

**Lower Thames Crossing**  
**6.3 Environmental Statement**  
**Appendices**  
**Appendix 6.3 - Archaeological**  
**Desk-Based Assessment of**  
**20th century Military**  
**Archaeology**

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# Lower Thames Crossing

Archaeological Desk-Based Assessment of 20<sup>th</sup> century  
Military Archaeology

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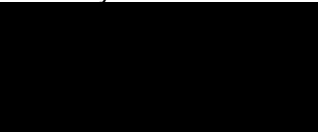
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## Contents

<i>Acknowledgements</i> .....	<i>vi</i>
<b>1 INTRODUCTION</b> .....	<b>7</b>
1.1 Project background.....	7
1.2 Lower Thames Crossing .....	7
1.3 Scope of document.....	7
1.4 Aims and objectives.....	8
<b>2 RELEVANT LEGISLATION AND GUIDANCE</b> .....	<b>8</b>
2.1 Introduction.....	8
2.2 Designated heritage assets .....	9
2.3 The Protection of Military Remains Act 1986 .....	9
2.4 National Policy Statement for National Networks .....	9
2.5 Local planning policy .....	10
<b>3 METHODOLOGY</b> .....	<b>10</b>
3.1 Introduction.....	10
3.2 Study Area.....	10
3.3 Sources .....	10
3.4 Walkover Survey.....	11
3.5 Assessment criteria – Significance.....	11
3.6 Setting assessment .....	12
3.7 Assumptions and limitations.....	13
3.8 Copyright .....	13
<b>4 HISTORY OF DEFENCE IN KENT AND ESSEX DURING THE 20<sup>TH</sup> CENTURY</b> .....	<b>13</b>
4.1 Level of research to date .....	13
4.2 Why was there a need to defend Kent and Essex? .....	14
4.3 First World War.....	14
4.4 Interwar Period .....	16
4.5 Second World War.....	17
4.6 Cold War.....	18
4.7 Summary .....	19
<b>5 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS</b> .....	<b>19</b>
5.1 Within the Application Site and 1km Study Area .....	19
5.2 WWI North Ockendon Landing Ground.....	20
5.3 WWI Orsett Landing Ground.....	20
5.4 RAF Gravesend .....	20
<b>6 MILITARY HERITAGE ASSETS WITHIN THE APPLICATION SITE AND STUDY AREA)</b> 21	
6.1 Introduction.....	21
6.2 Kent.....	21
6.3 Essex.....	25
6.4 WWI landing ground at North Ockendon.....	27
6.5 WWI landing ground at Orsett and later military camps.....	28
6.6 RAF Gravesend.....	29
<b>7 ASSESSMENT OF ARCHAEOLOGICAL SURVIVAL, PREVIOUS IMPACTS AND POTENTIAL IMPACTS</b> .....	<b>32</b>
7.1 WWI North Ockendon landing ground.....	32
7.2 WWI Orsett landing ground and later military camps .....	32
7.3 RAF Gravesend.....	32
7.4 Military heritage assets .....	32
7.5 Statement of potential impact.....	35



<b>8</b>	<b>SIGNIFICANCE AND POTENTIAL</b>	<b>35</b>
8.1	Introduction	35
8.2	WWI landing ground at North Ockendon	35
8.3	WWI Landing Ground at Orsett	36
8.4	RAF Gravesend	36
8.5	WWI military heritage assets	37
8.6	WWII military heritage assets	38
8.7	Cold War military heritage assets	38
<b>9</b>	<b>BOWATERS FARM ANTI-AIRCRAFT BATTERY SCHEDULED MONUMENT STATEMENT OF SIGNIFICANCE</b>	<b>38</b>
9.1	History	38
9.2	The asset	39
<b>10</b>	<b>CONCLUSIONS</b>	<b>42</b>
	<b>REFERENCES</b>	<b>44</b>
	Bibliography	44
	Historic Environment Records	47
	Cartographic and documentary sources	47
	Online resources	48
	<b>APPENDICES</b>	<b>49</b>
	Appendix 1: Terminology	49
	Appendix 2: Legislative and planning framework	50
	Appendix 3: Gazetteer	55

## Figures and plates

Figure 1:	Site and Study Area
Figure 2:	Key Sheet
Figure 3:	Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency
Figure 4:	Site, Study Area and National Mapping Programme data for Kent of military assets based on KHER
Figure 5:	Results of the Aerial Mapping Study for the Tilbury Area
Figure 6:	Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER
Figure 7:	WW1 North Ockendon Landing Ground: Location Figure
Figure 8:	WW1 North Ockendon Landing Ground: Historic Maps
Figure 9:	WW1 North Ockendon Landing Ground: 50cm DTM Lidar Survey Data
Figure 10:	WW1 Orsett Landing Ground: Location Figure
Figure 11:	WW1 Orsett Landing Ground: Historic Maps
Figure 12:	RAF Gravesend and Ashenbank Wood: Location Figure
Figure 13:	Air Ministry Plan for RAF Gravesend
Figure 14:	Air Ministry Plan for RAF Gravesend dispersed site Ashenbank Wood
Figure 15:	Plan of RAF Gravesend and 1m DTM LIDAR survey data.
Figure 16:	Bowaters Farm Scheduled Monument: Site location
Figure 17:	Bowaters Farm Layout
Plate 1:	North Ockendon: view from the northern boundary, facing southwest
Plate 2:	North Ockendon: view from the northern boundary, facing southeast
Plate 3:	North Ockendon: view from the centre of the northern boundary, facing southwest
Plate 4:	North Ockendon: view from the centre of the northern boundary, facing southeast
Plate 5:	Orsett: view of Whitmore car park, facing southwest



- Plate 6: Orsett: Unidentified cylindrical concrete structure  
Plate 7: Orsett: crescent shaped mound, facing south  
Plate 8: Orsett: second crescent shaped mound, facing east  
Plate 9: Orsett: view from the approximate centre of the eastern field, facing southwest  
Plate 10: Orsett: view from the southern boundary of the eastern field, facing south to Orsett  
Golf Club  
Plate 11: Orsett: concrete rubble identified in the eastern field  
Plate 12: Orsett: view of Orsett Golf Club car park, facing southeast  
Plate 13: Orsett: general building debris noted in the eastern fields, facing north  
Plate 14: Orsett: view from the southern boundary of the eastern field, facing east  
Plate 15: Orsett: view from the southeast area of the eastern field, facing east  
Plate 16: Orsett: man-made hole in the southeast area of the eastern field with concrete  
at the base  
Plate 17: Orsett: view from the southeast area of the eastern field, facing northeast  
Plate 18: Orsett: concrete identified in the eastern section of the eastern field, facing west  
Plate 19: Orsett: view from the northeast corner of the eastern field, facing north  
Plate 20: Orsett: modern manhole on earlier concrete structure?  
Plate 21: Orsett: View of the eastern field from west of Whitmore Hall, facing southwest  
Plate 22: Orsett: view of the western field from Bristowe Drive, facing south  
Plate 23: Orsett: view of the western field from Bristowe Drive, facing southwest  
Plate 24: RAF Gravesend: view from the southern boundary of the southern field, facing  
North  
Plate 25: RAF Gravesend: view from the central field, facing north showing existing Powerlines  
Plate 26: RAF Gravesend: View of the existing paddock, facing northeast  
Plate 27: RAF Gravesend: view from the western boundary of the paddock, facing southwest  
Plate 28: RAF Gravesend: View of the northern field, facing northeast  
Plate 29: RAF Gravesend: view from the northern field, facing south  
Plate 30: RAF Gravesend: view from the centre of Southern Valley Golf Club, facing north  
Plate 31: RAF Gravesend: View of the field to the north of the golf course, facing northwest  
Plate 32: RAF Gravesend: View from the northern boundary of the golf course, facing  
southwest  
Plate 33: RAF Gravesend: view from the centre of the golf course, facing west  
Plate 34: Bowaters Farm: View of former generator building, facing southwest  
Plate 35: Bowaters Farm: view of former storage buildings, facing southeast  
Plate 36: Bowaters Farm: view of 4.5 inch gun emplacement, facing north  
Plate 37: Bowaters Farm: view of the command post, facing south  
Plate 38: Bowaters Farm: view of surviving concrete path, facing west  
Plate 39: Bowaters Farm: View of 5.25inch gun emplacement, facing west  
Plate 40: Bowaters Farm: View of 5.25inch gun emplacement, facing northwest  
Plate 41: Bowaters Farm: View of 5.25inch gun emplacement entrance with its surviving iron  
ladder, facing southeast  
Plate 42: Bowaters Farm: surviving concrete surface, facing north  
Plate 43: Bowaters Farm: View of the headquarters buildings, facing southeast  
Plate 44: Bowaters Farm: View of the southern range of Cold War buildings, facing southwest  
Plate 45: Bowaters Farm: view of the northern range of Cold War buildings, facing northwest  
Plate 46: Bowaters Farm: view of surviving concrete boundary fence posts along the Western  
boundary, facing southwest  
Plate 47: Bowaters Farm: view of the original entrance into the battery, facing east  
Plate 48: Bowaters Farm: building 1, facing north  
Plate 49: Bowaters Farm: building 2, facing northwest  
Plate 50: Bowaters Farm: building 3, facing southwest  
Plate 51: Bowaters Farm: building 4, facing north  
Plate 52: Bowaters Farm: building 5, facing west



Plate 53: Bowaters Farm: view from the main entrance into the farm, facing east  
Plate 54: Bowaters Farm: view from trackway south of the AA battery facing north  
towards the emplacements



## Summary

Wessex Archaeology was commissioned by Arcadis LLP, on behalf of LTC CASCADE, to prepare an archaeological desk-based assessment of 20<sup>th</sup>-century military archaeology remains located within the proposed boundary of the Application Site.

