs End Village. This defence line is also recorded as a flame fougasse barrier with the oil tank and control post located on the shore at its eastern end (Stilwell 2016, 78–9). Stilwell (2016, 79) also records a line of anti-tank dragon's teeth placed above the beach on the western half of the bay which are visible on aerial photographs taken in 1942 and 1944 (Fig. 110).

Following the Second World War this long low beach was chosen to be the site of Ramsgate International Hoverport active between 1969 and 1982. All buildings relating to the port have since been removed, but the concrete landing area and carparking area remain, though already heavily overgrown (thanet.gov.uk 2025; Small pers. comm. 2025).

Plumpudding Island

The northern and eastern coasts of Thanet are for the most part protected by cliffs, but the beaches and access points were strengthened and protected with both passive and active defences. Particularly vulnerable, easily accessible points such as Plumpudding Island on the north-western corner of Thanet were heavily protected with both beach and inland defences. An entry in the war diary of the Canadian 198th Infantry Brigade for July 1940 notes the instruction to 'Break up beaches with iron rails or asparagus including the beach west of the rifle range at Plumpudding Island' (TNA: PRO WO.166/1051/1). RAF aerial photographs of the site taken in January and November 1941 indicate within a short space of time there had been several distinct phases of defence.

The earliest photographs taken in January 1941 show the site under a dusting of snow (Fig. 111). There is the faint trace of a single line of barbed wire entanglements passing over the westernmost of a line of four already established anti-landing obstacles and extending around the southern side of the others parallel to the railway line. Anti-landing obstacles come in a number forms, but those at Plumpudding Island comprise four roughly parallel linear ditches set perpendicular to the beach, each central ditch flanked by mounds of upcast ditch material designed to impede any aircraft attempting to land on this area of flat low-lying ground between Birchington and the marshes of the Wantsum Channel and gaining access to rail and road links westwards to the rest of the country. These obstacles were placed across the country in any open ground considered suitable to land an aircraft or glider. In the bottom-right of this photograph, in the fields to the south of the railway line, the faint traces of two crossing lines of anti-landing posts can be seen as a pale interrupted line, part of a network of posts extending eastwards over the open fields to Birchington in the east. A single line of posts can also be seen extending north from the railway line, visible as a line of pale dots.

The trenches look crisp but appear grassed over at the edges so are not freshly cut. Spurs of zig-zag ditch extend from parts of the main ditch system leading to gun emplacements and lookouts. The central ditches of the anti-landing obstacles, unusually, appear to have been incorporated into the trench system suggesting the anti-landing obstacles were the earliest features before any other defences had been put in place on the site but were still in use, doubling up as both as obstructions and trenches. It is likely they were constructed in late 1940 (Chirs Kolonko-Weet pers. comm. 2024).



Figure 111. Coastal defences at Plumpudding Island on the north-western end of the Isle of Thanet overlooking the Thames Estuary. [Extract of RAF/26J/BR194 VC 1 10-JAN-1941 Historic England Archive (RAF Photography)]

The site was photographed again in November 1941 by which time some of the upcast mounds of the anti-landing obstacles still appear as pale mounds which have not grassed over, but at least one group have been partially levelled and spread. At some point since January a double line of barbed wire had been placed along the coast just above the beach with branches extending inland. There is evidence of scuffing out or infilling of some of the gun emplacements off the coastal trench where the barbed wire had been placed, possibly to prevent access under the wire via the open trench (Fig. 112).

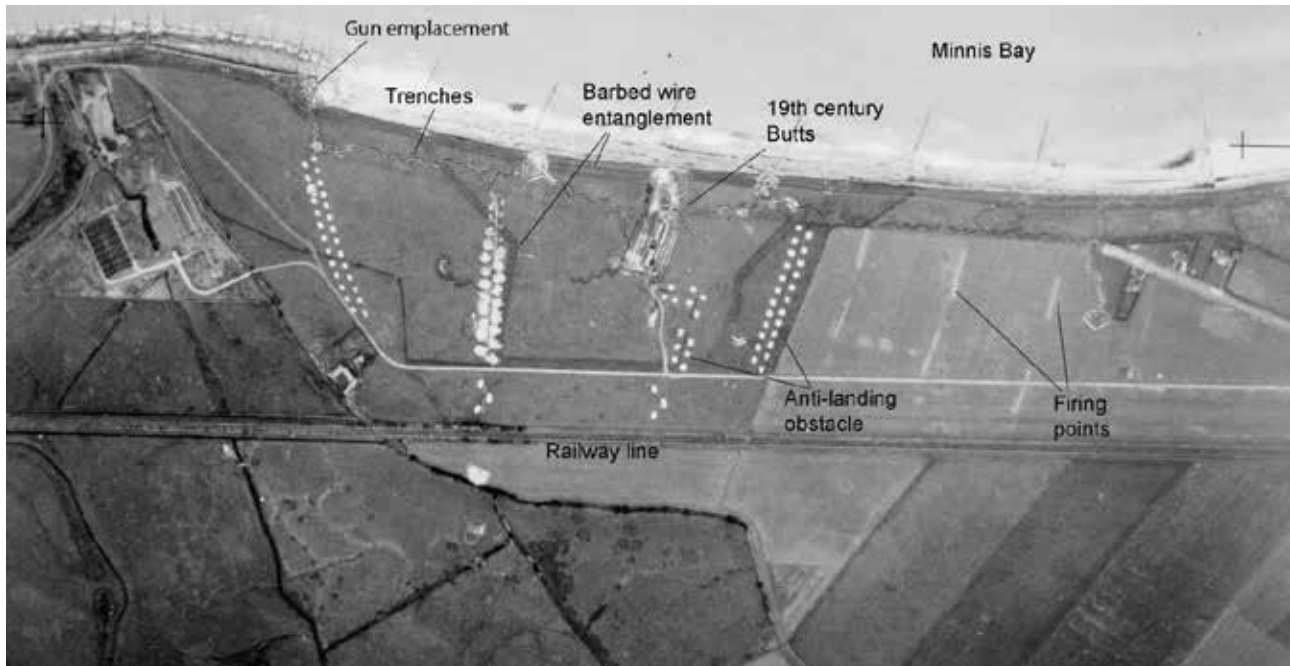


Figure 112. Coastal defences at Plumpudding Island on the north-western end of the Isle of Thanet overlooking the Thames Estuary. [Extract of RAF/S647 V 36 06-NOV1941 Historic England Archive (RAF Photography)]

The Second World War defences overlie the remains of a 19th-century rifle range which extended across the eastern half of this low-lying area. The slight earthwork remains of the embanked firing points were spaced at regular intervals leading up to the substantial earthwork of the butts at the western end just above the beach. The absence of anti-landing obstacles here suggests the firing points may have acted as an existing substitute anti-landing obstructions in the eastern half of the low ground.

Further east on Thanet, RAF photographs taken in November 1941 recorded a line of three anti-landing obstacles cut into the broad open grassed area above Palm Bay at Cliftonville, immediately to the west of the site of the Chain Home Low Stations on Foreness Point (see below). The obstacles were of a simpler construction than at Plumpudding Island, comprising a single long ditch and linear bank of upcast material along one side of the ditch, all set at 45 degrees to the cliff edge. Faint traces of these ditches are still visible as cropmarks in the grass (Google Earth 2024). Further obstacles in the form of lengths of barbed wire entanglement set perpendicular to the cliff were added to the western half of the open ground, with gun emplacements along the north side of Palm Bay Avenue the road running west to east along the southern side of the open area. During the war a large part of the now built-up land around Foreness Point was still cultivated farmland. This area was similarly fortified against aerial invasion, with a network of ditched and banked anti-landing obstacles inland of Palm Bay. A larger block of

trenches was also established south of the radar station on Foreness Point, intersecting with the extensive network of anti-landing posts.

As illustrated at Plumpudding Island, as the war progressed perceived threats changed, and precautions were modified in the light of experience and acquired intelligence. Aerial photographs taken during and just after the Second World War chart some of these changes, but typically there are only a limited number of photographs taken in the first half of the war (1940 to 1942) and very few from the second half of the war. The majority of RAF photographs date from 1946 to 1948 which provide an extensive snapshot of the country in the years immediately after the war when the remaining defences are still visible, but many defensive structures such as the miles of barbed wire entanglements, road-blocks and mine fields were removed quickly after the war so that normal life could resume.

Defended localities and nodes

From 1940 onwards, having established the 'coastal crust' defences, attention shifted to provision of inland defence lines focused on anti-tank stop-lines and Defended Localities with the prime purpose to impede or delay the movement of any invading forces which had already broken through the coastal defences. The main inland barrier was the GHQ Stop-Line which ran from south-west England, through London and ultimately into Scotland and Wales. Wherever possible the stop-lines incorporated natural barriers such as rivers and dense woodland, as well as existing features such as canals, railway embankments and cuttings which were strengthened, and drainage ditches widened to the proportions of an anti-tank ditch. Concrete anti-tank blocks and barbed wire were placed to strengthen any weak points such as bridges and such nodes were also protected with pillboxes, gun emplacements and mine fields (Lowry 1996). These defences were to be manned by a combined force of Home Guard and regular soldiers tasked with delaying an advancing force until reinforcements arrived.

Defended Localities (DLs) or *anti-tank islands* also referred to as *keeps* or *hedgehogs* were established at locations known as nodal points. The focus of a Defended Locality could range in size from a rural cross-roads to a city but were all designed to provide a defended strong point with an all-round defence capability from which an attack could be mounted to the flanks and rear of any invading force which had broken through a stop-line, or in the case of Thanet, through the coastal defences (Lowry 1996, 79; Osborne 2004, 71).

War Office documents from between July and December 1940 for the sub-area within No.7 Sector of 43rd Division's Area of Defence (occupied by the 198th Infantry Brigade in

East Kent and Thanet) outline the predicted location and means of an enemy assault on the area. They discuss the establishment of a Grid System of defences comprising a number of 'fences' to act with the G.H.Q corps and Divisional Stop Lines. The Divisional stop line was to run from Dover to Canterbury and on to Whitstable. The Brigade 'Fence' in this part of Kent was formed by the River Stour from its mouth to the junction with the River Wantsum, then along the River Wantsum to the mouth at Cold Harbour Sluice. Within 198th Brigade's area, the sites for three nodal or strong defended localities were selected at Sandwich, Sarre and St Nicholas at Wade (TNA: PRO WO.166/1051/1).

The two nodal points on Thanet were constructed in close proximity to one another, centred on the adjacent villages of Sarre and St Nicholas at Wade at the north-western end of the island, overlooking the marshes of the Wantsum Channel controlling the bridges carrying the two crossing points between the Isle of Thanet and the rest of Kent.

St Nicholas at Wade

St Nicholas at Wade lies just over 1km to the north-east of Sarre, to the south of Thanet Way (A299), the new road completed just before the beginning of the Second World War. Both the village and the new St Nicholas roundabout at the meeting of the four major roads to the east were to be secured in the event of an invasion to prevent the movement of enemy forces from Thanet to the mainland and beyond. Aerial photographs taken by the Luftwaffe (GX/10370 0025 07 September 1940) show the entire village already surrounded with trenches and barbed wire. Gun emplacements and slit trenches are visible and roadblocks have been established on the roads into the village (Foot 2002).

There are two brief records referring to St Nicholas at Wade's defences in the War Diary of the Canadian 198th Infantry Brigade. One much-abbreviated entry from the 15 July 1940 diary includes notes on the redistribution of troops on Thanet and makes a rare mention of the nearby Defended Locality, '1 L.I..R reverted to command L.I.B. and left 198 Inf. Bde. area. A redistribution of troops was made.' In the Remarks column, '6 Border to St. Nicholas-at-Wade, holding positions occupied by L.I.R. & coast from excl Reculver – excl Epple Bay. 7 Border to Updown House, holding coast Epple Bay' (TNA: PRO WO.166/1051/1). A second entry on 9 October 1940 notes the 'Bty HQ 'A' TP 227 Fd Bty. moved from St Nicholas at Wade to Birchington 'A' Tp. to fulfil a mobile role in Brigade Defence Scheme' (TNA: PRO.WO.166/1051/1).



Figure 113: Extract of RAF vertical photograph showing part of the south-eastern earthen trench defences of the Defended Locality at St Nicholas at Wade. [RAF/HLA/383 RS 957-959 28-DEC-1941. Historic England Archive (RAF Photography)]

A few low-level aerial photographs were taken by the RAF of parts of the St Nicholas at Wade defences in December 1941, showing some of the fortifications around the village in great detail (Fig. 113). The main complex of trenches visible at the right-hand side of the photograph in Figure 113 is a complex polygonal trench system incorporating gun positions with the grooves for gun sights clearly visible cut into the parapet of the pentagonal ditch with a long sap trench extending into the field to the south. By 1944, aerial photographs indicate the trenches around the village had all been infilled, appearing as a smudged white mark of backfilled chalk fill. The slight outline of the ditches and gun position to the east are just visible. The white dot of a pillbox located at the centre of the St Nicholas Roundabout is clearly visible (Fig. 114).

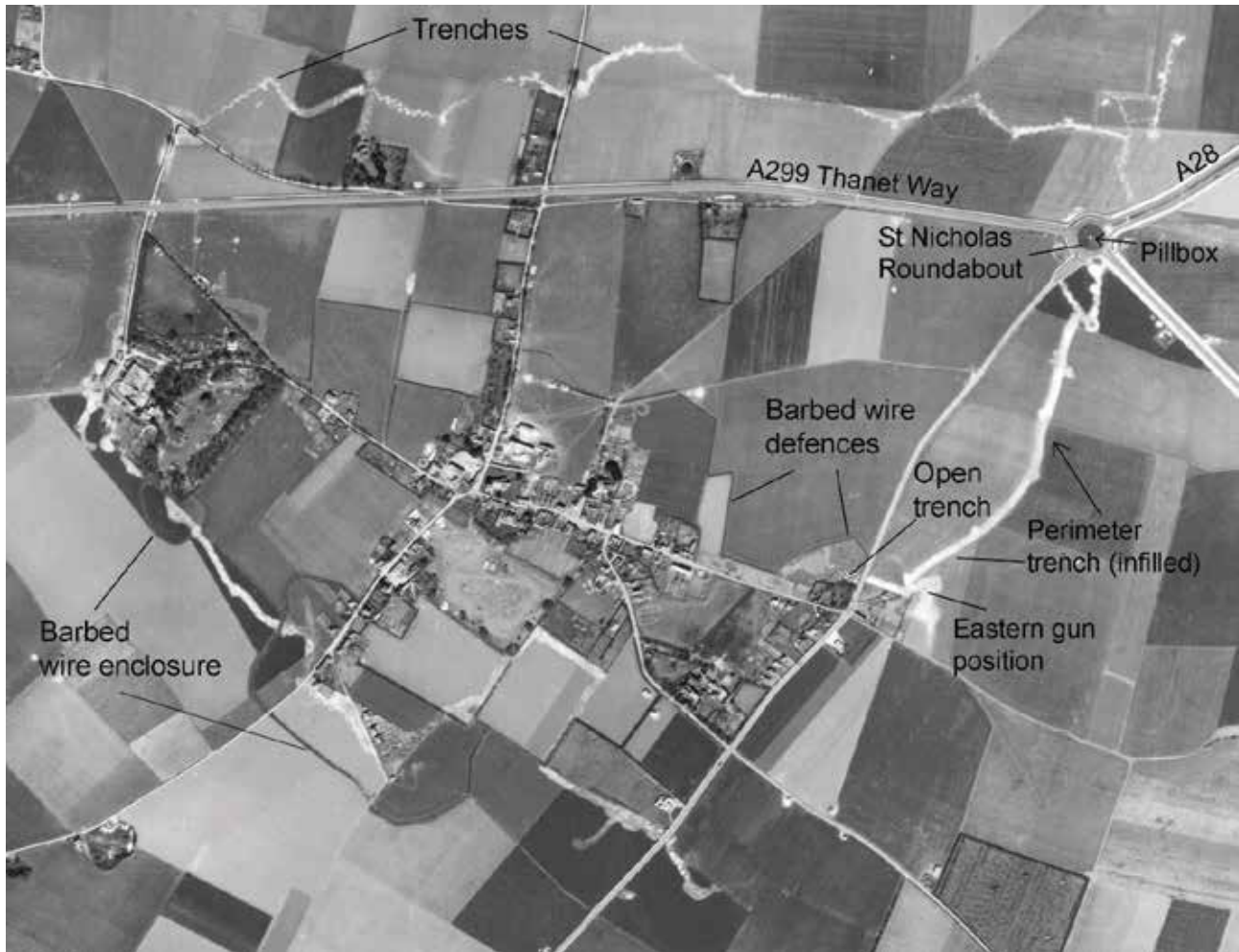


Figure 114: Extract of USAF aerial photograph taken on 20-APR-1944 showing the village of St Nicholas at Wade surrounded by the remains of the encircling trench system (infilled by this time). [US/7PH/GP/LOC295 V 5005 20-APR-1944 Historic England Archive (USAAF Photography)]

Beyond the encircling defences around St Nicholas at Wade, the cropmarks of a long linear zig-zag trench system have been traced from the north-east edge of the village heading east-south-east for over 2.3km, terminating to the north-east of the village of Monkton. It is not clear when the trench was dug, but parts of the south-eastern section between the A299 (east of the Monkton Roundabout) and close to Waterhall Farm, passing north of Millers Lane Chalk Pit, are faintly visible as a pale chalky line on Luftwaffe reconnaissance aerial photographs taken in on 23 September 1940. By this date it was possibly already infilled and out of use. Part of the trench was mapped from cropmarks seen on US/7PH/GP/LOC295 V 5007 20-APR-1944, suggesting that these trenches went out of use quite quickly. As seen elsewhere on Thanet, these trenches are of a crenelated form that is reminiscent of First World War trenches, but this style of trenching was still in use for a brief time at the very start of the Second World War so it is likely these trenches

were dug as part of the early response to threat of invasion in 1939 to 1940. The north-west end of these trenches presumably articulated with the St Nicholas at Wade defended locality (Kent HER: MKE123871). It is not clear from the available aerial evidence where the south-eastern end terminated. Possibly it reached Monkton Street and was intended as a communications trench between St Nicholas-at-Wade and Monkton and Minster. It is also possible that the system was never completed before the decision was made to close it.

Running parallel to the south of that trench are the traces of an apparently similarly short-lived feature in the form of a faint linear earthen bank detected extending east-south-east from the south-western side of the St Nicholas at Wade defences. This feature could be traced for about 870m crossing the Canterbury Road south of Little Orchard before sweeping around to the south of an orchard (now removed). A small emplacement of trenches and a single pillbox could be seen on the southern edge of the orchard, with a second cluster of trenches located in its south-eastern corner and a third small entrenched position on the north-eastern corner. On the southern side of this linear bank the remains of a number of embanked gun emplacements and weapons pits were also noted (RAF/HLA/383 RS 956 28-DEC-1941).

Sarre

The village of Sarre is located at the junction of the A253 road to Ramsgate and the A28 Canterbury to Margate road and Sarre Bridge over the Wantsum River. Sarre is listed in War Office Documents as a Category 'A' Nodal Point of Eastern Command (TNA: PRO WO 199/544), within No.7 Sector of 43 Division's Area of Defence Scheme for East Kent (TNA: PRO WO 166/508) (Kent HER: MKE123800). Responsibility for Sector 7 was given to 1st (London) Infantry Brigade of 56 Division during the critical period when invasion was believed to be imminent between June and September 1940. In July to August 1940 the village of Sarre was 'prepared for all-round defence' by B Company of 1st Canadian Pioneer Battalion from the Canadian VII Corps. Their Battalion War Diary for 14 July 1940 records 'Major Walsh, Canadian Pioneers, made a recce. of Sarre in order to put it into a state of defence' (TNA: PRO WO.166/1051/1). They were replaced by the 128th Infantry Brigade in late 1940, then by the 131st Infantry Brigade in 1941 (TNA: PRO WO 166/978, 166/983 and 166/1039–40).

The bridge into Sarre village and the railway bridge to the south-east were all prepared with demolition explosives in the form of pipe mines in advance of any enemy offensive (Kent HER: TR 26 SE 107, TR 26 SE 105). Road blocks were set up into and out of the village and on the Island Road causeway across the Wantsum Channel (Kent HER: 26 NE 305, TR 26 NE 1151, TR 26 SE 207). Buildings within the village were fortified (for

example, Kent HER: TR 26 NE 1122) and Canadian pipe mines were laid (TNA: PRO WO 179/14 & 468). Sarre Court at the centre of the village was requisitioned as HQ for the Sector 7 Infantry Brigade whilst the Brigade's Battle HQ was sunk in tunnels in a nearby disused chalk quarry off the A28 (Kent HER: TR 26 NE 1138) (TNA: PRO WO 166/978, 166/983 and 166/1039–40). The only hint of activity within the disused quarry visible on aerial photographs taken in 1944 is four dispersed Nissen huts at the southern end and evidence of vehicle tracks leading to a bare chalky area in the north-eastern corner, possibly the site of the Battle HQ excavations (Fig. 115). The battle HQ is recorded as a series of underground tunnels and rooms at a depth of 50ft (about 15m) accessed via three separate stairways dug by miners of the Kent Coalfields and Sappers from the 553rd Field Company Royal Engineers (Stilwell, 2016, 21).

The Kings Head Inn at the heart of the village was designated as the Keep for the fortified node – the last defended position if the outer village defences were breached. Other houses and businesses were strengthened and fortified with gun emplacements, fitted out with concrete reinforced internal walls and gun embrasures (one inbuilt pillbox is still intact within a house). The village was furnished with variety of anti-tank incendiary devices, including open-ended flame fougasse traps at roadsides and a barrel of petroleum and phosphorous bombs suspended over the road (Kent HER: MKE123800) (Stilwell, 17–18).

Neither the war diaries nor aerial photographs taken by the RAF in the early 1940s indicate the presence of any earthen field works or trenches around the village, but extensive barbed wire entanglements around Sarre bridge and on the marshes to the south-west of the village are visible on these aerial photographs and were mapped. Aerial photographs taken in April 1944 show the northern boundary of the village visible as a thick dark line which could be broad lines of barbed wire entanglements. An inner barbed wire entanglement branches off this inwards, curving around to the eastern side of the quarry housing the Battle HQ. A drainage channel running parallel to the River Wantsum between the village and the bridge appears to have been widened and upcast material embanked on either side, probably to act as an anti-tank trench. There is evidence in 1944 of vehicle activity of some sort, likely to be military, within the former Perkins Chalk Pit to the east of the village (Fig. 115).

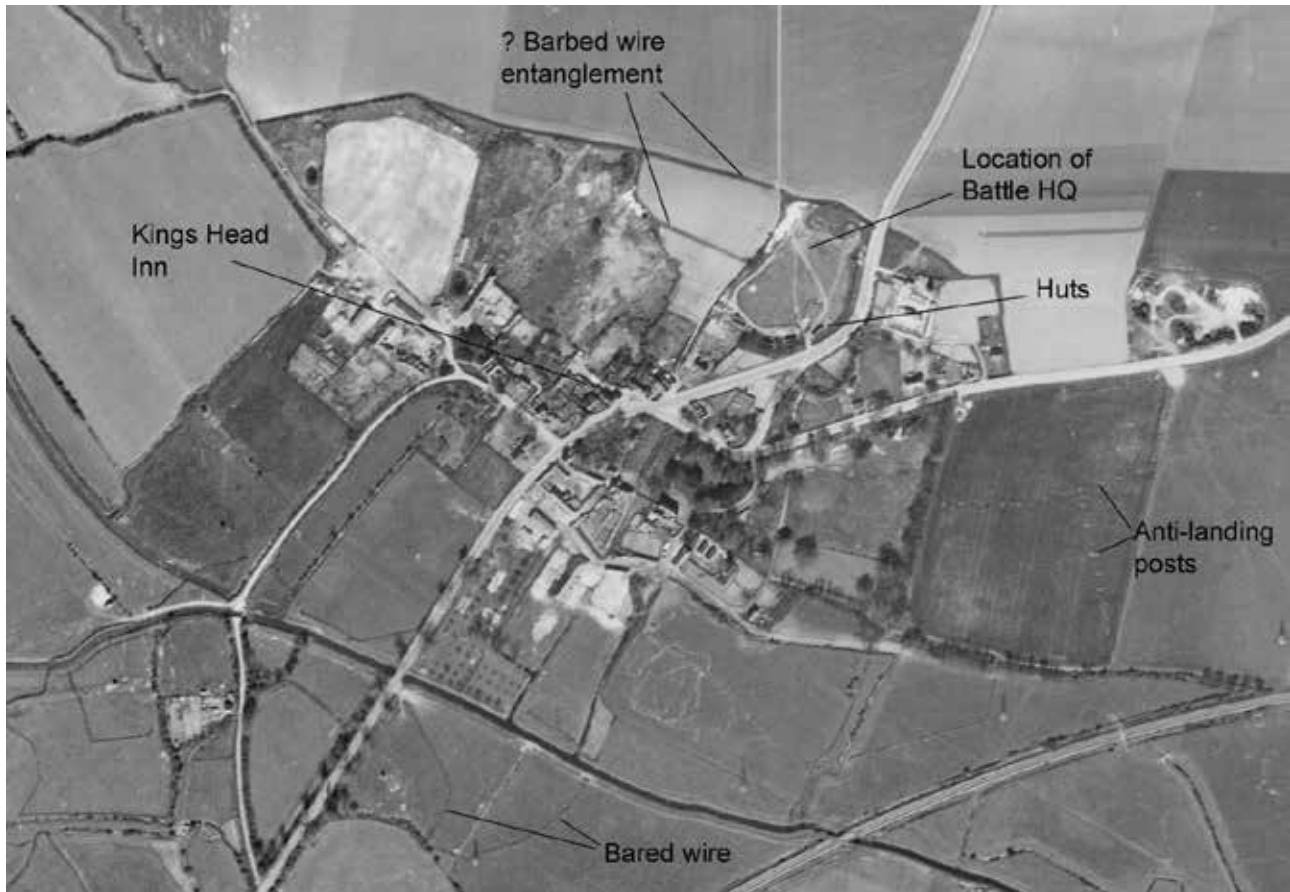


Figure 115: Aerial view of the scant traces of the defences of Sarre defended locality guarding Sarre Bridge over the Wantsum River. [Extract of US/7PH/GP/LOC295 V 5005 20-APR-1944 Historic England Archive (USAAF Photography)]

It would appear that unlike the defences at neighbouring St Nicholas at Wade, which were clearly visible on aerial photographs, every effort was made to conceal those at Sarre, and there is an account from residents of the village that barbed wire was concealed in the hedgerows (Stilwell 2016, 15). These plans appear to have been a success, the German air photo interpreters failing to record any activity around Sarre from Luftwaffe reconnaissance photographs, focusing instead on those at St Nicholas at Wade. Perhaps the purpose of this was indeed a ploy to draw attention away from Sarre giving the impression it would be an easy target for an invading force.

A further defended node was also established at Plucks Gutter to the south-east of Sarre on the opposite side of the Wantsum Channel, where the road from Gore Street near Monkton crosses the marshes to the bridge over the Great Stour (just east of the confluence with the Little Stour). USAF aerial photographs taken in April 1944 show road blocks with anti-tank cubes and gun emplacements and a double line of barbed wire entanglements encircling the bridge fortified with pillboxes. Drainage ditches to the west

and east of the bridge, south of the river also appear to have been widened to act as an anti-tank obstacle (Fig. 116). These features were recorded from aerial photographs as part of the SE RCZAS survey (Hamel and Lambert 2011).



Figure 116: Defended locality at Plucks Gutter river crossing. (P marks the location of pill boxes. [Extract of US/7PH/GP/LOC295 V 5005 20-APR-1944 Historic England Archive (USAAF Photography)])

Hengrove

The site of an additional possible Defended Locality (not noted in Foot 2002) is located in the centre of the Isle of Thanet on the site of the former Hengrove or Margate (Thanet) Golf Course (Fig. 117). The defended area was situated on a high point overlooking a dry valley to the north which heads north-east towards Hartsdown Park, Margate. The site is first recorded on aerial photographs taken on 23 September 1940 by a Luftwaffe survey of the British Isles recording most of a trench system already cut, appearing as a single sub-rectangular enclosure linked to a north-eastern triangular area by the trench running along the south-eastern side. The defended area was recognised as such and incorporated into annotated Luftwaffe wartime reconnaissance maps.

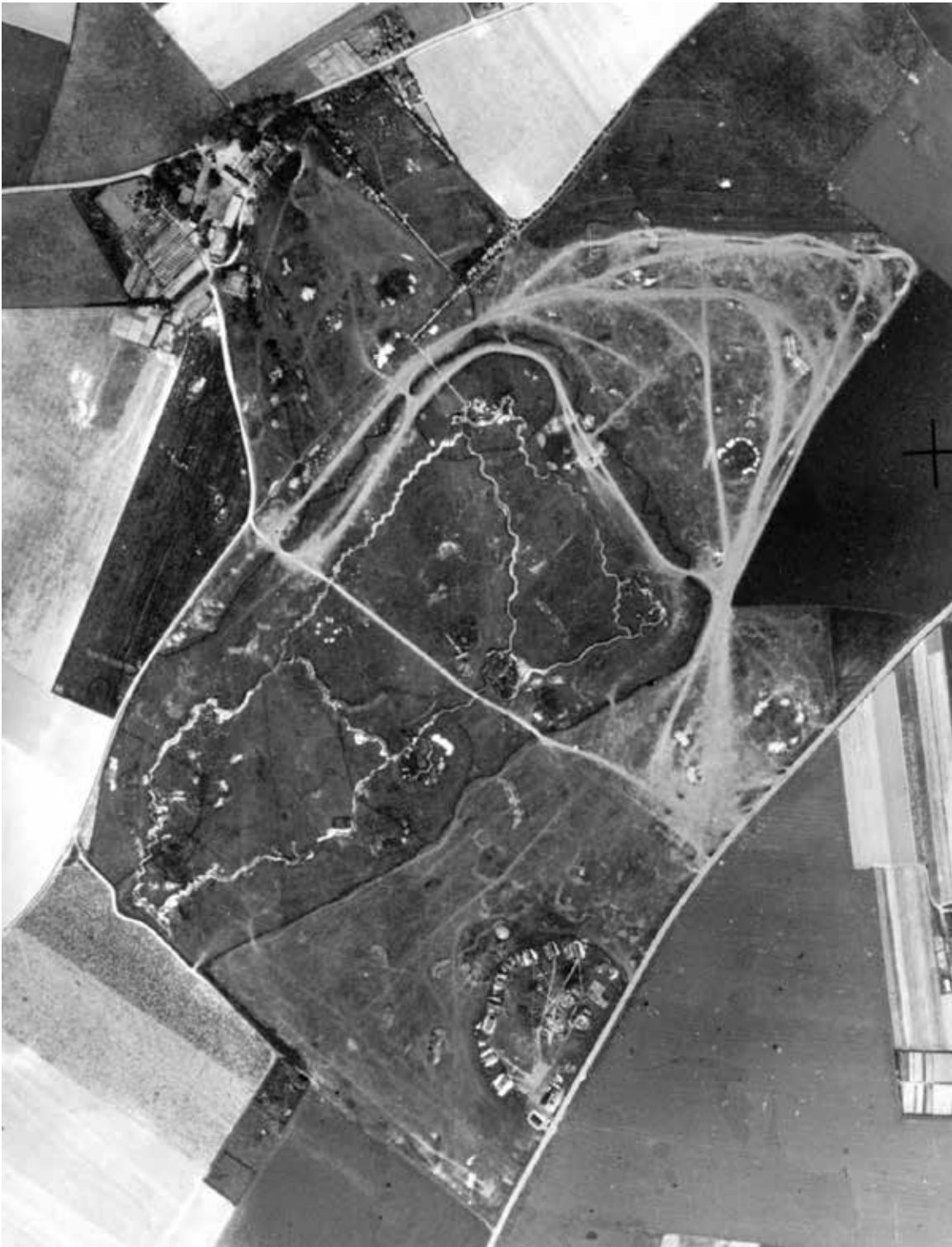


Figure 117: Traces of the possible Second World War defended location on the site of the former Hengrove Golf Course with adjacent gun emplacement within an arc of huts with lateral blast walls off Manston Road. [Extract of RAF/HLA/564 V 6017 01-JUN-1942. Historic England Archive (RAF Photography)]

When the site was photographed by the RAF in June 1942 (RAF/HLA/564 V 6017 01-JUN-1942) the complex of trenches appeared to no longer be in use. It is apparent that in the intervening period since September 1940 additional trenches had been added to the middle region on the northern side creating a complex of trenches forming an elongated oval enclosed area aligned north-east to south-west and measuring 580m by 190m. This is sub-divided by trenches into the two original and the third additional areas. Numerous subsidiary trench systems with saps and gun emplacements can be seen throughout, branching off the main trenches, some of which are grassed over and possibly already infilled by this stage. Gun pits and small slit trenches are also scattered throughout the site (Fig. 117).

The entire trenched area is surrounded by an outer barbed wire enclosure measuring (665m by 320m), with internal sub-enclosures around three of the ditched strong-points which enclose parts of the ditched system at the northern corner, the western end and mid-way along the south-eastern side. The barbed wire is not apparent on the photographs taken in 1940 and it is clear that by that time the trenches were not in use. The style of the trenches, like those dug on the north coast of Thanet, are reminiscent of trenches constructed during the First World War but used very early on in the Second World War until entrenchment guidelines were changed. It is evident from the golf club's records of fixtures that the golf course remained active throughout the First World War, so it is unlikely the trenches date from then (www.golfsmissinglinks.co.uk).

By the summer of 1942 the trenches had clearly been infilled in places and well-worn vehicle tracks seen to criss-cross the entire site, suggesting it may have been used for training purposes. The remains of the golf greens and bunkers can be seen largely untouched but overgrown amongst the military trenches. To the south of the site, adjacent to the road, is an arc of accommodation huts within blast walls and at least two embanked gun emplacements of a Heavy Anti-Aircraft (HAA) battery – Chalk Hole Farm (Manston F-7 HAA) – within the arc (Fig. 117). A second phase of HAA with four guns was located just to the west of the depot at some point after June 1942 when the site was photographed by the RAF.

It is possible that the Hengrove site was developed as an early Defended Locality at the heart of the island, abandoned by 1942 and subsequently used for training purposes. There is also a possibility that the site was originally established for training purposes, but existing documentation on the preparation of wartime defences for East Kent and Thanet indicates the perceived threat of imminent invasion drove the urgency to establish working defences early on in the war. This suggests there was not time, resources or manpower to

focus on an area of practice trenching (TNA: PRO WO 166/978, 166/983 and 166/1039–40).