The aims of the assessment, outlined in the project design, was to conduct:

- Detailed archaeological assessments for the First World War landing ground at Orsett and North Ockendon;
- A detailed archaeological assessment for RAF Gravesend;
- A comprehensive assessment of all remaining 20<sup>th</sup>-century military heritage assets; and
- A statement of significance for the Bowaters Farm anti-aircraft battery scheduled monument

The assessment has concluded, based on existing scheduling guidance, the World War One landing ground at Orsett is considered to be of local significance only which is derived from its archaeological interest and historic interest. The setting of the landing ground is considered to make no contribution to significance. The landing ground will see no physical impact as it lies outside of the Application Site. With setting making no contribution to its significance, any change caused by the proposals will have no impact on significance.

The World War One landing ground at North Ockendon was also identified to be of local significance, based on existing scheduling guidance. This significance is derived from its historic and archaeological interest, and its setting. The landing ground will see no physical impact as it lies outside of the Application Site, but there may be impact to significance through change to its setting. This level of impact will be addressed in the ES chapter.

The detailed assessment conducted for RAF Gravesend included a historical synthesis of its use both pre and post-World War Two, historic map regression, lidar analysis and a walkover survey. The assessment identified that the airfield's significance is based at a local level as it does not meet the criteria set out by Historic England (Historic England 2016 and 2018a). It does have local significance derived from its archaeological interest, historic interest and from parts of its setting. This is also enhanced by the known anti-aircraft defences in the wider landscape and by the dispersed site at Ashenbank Woods, which also have an archaeological interest. RAF Gravesend lies within the Application Site and will be impacted by the proposals. There may also be change to the parts of setting that have been identified in this assessment to contribute to significance. These impacts will be discussed within the ES chapter.

Bowaters Farm anti-aircraft battery is a designated heritage asset of national significance which lies in historical, architectural and archaeological interests, through its setting and also group value with a range of other military defences in the wider landscape. This asset lies outside the Application Site so would see no physical impact. There may be an impact through change to setting and this change will be taken into account within the ES chapter.

For the remaining Defence of Britain military heritage assets, their level of significance varies. This is dependant on the type of heritage asset (i.e. mortar emplacement or pillbox), level of survivability and rarity. Except for military heritage assets that have been given scheduled status or are protected military remains, none of the remaining military heritage assets are considered to be of national significance.

Due to a lack of archaeological investigation within the scheme boundary, it is possible that unrecorded military archaeology for WWI, WWII and the Cold War may be encountered in areas that have seen a minimal physical impact. The significance of the military archaeology uncovered would



need to be considered on a case by case basis. However, any remains uncovered are unlikely to be of national significance.

### **Acknowledgements**

This project was commissioned by Arcadis LLP, and Wessex Archaeology is grateful to James Goad in this regard. Wessex Archaeology would also like to thank Kent County Council and Essex County Council for supplying the Historic Environment Record data. Thanks, are also extended to the assistance provided during the writing of this assessment from Andrew Mayfield, community archaeologist for Kent County Council and the collections enquiry team at the RAF Museum, London.



# Lower Thames Crossing

## Archaeological Desk-Based Assessment of 20<sup>th</sup> Century Military Remains

### 1 INTRODUCTION

#### 1.1 Project background

1.1.1 On 12<sup>th</sup> April 2017, The UK Government's Secretary of State for Transport announced the preferred route for Lower Thames Crossing (LTC), referred to in this document as the 'Application Site'. This is the option previously known as 'Option C' (Route 3) with Western Southern Link (WSL). The route is primarily designed to ease congestion on the Dartford Crossing but will accommodate projected increases in traffic levels in the region as well as supporting future economic growth.

#### 1.2 Lower Thames Crossing

1.2.1 The Application Site is located between the A2 in Kent and the M25 in the London Borough of Havering passing through Thurrock for much of its length (**Figure 1**). At the southern end of the Application Site, a new WSL will connect to a new junction on the A2. The WSL would continue north from the new junction passing through agricultural land to the southern tunnel portal. The tunnel will then run underneath the River Thames for approximately 4km emerging on the north side of the river at East Tilbury. The route will then pass north on an embankment in between Chadwell St Mary and Linford and turn to the northwest to join a new junction with the A13 at Orsett. The road continues north from the A13 and turns eventually west to join the M25 inbetween North and South Ockendon.

1.2.2 The Lower Thames Crossing will comprise:

- Approximately 14.5 miles (23km) of new motorway connecting to the existing road network from the A2/M2 to the M25
- Two 2.5-mile (4km) tunnels, one southbound and one northbound
- Three lanes in both directions with a maximum speed limit of 70mph
- Improvements to the M25, A2 and A13, where the Lower Thames Crossing connects to the road network
- New structures and changes to existing ones (including bridges, buildings, tunnel entrances, viaducts, and utilities such as electricity pylons) along the length of the new road

#### 1.3 Scope of document

1.3.1 This assessment was requested by the Client in order to determine, as far as is possible from existing information, the nature, extent and significance of 20<sup>th</sup>-century military remains within the Application Site and its environs, and to provide an initial assessment of the potential impact of development on the heritage assets that embody that significance.





1.3.2 The Client had prepared a scoping document in 2018. A separate project design has also been prepared by Wessex Archaeology outlining the scope of the document (Wessex Archaeology 2019).

1.3.3 The Historic Environment, as defined in the National Planning Policy Framework (NPPF 2019): Annex 2, comprises:

*'all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.'*

1.3.4 NPPF Annex 2 defines a Heritage Asset as:

*'a building monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing).'*

1.3.5 Both definitions are homogeneous and included in the historic environment introduction of the National Policy Statement for National Networks definitions (DfT 2014).

## **1.4 Aims and objectives**

1.4.1 The aims of this assessment in line with the method statement prepared by Wessex Archaeology (2019) in conjunction with the Clients' own method statement (Arcadis 2018) are to:

- A detailed archaeological assessment of two First World War landing grounds at Orsett and North Ockendon, and of RAF Gravesend. The assessment of RAF Gravesend will utilise all available sources;
- A comprehensive assessment of the remaining Defence of Britain (DoB) features within the Application Site boundary and assets identified by local historic environment records.
- A statement of significance for the scheduled WWII anti-aircraft battery known as Bowaters Farm and all its ancillary structures; and

1.4.2 As per the project design, the presentation of the 20<sup>th</sup>-century DoB features will be in a chronological and regionally focused narrative with their assessment split between the two counties: Kent and Essex.

1.4.3 The assessment of significance of all heritage assets will use Historic England *Managing Significance in Decision-Taking in the Historic Environment - Historic Environment Good Practice Advice in Planning: 2* (2015) and Historic England *Conservation principles* (2008) as per the Clients' method statement (Arcadis 2018).

## **2 RELEVANT LEGISLATION AND GUIDANCE**

### **2.1 Introduction**

2.1.1 There are national legislation and guidance relating to the protection of, and proposed development on or near, important archaeological sites or historical buildings within planning regulations as defined under the provisions of the *Town and Country Planning Act*

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1990. In addition, local authorities are responsible for the protection of the historic environment within the planning system.

2.1.2 The following section summarises the main components of the national and local planning and legislative framework governing the treatment of the historic environment within the planning process. Further detail is presented in **Appendix 2**.

## **2.2 Designated heritage assets**

2.2.1 A designated heritage asset is:

*'A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.'*

2.2.2 Designation can be defined as:

*'The recognition of particular heritage value(s) of a significant place by giving it formal status under law or policy intended to sustain those values'* (English Heritage 2008, p.71).

2.2.3 Statutory protection is provided to certain classes of designated heritage asset under the following legislation:

- *Planning (Listed Buildings and Conservation Areas) Act 1990;*
- *Ancient Monuments and Archaeological Areas Act 1979; and*
- *Protection of Wrecks Act 1973*

2.2.4 Further information regarding heritage designations is provided in **Appendix 2**.

## **2.3 The Protection of Military Remains Act 1986**

2.3.1 All military aircraft crash sites in the United Kingdom, its territorial waters, or British aircraft in international waters, are controlled sites under the *Protection of Military Remains Act 1986*. It is an offence under this act to tamper with, damage, move or unearth any items at such sites unless the Ministry of Defence (MOD) has issued a licence authorising such activity.

2.3.2 Given the known history of part of the Application Site as a former WWII airfield, the possibility exists that military aircraft crash sites may be present. As a consequence, the *Protection of Military Remains Act 1986* may be directly relevant to the Application Site.

## **2.4 National Policy Statement for National Networks**

2.4.1 National Policy Statement for National Networks (NPSNN) was published by the Department for Transport in December 2014 (DfT 2014). NPSNN sets out the need for, and Government policies to deliver, development of nationally significant infrastructure projects (NSIPs) in England. Paragraphs 5.120 to 5.142 refer to the Historic Environment. Paragraphs 5.126 and 5.127 deal specifically with the EIA process and paragraphs 5.128 to 5.138 deal with decision making process undertaken by the Secretary of State.

2.4.2 In paragraphs 5.123-25 NPSNN goes on to state that designated assets are those that have been recognised as being of higher importance and worthy of protection. However, it should not be assumed that all non-designated assets are of a lower significance as they may not



have been the subject of any previous investigation or assessment and further research may indicate that they merit designation/statutory protection.”

2.4.3 NPSNN paragraphs are included in **Appendix 2**.

## **2.5 Local planning policy**

2.5.1 The Site is situated within the administrative boundaries of several councils. Local planning policy relevant to this assessment and future considerations include:

- Gravesham Local Plan Core Strategy – Policy CS20
- Thurrock Local Development Framework: Core Strategy and Policies for Management of Development – Policy CSTP24
- Havering London Borough Core Strategy and Development Control Policies: Development Plan Document - Policies CP18 and DC67-71

2.5.2 Local planning policies that relate to the historic environment and may be relevant to the proposed development are presented in **Appendix 2**.

## **3 METHODOLOGY**

### **3.1 Introduction**

3.1.1 The methodology employed during this assessment was based upon relevant professional guidance, the Chartered Institute for Archaeologists' Standard and Guidance for Historic Environment Desk-based Assessment (Chartered Institute for Archaeologists, 2014; revised 2017).

### **3.2 Study Area**

3.2.1 A Study Area was established within a 1 km radius of the Application Site. The recorded 20<sup>th</sup>-century military historic environment resource within the Study Area was considered in order to provide a context for the discussion and interpretation of the known and potential resource within the Application Site.

### **3.3 Sources**

3.3.1 Several publicly accessible sources of primary and synthesised information were consulted. These comprised:

- The National Heritage List for England (NHLE), which is the only official and up to date database of all nationally designated heritage assets;
- The Kent Historic Environment Record (KHER), Essex Historic Environment Record (EHER) and Greater London Historic Environment Record (GLHER), comprising of databases of recorded archaeological sites, find spots, and archaeological events within the county;
- South East Regional Research Framework Resource Assessment and Research Agenda for defence (Smith 2019);
- Revised Research Framework for the East of England (Medlycott 2011);

- National heritage datasets including the Archaeological Data Service (ADS), Heritage Gateway, OASIS, PastScape and the National Record of the Historic Environment (NRHE) Excavation Index;
- Historic manuscripts, surveyed maps, and Ordnance Survey maps held at the Kent History and Library Centre, Essex Record Office and the RAF Museum;
- Relevant primary and secondary sources provided by the Client; and
- Relevant primary and secondary sources held at the Kent History and Library Centre, Essex Record Office and in Wessex Archaeology's own library. Both published and unpublished archaeological reports relating to excavations and observations in the vicinity of the Site were studied.

3.3.2 Sources consulted during the preparation of this assessment are listed in the references section of the report.

### **3.4 Walkover Survey**

3.4.1 Site visits were conducted for World War II (hereafter 'WWII') RAF Gravesend, World War One (hereafter 'WWI') Orsett landing ground, North Ockendon Landing ground and Bowaters Scheduled Monument. These were completed on the 18<sup>th</sup> and 19<sup>th</sup> October 2019. The results of the walkover surveys are discussed below. Due to the overall size of the Application Site, it was not possible to conduct a walkover survey of the entire area, nor was it considered necessary at this stage.

### **3.5 Assessment criteria – Significance**

3.5.1 NPSNN (para 5.122) defines significance as follows:

*“The sum of the heritage interests that a heritage asset holds is referred to as its significance. Significance derives not only from a heritage asset’s physical presence, but also from its setting.”*

3.5.2 The assessment of the significance of heritage assets was informed by:

- Department for Transport 2014 National Policy Statement for National Networks;
- Highways Agency 2019, Design Manual for Roads and Bridges LA106: Cultural Heritage Assessment;
- Scheduled Monuments & nationally important but non-scheduled monuments (Department for Culture, Media and Sport (DCMS) October 2013);
- Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage 2008);
- Managing Significance in Decision-Taking in the Historic Environment: Good Practice Advice in Planning Note 2 (Historic England 2015a);
- Relevant national, regional and thematic Research Frameworks (Smith 2019, Medlycott 2011); and

- Relevant Designation Selection Guides published by English Heritage / Historic England (2018a, 2018b).

3.5.3 As specified in the method statements (Arcadis 2018, Wessex Archaeology 2019) documents used to establish significance will be the English Heritage (now Historic England) *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment* (2008) and *Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning Note 2* (Historic England 2015a). Within the guidance, significance is weighed by consideration of the potential for the asset to demonstrate differing 'values'.

3.5.4 The values identified within Conservation Principles are broadly analogous to the 'interest' defined in NPSNN, which are used within this report. These are:

- **Archaeological Interest:** *there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point.*
- **Architectural and Artistic Interest:** *these are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skill, like sculpture.*
- **Historic Interest:** *An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history, but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity.*

### 3.6 Setting assessment

3.6.1 Annex 2 of the NPPF defines the setting of a heritage asset as:

*'the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.'*

3.6.2 The setting assessment was guided by *The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3* (Historic England 2015b; revised 2017), which advocates a systematic and staged approach to the assessment of the effects of development:

- Step 1 of the approach is to 'identify which heritage assets and their settings are affected'
- Step 2 requires assessment of 'the degree to which these settings and views make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated'

- Step 3 is to 'assess the effects of the proposed development, whether beneficial or harmful, on the significance or on the ability to appreciate it'
- Step 4 is to explore ways to 'maximise enhancement and avoid or minimise harm'
- Step 5 is to 'make and document the decision and monitor outcomes'

3.6.3 For the purposes of this assessment, only Steps 1-4 of the process have been followed. Step 5 was not included as part of this assessment, as this is the responsibility of the Local Planning Authority.

### **3.7 Assumptions and limitations**

3.7.1 Data used to compile this report consists of secondary information derived from a variety of sources, only some of which have been directly examined for the purposes of this Study. The assumption is made that this data, as well as that derived from other secondary sources, is reasonably accurate.

3.7.2 The records held by the KHER, EHER and GLHER are not a record of all surviving heritage assets, but a record of the discovery of a wide range of archaeological and historical components of the historic environment. The information held within is not complete and does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.

3.7.3 Both the RAF Museum and National Archives were contacted for further information. Neither had any additional documentation directly related to the North Ockendon landing ground or Orsett landing ground (RAF Museum, per coms 21<sup>st</sup> August 2019).

### **3.8 Copyright**

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## **4 HISTORY OF DEFENCE IN KENT AND ESSEX DURING THE 20<sup>TH</sup> CENTURY**

### **4.1 Level of research to date**

4.1.1 Within the last few years, in conjunction with the Centenary, we have seen a rise in the interest and research for WWI defences on the Home Front with general books for Britain produced by Appleby (2015), Martin Brown (2017) and Mike Osborne (2017). At a regional level, thematic surveys have been completed in Essex for WWI airbases and landings grounds (Medlycott 2011) while assessments for Gravesend (Smith 2010), Medway (Smith 2011), Canterbury (Smith 2012) and Thanet (Smith 2018) have recently been prepared by Victor Smith, a noted military historian for Kent. More detailed assessments of particular typologies or specific areas have only just started to occur. One such example is the recent work by the Shorne Wood Historic Group with the support of Kent Council's Heritage Conservation Team (Mayfield 2016).

4.1.2 A plethora of research has been completed for WWII at local, regional and national levels. The most widely known of and widely used assessment was completed by English Heritage

known as the Defence of Britain (DoB) project. The purpose of the project was to record the 20<sup>th</sup>-century military landscape of the United Kingdom. The methodology used for the DoB was reproduced at a regional level with more detailed surveys completed in Kent, Essex and many other counties. More detailed pieces of literature for Kent and Essex have been completed by Victor Smith (Smith 2010; 2011; 2012; 2018), Mike Osborne (2013), Frances Clamp (2017) and Fred Nash (2017), to name just a few.

- 4.1.3 Several books have been written on the mentality of the Cold War in Britain and on analysing the history of Cold War (Hill 2018, Gieger 2017). Yet there has been almost no literature on the defences present in Britain. In 2005, Historic England compiled a nationally focused book on Cold War defences, however, this was based on the defences that were subject to declassification (2005). Where there have been studies, these are often very broad (McCamley 2002) or on particular sites that played a key role during the Cold War. Such examples include the research completed by Historic England at Fort Halstead in Sevenoaks for the Atomic Bomb Project (Smith 2019:37) and the test sites at Foulness (Cocroft and Newsome 2009). However, the lack of current research is primarily because most sites and associated documents remain classified under the British Secrecy Act. A steep increase in the amount of literature available is expected in the coming years as more and more sites are declassified.

## 4.2 Why was there a need to defend Kent and Essex?

- 4.2.1 Kent has always been a county at risk of raids and invasions. To the east, the closeness to the Continent via the short sea crossing that has been vital for trade and communication has made the county vulnerable to invasion (Smith 2019:3). To the north, The River Thames trading routes which penetrate the heartland of England too have been a tempting target for an invader with a series of commercial ports and the Royal Arsenal at Woolwich and dockyard, essential military infrastructure to any war, along its route. The River Medway was also susceptible, attested by the successful Dutch Raid of 1667 that crippled the British Navy. Defending Kent has therefore been of top priority for any acting government or royal monarch.
- 4.2.2 Essex, for the most part, has always been thought to have been safe from invasion with the rough North Sea acting as a natural barrier (Osborne 2013). However, the southern limits of Essex which border the River Thames is another matter. Like Kent, there had always been a concern that an invasion force or enemy flotilla could use the Thames to gain access to London and the English heartland. Military invasion philosophy has for centuries maintained that the successful occupation of the capital would lead to the inevitable fall of the country. However, it was developments in technology during the 20<sup>th</sup> century that saw an invasion of Essex as a possibility. With its general low-lying flat ground and reasonably easy access to London it has the perfect conditions for modern land invasion tactics.