The Golf Club clubhouse at Hengrove (originally Hengrove Farmhouse) located to the north of site was requisitioned during the war and is mentioned in the war diaries of the Canadian 98th Infantry Brigade for 18 July 1940, with the entry 'Reserve Coy [Company] at Hengrove (7886)' implying it was being used to house troops or serve as a company Head Quarters. Hengrove is also marked on a map of defence sites within this diary (TNA: PRO WO.166/1051/1).

Hengrove Golf Club opened in 1896 on 200 acres of well-drained chalk farmland to the south of the farmhouse which became the clubhouse. According to the history of the golf club, it was operational throughout the First World War, but was requisitioned in 1939 'for troop training and food production' and never re-opened following the war (www.golfsmissinglinks.co.uk). Currently no documentary records for the exact nature of the military activity undertaken on the site of the golf course have been identified.



Figure 118: Cropmarks of trenches and other features on the site of the former Hengrove Golf Club. [APGB Imagery 21-APR-2007 © Bluesky International Limited and Getmapping Limited 1999-2023]

Following the Second World War the site was returned to arable farmland and has been ploughed ever since. No surface trace of the trenches or the earlier golf course can be seen as earthworks, but cropmarks of these and earlier features including traces of prehistoric round barrows, a fragment of ditched field system and enclosures can clearly be seen on aerial photographs amongst the complex cropmark remains of the military features (Fig. 118).

Brooksend Farm

A small, defended area of Second World War trenches has also been recorded on rising ground on the north-eastern side of Brooksend Stream. These trenches were first visible on Luftwaffe reconnaissance aerial photographs taken on 7 October 1940 (GX/10396 0052) where they appear as white, presumably freshly excavated, trenches and were photographed again in January of 1941 by the RAF where they are dusted in snow (Fig. 119). The main trench complex is made up of two linked roughly triangular cells with spurs of trench, or saps, extending northwards up the slope from both. The trenches would have offered clear views across the Brooksend Stream to the south and north-west down the ridge of high ground which slopes down to the bay to the north-west at Plumpudding Island. A single zig-zag trench extended southwards from the main trench complex to the northern bank of the Brooksend Stream where it turned west, running along the bank of the stream for about 270m, providing cover for troops to move freely along the bank of the stream. The fields between these trenches and the railway line to the north-west were also obstructed with a grid of anti-landing posts. The disturbance caused by the construction of these posts is visible in the crops on RAF aerial photographs taken in 1941 (RAF/26J/BR194 VC 37 10-JAN-1941).

All of these trenches were infilled and ploughed over after the war but appear regularly as clear cropmarks amongst the cropmarks of other archaeological features including Bronze Age round barrows, an Iron Age/Roman trackway and settlement, numerous pits of uncertain date, an early medieval inhumation cemetery and a medieval windmill mound (Fig. 120). The features are spread across a wide area of unhedged fields which have historically been farmed under different regimes and crops. As a consequence, only parts of the features appear as cropmarks at different times of the growing season (Fig. 121).

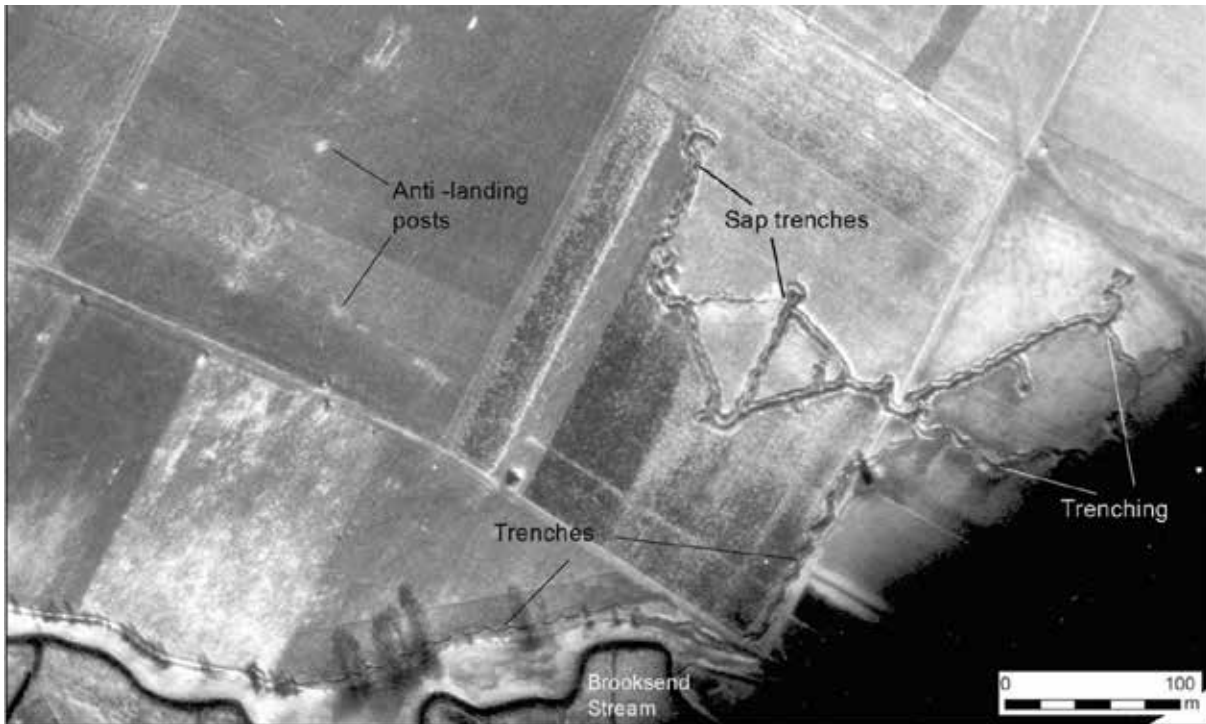


Figure 119: Extract of RAF aerial photograph taken in 1941 showing trenching and the position of anti-landing posts to the north of Brooksend Stream. [RAF/26J/BR194 VC 36 10-JAN-1941. Historic England (RAF Photography)]



Figure 120: Traces of a Second World War trenches, Bronze Age round barrows and an early medieval cemetery visible as cropmarks. [EARTH.GOOGLE.COM XX-XXX-2013 ACCESSED 31-APR-2025]

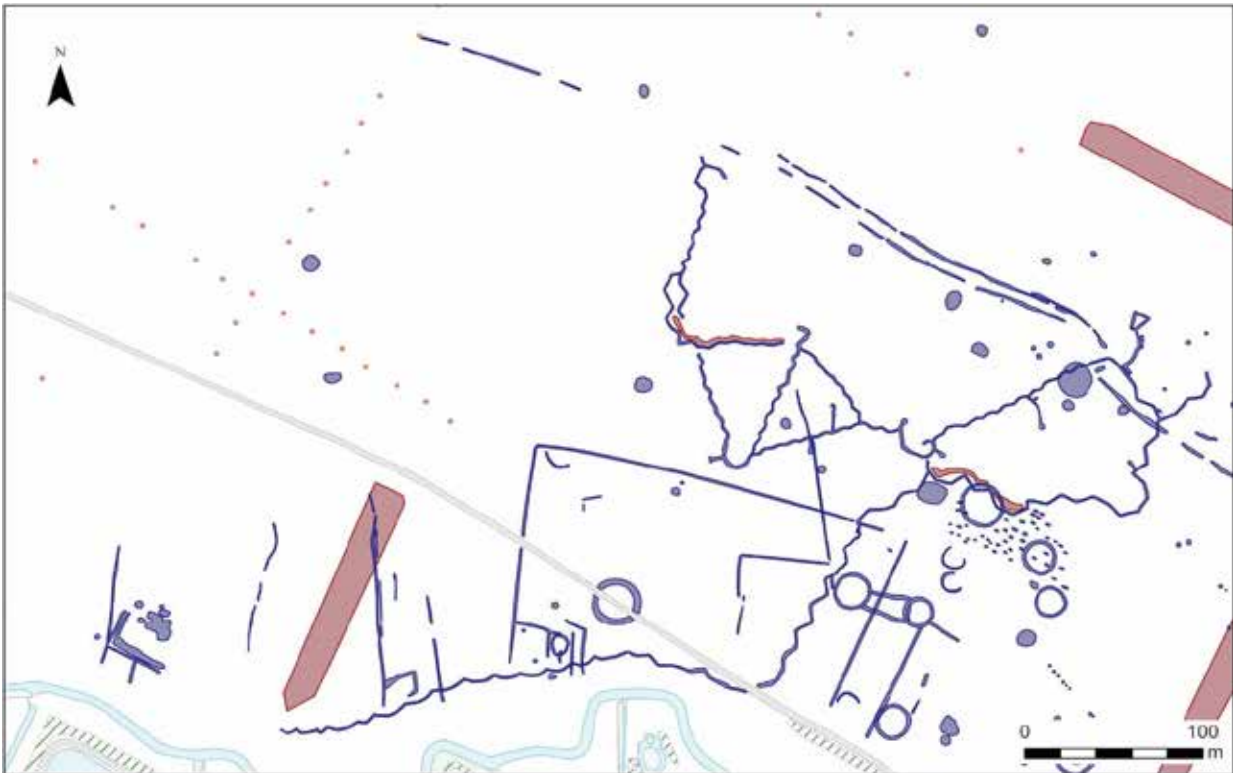


Figure 121: Extract of mapping from aerial photographs showing trenching and features from multiple periods visible as cropmarks, structures and banks, to the north of Brooksend Stream. [Archaeological mapping © Historic England. Base map © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Active defences

The extensive defences constructed around the coast were a combination of obstructions designed to impede the progress of an advancing invasion force, supported by active defences ranging from individual gun emplacements to large coastal batteries.

Coastal batteries

The shores of the Isle of Thanet were vulnerable to attack from the sea. Coastal gun batteries were constructed along the coast to provide Naval artillery cover. In May 1940 a national emergency battery programme was rapidly launched, repurposing 150 six-inch guns from First World War cruisers for coastal defence. They were placed around the coast from Shetland to Sussex, with a further similar number added in 1941 to extend cover to the Devon coast. Each emergency battery was typically made up of two solid, roofed concrete gunhouses with each gun sunk into a pit attached to iron holdfasts, fronted by a concrete apron with a crew shelter and ammunition lockers (Osborne 2004, 24–5). To the rear of the gun positions were accommodation huts, the generator, guardroom, office,

workshop and other support facilities, all enclosed in a barbed wire enclosure defended by gun emplacements. Targets were illuminated by a Coastal Artillery Searchlight.

The locations of at least six probable coastal batteries have been recorded on aerial photographs around the coast of Thanet through the combined surveys carried out by the SE RCZAS, the Ramsgate HAZ and the Thanet project. The largest is the Joss Bay Battery on North Foreland comprising two six-inch guns (Kent HER: TR 46 NW 74), though RAF aerial photographs from 1941 show a row of four rectangular gunhouses facing east and north-east with numerous structures and buildings located within a complex barbed wire enclosure. To the south of the coastal battery there is a tall tower structure, possibly a Coastal Artillery Searchlight. The site was photographed by the RAF in 1946 in the process of being dismantled.

Some 500m to the south, a second coastal battery was located at Hope Point. It comprised two gun positions on the cliff edge facing east (Kent HER: MWX43035). Further south still, a two-gun emergency battery was recorded on RAF aerial photographs taken in 1942, south of Broadstairs Harbour on the cliff at Dumpton Point. The gunhouses were initially concealed with earthen mounds which had been removed when photographed in 1947 prior to the demolition of the battery (Wessex Archaeology 2009–10; Kent HER: MWX43064).

Most of these sites were dismantled promptly at the end of the war, but two concrete four-inch gun emplacements at Little Cliffsend Farm Coastal Battery are rare survivors. They comprised two concrete gunhouses set back from the cliff facing southwards into Pegwell Bay. They are clearly visible on 1951 RAF photographs (Small and Barber 2019, 49, Fig. 42) (Fig. 122), where they remained in use as a stable and sun room in the grounds of the farm into the late 20th century (HERR 1423881). Parts of the structures are still marked on current Ordnance Survey mapping and are presumed to survive in some form.

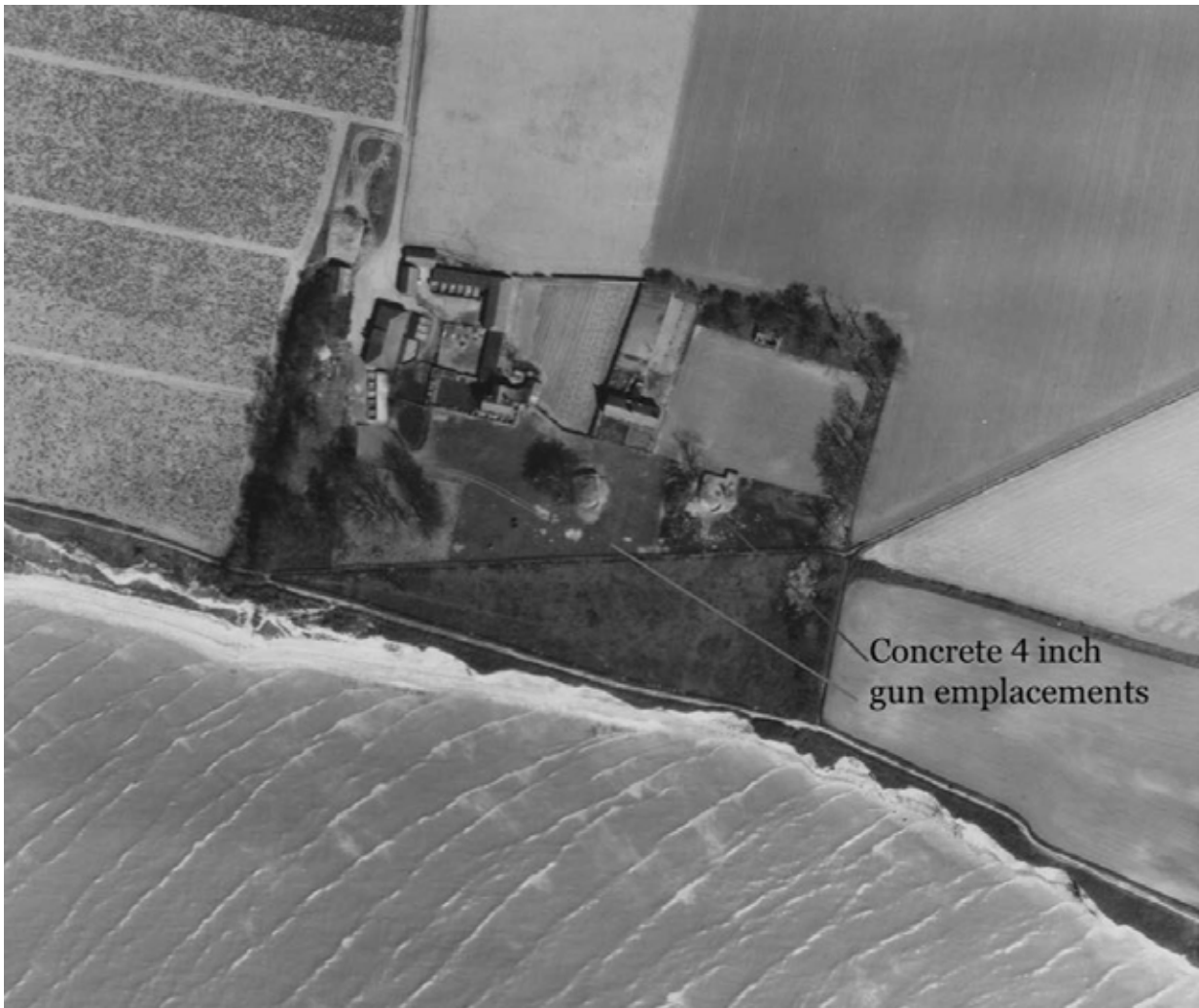


Figure 122: Second World War coastal battery with two concrete reinforced gun emplacements that had previously held four-inch guns at Little Cliffsend Farm, west of Ramsgate and overlooking Pegwell Bay. [RAF/58/646 VP3 5008 22-Apr-1951 Historic England Archive (RAF Photography)]

Heavy Anti-Aircraft Batteries

By early summer 1940 Britain came under large-scale attacks from the Luftwaffe, leading to the British retaliatory defensive campaign which came to be known as the Battle of Britain. As a result of the offensive, priority had shifted to the defence of airfields. The level of defence and range of weapons varied on the location and importance of the airfield. The most important sites were fighter airfields, particularly those located in Group 11 covering the south and south-east of the country. This included airfields in the designated 6 AA Division – Manston, Biggin Hill, North Weald, Hawkinge and Hornchurch – which were furnished with 40mm Bofors gun emplacements (Dobinson 2001, 198). By late June 1940 these frontline airfields had their defences enhanced with Heavy Anti-Aircraft weapons in preparation for engagement with bombing daylight bombing raids. At that time Manston

was the most strongly defended airfield in Britain, furnished with four Bofors guns, six Lewis guns and eight three-inch HAA weapons across three separate HAA batteries around the airfield (Dobinson 1996).