## 4.3 First World War

### *Kent*

- 4.3.1 When Britain went to war with Germany in 1914, concerns had already been circulating that an invasion force of up to 70,000 could theoretically land in Britain with little immediate resistance (Smith 2019:26). Prior to 1914, it had always been assumed that any invasion would be prevented or contained by the Royal Navy. However, as European powers began to develop their fleets that could match or hamper the Royal Navy this assumption eroded. New technological advancements of the early 1900s also meant that past island defence philosophy would also not be adequate to defend the nation. New ideas and defences had to be built to protect the island.



- 4.3.2 A rush to make Britain and Kent ready for modern warfare began with a rush to increase and improve Kent's' coastal defences. This need was addressed first and foremost by developing the existing fortifications located on the River Thames, River Medway, in important harbours such as Dover and Newhaven and on existing batteries in Grain and Sheppey. This included adding new and improved artillery which had a much longer firing range and placing new layers to existing defences that were able to withstand the powerful impact of modern ordnance.
- 4.3.3 Alongside the coastal defences, from 1914 onwards, land defences were established at key locations in Kent. The majority of anti-invasion defences were not continuous, comprising of short lengths of fire trenches with barbed-wire entanglements built as defended localities, some overlooking possible landing beaches (Appleby 2015). In Sheppey, Canterbury and between the Swale and Hoo Peninsula more substantial stop lines were built, supplemented with artillery and machine-gun emplacements (Brown 2017:43). Additional trenches were also cut along the Thameside and around important towns, but these have yet to be identified (Smith 2010:11). Any form of land invasion would be met by heavy resistance.
- 4.3.4 The outbreak of the war and settling of the Western Front saw a continued need for fresh recruits from across the British Empire. Many camps and temporary bases were established across Kent to act as temporary accommodation and as training facilities. Before their placement on the Western Front, soldiers needed to be able to dig, repair and cope with physical and the psychological pressures of trench warfare. The largest concentration of camps was in and around Folkestone and Dover, where most of the soldiers and equipment would embark from to the Continent. While there are no records of any camps existing within the Application Site, several have been recorded in Medway to the south and soldiers are likely to have been put up in Gravesend at Milton barracks with Gravesend playing a key role in WWI due to the pontoon bridge (discussed below). It would be wrong to assume temporary camps were not set up in and around the town.
- 4.3.5 Aviation was still a new technology, and the actual threat it could pose and how best to counter against it was not fully understood. However, after the first attacks by the German Air Force, it was soon realised that defences had to be designed and built with the eastern coastal towns, London and Gravesend becoming targets for German aircraft. Nevertheless, little is known of and about the defensives that were constructed in around Gravesend to counter aircraft with even less documented. Acoustic mirrors, Barrage balloons, anti-aircraft batteries, searchlights and ground observation posts were some of the defences thought to have been established in the area with Victor Smith suggesting some of these may have been positioned close to the River Thames (Smith 2019). Airfields were also established in Kent by the Royal Flying Corps (RFC) to house fighter squadrons to defend against Zeppelins and bombers. At the start of the war these were rudimentary and mainly comprised of a flat area of grass designed in the shape of a runway with a few permanent or temporary buildings; these grew in size and sophistication as the war progressed.
- 4.3.6 Although few remains survive of WWI land defences in Kent, recent work by Kent County Council as part of the HLF funded project '*Valley of Visions Landscape Partnership Scheme and the Shorne Woods Heritage Project*' have identified the remains of WWI stop lines and officer camps (Mayfield 2016). The project identified approximately 1.5km of 'trench features' along one of the ridgelines of the Medway Valley, which upon further study was identified to be between 0.5-1m deep and over 1m wide. Further study of the site is due to occur in the future.

## Essex

- 4.3.7 Partway through WWI concerns were raised in Government that an invasion of Essex could occur (Osborne 2013). In the early 1900s, several fictional novelists had written books on the invasion of Britain that used East Anglia as the landing area (Halifax 2010). In 1904, a series of military exercises had taken place that saw a force successfully land in Essex and move inland to Clacton before they were spotted (*ibid*). However, it was the collapse of the Eastern Front and movement of Central forces to the Western Front that worried the Government. There was little stopping the German High Command transporting these new forces across the channel in an attempt to break the deadlock in the Continent. With the limited land defences in the region and the Royal Navy stretched thin, an invasion could have been devastating. Fortunately, The German High Command never designed or had any interest in conducting such an invasion (Osborne 2013:92). If they had, the result might have been devastating.
- 4.3.8 While the threat of land invasion never materialised, the level of aerial assault on the county was not anticipated with areas along the Essex side of the Thames becoming a key target of the German Luftstreitkräfte (Osborne 2013). To counter this new threat, the post-medieval coastal fortifications such as Tilbury Fort had their larger coastal artillery removed and replaced with smaller pieces that could target aircraft. Development of new naval defences closer to the Thames estuary made this a possibility. Fixed gun emplacements replaced the smaller artillery in 1915 as aerial assault intensified (*ibid*:95). New Royal Flying Corps airfields/landing grounds were also established across the region to house fighter squadrons. Like in Kent, at the start of 1916, most were simple often requiring just a flat piece of grassland capable of containing an airstrip of about 500 yards, a couple of aircraft sheds and buildings for rest. They would, however, become more permanent and sophisticated sites by the end of the war with improved hangers, barracks huts and officers' quarters.
- 4.3.9 Poor flying conditions, inefficient and small aeroplane engines and the inability to gain accurate locations for the zeppelins also necessitated the need for temporary landing grounds where fighters could land, refuel and reevaluate the situation. Essex had the largest concentration of landing grounds with twenty-seven in total (Barker 2002). The landings grounds were split into five classes depending on their lightening and day or night capabilities; first class, second class, third class, emergency or night landing. Two landing grounds exist within the Study Area and are discussed below (North Ockendon and Orsett).
- 4.3.10 Apart from the use of existing fortifications, little is known of the land defences built in Essex. Around the Tilbury area, there are likely to have been some form of defensive line similar to those found in Kent, but no study has been conducted to find any information on such defences. The only defence (though not truly a defence, nor technically just in Essex) was the pontoon bridge built from Tilbury to Gravesend. Constructed of lighters spanned by timber roadways, it had a removable middle section that could be extracted to allow river traffic to pass (Smith 2010). The bridge was used to transport military personnel and equipment from Essex to the embarkation points on the south-east coast.

## 4.4 Interwar Period

- 4.4.1 Following the end of WWI, there was a significant reduction of the anti-invasion defences in Kent (Smith 2019:28) and in Essex (Osborne 2013). Without an identified enemy and lack of knowledge about the type of threat it would pose, there was uncertainty about priorities of defence. WWI had not only stripped Britain of a huge amount of natural resources and workforce but other European powers too. All countries saw a significant decrease in their military budgets. In Britain, this led to the acknowledgement of the Ten-year Rule which



stipulated any potential aggressor would require at least ten years to prepare for war. This allowed a decade worth of defence savings to be made with the rule only revoked after the first signs of German re-armament in 1932.

- 4.4.2 While there was a reduction in anti-invasion defences, there was a surge in developing Britain's airforce during the interwar period. After WWI, all countries acknowledged that aeroplanes would play a significant role in any future conflict. However, in the early 1920s, the British Air Force lagged behind other international powers, particularly France. In 1923, the Steele-Bartholomew Scheme was enacted to change this. Several new airfields were created across Kent for the recently established Royal Air Force (RAF) while in Essex two fighter squadrons bases were built at North Weald and Suttons Farm. The main airfields in Kent were supplemented by a series of supporting stations. By the middle of the 1930s, preparations focussed on the threat of Germany and likelihood of large-scale aerial bombardment. Construction had also begun on radar stations and sound mirrors in Kent and Essex to identify any incoming aircraft and on anti-aircraft batteries positioned in strategic areas/sites.
- 4.4.3 Civil defence acquired special urgency following the Munich Crisis and the year leading to the outbreak of War (Smith 2010:18). At numerous places across Gravesend and in Kent trench shelters were dug in open areas close to residences. Construction of other types of civil defence structures such as warden posts, control centres, gas decontamination centres and first-aid posts soon followed. However, after the naïve meeting of Chamberlain and Hitler, no further money was spent on either air precautions or civil defence until the outbreak of WWII (ibid).

## 4.5 Second World War

- 4.5.1 In May 1940 following the defeat of the British Expeditionary Force, the German invasion of Britain was considered inevitable. It was believed that Germany would use similar Blitzkrieg tactics employed on the Continent involving attacking several areas at once with mechanised infantry formations with close air support. This would involve landing invasion forces in several locations to cause severe disruption to any defending force. The British Command thought that the southeast would bear the brunt of the invasion and led to a radical increase in the tempo of constructing home defence measures (Smith 2001).
- 4.5.2 The defence of Britain fell to the Commander-in-Chief of the Home Forces, General Edmund Ironside. Ironside planned to turn strategic areas of the country into 'prepared battlefields' and relied on pinning the enemy down, while what regular army divisions he had left could counterattack with vehicles and artillery. To do this, he commissioned the construction of a series of stop-lines starting with a coastal crust before heading inland to the longest and most heavily defended of the lines; the General Headquarters anti-tank line (GHQ line). This national defence line stretched across Southern England from the Bristol Channel, running along the left bank of the River Medway, across the Hoo Peninsula to the south bank of the Thames (Smith 2010). Smaller stop-lines were built further inland around London and key towns/areas. Gravesend was encased in a defensive circuit of nodal points, anti-tank islands, pillboxes, anti-tank ditches, roadblocks, spigot mortar positions and some minefields. Several pillboxes and defences were also built along the Thames to supplement the post-medieval fortifications in case the enemy tried to pass up the River.
- 4.5.3 Essex was also considered to be a point of a possible invasion. Though it did not have the ports of Kent or proximity to the Continent, it did have miles of coastline, an overall flat topography and several natural harbours. As a result, the GHQ line was expanded from the River Thames northwards across much of Essex and East Anglia. The line utilised what possible natural barriers it could (rivers, canals etc.) supplemented by human-made

defences to create the continuous anti-tank barrier. Pillboxes, mortar emplacements and defensible positions were added along the route. In Essex, the line was complemented by additional smaller stop lines such as the River Line, The Stanier Line, The Black Line and The Outer London Line. These also comprised of pillboxes, anti-tank ditches, barricades and runs of barbed wire making large parts of Essex 'battle ready'. New and improved defences were built along the coast, especially around the Thames Estuary, and the post-medieval forts were re-armed. More unique to Essex was the use of armoured trains. Armoured trains had been successfully used in previous wars with twelve trains assembled in Britain; six of which guarded the East Anglian Coast (Osborne 2013). Only one such train was sent to Kent.

- 4.5.4 Kent, as a county, played a greater role in the air defence than Essex. In total, thirty-two RAF airfields (both minor and main airfields) were present in Kent during the war compared to the twenty in Essex; of these twenty twelve were built by the United States Army Air Force as long range bomber stations (Osborne 2013:157). There was also a greater concentration of anti-aircraft defences in Kent, especially along the coast and around the airfields which were susceptible targets for bombardment. However, one of the best-preserved anti-aircraft examples, Bowaters Farm Anti-aircraft battery, resides in Essex.
- 4.5.5 Following the success of Operation Overlord and liberations of parts of Western Europe, the threat of invasion lessened. As a result, most of the temporary land defences were removed while hard defences were maintained until the end of the war. Pillboxes and anti-aircraft defences remained in case of future conflicts in both counties.

## 4.6 Cold War

- 4.6.1 The Cold War brought new challenges in how best to defend Britain. While Britain took a backseat in the ensuing conflict, which was largely fought between the US and the Soviet Union, it was considered a strategic target by Russia. The manning of existing anti-aircraft and coastal batteries continued into the 1960s (Smith 2019:36). New ROTOR radar and Ground Control Interception (GCI) stations were also built in Kent while several of the RAF stations continued to be used by fighter squadrons. However, due to technological developments, these defences, relatively quickly, became outdated. As a result, most coastal defences and heavy anti-aircraft batteries in Kent were removed or put into a care and maintenance program. Many of the surviving airbases were also closed, with the RAF focusing their military presence in north Britain and Scotland. Changes in military tactics with the establishment of NATO saw an emphasis on forward defence by air formations in Continental Europe and over the North Sea (ibid).
- 4.6.2 Very little is known of the Cold War defences in Kent. We are aware that as part of a national programme, government seats and civil defence control centres were constructed, used in the event of a nuclear attack along with radiation monitoring posts that could monitor the fallout. The closest known post to the Application Site in Kent is located in Gravesend which has since been opened up to the public. More defences could have existed, however much of the documentation from the Cold War still remains confidential. Declassification of these documents will help develop our understanding of Cold War defences in Kent. However, as some of these sites lie on private land, their level of preservation is not known.
- 4.6.3 In Essex, the outbreak of the Cold War saw a continual military presence and need for military defences. Unlike in Kent, much of the AA capabilities in Essex had been altered from stationary sites to mobiles units that could deploy to any area (Osborne 2013). From the 1960s, there was greater emphasis on the construction of surface-to-air missile gun sites across the East Anglian coast to combat against the new jet-engined Russian aircraft. One former anti-aircraft site that saw substantial modification was Bowater Farm in East

Tilbury, which saw the installation of new automatic AA weaponry, brick barracks, garages and a guardroom. However, of all the RAF bases built in Essex during the WWII only RAF Wethersfield and RAF North Weald continued as operational military sites, the latter until 1991.

#### **4.7 Summary**

- 4.7.1 For the most part, all evidence of WWI defences has been lost in both regions. This means that those that do survive or are known of, such as the North Ockendon Landing Ground, are of significance. During WWII, both counties were possible sites for invasion by Germany and as result both saw the construction of a plethora of anti-invasion and anti-air defences, and there is a great deal of documentary and physical evidence for these defences in both counties.
- 4.7.2 The only real differences to the defence mentality between the two regions was a greater emphasis on reactionary fighter squadrons in Kent and the use of armoured trains in Essex. The need for more fighter squadrons in Kent is obvious. Its proximity to the Continent and with the Luftwaffe travelling over the county to reach London it warranted a greater aerial presence. The emphasis on the use of armoured trains is less well understood. Both had highly developed railway networks, and both were at threat. The railway lines were likely needed to be free from unnecessary traffic in Kent to assist with movement of soldiers and equipment.
- 4.7.3 In both Kent and Essex, there was a substantial running down of military presence and defences following the end of WWII, more so in Kent. Essex was still used for a time by the RAF until fighter squadrons were moved further north to protect against aerial attack from the North Sea. Some of the anti-aircraft batteries in Essex were upgraded at the start of the Cold War but like Kent were decommissioned with the advent of the jet engine. However, our current understanding in both counties is severely lacking.

### **5 PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS**

#### **5.1 Within the Application Site and 1km Study Area**

- 5.1.1 There have been numerous investigations completed within the Application Site and in the 1km Study Area as evident by those shown in Figures 3A-D. The majority of investigations represent developer-led studies completed by commercial archaeological units, and, for the most part, were not taking place due to the potential for identifying military archaeological remains. Except for those completed at RAF Gravesend which are discussed, below the only developer-led investigations that had a focus on 20<sup>th</sup>-century military archaeological remains include the geophysical survey on the Tilbury Marsh by Wessex Archaeology (WA 2017).
- 5.1.2 For military archaeological remains, the Defence of Britain Project and the North Kent Coast Rapid Zone Survey (EKE10278, EKE8626 and EKE8094) remain key references. Completed between 1995 and 2001, the Defence of Britain Project was a national project run by the Council for British Archaeology and national bodies to record the 20<sup>th</sup>-century military landscape of the United Kingdom. The majority of the undesignated military heritage assets discussed below were identified during this project. The North Kent Coast Rapid Zone Survey, was completed by Wessex Archaeology on behalf of Kent County Council in the early 2000s. The survey aimed to assess North Kent coastal areas for any undiscovered military heritage assets through desk-based study and on-site surveys. Several previously unrecorded military heritage assets were identified during the study.

- 5.1.3 In Kent, several sites have been subject to additional surveys. Regional investigations were conducted in Kent by Victor Smith for the Thameside area and Gravesend, which focused on the defences from the WWI to Cold War and beyond (Smith 2019). Desktop studies have occurred on Shorne Marsh from 1999 to 2013 with a particular focus on the Milton Firing Range (EKE9777, EWX9136 and EKE16356). Shorne Wood saw intermittent surveys during the 2000s with remains of the WWII camp noted in 2002 and 2004 (EWX9123).
- 5.1.4 Studies for the Essex side of the Application Site have prioritised investigations and research into the post-medieval forts (EEX54886, EEX53549, EEX52891 and EEX54884) with less of an emphasis on 20<sup>th</sup>-century military archaeological remains. Assessments have however been completed for specific sites such as the survey of the Bowaters Farm scheduled monument (EEX52863, RCHME 1994) and on WW1 landing grounds (EEX52887), both non-intrusive by nature.
- 5.1.5 For the area of the Application Site that falls within the boundaries of GLHER, the recorded intrusive investigations have not specifically been focused on identifying 20<sup>th</sup> century military archaeological remains, nor have any remains been identified.
- 5.2 WWI North Ockendon Landing Ground**
- 5.2.1 The only recorded investigation of the North Ockendon WWI landing ground was during a larger assessment of WW1 landing grounds by Peter Doyle in 1997 (1997). This was not a detailed survey, and little is mentioned in the overall report by Doyle for North Ockendon.
- 5.3 WWI Orsett Landing Ground**
- 5.3.1 The only recorded investigation of the Orsett WWI landing ground was during a larger assessment of WW1 landing grounds by Peter Doyle in 1997. This was not a detailed survey, and again little is mentioned in the overall report by Doyle for Orsett.
- 5.4 RAF Gravesend**
- 5.4.1 Several archaeological investigations have been carried out over the former airfield base. Some of these have been small in scale such as the geotechnical investigations at Michael Gardens in the southern section of the airfield (EKE8248), while others have been non-intrusive such as the historic building survey of Thameside school (EKE12262).
- 5.4.2 For the most part, intrusive surveys have been confined to the northern and southern extremes of the airfield in advance of development. No survey has been completed in the parts of the airfield that housed the buildings complexes. In 2001, a watching brief at Cervia Way found two undated linear features that could relate to the former airfield site (EKE8590). At Hillside in the southern section of the airfield, the remains of an Iron Age to Romano-British settlement were encountered suggesting not all areas were impacted by the construction of the airfield (EKE12960, EKE12962 and EKE4858). However, not all archaeological surveys yielded archaeological results. The archaeological watching briefs completed at Thamesview School encountered no archaeological remains (EKE16749, EKE5345).
- 5.4.3 In 2019, a magnetometry survey was conducted on four areas within the Kent part of the Application Site (Headland Archaeology 2019). The survey identified a broad-band of high magnitude anomalies across the area designated F19 which relates to the fields to the south of the Riverview Park housing estate. These anomalies are thought to correspond to the taxiways, turning circles and other RAF Gravesend airfield infrastructure (Ibid: 9). High magnetic responses were also recorded at Southern Valley Golf Course previously the northern part of RAF Gravesend. These are thought to be the remains of remediation works

associated with demolition of RAF Gravesend and could mask archaeological anomalies of a lower magnetic response.