A total of nine HAA battery sites were established on Thanet, though not necessarily at the same time, falling within the three sector areas of Manston, Ramsgate/Richborough and Foreness. These were listed accordingly within three separate coding sequences (Dobinson 1996, 574). Unfortunately, no details of the dates or the types of guns installed at these sites are included with this information. They are listed as follows:

- Foreness F1 at the Recreation Ground, Cliftonville
- Foreness F2 at Kingsgate on the golf course
- Dumpton (Ramsgate/Richborough F3) adjacent to a football pitch
- Pegswell (Ramsgate/Richborough Pegwell Bay F4)
- Ozengell Grange (Manston F5)
- Cleve Court (Manston F6)
- Chalk Hole Farm (Manston F-7)
- Updown House (Ramsgate/Richborough F8)
- North Forleland FX located at Northdown, Margate

The three HAAs which formed the main defensive ring around the perimeter of Manston airfield were Cleve Court (Manston F6) located at the western end of the runway, Chalk Hole Farm (Manston F-7) at the north-eastern side of the airfield adjacent to the site of Hengrove Golf Club, and Ozengell Grange (Manston F5) (also listed within the Ramsgate/Richborough sequence) located at the eastern end of the runway (Dobinson 1996, 574).

At Chalk Hole Farm HAA there appears to have been two phases of development. When photographed in 1942 (RAF/HLA/564 V 6017 01-JUN-1942) (see Fig. 117) there was an arc of huts between earthen blast walls within which at least two embanked gun emplacements were visible.

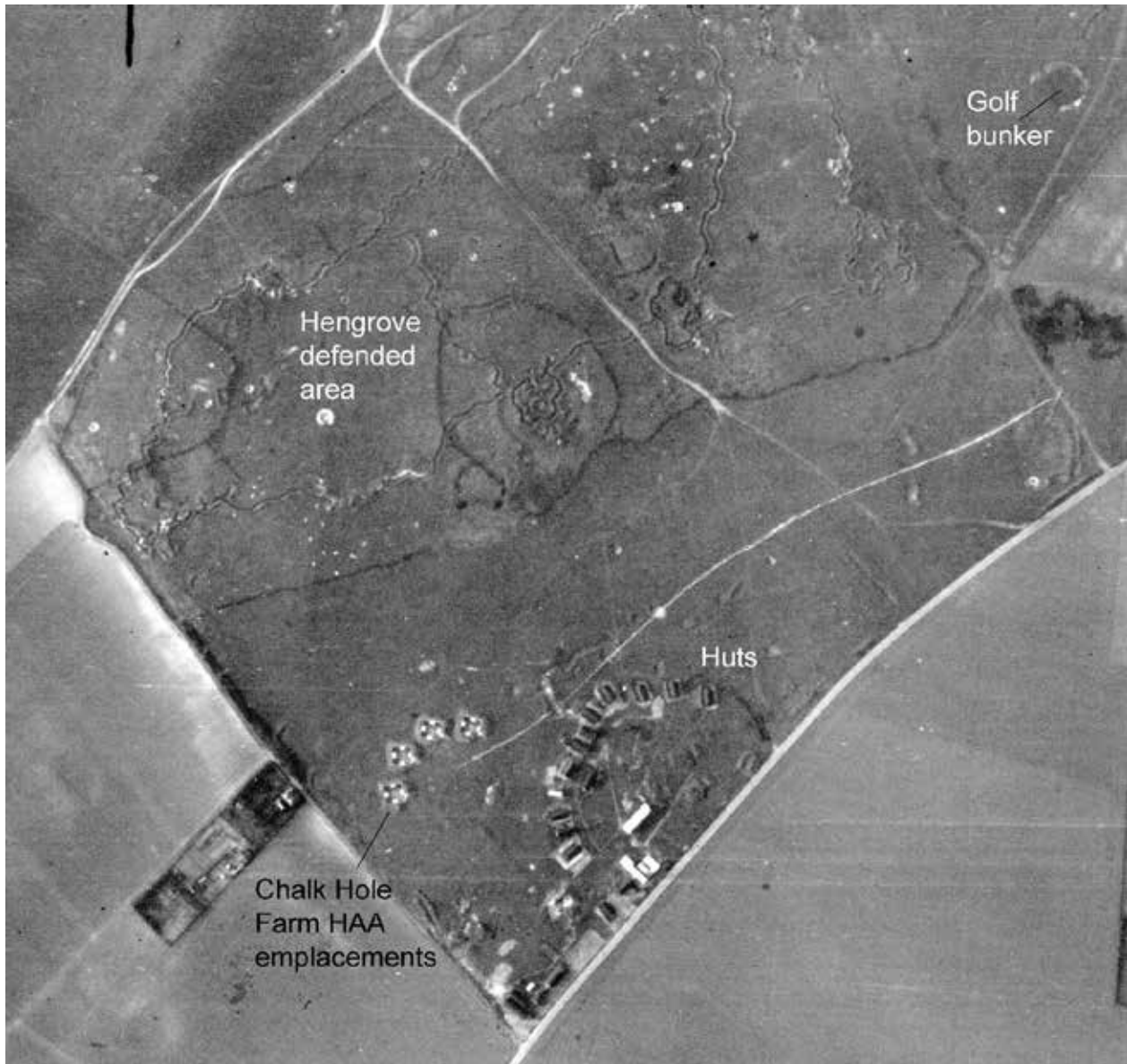


Figure 123: Chalk Hole Farm HAA and hutted accommodation, storage adjacent to the grassed-over trenches of the defended area on Hengrove Golf Course. [Extract of RAF/106G/UK/1378 FV 7079 04-APR-1946. Historic England Archive (RAF Photography)]

The battery was upgraded at some point after 1942 to a four-gun emplacement located to the west of the huts, replacing the earlier gun positions. Post-war RAF photographs taken in February 1946 show much of the battery (minus the guns) and the huts still in place (Fig. 123).

Cleve Court HAA was visible as structures and earthworks on RAF/HLA/564 V 6010 01-JUN-1942 enclosed by a barbed wire entanglement that also surrounded the buildings of Cleve Court (Kent HER: MKE125777), forming part of defences on the western flank of

RAF Manston. The battery included seven huts protected by blast walls and numerous other small buildings within the area enclosed by the barbed wire entanglement. There appears to have been at least six gun positions but the site was already being dismantled by the time of that photography and numerous spoil heaps are present in the central area of the battery. It was additionally served by two weapons pits and a long revetted slit trench (see Fig. 105). The site was demolished during the war to facilitate the building of new airfield services during the construction of RAF Manston's emergency runway in 1943 to 1944.



Figure 124: HAA batteries at Ozengell Grange and at Dumpton sports ground. [Extracts from RAF 106G/UK/1378 V 5069 04-APR-1946 and RAF/HLA/386 RS 912 02JAN-1942. Historic England Archive (RAF Photography)]

Ozengell Grange HAA was located at the eastern end of Manston runway on the eastern side of Haine Road. It comprised a battery and two rows of three huts with blast wall protection on the south-east and north-eastern sides, similar to those seen at Cleve Court HAA. The HAA gun emplacements and slit trenches lay between the huts and the road and a cluster of Nissen huts could be seen to the north. By 1950 the entire site had been dismantled and levelled (Fig. 124, left).

Dumpton HAA (Ramsgate/Richborough F3) lay on the east coast, north-east of Ramsgate, adjacent to a playing field/football pitch which may have remained in use through the war. When photographed in 1942 the site comprised four mobile guns located in the north-east corner between the railway and the road with tents for accommodation. Later photographs taken by the RAF in 1946 show the tents replaced by huts arranged around the perimeter

of the football pitch. Wear around the goal and the presence of goalposts suggests that the football pitch may have remained in use through the war (Fig. 124, right).

Pegswell HAA (Ramsgate/Richborough F4) was located immediately to the west of Ramsgate overlooking Pegwell Bay. The site comprised a group of four embanked gun emplacements with a central control post surrounded with a blast wall. A fifth smaller gun position was located to the south and a number of huts strung out along the side of the road to the east.

Updown House HAA (Ramsgate/Richborough F8) is listed as being located at TR 362 695 (Dobinson 1996, 579), but no trace of a battery has been identified at this location on aerial photographs. It may have been a mobile battery, not recorded due to the long interval between periods of aerial reconnaissance.



Figure 125: Foreness F1 and Foreness F2 Heavy Anti-Aircraft Batteries. [Extracts of RAF/106G/UK/1378 FV 7047 and RAF/106G/UK/1378 FV 7046 04-APR-1946 Historic England Archive (RAF Photography)]

In the north-eastern corner of Thanet, a seventh HAA battery, Foreness F1, was identified on RAF aerial photographs (RAF/106G/UK/1378 FV 7047 04-APR-1946) at the Recreation Ground, Cliftonville inland, south of the Chain Home Low radar stations at North Foreland (Fig. 125, left). The site of this HAA now lies beneath post-war housing west of Princess Margaret Avenue and Victor Avenue. The possible site of a Diver Battery was also noted to the south-east of Foreness F1 HAA, visible as a line of four parched squares at the edge of the field, possibly where the guns had stood before being moved to another site. Just over 1km to the east was the site of Foreness F2 HAA located at Kingsgate on the golf course. The site was noted by the Luftwaffe in 1940 and the remains of the site,

including parts of the gun emplacements and associated command building and huts, were recorded by the SE RCZAS from RAF aerial photographs taken in 1946 (Fig. 125, right).

Finally, North Foreland FX HAA was located at Northdown, Margate. This site was recorded as a cropmark of four mounds in a north-west to south-east alignment on Google Earth aerial photography taken in 1960 but now lying beneath housing off Friends Avenue. It is not clear when the battery was constructed, but it is recorded as active in April 1944 (Dobinson 1996, 427).

The site of a possible Z Battery has also identified from RAF aerial photographs taken in December 1941 appearing as an offset linear arrangement of paired mounds (RAF/HLA/380 STBD 915 15-DEC-1941). There are records of a Z-Battery located to the north of Manston airfield, but the exact location has not been identified. It is possible that these features relate to that record. The site is presumed destroyed and lies beneath housing on Hildersham Close, Broadstairs.

Civil defences

The Air Raid Precautions (ARP) Act of 1937 placed a statutory obligation on local government to provide shelter and anti-gas precautions (gas masks) to the civilian population. As a result, by September 1939 over 1,500,000 domestic air raid shelters – mostly Anderson shelters – were issued to households across the country with an income under £250 per annum. There followed a nationwide programme of communal shelter construction in March of 1940 to provide emergency refuge in streets and public spaces for those (including school children and workers) caught in daytime raids away from home. Surface shelters were constructed on the streets in town centres and areas of terraced housing. These were typically of brick and pre-cast concrete construction such as the Raid-Safe shelter. They shelters could hold up to 50 people but were widely considered less than ideal and became increasingly unpopular with the public though the war (Lowry 1996).

A number of large public shelters were constructed in the northern and eastern coastal towns of Thanet, with over 180 individual sites mapped as part of the Thanet project. They ranged in size depending on the location and varied in form from semi-sunken Stanton Shelters to large composite shelters. Many shelters were located around the extensive site of RAF Manston to accommodate service personnel. Outside the military sites, shelters were located in open spaces at regular intervals on road junctions, parks and recreation grounds in built-up areas. Large shelters are visible in the grounds of several schools and colleges which, along with large houses, were frequently taken over for military and civil

defence purposes after the closure of schools and evacuation of children from Kent early on in the war (Fig. 126).



Figure 126: Two large air raid shelters at Garlinge Primary School still extant in 1951. [Extract of RAF/58/618 V 5089 11-APR-1951. Historic England Archive (RAF Photography)]

One such site with a large semi-sunken shelter was seen at the Ursuline College at Westgate-on-Sea which was used as a billet for the Women's Auxiliary Air Force (Stilwell 2016, 7). A particularly large public shelter was noted on RAF aerial photographs taken in 1942 on a piece of vacant land at the junction of Westbrook Avenue and Bridge Road, Westbrook (Fig. 127). The shelter appears as a sickle-shaped earthen bank with three entrances on the concave northern side, probably a composite of three separate buried shelters. An Air Raid Precautions Observation Post was located at the eastern end and an emergency water supply tank (EWS) was seen positioned on the corner at the western end of the shelter when photographed in 1946. EWS tanks were recorded scattered throughout the built-up areas of Thanet. These tanks were usually open circular corrugated iron tanks filled in readiness to provide water to extinguish fires in the event of failure of the water supply following an air raid.



Figure 127: Large curved public air raid shelter with three separate entrances on open ground at Westbrook Avenue, Westbrook. [Extract of RAF/26J/BR194 VC 12 10-JAN-1941. Historic England Archive (RAF Photography)]

Slit trenches were also dug to provide emergency air raid shelters next to buildings and factories. One possible communal trench shelter was seen in open land at the back of houses between the Canterbury Road and St James Park Road, Westbrook visible on RAF aerial photographs taken in 1941 (RAF/26J/BR194 VC 11 10-JAN-1941). Similar provision was made in the gardens of some private properties. For example, the large houses of Northdown Hill and Montrose on Lower Northdown Road, Cliftonville, both had covered and uncovered air raid shelters. Their earthworks were mapped from RAF/HLA/380 PORT 645 15-DEC-1941. The two Northdown Hill shelters have since been levelled but part of Montrose's shelter survives as an earthwork. The Montrose shelter had been dug in 1939 by European refugees who had escaped to Britain from fascist persecution and who were temporarily lodged in the house prior to more permanent housing and occupation, for example joining the Czech Free Air Force (Katharine Whitaker, pers. comm. 2024) (Fig. 128).

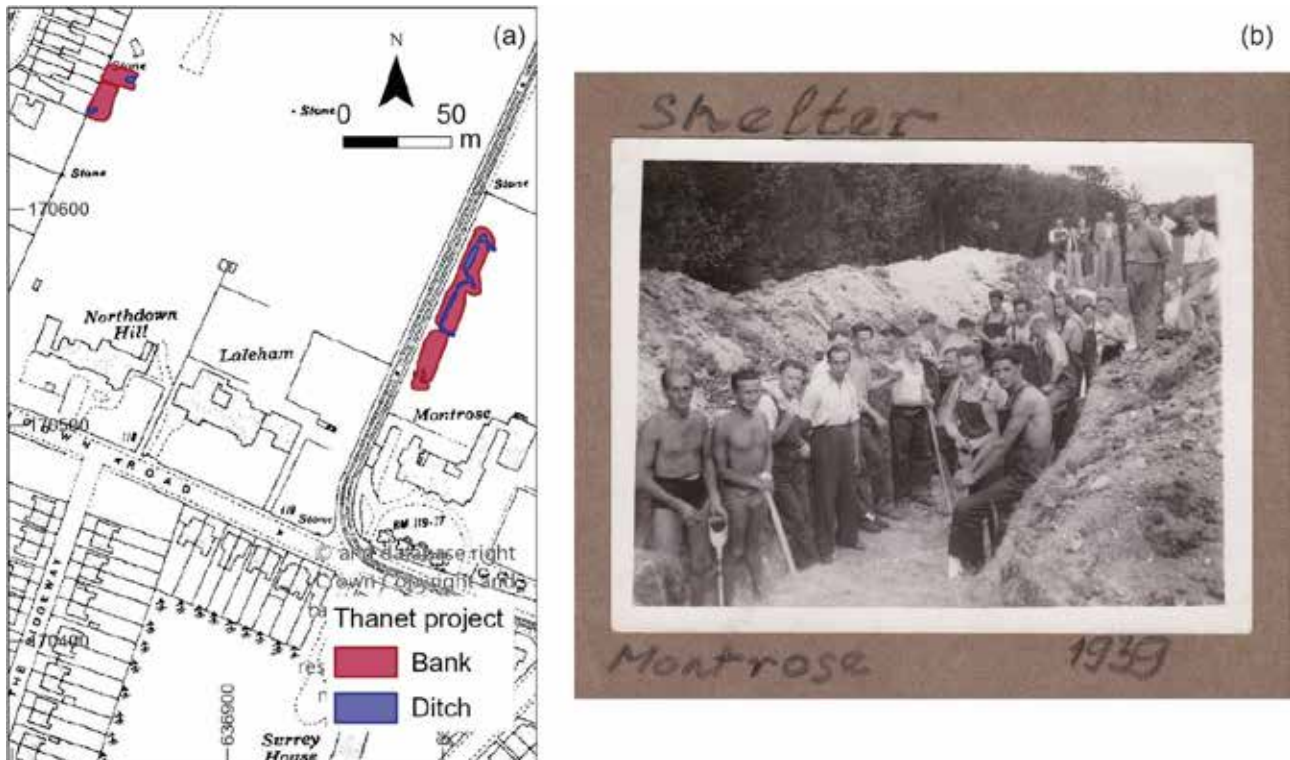


Figure 128: Second World War domestic air raid shelters. (a) Air raid shelters in the gardens of Northdown Hill and Montrose, Cliftonville. [Archaeological mapping © Historic England. Base map © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2025) Licence numbers 000394 and TP0024], (b) Refugees, billeted in Montrose, excavating the linear air raid shelter in the garden, 1939. [© Katharine Whitaker, reproduced with permission]

In contrast, very few shelters were recorded in Ramsgate town during the Ramsgate HAZ survey (Small and Barber 2019). Ramsgate, having suffered badly from air raids during the First World War, put in place plans initiated in the 1930s to build a tunnel network in the chalk beneath the town. The tunnel network followed the line of existing roads at an average depth of 70 feet. Chalk spoil was deposited at the foreshore between the West Pier and the Western Undercliff Promenade, with the intention of extending the promenade at some point in the future (Spain 2011). The network proved a success, providing protection to the population of Ramsgate as a succession of heavy air raids damaged and destroyed homes and premises above. After a single night of heavy bombing on 24 August 1940, 78 homes were destroyed, with over a thousand others damaged, leaving 31 dead, 58 injured and around 300 families homeless (Stockman 1986, 40–1). As a result, some people began to live in the tunnels on an almost permanent basis. To a certain extent, the existence of the tunnel network negated the need for the kind of large surface public air raid shelters seen in the streets and parks of other towns and cities across the country. The public entrance to the tunnels was via stairways, similar to London Underground entrances, located in parks, public areas and school grounds.