- 5.4.4 Associated with RAF Gravesend is the dispersed camp at Ashenbank Wood which has been subject to several investigations that took place from 1998 to 2019 (EKE5392, EKE5432, EKE5216 EKE12008). This has included surveys by Victor Smith of the surviving air raid shelters within the camp in 2010 (EKE12575). A walkover survey was conducted by LTC heritage team in 2019 which confirmed that remains of the camp still survive in the area, while parts of camps 1-4 were removed to make way for the High Speed 1 Line.

## **6 MILITARY HERITAGE ASSETS WITHIN THE APPLICATION SITE AND STUDY AREA)**

### **6.1 Introduction**

- 6.1.1 The following section is split into two parts. It begins with an assessment of the recorded 20<sup>th</sup>-century military remains with the Kent section of the Application Site and Study Area. This is followed by a review of the Essex side. Both have been split into chronological sections beginning with WWI through to WWI and to the Cold War. For WWII the sections is split further into the type of defence, i.e. land defence or civilian. This discussion is followed by the detailed assessments for North Ockendon WWI landing ground, Orsett WWI landing ground and RAF Gravesend.

- 6.1.2 Illustrations of the historic environment data have been prepared for the entire Application Site displaying all known 20<sup>th</sup>-century military archaeological remains and are included at the end of the report. These include plans for both Kent and Essex, National Mapping Programme data, surveyed sites by LTC, historic maps for the three airfields and original plans of RAF Gravesend.

### **6.2 Kent**

#### *WWI*

- 6.2.1 Despite the importance that Gravesend and Thameside area had during WWI, as addressed by Victor Smith (2010), there are few entries on the KHER that relate to military archaeology heritage assets of this date. For the most part, these relate to either buildings or sites that had a more supportive role during the war rather than having a role in the defence in the region (3, 226, 22, 240 and 241). The exception to this would be the pontoon bridge that was positioned over the River Thames between Gravesend and Tilbury (219). The pontoon bridge was discussed as part of paragraph 4.3.10 above.
- 6.2.2 The only recorded entry that in long term military use was Milton Range (64 and 68). Established in 1862, the late 19<sup>th</sup>-century rifle range has seen almost continual use up to present day. The site was chosen by Col. M. Williams, the commanding Royal Engineer, after it had become clear the of establishment of a range in the vicinity of Chatham Dockyard would be too costly. Five of the original butts survive in the western extent of the range measuring c. 11m by 25m with a walled or fenced area in front (west) of them. Milton Range was extended and developed on several occasions during the late 19<sup>th</sup> century and 20<sup>th</sup> century eventually having a latrine block, a repair workshop, light gauge railway and additional firings mounds constructed. The original shooting butts are considered to be some of the best surviving examples of their type. The full extent of the rifle range has been mapped as part of the Hoo National Mapping Project (Figure 5).
- 6.2.3 Although, there is no definitive evidence that the original shooting butts were used during WWI, it is highly likely they were as soldiers continued to be stationed in Gravesend at



Milton barracks, who would need training in the use of standard infantry rifles before being sent to the Western Front.

- 6.2.4 In 1922, eight homes were built in Thong Lane just outside the Scheme boundary for veterans of the First World War under the 'Homes forHeroes' scheme (22). Each home originally had a barn and ten acres of land and to qualify for the homes, one had to have been wounded or gassed, and therefore unable to gain employment. It was hoped the land and the house would provide a level of self-sufficiency for the veterans. All eight homes and their associated barns still exist today. The ten acres of land, however, has been substantially reduced to large gardens.
- 6.2.5 Whilst there are no recorded 20<sup>th</sup> century military defensive structures of WWI date within the Kent part of the Application Site, they are likely to have existed. As discussed earlier, Victors Smith's research on the Kent Thameside has led to the suggestion that temporary stop lines may have been created in the area (Smith 2010). These are unlikely to have included permanent defensive placements. Temporary camps may also have existed in and around Gravesend for the barracking of troops. A recent assessment of Lidar from Birling has found the remains of an officer camp stretching over 3km along the Medway ridge (Mayfield 2016).
- 6.2.6 Lidar for the Kent part of the Application Site was consulted. No features matching similar discovered trench systems identified by Appleby (2015) or Mayfield (2016) could be discerned. These would have presented themselves as negative features on the Lidar survey, which could be a reason why no such trenches are shown. Post-deposition of soil and material during flooding events or through man-made process could seal such trenches from the Lidar. The potential that there may be surviving WWI features cannot be ruled out.

#### *WWII*

- 6.2.7 With the exception of four entries for the Cold War, all remaining records in the Kent part of the Application Site date to WWII; and there are many. Gravesend and Northfleet were seen as strategically important in the event of an invasion and as a result a defensive ring of both land and air defences were created around these settlements, but also around the Pepper Hill electricity station and RAF Gravesend (Victor Smith 2009). We also have at our disposal a greater quantity of historic records including both paper documents and aerial photographs. These formed the main source of evidence during the Defence of Britain project, which most of the HER entries derive their existence from.

#### Land defences

- 6.2.8 As stated above, a plethora of land defences existed in and around Gravesend, particularly on the main roads in and out of the town. These include battle headquarters (26, 49, 59, 141, 146, 155 and 253), defended points (2, 44, 47, 53, 140, 149, 250), fire trenches (152), defence centres (185 and 189), mortar emplacements (28, 30) and roadblocks (27, 43, 48 and 54). Victor Smith has suggested that there were likely additional features in the Kent Thameside area, with pillboxes likely to have existed along the shoreline (2010).
- 6.2.9 The village of Cobham in the southern part of the Application Site also had a number of defences created, as it was selected as the site for a divisional headquarters that was active from 1941 to 1942 (127). It is thought that the division troops were stationed in the hidden camps located in Cobham, Ashenbank Wood and Shorne that are discussed below. The commander of the divisions, or the divisions name, are not provided by the HER entry.

Air defences

6.2.10 There are a great number of aerial defences within the Kent region. This is unsurprising given the existence of RAF Gravesend and known use of the River Thames as a guide for Luftwaffe pilots on their raids on London. These include both heavy (60, 128) and light AA batteries (25, 29, 34, 39, 41, 138, 153 and 157), air raid sirens (142, 150, 204), warden and searchlight posts (32, 55, 58, 136, 137, 159, 163, 169, 171, 172, 173, 179, 182, 184, 199 and 211), barrage balloon sites (70, 161, 165 and 252) and air raid warden posts (22, 38, 50 and 57). These were all likely coordinated from the anti-aircraft headquarters located on Rochester Road, Chalk (45).

Naval defences

6.2.11 The only recorded naval defences are two minewatching posts established in Gravesend (233 and 235). To interrupt maritime traffic on the River Thames, the Luftwaffe would drop mines into the water and it was the responsibility of those stationed at the posts to inform the Royal Navy of their locations. Any form of anti-ship defence was positioned either further downstream in the Thames Estuary or in existing coastal battery forts such as Tilbury Fort, Coalhouse Fort, New Tavern Fort and Shornemead Fort (Smith 2010). There are however a series of mooring posts/stages and platforms/wharves located on the foreshore (65, 66, 67, 69, 194, 196, 210, 214, 217, 223, 224, 225, 227, 228, 229, 230, 231, 232, 234, 236, 237, 238, 239 and 255). Though it cannot be confirmed, some of these may have seen use during WWII.

Airfield sites/camps

6.2.12 The only record airfield site/camp was positioned in Ashenbank Wood which is discussed as part of the assessment for RAF Gravesend below.

Airplane crash sites

6.2.13 The KHER holds the records for several aeroplane crashes (4, 14, 40, 63, 129, 147, 188 and 198). Of these recorded crashes, five are considered protected military remains (4, 63, 129, 188 and 198); none are located within the Application Site. However, entry 198 (HER: TQ 67 SE 169) relates to a crashed Mosquito Mk VI HR153 British Bomb that dived into the Thames after take off from Gravesend, the position of the wreck has yet to be identified.

6.2.14 In addition to the records from the KHER, there are further accounts in the Air Ministry Casualty files held at the National Archives including diaries for the American and Canadian Airforce. These are provided in a tabular format below. It is not known whether or not any of the remains of the aircraft survive below ground. However, at present, they do not fall under the category of protected military remains.

Reference	Date	Pilot	Record
AIR 81/2496	31-Jul-40	Pilot Officer E G Parkin	injured; aircraft accident, Gravesend, Hurricane P3349, 501 Squadron
AIR 81/10004	21-Sep-41	Pilot Officer W B Sanders	injured; Spitfire W3315, 609 Squadron; aircraft accident at RAF Gravesend
AIR 81/7766	22-Jul-41	Pilot Officer R C Gosling	injured; crashed at RAF Gravesend on return from operational flight, enemy action, Spitfire W3229, 2 Squadron
AIR 81/7388	05-Jul-41	Sergeant C J Mason	injured; mid air collision near Gravesend between Spitfire W3178 and Spitfire P8578, 74 Squadron
AIR 81/3827	17-Oct-40	Sergeant J Gillies	injured; enemy action, Hurricane Z3312, 421 Flight (Gravesend)



AIR 81/4182	11-Nov-40	Aircraftman B C Northway	Died of injuries; enemy action, 909 Balloon Squadron, Gravesend
AIR 81/2325	29-Jun-40	Sergeant R W Haines	killed; aircraft accident, Gravesend, Spitfire R9498, 610 Squadron
AIR 81/4846	12-Jan-41	Pilot Officer J G Benson, Pilot Officer L M Blain	injured; aircraft accident at RAF Gravesend, Defiant N1688, 141 Squadron
	3-July-1943	Sgt John Baker Sgt Glenn Lewis Sgt Jack Holdes	Plane ran out of fuel and crashed at Gravesend, all pilots successfully bailed out over Kent. 432 Canadian Squadron.
AIR/28/294	4-July-1940		Emergency landing of 432 Canadian Squadrons at RAF Gravesend. One of eight planes crashed with the pilots killed.