Chain Home Stations and Rotor

Foreness Point, north-east Thanet, was the location of Chain Home Low Stations CHL03A and CHL03B and a Rotor Station. Second World War Chain Home Low stations were established to enable monitoring of both shipping and aircraft movement. Rotor was developed from 1949 to enable long-range early warning in response to the growth of jet-powered flight (Lowry 1996, 130). Numerous features of the operation and local defence of these radar stations were mapped from a range of aerial sources, including evidence for the construction of the Rotor Station. Elements of these co-located sites have been confused in previous HER/Historic England Research Records and it is not clear from the available aerial evidence precisely how to divide some of the Second World War features between CHL03A and B, given the probability that things such as weapons pits and air raid shelters which were added over time formed the overall defence of the promontory.

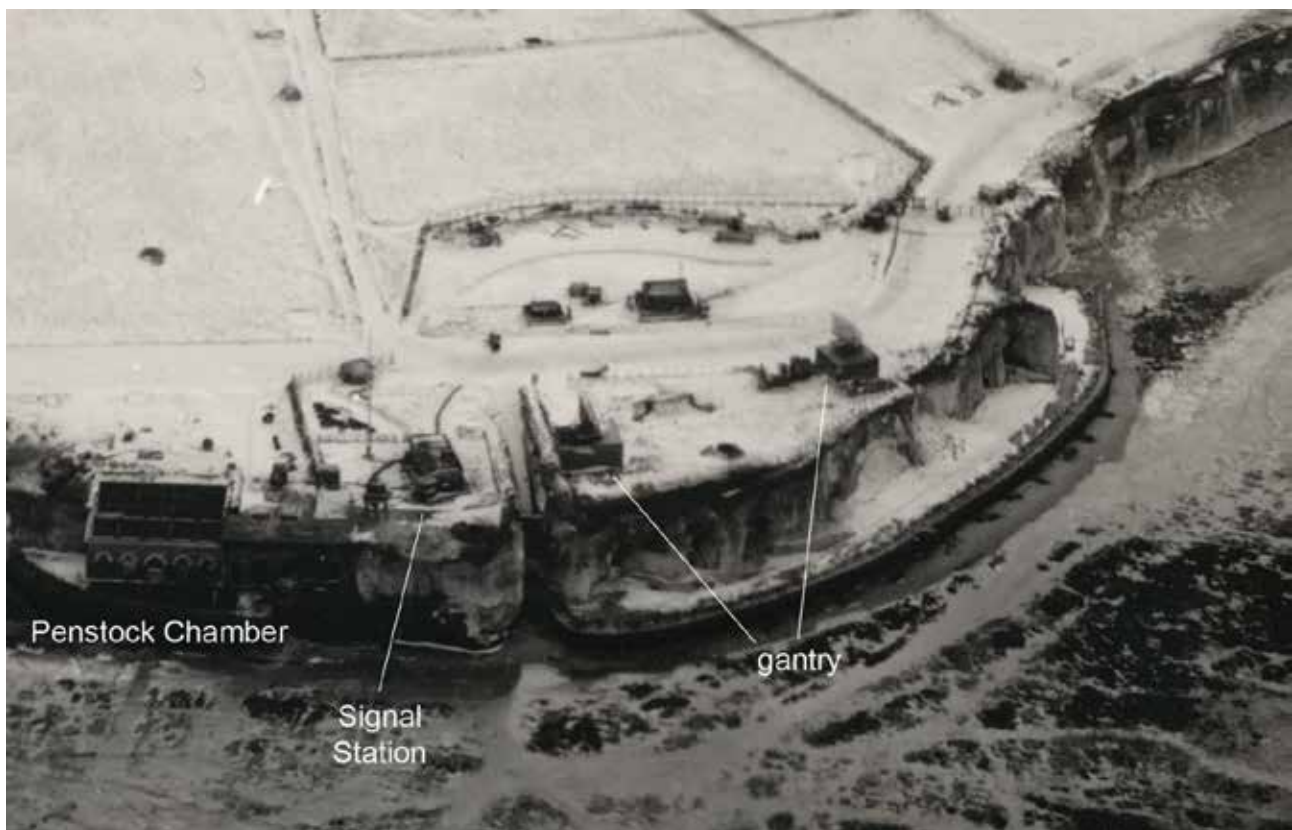


Figure 129: Foreness Point Chain Home Low Station CHL03A, looking south. [Extract from RAF/140/S751/H55 PO 3055 08-FEB-1942 Historic England Archive (RAF Photography)]

CHL03A was a Chain Home Low Station established at the northernmost edge of Foreness Point (Kent HER: MKE125937) (Fig. 129). It was a twin gantry site with both a transmitter and a receiver gantry each sited on the top of huts positioned very close to the cliff edge (Kent HER: MKE125938, MKE125939). A small guardhouse and small huts were

situated nearby to the south of the gantries (Kent HER: MKE125941, MKE125940). One pillbox close to the guardhouse was positioned on the north-west facing clifftop (Kent HER: MKE125942) with a second (Kent HER: MKE125943) closer to the promontory's pre-war Signal Station. Earthwork weapons pits and slit trenches were arranged both on open ground amongst the radar station's operational structures and at the cliff edge at the tip of Foreness Point (where there were also fougasse and other defensive features not visible in the aerial sources but previously recorded by the HER). An air raid shelter was made available between the two gantries (Kent HER: MKE125945).

Immediately to the south of CHL03A, the second Chain Home Low Station, CHL03B, was a single gantry site with a combined transmitter/receiver block (Kent HER: TR 37 SE 1358). Additional small huts and an array of slit trenches were situated around the transmitter/receiver block and the two Chain Home Low Stations were enclosed by an internal fence line and external barbed wire entanglements, with pillboxes positioned strategically to protect each flank (Fig. 130).



Figure 130: Foreness Point Chain Home Low Station CHL03B, looking south. [Extract from RAF/140/S751/H55 PO 3055 08-FEB-1942 Historic England Archive (RAF Photography)]

The site of CHL03B became more complex with the addition of numerous huts, weapons pits and slit trenches as the war progressed (for example, Kent HER: TR 37 SE 1352). Most of these features were mapped from RAF imagery immediately post-dating the war (RAF/106G/UK/1378 FV 7047 04-APR-1946) and it is not clear from the available aerial

evidence precisely when they were added. A sub-rectangular barbed wire entanglement added to the west side of the original defences formed part of that later development (Kent HER: MKE125958). By 1951, however, both Chain Home Low Stations had largely been cleared from Foreness Point and a Rotor Station was under construction (Kent HER: MKE125963).

The excavation and installation of the Rotor underground operations room is clear in RAF/58/742 V 5065 (16-JUL-1951) from which it was mapped (Kent HER: MKE125969). A line of small huts dating to the Second World War with a new, long, building on the west side of the cavity are also visible and one pillbox survived on the south of the site at that time (Fig. 131 a). Once constructed, the operations room was covered by a mound which was mapped from RAF/540/1139 V 0003 (28-MAR-1953) (Kent HER: MKE125973). A guardhouse was built over the operations room's access point (Kent HER: MKE125965) and other overground structures, including ventilation points and the radar mast, were mapped from the 1953 RAF photography (Fig. 131 b). The site was captured in RAF oblique photography at the same time (Fig. 132).

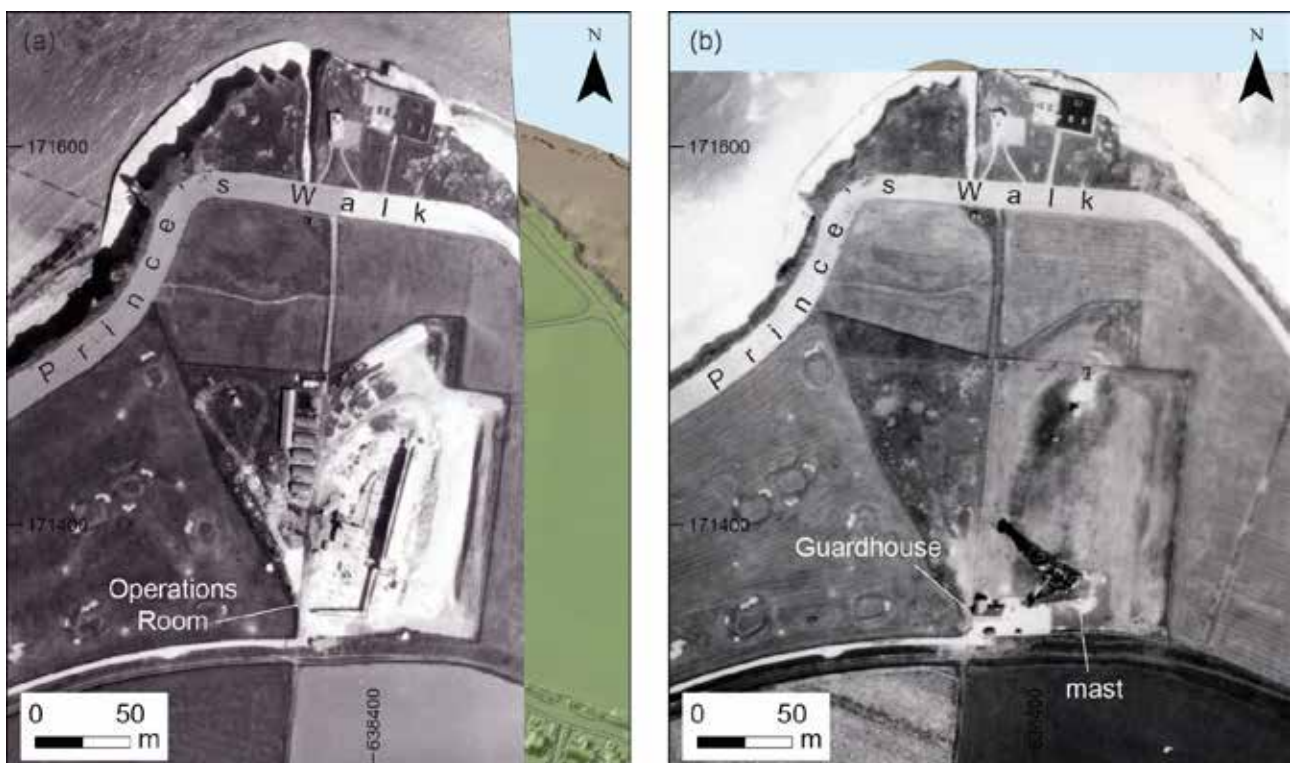


Figure 131: Foreness Rotor Station in 1951 and 1953. (a) Under construction. [RAF/58/742 V 5065 16-JUL-1951 Historic England Archive (RAF Photography)] (b) Operational. [RAF/540/1139 V 0003 28-MAR-1953 Historic England Archive (RAF Photography)]. Includes data © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900.



Figure 132: Foreness Rotor station from the east. [Extract from RAF/540/1140/SO N2 0026 29-MAY-1953 Historic England Archive (RAF Photography)]

The complexity of the Foreness Chain Home Low Stations and evidence for change throughout the Second World War may be explained by their somewhat experimental nature. A very early radar station was built at Foreness in late 1939, instrumental in the development of effective practices and procedures to ensure successful interception of hostile air assault using trials along the north Kent coast (CHL03A). Research into low-flying and night interception continued during 1940 as the site's original Coast Defence, U-boat radar equipment was complimented by the installation of a true Chain Home Low system. CHL03B was then established slightly further south of the original cliff top installations. Chain Home Extra Low equipment, including an Air Ministry Experimental Station Type 31 radar, was deployed later in the War (Dobinson 2010, 242–6, 266–7, 275, 280, 478). The only remaining visible evidence of the radar installations on Foreness Point is the slight earthwork over the underground Rotor operations room, seen as a low earthwork in Environment Agency 1m lidar (07-DEC-2017) and on the ground during a recent visit.

Conclusion

A complex range of factors contributes to the visibility, detection and interpretation from aerial sources of archaeological sites on the Isle of Thanet, but nonetheless there is an exceptional density of sites, and in particular cropmark sites, across the District.

Archaeological features range in date from possible Neolithic long barrows and mortuary enclosures to Cold War early-warning infrastructure. Thanet's geology and soils are generally conducive to cropmark formation. In consequence, it is important to understand the history of cultivation and crop regimes in specific places where there seem to be gaps in the archaeological record as mapped from aerial sources. Although earthworks survive less well overall in the cultivated landscape, they are a significant component of the archaeological record along with structures, visible in the older aerial sources. Earthwork sites are present on all soil types and cropmarks proliferate in most circumstances, suggesting that the Thanet project aerial mapping (combined with previous projects covering the District) is representative of Thanet's archaeology as a whole.

Landscape characterisation emphasises the Isle of Thanet's distinctiveness as an area set apart from the Kent mainland by the low-lying Wantsum Channel. It is a highly uniform area of unenclosed agricultural land enjoying wide views with settlement predominantly on the clifftops of the coastal strip. Those patterns are largely the result of medieval and post-medieval agricultural land management and Victorian and later residential development (see above, *The Isle of Thanet in its Setting*). Fewer Neolithic features have been mapped by the Thanet and Ramsgate HAZ projects than for other periods, as might be expected for archaeology likely to be visible in aerial sources. Features from the Bronze Age onwards, however, are prolific across the District; their distribution relates to landscape character in as much as fewer sites were observed in the alluvial Wantsum Channel and many more on the cultivated higher ground.

The Thanet project has mapped the cropmarks of possible Early Neolithic funerary monuments that augment the picture of the island at that time with its three known causewayed enclosures. More Neolithic features such as pits are now known on Thanet as a result of large open area excavations such as at Thanet Earth (Holman et al. 2023). If combined with a better understanding of the District's geomorphology to establish Thanet's likely landform and sea levels at that time, those archaeological monuments could more cogently be interpreted to throw light on the idea of Thanet as a 'gateway' for people bringing new ideas, materials (such as domesticated plants) and ways of living from Continental sources. Whittle et al. (2022) suggest that there were numerous coastal contact points at the time causewayed enclosures started being built in south-east

England in the 38th century cal BC. Neither were they the earliest Neolithic monuments, which places greater importance on investigating the possible funerary monuments on Thanet and east Kent more broadly to address Whittle's (2025) proposal of a 'minimal' Neolithic in the south-east during the 41st to 39th centuries cal BC.

Evidence for Early Bronze Age life on Thanet remains dominated by the large number of round barrows across the District, most known in the form of cropmark ring ditches. It is tempting to see this as a vindication of Perkin's (2010) characterisation of Thanet as an 'Isle of the Dead', a burial place in the late third millennium and early second millennium BC. Possible visual relationships between the barrows on Thanet and the Kent mainland and waterways around the island tend to reinforce this sense of isolation. Thanet was not, however, used solely as a burial ground. The range of enclosures mapped from aerial sources and excavated evidence for Bronze Age field systems for example, including the early examples mentioned above, indicate that the picture is more complex. Generalising the archaeological record into generic areas of 'ritual' and 'domestic' or agricultural landscapes is a simplification that obscures potential relationships between the layouts of field boundaries, enclosed and unenclosed settlement, barrows and barrow cemeteries.¹²

Evidence for later prehistoric settlement across the District includes enclosures of possible Bronze Age and likely Iron Age date. Field systems, complex networks of trackways and enclosed and unenclosed settlement sites such as at Thanet Earth (Holman et al. 2023) hint at a connected agrarian landscape. The whole island appears to have been in use during the Iron Age, perhaps with people taking advantage of a habitat mix of well-drained upland, salt marsh and coastal resources. North Foreland was possibly defended in the Late Bronze Age/Iron Age and there is considerable excavated evidence for Iron Age settlement on its high ground. While Thanet is likely to have been a place of early contact with the Roman Empire through the Ebbsfleet and Richborough landing places, the District became an area of Roman farms with villas, perhaps a temple at Woodchurch, and numerous settlements across the cultivated landscape.

That there is no clear aerial evidence for extensive coaxial or aggregate field systems of Iron Age/Roman date, unlike on other areas of chalk downland in southern England, may reflect contemporary land management; but is perhaps more likely a result of ongoing, longterm, plough attrition to archaeological features. Excavation has revealed coaxial field boundaries with trackways originating in the Middle and Late Bronze Age, for example on

¹² We recognise that this report is structured thematically, but our chosen chapter construction was a pragmatic response to the challenge of writing about archaeological features of periods from the Neolithic to the 20th century, observed in aerial sources over a large area.

Cottington Hill, enabling Andrews et al. (2015, 105–6) to suggest that the Thanet landscape was at that time arranged into arable areas and sheep walks. The aerial evidence supports a picture of mixed farming on Thanet in later prehistory, with features such as the long linear ditches with funnel entrances north of Crispe Road, Acol, hinting at land divisions intended to control livestock. The evidence remains fragmentary, however, with more dating required to establish the contemporaneity of mapped features in the absence of a more regular, connected pattern of field boundaries across a wide area.

Early medieval communities on Thanet are evidenced by multiple inhumation cemetery sites, but contemporary settlements remain imperceptible in the aerial evidence. Post-built buildings may be less visible in aerial sources unless they were constructed with substantial post-pits that have withstood plough attrition and are capable of forming strong cropmarks. The local practice of constructing subsoil- and bedrock-cut sunken-featured buildings that on Thanet spans the Roman to medieval periods may be hindering the interpretation of specifically early medieval settlement from the cropmark evidence. As discussed above, there is a similar issue in interpreting some cropmark rectilinear enclosures as Iron Age/Roman or medieval in date on morphological grounds alone. The problem may be resolved through close examination of the distributions of field-walked and Portable Antiquity Scheme finds as well as excavation.

Nonetheless, there is considerable evidence for medieval rural settlement on Thanet that did not develop into present-day hamlets or villages. The settlement pattern across the District included dispersed farmsteads and small communities perhaps of cottages and gardens, often in linear arrangements fronting trackways. The routeways seem more often to have survived to the present-day, sometimes as surfaced roads (for example, at Shottendane) but also as footpaths, including a long route that once passed from the present-day location of St Nicholas Roundabout eastward across Thanet. It is unusual not to see evidence of ridge and furrow cultivation, but that is surprisingly absent from the aerial mapping of Thanet. Its lack could be attributed to modern plough attrition but as discussed above, a regionally-specific agricultural regime with differing land ownership practices and a lack of co-aration as intimated by Marshall (1798), Jolliffe (1933), and Orwin and Orwin (1967) is thought to be the reason for the absence of ridge and furrow in Kent.

Thanet's economy has been dominated by agriculture for centuries, but aspects of some of the associated processing industries, such as milling, have been recorded in the aerial mapping. Chalk has been of great importance to the District, shown by the number and extent of extractive pits mapped by the Thanet project. Many are likely to have been for agricultural lime. Medieval salt production in the Wantsum Channel created a spectacular

landscape of large waste tips, mostly in the formerly tidal area north-west of Sarre. It must have been a prominent local feature, both visually and economically, particularly for the monastic communities that utilised the marsh in this way. Later, brickworks exploiting Thanet's brickearth deposits served urban and suburban expansion as the island's coastal fringe was developed.

The aerial mapping has made clear Thanet's extensive and intensive 20th-century military landscape. Overall, the District provides excellent evidence for the development and integration of different types of military site, the features they comprised and the often rapid changes they underwent (for example, at Plumpudding Island). Rather than compartmentalising military archaeology and history into units by conflict, such as First and Second World War, on Thanet we see a continuum in places such as RNAS/RAF Manston. Early Second World War emergency installations influenced by First World War defensive thinking quickly gave way to a new strategic approach, clearly illustrated on Thanet by the development of Defended Localities. The range and extent of trench systems in the countryside hints at the experimental nature of some of that work and the relationship between First and Second World War practices. Civilian air raid precautions were still required even though the Isle of Thanet was militarised during the Second World War and, although experiences of the few who remained on the island have been recorded (for example, Stilwell 2016), there remain untold stories such as the refugees welcomed to the District having escaped fascism on the Continent.

Recommendations and research questions

'In evaluating crop-marks [sic] a fundamental rule is not to rely on negative evidence. When crop-marks are present, their probable causes can be inferred and used as a basis for interpretation. When crop-marks are absent, there is simply no inference to be made.' (Wilson 1982 [2000], 84)

It is important to bear in mind that at a different time when the conditions are right, archaeological features may appear as cropmarks where previously they have been absent. A camera must also be airborne at that perfect moment. Recommendations for future research to assess feature and site distribution patterns in the aerial mapping include:

- Consider the role of Thanet's Tertiary/Quaternary deposits on cropmark formation and investigate the formation and geomorphology of the Wantsum Channel.
- Explore the factors in cropmark formation over thicker soils on Thanet. For example, how does the British Geological Survey predictive soil thickness mapping compare with actual soil depths? Which factors have the strongest influence on cropmark formation on thicker soils? Include the type and nature of archaeological features and their fills, crop regimes, the history of planting methods, specific prevailing growing conditions etc.
- Assess the impact of ongoing cultivation, and changing cultivation methods, on cropmark formation. For example, are cropmarks that appear on predicted thicker soils captured on imagery of various dates or only recent coverage? Are cropmarks on predicted thinner soils seen on older imagery but less often in more recent years, all other variables being equal? Introduce additional variables to an analysis of soil thickness, vulnerability and presence/absence of cropmarks, such as slope and hydrological data.
- Review possible 'gaps' in the aerial mapping on a case-by-case basis to eliminate as many variables in cropmark formation as possible. Specific locations could then be prioritised for investigation by other methods, such as geophysical survey.
- Continue to monitor newly available aerial sources for visible archaeological features. If possible, review archive and historical imagery collections as they become available.

The Thanet project results, combined with the Ramsgate HAZ and SE RCZAS project results, provide a richer picture of Thanet District's archaeology from an aerial perspective than could be made by the Kent NMP pilot project in the 1980s. AI&M methods and standards have developed and far more aerial sources are now available, from which evidence has been mapped with a greater degree of spatial confidence. At the same time, further interventions including recent significant large-area excavation projects have bolstered knowledge of Thanet's archaeological record. Possible future research areas include, but are not limited to:

- Investigate the possible Neolithic funerary sites identified from aerial sources.

- Review the phenomenal density of Bronze Age barrows and burial sites, the majority of which are known from cropmarks, using a curated dataset of all relevant evidence from the District. Integrate interpretation of this funerary landscape with evidence of contemporary archaeological features including field systems and settlement.
- Evaluate the aerial mapping of Iron Age, Roman and medieval enclosure sites in the context of field-walked and excavated sites to understand the relationship between cropmark morphology and dating evidence. Extend this evaluation to review settlement patterns across the District, their potential continuity or discontinuity.
- Re-address the Bronze Age to Roman evidence on North Foreland and environs to assess the likelihood that the chalk spur was defended. Ensure that opportunities for investigating the possible southern end of the North Foreland linear earthworks are taken.
- How might the medieval and post-medieval field systems and settlement patterns revealed in the aerial sources be better understood? For example, why did some medieval settlements persist while other farmsteads and hamlets on Thanet went out of use?
- Although Thanet is thought to have had few field lime kilns (Eve and Stead 1998), chalk pits were significant features in the countryside. What was their role and active period for agricultural and construction purposes in both local and regional medieval/post-medieval economies?
- Salt production was an important medieval industry on Thanet, shown by the scale of salterns mapped by the Thanet project. How did salt production intersect with the agricultural cycle, or was it a specialist industry?
- Produce a comprehensive and integrated 20th-century military history and archaeology of Thanet. There have been conflict-specific histories (for example, Stilwell 2016) and site-specific histories (for example, publications on the operational history of RAF/USAF Manston) and thematic work that includes sites on Thanet (for example, Dobinson 2000; 2010) but no synthesis that focusses on interpreting the historic environment evidence as a whole.

References

Airfields of Britain Conservation Trust 2025 'Manston Airfield, Related (Decoy) Airfields' [online database] <https://www.abct.org.uk/airfields/airfield-finder/monkton/> (accessed 4 April 2025).

Allen, T. and Martin, T. 2021 *The Castle Hill Brickworks and Somerhill Estate. Post-Medieval Discoveries on the A21 Tonbridge to Pembury Dualling Scheme, Kent* (Oxford Archaeology Monograph 33).

Andrews, J., Dury, A. and Herbert, W. 1769 *A Topographical Map of the County of Kent in Twenty Five Sheets on a Scale of Two Inches to a Mile...* (London).

Andrews, P., Egging Dinwiddy, K., Ellis, C., Hutcheson, A., Phillpots, C., Powell, A.B. and Schuster, J. 2009 *Kentish Sites and Sites of Kent. A miscellany of four archaeological excavations* (Wessex Archaeology Report 24).

Andrews, P., Biddulph, E., Hardy, A. and Brown, R. 2011 *Settling the Ebbsfleet Valley. High Speed 1 Excavations at Springhead and Northfleet, Kent. The Late Iron Age, Roman, Saxon and Medieval Landscape* (Oxford Wessex Archaeology).

Andrews, P., Booth, P., Fitzpatrick, A.P. and Welsh, K. 2015 *Digging at The Gateway: Archaeological Landscapes of South Thanet. The Archaeology of East Kent Access (Phase III) Vol. 1: The Sites* (Oxford/Salisbury).

Anon. 1953 '30,000 Homeless in Floods' *Birmingham Gazette* 4 February 1953

Anon. 1878 'Abstract of Proceedings, 1877–8', *Archaeologia Cantiana*, 12, xxxiv–xlvi.

Anon. 1897 'The Gale' *The Times* 1 December 1897

Ashbee, P. 2000 'The Medway's megalithic long barrows', *Archaeologia Cantiana*, 120, 319–45.

Ashworth, C. 1985 *Action Stations. 9. Military Airfields of the Central South and South-East* (Wellingborough).

Bamford, J. and Williams, J. 2013 *A Detailed History of RAF Manston 1916-1930. The Men Who Made Manston* (Stroud).

Bamford, J., Williams, J. and Gallagher, P. 2015 *A Detailed History of RAF Manston 1931-1940. Arise to Protect* (Stroud).

- Bamford, J., Williams, J. and Gallagher, P. 2016 *A Detailed History of RAF Manston 1941-1945. Invicta – The Undefeated* (Stroud).
- Barber, M. 2004 'Rubbishy pots instead of gold': a brief history of the Neolithic of the South East', in Cotton, J. and Field, D., eds, *Towards a New Stone Age. Aspects of the Neolithic in south-east England*, Council for British Archaeology Research Report 137, 1–11.
- Barber, M. 2013 'West Kennet Late Neolithic palisaded enclosures', in Leary, J., Field, D. and Campbell, G., eds, *Silbury Hill: The Largest Prehistoric Mound in Europe* (Swindon) 234–5.
- Barker, N., Brodie, A., Dermott, N., Jessop, L., Winter, G. 2014 *Margate's Seaside Heritage* (Swindon).
- Bennett, P. 1989 'Interim report of work carried out in 1989 by the Canterbury Archaeological Trust', *Archaeologia Cantiana*, 107, 281–375.
- Bennett, P., Macpherson-Grant, N. and Couldrey, P. 2007 *Highstead near Chislet, Kent: excavations 1975-1977* (Canterbury).
- Bennett, P., Clark, P., Hicks, A., Rady, J. and Riddler, I. 2008 *At the Great Crossroads: Prehistoric, Roman and Medieval Discoveries on the Isle of Thanet 1994–5* (Canterbury Archaeological Trust Occasional Paper 4).
- Berry, P. 1996 'Radio Navigation Aids: 1940-1945', *Airfield Review*, 73, 35–7.
- Bersu, G. 1940 'Excavations at Little Woodbury', *Proceedings of the Prehistoric Society*, 6, 30–111.
- Bing, H. F. 1949 'St Augustine of Canterbury and the Saxon Church in Kent', *Archaeologia Cantiana*, 62, 108–29.
- Birch, D., Boakes, P., Elworthy, S., Hollins, C., and Perkins, D. 1988. *The Gateway Island: Archaeological Discoveries in Thanet 1630 to 1987* (Thanet District Council).
- Bowden, M. 2016 'Verlucio and Environs Project: Square double-ditched enclosure at 'The Waste', Bowood, Calne Without, Wiltshire', Historic England Research Report Series, 23/2019.
- Bowler, E. 1968 'The Reclamation and Land Use of the Thames Marshes of north-west Kent' (PhD thesis, London School of Economics).

Brent, J. 1864 'Account of the Society's researches in the Saxon Cemetery at Sarre', *Archaeologia Cantiana*, 4, 157–85.

British Geological Survey. 2024 'BGS 1:50,000 scale digital geology' [web mapping server] https://map.bgs.ac.uk/arcgis/services/BGS_Detailed_Geology/MapServer/WMSServer? (accessed 4 February 2025).

British Geological Survey. 2025 'Soil Parent Material Model' [online] <https://www.ukso.org/static-maps/parent-material-model-of-great-britain.html> (accessed 13 February 2025).

British Resistance Archive. 2009-2025 'Manston (Maize) Patrol' [online] <https://www.staybehinds.com/patrol/manston-maize-patrol> (accessed 7 April 2025).

Brookes, S 2003 in Williams, J.H (Ed) *Archaeology of Kent to AD 800*. (Kent County Council) 339-41.

Birchington Heritage Trust, 2025 [online] <https://birchingtonheritage.org.uk/> (accessed 23 May 2025).

Bushe-Fox, J.P. 1932 *Third Report on the Excavations of the Roman Fort at Richborough, Kent* (Reports of the Research Committee of the Society of Antiquaries of London 10).

Carpenter, E. and Evans, S. 2025 'London Borough of Enfield Registers Parks and Gardens Aerial Survey: Broomfield Park, Grovelands Park, Trent Park, Forty Hall', Historic England Research Report Series, 25-2025.

Carpenter, E., Newsom, S., Small, F. and Hazell, Z. 2013 'Hoo Peninsula, Kent. Hoo Peninsula Historic Landscape Project', Historic England Research Report Series, 21-2013.

Carter, A. 1998 'The Contribution of Aerial Survey: Understanding the Results', in Bewley, R.H., ed., *Lincolnshire's Archaeology from the Air* (Lincoln).

Champion, T. 2007 'Prehistoric Kent', in Williams, J., ed., *The Archaeology of Kent to AD 800* (Woodbridge).

Clark, P., Shand, G. and Weekes, J. 2019 *Chalk Hill: Neolithic and Bronze Age Discoveries at Ramsgate, Kent* (Leiden).

Clinch, M. 2001 'Kent Underground Research Group', *Kent Archaeological Society Newsletter* 49 (Spring 2001).

Collingwood R. A. and Taylor M. V. 1924 'Roman Britain in 1924', *Journal of Roman Studies*, 14, 206–51.

Cranfield University, 2025 'The Soils Guide' [online] <https://www.landis.org.uk> (accessed 5 February 2025).

Crawford, O. G. S., 1929 'Woodbury. Two Marvellous Air Photographs', *Antiquity*, 3(12), 452–5.

Croft, A., Munby, J., and Ridley, M. 2001 'Kent Historic Landscape Characterisation, Final Report', vol. 1-3, [online] https://archaeologydataservice.ac.uk/archives/view/kent_hlc_2014/index.cfm (accessed 28 January 2025).

Crutchley, S., Small, F. and Bowden, M. C. B. 2009 'Savernake Forest: a report for the National Mapping Programme', Historic England Research Report Series 29-2009.

Cuming, P. 2022 '8426 Thanet Archaeological Landscape Mapping Project. Revised Project Design (November 2022)', Kent County Council (unpublished project design).

Davis, A. H. 1934 *William Thorne's Chronicle of St Augustine's Abbey, Canterbury* (Oxford).

Dawkes, D., Hart, D., Grant, K. and Swift, D. 2019 *Beyond The Wantsum: Archaeological Investigations in South Thanet, Kent* (Spoil Heap Publications Monograph 22).

Deegan, A. 2009 'Air Photo Mapping and Interpretation for the Thanet Earth Wastewater Pumping Main to Birchington, Kent' (unpublished report).

Detsicas, A. P. ed., 1981 *Collectanea Historica: Essays in memory of Stuart Rigold* (Maidstone).

Dobinson, C. S. 1996 *Twentieth century fortifications in England, vol. 1. Anti-aircraft artillery: England's air defence gunsites, 1914–46* (York).

Dobinson, C. S. 2000 *Fields of Deception. Britain's Bombing Decoys of World War II* (London).

Dobinson, C. S. 2010 *Building Radar: forging Britain's early-warning chain 1935-45* (London).

Dunning, G. C. 1966 'Neolithic occupation sites in East Kent', *The Antiquaries Journal*, 46(1), 1–25.

Edis, J and Horne, P 1989 *The Classification of Cropmarks in Kent: S Report for the Monuments Protection Programme, Air Photographic Unit, Royal Commission on the Historical Monuments England (RCHME).*

Egging Dinwiddy, K. and Schulster, J. 2009 'Thanet's longest excavation: archaeological investigations along the route of the Weatherlees-Margate-Broadstairs wastewater pipeline', in Andrews et al. 2009, 58–174.

Evans, S. 2019 'Historic England Aerial Investigation and Mapping (formerly National Mapping Programme) Standards Technical Review', Historic England Research Report Series, 46-2019.

Evans, S., Boutwood, Y., Knight, D. and Oakey, M. 2012. 'East Riding of Yorkshire, Chalk Lowland and the Hull Valley NMP AIM Report', Historic England Research Report Series, 39-2012.

Eve, D. and Stead, P. 1998 *The Lime Burning Industry in Kent. Results of a Sites and Monuments Record Enhancement Project 1997–8* (Kent County Council).

Everitt, A. 1986 *Continuity and colonisation: the evolution of Kentish settlement* (Leicester).

Fawn, A. J., Evans, K. A., McMaster, I. and Davies, G. M. R. 1990 *The red hills of Essex: salt-making in antiquity* (Colchester).

Field, D. 1998 'Round barrows and the harmonious landscape: placing early Bronze Age burial monuments in south-east England', *Oxford Journal of Archaeology*, 17(3), 309–26.

Finch, W. C. 1933 *Watermills and windmills: a historical survey of their rise and fall as portrayed by those in Kent* (Sheerness).