#### British Army camps/sites

- 6.2.15 400m to the north of the Application Site was a British army camp in Furzy Leas Wood (15 and 16). The camp was erected in early 1944 for the accommodation of troops designated to take part in Operation Overlord (D Day). The barracks are said to have been a combination of rectangular timber huts with a pitched roof and semi-circular section Nissen huts. The barracks were abandoned after the troops were deployed for the invasion and removed in 1945-6. The area was subject to a walkover survey in 2004. This found the remains of some of the concrete foundations for some of the buildings including at least 7 Nissen huts and a possible storage tank (17 and 18). Overall the area had become heavily overgrown with the potential for more remains to survive below ground.
- 6.2.16 Located close to the centre of Northfleet is a recorded WWII POW camp (175). Little is known about the camp with few surviving records. An English Heritage survey in 2003 identified it as a German working camp. The camp was demolished after the war.

#### Civilian

- 6.2.17 There are many recorded military archaeology heritage assets used by civilian forces or by members of the public in the Application Site and Study Area. The defence of the Gravesham area was to be by four battalions of Home Guard totalling around 5000 men along with the Regular Army stationed at Milton Barracks and the concealed camps at Shorne and Cobham woods. Buildings were also requisitioned for civilian use, altered into hospitals, food kitchens and temporary accommodation. In addition to the air raid shelters constructed by homeowners in their back gardens, the War office expected enough underground raid shelters to be constructed to accommodate 15,000 people within the area (Smith 2010). The vast majority of these buildings/ sites were temporary in nature or established in existing buildings. Following the end of the war they were either demolished or returned to their former use.

#### Other

- 6.2.18 Other heritage assets of military origin mainly relate to bomb craters from Luftwaffe raids (12) and a V1 bomb site (19). Other assets visible on the figures include the Shorne War Memorial (23) and a pit identified in the southwest corner of the Study Area that may have contained modern remains from WWII (33).



### *Cold War*

- 6.2.19 There are three HER records of Cold War military archaeology heritage assets. The first record relates to the Navigation Control Centre, built in the 1950s and still serving as part of the Port of London Authority Cold War Navigation Control Centre (212). The other two entries relates to the former Cold War anti-vehicle bomb defences installed at Ebbsfleet Station in 2007 (178 and 181) .

## **6.3 Essex**

### *WWI*

- 6.3.1 In Essex, the only recorded military archaeology heritage asset (apart from the North Ockendon and Orsett landing grounds discussed later) is the WWI landing ground created at Horndon on the Hill (285 and 286). As mentioned in section 4.3, Essex during the later years of WWI played an important role in aviation defence with many landing grounds and airfields established. Horndon on the Hill, however, only lasted from April 1916 to the autumn of that year with no facilities beyond landing flares installed. It is therefore highly unlikely that any traces of its use survive.
- 6.3.2 At the outbreak of WWI in 1914, Tilbury Fort was given over to barracks for soldiers destined for France, accommodating over 300 men at any one time. In 1915 the fort was officially designated as an Ordnance Depot, and by 1917 the fort was dedicated to the storage and supply of army and wartime essentials. Electric lighting was installed, and a narrow-gauge railway and a steam crane on the quay were added to help to move material in and out of the fort.
- 6.3.3 Under similar circumstances to the Kent side of the Thames, it is likely that defences were established on the Essex side around Tilbury docks. The continuation of Tilbury docks was vital to the war effort, having been selected from the early 1900s as the main port of London to handle raw materials such as grain and timber (Hobhouse 1994). Defences were likely to have been put in place to defend the dock from land invasion. Yet, it is unlikely that any remains of such defences survive today as a result of their temporary nature and due to modern development/redevelopment of the area.

### *WWII*

#### Land defences

- 6.3.4 In comparison to the part of the Application Site that falls within the county of Kent, Essex has a far greater number of HER entries for military archaeology heritage assets. These comprise of pillboxes (80, 82, 98, 107 and 120), Spigot mortar emplacements (81, 83, 91, 92, 96, 97, 101, 102, 103, 104, 108, 109, 110, 118, 264, 270, 271, 274, 275, 276, 277, 281, 291 and 293), road barriers (82, 90, 95, 100, 105, 117, 119, 125, 283 and 284), Tett turrets (82, 88, 267, 272), military blockhouses (83 and 116) and Allan Williams turrets (93, 94, 273, 290 and 292).
- 6.3.5 From Figure 6, it is clearly visible that most defences were positioned in an arc around Tilbury Docks. Tilbury Docks was of vital importance to the war effort as a point of disembarkation for the goods and material, the role it played for the repatriation of the British Expeditionary Force (BEF) and its use in Operation Overlord including the Pipeline Under the Ocean (PLUTO). It was therefore, of utmost importance that if an invasion was to occur that Tilbury was well defended. With the exception of the defences located within Coalhouse and Tilbury Fort, and two pillboxes located on the Thames foreshore (80 and 82) all former defences have been removed.

### Air defences

- 6.3.6 The most significant aerial defences constructed in the area were the heavy anti-aircraft site at Bowater's Farm and the extensive array of anti-glider ditches within Tilbury Marsh. There was a great concern that in advance of an invasion force landing, paratroopers would be deployed at strategic locations such as Tilbury docks. The anti-glider ditches on the marshes (84, 86, 99, 111, 265 and 266: Figure 5), are thought to follow the typical form comprising of a large trench with smaller ditches coming off at right angles and large pits either side. Part of the West Tilbury marshes known as Walton Common to the north of the Tilbury Power station was subject to geophysical survey by Wessex Archaeology (2017). In the western section of the survey area, several anomalies were identified which are thought to be the remains of either anti-glider ditches or anti-invasion defences.
- 6.3.7 Additional air defence features include a radar tower at Coalhouse Fort (82), ARP shelter at Tilbury Fort (78), searchlight batteries (82 and 87), observation post (123) and several heavy anti-air gun sites (88, 106, 121, 278, 279, 282 and 287).

### Naval defences

- 6.3.8 All recorded naval defences were set up in Tilbury and Coalhouse Fort. This included a minefield control tower at Coalhouse Fort. German planes would frequently drop mines into the River Thames, and it was the role of the control tower to spot and notify the Navy of any mines so they could be removed. There are however a series of structures and posts on the foreshore which may have been built or used during WWII (71-76).

### Airfield sites/camps

- 6.3.9 There are no recorded airfield sites of WWII date within the Application Site in Essex. The closest airfield base to the Application Site was RAF Rochford located at Southend-on-Sea. The airbase was established as a satellite airfield and later housed the squadrons stationed at RAF Gravesend following the V1 rocket scheme.

### Air crashes

- 6.3.10 The Air Ministry casualty files held at the National Archives were consulted for the part of the Application Site in Essex. The search used as reference the name of settlements located within the Application Site or close by. Only one record could be identified. The exact location of the crash is not known and it has not been classified as protected military remains.

Reference	Date	Pilot	Record
AIR 81/3275	15-Sept-1940	Pilot Officer G A Langley	killed; force landed, enemy action, South Ockendon, Spitfire P9324, 41 Squadron

### British Army camps/sites

- 6.3.11 Two British Army camps were set up in the Essex section of the Application Site as part of Operation Overlord. The first army camp created on the former site of the Orsett WWI Landing Ground will be discussed later. The second camp was used as one of the main assembly areas for D-Day and covered a large part of the existing settlement of Tilbury (85). The assembly area was first identified on an aerial photograph dated the 6<sup>th</sup> July 1944 and comprised of thousands of bell tents, Nissen tents and air-raid shelters. Ancillary structures such as latrines and kitchens could also be seen. An aerial photograph from 1946 shows

that the entire base had been deconstructed with just a few marks left from the Nissen huts. No remains of the camp are thought to survive.

#### Civilian

- 6.3.12 Twenty-four air shelters were established in the Tilbury Docks area (78 and 82). These were used by both military personnel and by workers of the docks. All twenty-four are said to have been destroyed. There are no further known civilian structures in the Essex side of the Application Site.

#### Other

- 6.3.13 Unlike in Kent, no known sites of bomb craters or V1 rocket impact areas have been recorded by the EHER. However, Tilbury Docks and Tilbury Riverside Station both saw direct hits by German bombers and V1 rockets during the War.

#### *Cold War*

- 6.3.14 There is only one heritage asset of Cold War date within the Application Site in Essex. A nuclear monitoring post had been set up in Orsett (115). The monitoring station is positioned in an arable field between Mill Lane and Rectory Road, 145m north of the A13, and close to the Application Site. Over 1500 similar posts were constructed over the United Kingdom by the Air Ministry Works Department and built by local contractors. Its construction would begin with the excavation of a nine feet deep hole. A monocoque structure built from reinforced concrete with a floor about twelve inches thick, walls about seven inches thick and a roof about eight inches thick would be placed in the hole and reburied. The EHER entry provides no further information on the monitoring post in Orsett and it remains in private land.