Fitzpatrick A. P. 2019 'Caesar's landing sites in Britain and Gaul in 55 and 54 BC: Critical places, natural places', in Fitzpatrick A. C. and Haselgrove, C. 2019 *Julius Caesar's Battle for Gaul. New Archaeological Perspectives* (Oxford).

Foot, W. 2002 *Defence Areas: a national study of Second World War anti-invasion landscapes in England*, Vol. 1 (Council for British Archaeology and Historic England).

Fowler, P. 2000 *Landscape Plotted and Pieced. Landscape History and Local Archaeology in Fyfield and Overton, Wiltshire* (London).

- Frontline Ulster 2024 'Second World War Aircraft Direction Finding Part II – Interpreting the Remains' [online] <https://frontlineulster.co.uk/direction-finding-part-ii/> (accessed 4 April 2025).
- Galloway, J. A. 2015 'London and the Thames Estuary in the later Middle Ages: Economic and Environmental Change', in Wilkin A., Naylor J., Keene D., and Bijsterveld, A. J., eds, *Town and Country in medieval north-west Europe: Dynamic Interactions* (Turnhout).
- Garwood, P. 2003 'Round barrows and funerary traditions in late Neolithic and Bronze Age Sussex', in Rudling, D., ed., *The Archaeology of Sussex to AD 2000* (Kings Lynn).
- Gee, A. 1990-91, *Kent Underground Research Group Research Report*, 7, 9-14.
- Gollop, A. 2003 'Archaeological Excavation of Land at Queen's Farm, Queen's Farm Road, Shorne, Gravesend, Kent. Assessment Report', Canterbury Archaeological Trust (unpublished report).
- Haith, C 2008 Forthcoming, The Anglo-Saxon Cemetery at St Peter's, Broadstairs, London in Bennett, P., Clark, P., Hicks, A., Rady, J. and Riddler, I. 2008 *At the Great Crossroads: Prehistoric, Roman and Medieval Discoveries on the Isle of Thanet 1994–5* (Canterbury Archaeological Trust Occasional Paper 4).
- Hall, J. 1777 *A Map of the Isle of Thanet* (Margate).
- Hamel, A. and Lambert, V. 2011 'South East Rapid Coastal Zone Assessment Survey National Mapping Programme Report Components 1 and 2 (Blocks B-C and L-M)', Historic England Research Report Series, 128-2011.
- Hammond, J.M. 2010 'In search of 'the people of La Manche': a comparative study of funerary practices in the Transmanche region during the late Neolithic and early Bronze Age (2500 BC–1500 BC)' (PhD Thesis, University of Kent).
- Hart, D 2007 Letter 'Bradstowe School, Dumpton Park Road, Broadstairs' on October 24 2008.
- Hasted, E. 1800 *The History and Topographical Survey of the County of Kent*. Vol. X (Canterbury).
- Hicks, R. 1878 'Roman remains found at Ramsgate', *Archaeologia Cantiana*, 12, 14–18.
- Historic England, 2018a *Using Airborne Lidar in Archaeological Survey: The Light Fantastic* (Swindon).

- Historic England, 2018b *Banjo Enclosures: Introductions to Heritage Assets* (Swindon).
- Historic England, 2018c *Shrines (Roman and Post-Roman): Introductions to Heritage Assets* (Swindon).
- Historic England, 2018d *Religion and Ritual Pre-AD 410: Scheduling Selection Guide* (Swindon).
- Historic England, 2018e *Prehistoric Linear Boundary Earthworks: Introductions to Heritage Assets* (Swindon).
- Historic England, 2018f *Prehistoric Avenues and Alignments: Introductions to Heritage Assets* (Swindon).
- Hogarth, A. C. 1973 'Structural features in Anglo-Saxon graves', *The Archaeological Journal*, 130, 104–119.
- Hogwood, 1995 'Investigations at north Foreland hill', *Archaeologia Cantiana*, 115, 475.
- Holman, J., Masfield, R., Rady, J., Weekes, J. 2023 *Farming, Everyday Life and Ritual. 6,000 years of archaeology at Thanet Earth* (Canterbury).
- Hurd, H. 1914 'Late-Celtic discoveries at Broadstairs', *Archaeologia Cantiana*, 309–312.
- Hussey, A. 1911 'Chapels in Kent', *Archaeologia Cantiana*, 29, 217–67.
- Isle of Thanet Archaeological Society, 2000 'Woodchurch. Fieldwork Investigations 1999–2000' (unpublished report).
- Jacobs Babbie 2004 'The Landscape Assessment of Kent', Kent County Council https://www.kent.gov.uk/__data/assets/pdf_file/0010/182368/Landscape-Assessment-of-Kent.pdf [accessed 17 July 2025]
- Jessup, R. 1957 'The Follies of Kingsgate', *Archaeologia Cantiana*, 71, 1–13.
- Jolliffe, J. E. 1933 *Pre-feudal England. The Jutes* (London).
- Kain, R and Mead, W. R. 1977 'Ridge and furrow in Cambridgeshire', *Proceedings of the Cambridge Antiquarian Society* 67, 131-137
- Kelly's Directory, 1891 *Directory of Kent, Surrey and Sussex. Part 2, Kent: Court and Trade Directories* (London).
- Kelly's Directory, 1903 *Directory of Kent. Part 2: Private Resident and Trade Directories* (London).

Kelly's Directory, 1913 *Directory of Kent. Part 2: Private Resident and Trade Directories* (London).

Kenney, J. 1994 'Salt working mounds in the Harty marshes, Isle of Sheppey, Kent', Historic England Research Report Series, 91-1994.

Kent County Council, 2013 'Dover District Heritage Strategy. Appendix 1, Theme 1 – Coastal Processes and Landscapes' (unpublished report).

Kent Wildlife Trust, 2025 'Sandwich and Pegwell Bay' [online] <https://www.kentwildlifetrust.org.uk/nature-reserves/sandwich-and-pegwell-bay> (accessed 5 February 2025).

Kokalj, Ž. and Somrak, M. 2019 'Why Not a Single Image? Combining Visualizations to Facilitate Fieldwork and On-Screen Mapping'. *Remote Sensing*, 11(7), 747.

Kokalj, Ž, Zakšek, K., Oštir, K. 2011 'Application of Sky-View Factor for the visualisation of historic landscape features in lidar-derived relief models' *Antiquity* 85(327), 263–273.

Last, J. 2019 'Prehistory, landscape and heterotopia: a contribution to the Ramsgate Heritage Action Zone', Historic England Research Report Series 24-2019.

Last, J., Carpenter, E. and Evans, S. 2017 'West Wiltshire: National Archaeological Identification Survey Lowland Pilot Project Report' Historic England Research Report Series, 38-2016.

Lawley, R. 2021 *User Guide: Soil Parent Material Dataset* (BGS Digital Open Report OR/21/064) (Keyworth).

Lee, D. W. 2010 *Action Stations Revisited. The Complete History of Britain's Military Airfields: No. 3 South East England* (Manchester).

Linford, N., Linford, P. and Payne, A. 2018 'Verlucio and Environs Project, Bowood Estate, Calne Without, Wiltshire: report on geophysical surveys', Historic England Research Report Series 41-2018.

Lowry, B. ed., 1996 *20th Century Defences in Britain* (York).

Lyne, M. 2011 'The Roman villa at Minster in Thanet. Part 8, The Pottery', *Archaeologia Cantiana*, 131, 231–75.

Margary, I. D. 1948 'Notes on Roman Roads in East Kent', *Archaeologia Cantiana*, 54, 126–132.

- Marshall, W. 1798 *The Rural Economy of the Southern Counties: comprising Kent, Surrey, Sussex; the Isle of Wight; the Chalk Hills of Wiltshire, Hampshire etc and Including the Culture and Management of Hops, in the Districts of Maidstone, Canterbury and Farnham* (London).
- Martin, J., Schuster, J. and Barclay, A. 2012 'Evidence of an early Bronze Age field system and spelt wheat growing, together with an Anglo-Saxon sunken-featured building at Monkton Road, Minster in Thanet', *Archaeologia Cantiana*, 132, 43–52
- McCraigh, L 2018 Land at Birchington on Sea. Archaeological Evaluation Report. Wessex Archaeology.
- Millet, M. 2007 'Roman Kent', in Williams, J. H., ed., *The Archaeology of Kent to AD 800* (Woodbridge).
- Ministry of Agriculture, Fisheries and Food, 1988 Agricultural Land Classification of England and Wales [online]
<https://publications.naturalengland.org.uk/publication/6257050620264448> (accessed 20 February 2025).
- Moody, G. 2007 *Court Stairs Lodge, Pegwell Road, Ramsgate. Interim Excavation Report. Trust for Thanet Archaeology* (unpublished report).
- Moody, G. 2008 *The Isle of Thanet from Prehistory to the Norman Conquest* (Stroud).
- Moody, G. 2010 'Land adjacent to Two Chimneys Caravan Park, Shottendane Road, Birchington', Trust for Thanet Archaeology (unpublished report).
- Moody, G. 2011 'Sports Pitch and Multi Use Games Area, Ursuline College, Canterbury Road, Westgate on Sea', Trust for Thanet Archaeology (unpublished report).
- Moody, G. 2012 'Quex Park Estate Magnetometer, Resistivity, Metal Detector and Field Walking Survey Interim Report', Trust for Thanet Archaeology (unpublished report).
- Moore, C 2002 Late Bronze Age, Romano-British and Early/Middle Saxon features at Hoo St Werburg.
- Moore, C. 2010 *Windmills: a new history* (Stroud).
- Morgan, P. 1983 *Domesday Book, 1 Kent* (Phillimore)
- Morton, R.D., Marston, C.G., O'Neil, A.W., Rowland, C.S. 2024 'Land Cover Map 2023 (10m classified pixels GB)' [online] WMS

<https://catalogue.ceh.ac.uk/documents/68712ac3-d740-41df-bcb3-4d341f859909> (NERC EDS) (accessed 5 February 2025).

Munby, J. 2014 'Kent Historic Landscape Characterisation (HLC)' [data-set] York: Archaeology Data Service [distributor] <https://doi.org/10.5284/1027509> (accessed 5 February 2025).

Museum of London Archaeology Service, 2000 'East Northdown Farm, Botany Road, Margate - Archaeological Investigations: An Interim Report', (unpublished document).

National Library of Scotland Ordnance Survey One inch to the mile Old Series map: Kent NE. Surveyed 1788-1798, Published 1801.

Natural England, 2007 (2019) 'Provisional Agricultural Land Classification (ALC)' [online] <https://www.data.gov.uk/dataset/952421ec-da63-4569-817d-4d6399df40a1/provisional-agricultural-land-classification-alc2> (accessed 28 January 2025).

Natural England, 2015 (2025) 'National Character Area profile: 113, North Kent Plain' [online] <https://nationalcharacterareas.co.uk/north-kent-plain/> (accessed 5 February 2025).

Natural England, 2022 'Living England Habitat Map (Phase IV)' [online] <https://www.data.gov.uk/dataset/e207e1b3-72e2-4b6a-8aec-0c7b8bb9998c/living-england-habitat-map-phase-4> (accessed 5 February 2025).

Needham, S. and Anelay, G. 2021 *Barrows at the Core of Bronze Age Communities. Petersfield Heath Excavations 2014–18 in their Regional Context* (Leiden).

Orwin, C. S. and Orwin, C.S. 1967 *The Open Fields* (Oxford).

O'Shea-Walker, L. and Helm, R. 2017 'Westwood Village: Land off Manston Court Road and Haine Road, Margate, Thanet, Kent', Canterbury Archaeological Trust (unpublished report).

Osborne, M. 2004 *Defending Britain: Twentieth-Century Military Structures in the Landscape* (Stroud).

Oxford Archaeology, 2005 'Land adjacent to Salmestone Grange, Nash Road, Margate, Kent: Archaeological Evaluation Report', (unpublished document).

Oxford Wessex Archaeology, 2011 'East Kent Access (Phase II), Thanet, Kent: Post-Excavation Assessment Vol. 1', (unpublished document).

- Parfitt, K., Boast, E. and Moody, G. 2009 'The Roman villa at Minster in Thanet. Part 6 the villa enclosure buildings 2 and 5', *Archaeologia Cantiana*, 129, 333–57.
- Perkins, D. R. J. 1981 Interim Report: A cropmark evaluation undertaken by D Perkins on behalf of The Thanet Archaeology Unit.
- Perkins, D. J. R. 1985 'The Monkton Gas Pipeline: phases III and IV, 1983–4', *Archaeologia Cantiana*, 102, 43–69.
- Perkins, D. J. R. 1987 'The Jutish cemetery at Half Mile Ride, Margate: a re-appraisal', *Archaeologia Cantiana*, 104, 219–36.
- Perkins, D. R. J. 1988 'Researches and discoveries in Kent: the site of the church of St Giles, Sarre', *Archaeologia Cantiana*, 195, 291–7.
- Perkins, D. R. J. 1991a 'Land north of St Nicholas roundabout' (unpublished document).
- Perkins, D. R. J. 1991b 'The Jutish cemetery at Sarre revisited: a rescue evaluation', *Archaeologia Cantiana*, 109, 139–66.
- Perkins, D. R. J. 1993 'North Foreland Avenue, Broadstairs', *Archaeologia Cantiana*, 112, 411–413.
- Perkins, D. R. J. 1995 Hartsdown Community Woodland Scheme. Evaluation Report for Thanet District Council and Kent County Council.
- Perkins, D. R. J. 1996 'The Trust for Thanet Archaeology; evaluation work carried out in the 1995, Hartsdown Community Woodland Scheme, Margate', *Archaeologia Cantiana*, 116, 265–81.
- Perkins, D. R. J. 1999 *A Gateway Island. An Exploration of Evidence for the Existence of a Cultural Focus in the form of a 'Gateway Community' in the Isle of Thanet during the Bronze Age and Early and Middle Iron Ages* (PhD thesis, Institute of Archaeology, University College London).
- Perkins, D. R. J. 2001 'The Roman Archaeology of the Isle of Thanet', *Archaeologia Cantiana*, 121, 43–60.
- Perkins, D. R. J. 2004 'Oval Barrows on Thanet', in Cotton, J. and Field, D., eds., *Towards a New Stone Age. Aspects of the Neolithic in south-east England*, Council for British Archaeology Research Report 137.

Perkins, D. R. J. 2007 'The Long Demise of The Wantsum Channel: A Recapitulation based on the Data', *Archaeologia Cantiana*, 127, 249–59.

Perkins, D. R. J. 2008 in Bennett, Clark, P., Hicks, A. Rady, J. and Riddler, I. 2008 *At the Great Crossroads: Prehistoric, Roman and Medieval Discoveries on the Isle of Thanet 1994–5* (Canterbury Archaeological Trust Occasional Paper 4).

Perkins, D. R. J. 2010 'The Distribution Patterns of Bronze Age Round Barrows in North-East Kent', *Archaeologia Cantiana*, 130, 277–309.

Perkins, D. R. J., MacPherson-Grant, N. and Healey, E. 1995 'Monkton Court Farm Evaluation, 1992', *Archaeologia Cantiana*, 114, 237–316.

Pollard, J., Gillings, M., Chan, B., Cleal, R., French, C., Allen, M., Banfield, E., Pike, A., De Carle, D., Eve, S., Rowland, J., Thompson, J., Clifton, B., Snashall, N. n.d. 'West Kennet Palisades, Avebury. An Interim Report on the Summer 2019 Excavations', [online] [KVP19_interim_report_LwMP.docx.pdf](#) (accessed 25 February 2025).

Rady, J. and Holman, J. 2019 'Beneath the Seamark; 6,000 years of an Island's History. Archaeological Investigations at 'Thanet Earth', Kent 2007-2012', Canterbury Archaeological Trust Technical Report 2.

RCHME, 1989 'The Classification of Cropmarks in Kent: A Report for the Monuments Protection Programme', Historic England Research Report Series, 137-1989.

Richardson, A. 2005 *The Anglo-Saxon Cemeteries of Kent* (Oxford).

Ritchie, A. E. 1919 *The Kent Coalfield: Its Evolution and Development* (London).

Roberts, D., Valdez-Tullet, A., Marshall, P., Last, J., Oswald, A., Barclay, A., Bishop, B., Dunbar, E., Forward, A., Maw, M., Linford, N., Linford, P., López-Dóriga, I., Manning, A., Payne, A., Pelling, R., Powell, A., Reimer, P., Russell, M., Small, F., Soutar, S., Vallender, J., Winter, E. and Worley, F. 2018 'Recent Investigations at two Long Barrows and Reflections on their Context in the Stonehenge World Heritage Site and Environs', *Internet Archaeology*, 47. <https://doi.org/10.11141/ia.47.7>

Rural Payments Agency 2021 'Crop Map of England (CROME) 2021 Kent' [dataset] <https://environment.data.gov.uk/spatialdata/crop-map-of-england-2021/wms> (accessed 21 February 2025).

Scarth, R. N. 1999 *Echoes from the Sky: a story of acoustic defence* (Hythe).

Scurrall, D. G. 1970 'Isle of Thanet', *Archaeologia Cantiana*, 85, 188–9.

- Sellar A. M. 1907 *Bede's Ecclesiastical History of England* (London).
- Shaffrey, R. 2019 'The Roman villa at Minster in Thanet, part 12: Quernstones and Millstones', *Archaeologia Cantiana*, 140, 1–12.
- Shephard-Thorn, E. R. 1988 *Geology of the Country around Ramsgate and Dover. Memoir for 1:50,000 geological sheets 274 and 290 (England and Wales)* (London).
- Skelton R. A. and Harvey, P. D. A. 1986 *Local Maps and Plans from Medieval England* (Oxford).
- Small, F. 2002 'Richborough Environs Project, Kent. Report on the Aerial Photographic Transcription and Analysis', Historic England Research Series, 12-2002.
- Small, F. and Barber, M. 2019 'Ramsgate Heritage Action Zone: An Assessment of Aerial Photographs and Lidar', Historic England Research Report Series, 25-2019.
- Small, F. 2020 'An Aerial Assessment of Earthworks and Cropmarks of a possible Roman Temple Complex north of Furzenhall Farm, Biggleswade, Bedfordshire', Historic England (unpublished report).
- Smith, L.T. (ed.) 1964 *The Itinerary of John Leland in or about the years 1535–43* Parts VII and VIII (London).
- Spain, P. 2011 'Ramsgate's Remarkable Tunnels', *Subterranea*, 27, 39–50.
- Spurrell, F. C. J. 1885 'Early sites and embankments on the margins of the Thames Estuary', *The Archaeological Journal*, 42, 269–302.
- St Nicholas at Wade with Sarre Parish Council, 2025 Parish Council website [online] <http://www.stnicholaswithsarre.co.uk> (accessed 26 August 2025).
- Stafford, E. 2015 'Topographical and geological background,' in Andrews, P., Booth, P., Fitzpatrick, A.P. and Welsh, K. *Digging The Gateway: Archaeological Landscapes of South Thanet. The Archaeology of East Kent Access (Phase III) Vol. 1: The Sites* (Oxford/Salisbury).
- Stilwell, R. 2016 *The Defence of Thanet and East Kent (1939-1945)* (privately printed).
- Stockman, R. 1986 *The History of RAF Manston*, 3rd edn (Royal Air Force Station Manston).
- Swale and Thames Archaeology, 2021 'Archaeological excavations at Briary Close, Westbrook, Margate, Kent. Interim report', (unpublished report).

Tann, P. 2020 'The Brickmaking Industry in Kent c.1825–1900', *Archaeologia Cantiana*, 141, 125–47.

Thanet District Council, 1988 *The Gateway Island. Archaeological Discoveries in the Isle of Thanet 1630–1987* (Margate).

The Victoria History of the Counties of England, A History of the County of Kent, Vol. I, ed. W. Page (London, 1908).

The Victoria History of the Counties of England, A History of the County of Kent, Vol. II, ed. W. Page (London, 1926).

Thompson, M. W. 1956 'A group of mounds on Seasalter Level, near Whitstables, and the medieval imbanking in this area', *Archaeologia Cantiana*, 70, 44–67.

Thompson, F. H. 1983 'Excavations at Bigberry, near Canterbury 1978–80', *The Antiquaries Journal*, 63, 237–78.

Trust for Thanet Archaeology, 1995 'Overall assessment of the pottery and other finds from the 1907–9 South Cliff Parade, 1971–2 and 1974 Dumpton Gap and 1992–4 South Dumpton Downs excavations' (unpublished report).

Trust for Thanet Archaeology, 1999 'An Archaeological Evaluation at East Northdown Farm, Margate' (unpublished report).

Trust for Thanet Archaeology, 2015 'Land opposite Woodchurch Farmhouse, Woodchurch, Birchington, Test pitting survey report' (unpublished report).

Tithe Apportionments, 1836-1929 [database] <https://www.TheGenealogist.co.uk> 2025 (accessed 12 March 2025).

Wales, R. 1948 *Windmills in England; A Study of Their origin, Development and Future* (London).

Walker, A. T. 1969 'Quex And Its Owners', www.birchingtonheritage.org.uk (accessed 09 April 2025).

Walker, G. P. 1926 'Old roads in east Kent and Thanet', *Archaeologia Cantiana*, 38, 75–88.

Wallace, L. M., Mullen, A. and Johnson, P. S. 2014 'Bourne Park (Bishopsbourne) Geophysical Survey 2013 Results' (unpublished report).

- Watson, A. 2001 'Round barrows in a circular world: monumentalising landscapes in Early Bronze Age Wessex', in Brück, J., ed., *Bronze Age Landscapes. Tradition and Transformation* (Oxford).
- Watts, M. 2000 *Water and Wind Power* (Princes Risborough).
- Wessex Archaeology, 2006a 'Radiocarbon Results and Charred Plant Remains from the Excavations at Westwood Cross, Broadstairs, Thanet' (unpublished report).
- Wessex Archaeology, 2006b 'North Kent Coast Rapid Coastal Zone Assessment Survey. Phase II: Field Assessment Year Two Report' (unpublished report).
- Whitaker, K. A. 2021 'Sarsen stone quarrying in Southern England', *Post-Medieval Archaeology*, 51(1), 143–6.
- White, H. J. O. 1928 *The Geology of the Country near Ramsgate and Dover. Explanation of one-inch Geological Sheet 274 and 290*, New Series (London).
- Whittle, A. 2025 'A provisional model for the Mesolithic-Neolithic transition in Britain', in Hofmann, D., Cummings, V., Bjørnevad-Aklqvist, M. and Iversen, R., eds, *The Early Neolithic of Northern Europe* (Leiden).
- Whittle, A., Healy, F. and Bayliss, A. 2011 *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland* (Oxford).
- Whittle, A., Bayliss, A. and Healy, F. 2022 'A decade on: Revised timings for causewayed enclosures in Southern Britain', in Last, J., ed., *Marking Place. New Perspectives on Early Neolithic Enclosures*, Neolithic Studies Group Seminar Papers 18.
- Williams, G. 1996 *Flying Through Fire. FIDO – the Fogbusters of World War Two* (Grange Books).
- Williams, J., ed. 2007 *The Archaeology of Kent to AD 800* (Woodbridge).
- Wilson, D. R. 1982 (2000) *Air Photo Interpretation for Archaeologists* (Stroud).
- Wilson, D. M. and Hurst, D. G. 1970 'Medieval Britain in 1969', *Medieval Archaeology*, 14, 155–208.
- Woodward, A. 1996 'The topography of some barrow cemeteries in Brone Age Wessex', *Proceedings of the Prehistoric Society*, 62, 275–91.
- Woodward, A. 2000 *British Barrows. A Matter of Life and Death* (Stroud).

Woodward, P.J. 1991 *The South Dorset Ridgeway. Survey and Excavations 1977–84* (Dorset Natural History and Archaeological Society Monograph 8).

Worlford, F. H. 1943 'A report of the late Bronze Age site excavated at Minnis Bay, Birchington, Kent', *Proceedings of the Prehistoric Society*, 9, 28–47

Zakšek, K., Oštir, K., Kokalj, Ž. 2011 'Sky-View Factor as a Relief Visualization Technique', *Remote Sensing*, 3(2), 398–415.

Methodology

Project Study area

The project study area is 142sq km, encompassing Thanet District (Fig. 133). Of that:

- 20sq km was mapped by the Ramsgate HAZ project to current AI&M standards. That data is incorporated into the Thanet project with no updates.
- 34sq km was mapped by the South East RCZAS in 2010. That data was made available to the Thanet project. The only changes made were minor enhancements to the mapping and the addition of newly observed features.
- 88sq km was sketch-plotted by the Kent NMP pilot project in the late 1980s. That area has been fully reassessed, re-mapped and recorded.

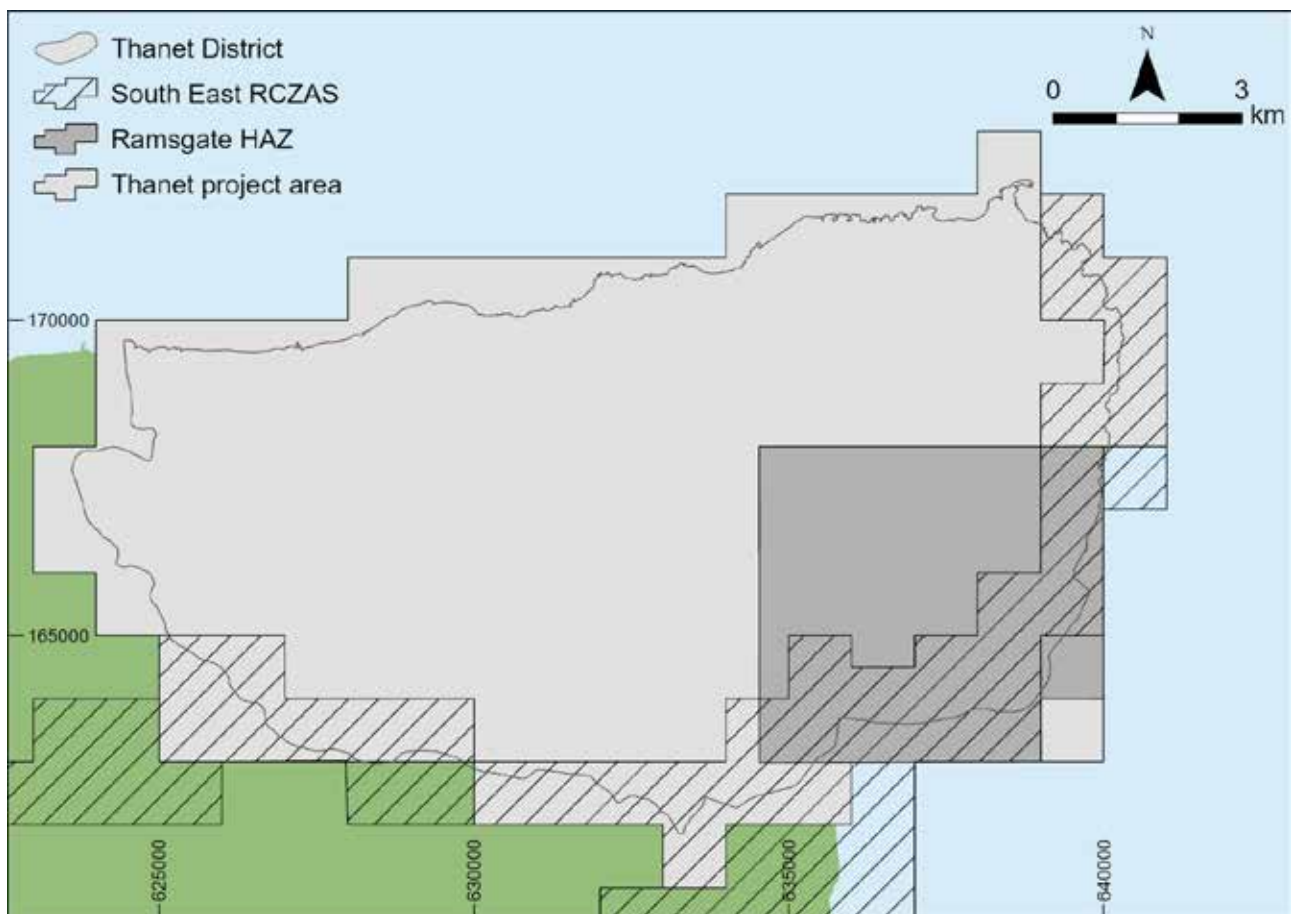


Figure 133: Project study areas. [Includes data © Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900]

Sources

All available vertical and oblique aerial photographs of the project study area held in the Historic England Archive were assessed for this project. The collections include both prints and born-digital files, provided in two coversearches (Historic England Archive 139151 and 139153) but here summarised in total (Table 8).

Table 8: Historic England Archive images made available to the Thanet project.

	N	Date range
Specialist oblique images	3,262	1920–2022
Military oblique images	520	1941–1962
Vertical images	4,098	1941–2019

Digital orthophotographs covering the whole of Thanet District were supplied via the Aerial Photography for Great Britain (APGB) Agreement. That imagery includes 25cm resolution layers dated 14 August 2003 and 21 April 2007 and 12.5cm resolution layers dated 25 May 2012, 14 April 2015, 5 May 2018 and 7 April 2021. Google Earth layers dating from the 1940s to 2023 were sourced from Google Earth Pro, and a Microsoft Bing.com/Maps layer from 2024 was also consulted.

Environment Agency DTM and DSM lidar datasets at 1m resolution were downloaded from the Defra Survey Data portal (<https://environment.data.gov.uk/survey>). Data captured in 2017 (11 tiles) and 2019 (2 tiles) provided complete coverage of Thanet District.

Kent HER georeferenced vertical photography layers dating to 1946/7, 1961, 1990, 2008 and 2016 were available and individual frames from the 1990 coverage were supplied to map certain archaeological features in the environs of Sarre.

At present there is no access to the CUCAP archive (see above) so those photographs could not be consulted. A small number of scanned images were viewed using the CUCAP online map viewer (<https://www.cambridgeairphotos.com/map/>).

In addition to the aerial photographs and lidar, other sources of information were consulted to inform interpretation and understanding of sites. They included:

- Historic Ordnance Survey maps;
- Kent HER data including spatial data and textual monument records and other GIS layers (e.g., digitised Tithe Award maps);
- Historic England Research Records (Warden);

- The National Heritage List for England;
- Tithe maps (Genealogist website accessed through the Historic England Library);
- British Geological Survey (BGS) data;
- UK Soil Observatory (UKSO) data;
- Results from previous archaeological investigations (reports, survey data, journal articles, monographs, regional Research Framework).

Methodology

All available aerial photographs were viewed under magnification and in stereo where possible, using a handheld stereoscope. Digital imagery was viewed on-screen in a GIS environment. Photographic prints showing archaeological features were scanned and then rectified using the specialist Aerial 5.36 programme. The rectification process involves matching features on 1:2,500 Ordnance Survey digital mapping and/or APGB orthophotographs (the control) with the same features on the scanned aerial photograph to remove all height and tilt distortion. Mapped features can be within $\pm 1\text{m}$ of their true ground position but the accuracy will decrease in areas with poor control (Evans 2019). An APGB 5m digital terrain model was incorporated into the calculation to improve accuracy by compensating for undulating terrain. As a result of mid- to late 20th-century development, map control for pre-development aerial photographs in the environs of eastern Cliftonville and Foreness Point is limited and to complete some rectifications in that area an intermediate stage was introduced. Extracts of historic Ordnance Survey maps were rectified to provide control and the result is that although internal errors of under 2m were achieved for aerial photograph rectifications, that may not be a realistic reflection of true ground accuracy.

The lidar and digital orthomosaics were already georeferenced and so could be imported directly into the mapping software. Environment Agency lidar datasets were processed to generate a number of different 2D visualisations as GeoTIFF images using the RVT 2.2.1 programme (Relief Visualisation Software Toolbox software) (Kokalj and Somrak 2019; Kokalj et al. 2011; Zakšek et al. 2011).

All archaeological features visible as cropmarks, earthworks and structures were mapped in accordance with Historic England's *Standards for Aerial Investigation and Mapping Projects* and the *Aerial Investigation and Mapping Technical Specification*. That includes features with a potential date range from the Neolithic to 20th-century military remains.

Features were recorded according to morphology using Historic England mapping conventions, using ESRI ArcPro 3.2.2 GIS software. These features were mapped on different layers based on the original form of the feature (bank, ditch etc) irrespective of whether these were seen as earthworks or cropmarks (Table 8) and textual attribute data was captured for every feature (Table 9). Monument recording was completed directly in Kent HER via remote access to HBSMR.

Table 9: Historic England AI&M mapping conventions.

LAYER NAME	DESCRIPTION	TYPE
BANK	Polygon for features such as banks, platforms, mounds and spoil heaps	Polygon 
DITCH	Polygon for cut features such as ditches, hollows, pits or hollow ways	Polygon 
EXTENT_OF_FEATURE	Polygon outlining a large area feature or group of features such as industrial complexes or boundaries of military complexes.	Polygon 
RIDGE_AND_FURROW_AREA RIDGE_AND_FURROW_ALIGNMENT	Polygon depicting the outline of a ridge and furrow plot Polyline depicting the direction and form of a block of ridge and furrow	Polygon and Polyline 
STRUCTURE	Polygon for built features including stone, concrete, metal and wood	Polygon 

Table 10: Historic England AI&M attribute data fields applied to the Thanet project.

Attribute	Description	Sample data
HEUID	Historic England Research Record Unique Identifier (UID)	79060 (where possible)
HER_No	HER uid for those features concorded with existing HER records	MKE12345
HERPREF	HER PrefRef for those features concorded with existing HER records	TR 36 SW 123
LAYER	Original feature form	DITCH
PERIOD	Date of feature (EH Thesaurus). Single or dual indexed terms	MEDIEVAL
NARROW_TYPE	Monument Type (EH Thesaurus). Specific monument type for individual features	FISHPOND
BROAD_TYPE	Monument Type (EH Thesaurus). Broader monument type to enable grouping of individual features	CISTERCIAN MONASTERY
EVIDENCE_1	Form of remains (EH Thesaurus) as seen on PHOTO_1	EARTHWORK
SOURCE_1	Source feature was mapped from (air photograph or lidar)	NMR RAF/3G/TUD/UK/3 PART I 5097 14-DEC-1945
EVIDENCE_2	Form of remains (EH Thesaurus) as seen on PHOTO_2	LEVELLED EARTHWORK
SOURCE_2	Latest available source (air photograph or lidar) to give indication of current state of preservation (not applicable for cropmark sites)	NMR 28225/36 19-OCT-2011
Heritage_Gateway	URL to full monument record on Heritage Gateway	Heritage Gateway - Results

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