## **6.4 WWI landing ground at North Ockendon**

- 6.4.1 North Ockendon Landing ground is located between the settlements of North and South Ockendon. It sits in an area of relatively low topography which has historically been used for agricultural purposes. To the north of the landing ground is a golf course while agricultural land borders it in all remaining directions (Figure 7). The overall size of the landing ground is not known but is thought to have included the land currently used by the golf course.
- 6.4.2 North Ockendon landing ground is described by the EHER as being a third-class night landing ground established in 1916 and in operation from April to October 1916. A Third-Class landing ground would have comprised of a flat strip of land for use as a runway and a temporary Bessonneau hanger. The Bessonneau hanger was a portable timber, and canvas aircraft hangar used originally by the French military but subsequently adopted by the Royal Flying Corps during WWI. They were usually supplied as a kit of parts that could be easily erected, dismantled and transported quickly. It is unlikely that any remains associated with the hanger survive below ground. There are also no records of any landings occurring at the base, which is unsurprising given its proximity to larger and more developed landing ground at Orsett (Doyle 1997).
- 6.4.3 Before the construction of the landing ground, the area had been used for arable purposes. The earliest Ordnance Survey (OS) map dated to 1872 shows it was comprised of two fields. To the north and west of the landing ground close to the Fen Lane were a gravel and clay extraction pit. The next depiction of the area was not produced until 1920 after the landing ground had been removed and the area returned to its former use. The area remained in agricultural use until 1985, when the Top Meadow Golf Course was constructed to the north of the landing ground. There is no evidence on any of the historic maps to

validate EHERs claim that the western part was incorporated into a gravel pit post-WWII, as the overall size of the landing ground is not known.

- 6.4.4 The Environment Agency's publicly accessible 1m Digital Terrain Modem (DTM) was examined for the former landing ground. Of interest are two parallel positive features located within the centre of the former landing ground. These are noted on a north to south alignment approximately 100m apart and 300m in length. The Lidar shows the western positive feature continuing into the southern field while there are possible remains of the eastern feature to the north within the golf course. Their function is difficult to determine without further investigation; they do not appear to be agricultural. If they are related to the airfield, then this goes against the previous claims by Nigel Pratt that no remains are likely to survive (HER entry description: Pratt 2001).
- 6.4.5 A walkover survey of the North Ockendon WWI landing ground was completed on the 18<sup>th</sup> October 2019 (Plate 1-4). The landing ground is formed by a single large agricultural field with low hedges that had just been ploughed prior to the survey. The walkover survey identified that the landing ground would have had commanding views southwards towards the River Thames and Tilbury/Dartford area. With a general lack of tree coverage, taking off and landing would have been simple with the topography of the field favouring a north-south runway.

## 6.5 WWI landing ground at Orsett and later military camps

- 6.5.1 The WWI landing ground at Orsett (114) today is covered by modern housing and the Orsett golf course. Part of the golf course land includes two areas of grassland that are overgrown. To the south of the landing ground is the main fairway for the golf club, to the west a former extraction pit, to the north the A13 and to the east agricultural fields (Plate 5-23).
- 6.5.2 Orsett originated as a landing ground for fighter squadrons with the Number 49 squadron said to have used the landing ground from 1917-1919. It was classed as a First-Class Landing Ground which meant that it would have contained several buildings, hangars and accommodation buildings, yet an account by Ian Phillpot in his book *The Birth of the Royal Air Force* states that only tented accommodation was present at Orsett (2013). No plans or records of the airbase are held by the National Archives or by the RAF Museum (RAF Museum 2019, *per coms* 14/08/2019).
- 6.5.3 Prior to the development of the WWI landing ground the area was used for arable purposes with a farm recorded as Mucking Heath Farm located to the south (Figure 11). The closest produced map to the use of the landing ground was the 1920 third edition Ordnance survey map. This shows the site as one large field. Construction of the Southfield estate occurred in the 1920s to the north of the site with a couple of semi-detached houses.
- 6.5.4 During WWII, the former landing ground would be used by the Allied forces in the lead up to Operation Overlord. An aerial photograph taken in May 1946 shows a large military camp spread across land to the south of Stanford Road including the former airbase. This camp was formed by continuous rows of huts, apparently very new, with pitched roofs. Only two or three could be identified as the Nissan type. Collectively, 300 huts were noted.
- 6.5.5 A top-secret Ordnance map produced as part of Operation Overlord sheds light on the use of the camp. In the lead up to Operation Overlord, areas across Kent and Essex were selected as marshalling areas. Each marshalling area was intended to hold 40,700 men and 6,500 vehicles. The designated embarkment ports were designed to be able to transport 4,000 men and 600 vehicles per day following the invasion of Normandy. Designated 'Marshalling Area S' the camp at Orsett golf club (Orsett) was one of 8 sub-

areas established which included Tilbury, Purfleet, Thorndon Hall, Belhus Park, Warley Barracks, Weald Park, and the Halfway House Inn on the Southend Arterial Road ( ). The map shows the location of camps, equipment dumps, and the routes traffic should take to reach their designated embarkation points. Orsett was designated sub-area S1 with two camps built along with either side of the road used for vehicle storage. The troops stationed at Orsett were to use a temporary road established from just west of Stanford Le hope to travel south to Tilbury which was their designated embarkment point. Therefore, this plan confirms that while the camp is first shown on the 1946 aerial photograph it had been created sometime at the start of 1944 in the lead up to Operation Overlord.

- 6.5.6 After WWII, a Royal Army Service Corps (RASC) was built on the southern section of the base. This is visible on historic mapping dated to the 1960s. The Royal Army Service Corps (RASC) was a corps of the British Army responsible for land, coastal and lake transport, air despatch, barracks administration, the Army Fire Service, staffing headquarters' units, supply of food, water, fuel and domestic materials such as clothing, furniture and stationery and the supply of technical and military equipment. The camp comprised of a range of structures, some appearing to be Nissen huts while more permanent structures are evident in the centre and western sections of the base. These would denote use by the officers or as administrative buildings. Further sections of the camp include a parade ground and sports ground. In 1965, the RASC was merged with Royal Engineers and brought under the Royal Army Ordnance Corps. This saw the disbandment of many of its sites which, based on Ordnance Survey (OS) mapping, included the removal of the camp at Orsett.
- 6.5.7 Later Ordnance survey mapping and historic records (Essex County Council 2007) suggest that the former site of the depot was subject to aggregate extraction. However, this does not appear to correlate with the findings of the walkover survey (Plates 5-23). Concrete debris was noted across the southeast section of the landing ground in the position of the former RASC base. The consistency of the concrete was rough and rudimentary with a high concretion of pea shingle. Shingle was commonly added to the cement mixture during wartime when supplies were low. In addition, two manhole covers which show modern alteration (Plate 20) and a concrete cylindrical structure (Plate 6) were identified, along with a number of mounds that contained concrete debris. Unless the extraction pit was used later for the dumping of waste material, of which there is no record, then there is no reason for the concrete debris and the cylindrical structure to be present at the base of a presumed quarry pit. The 1987-1994 OS map does however only show that the western part of the camp was subject to quarrying, having been labelled as a 'Pit (disused)'. Google Earth images from 2004 to 2010 also show further extraction work in the western field. It may be that only the western section of the former camp has been subject to quarrying.
- 6.5.8 The Environment Agency's publicly accessible LIDAR data was consulted for the RAF Orsett. However, the former airfield, along with a linear piece of land to the south, have not been subject to any survey (50cm, 1m or 2m DTM).

## 6.6 RAF Gravesend

- 6.6.1 RAF Gravesend is located to the southeast of the town of Gravesend (36). Today most of the former airfield is occupied by the Riverview Park residential estate, a leisure centre, schools and the Southern Valley Golf Club. Only parts of its southern extent remain undeveloped and currently used for agricultural purposes (Plates 24-33).
- 6.6.2 Before the construction of the airfield in the 1930s, the site was used for agricultural purposes. It was formed of several fields, the boundaries having been established during



the enclosure of the land during the post-medieval period. The fields were used by West Wood Farm which was previously situated in the centre of the airfield.

- 6.6.3 The airbase started life in the 1930s as a private airport. The airport was officially registered in June 1932 as the Private Limited Company of Gravesend Aviation. The directors of the company were T.A.B Turnan of London and W.A.C Kingham of Beckenham. The primary aim of the company was to set up an aerodrome at Thong Lane for general aviation, in the hope of persuading large aviation companies, such as KLM and Lufthansa, to consider the aerodrome as an emergency landing ground for their airlines ( [REDACTED] ). They had some success in doing this with on two occasions; two flights on their way to Croydon Airport diverted to Gravesend due to poor weather. Their success in these operations led to more companies using the airport. Later that year the company acquired the district contract for the agency of de Havilland aircraft and engaged a Mr A Carrol as the Chief Flying Instructor (CFI). At the same time, a Mr Herbert Gooding, a local builder, was employed to build a control tower and clubhouse, shortly following by two hangers, fuel and oil stores and equipment storage.
- 6.6.4 Gravesend Airport's popularity rose again in 1933. At the beginning of July 1933, the airport had its first visit from the Royal Airforce with three Hawker Audax aircraft using the airport as a base while engaged in training exercise with the Royal Marines. Two hangers constructed the previous year were acquired by Percival Aircraft Works for the manufacture of seaplanes. Percival Aircraft Works would later be replaced in 1936 by Essex Aero Limited. Essex Aero Limited was a well known and respected aviation company in the aviation industry known for their light-alloy fuel and oil tanks and specialist tuning of aircraft for races.
- 6.6.5 In October 1937, The Air Ministry requisitioned Gravesend for use as a training school under the rearmament programme passed in 1935. Designated No. 20 Elementary and Reserve Flying Training School, there was a large influx in both personnel and aircraft. To also ensure rapid training of men, flying restrictions were lax at the base given them more time in the air per day. A contract was also obtained to teach Royal Navy pupils to fly, and the White Ensign was added to the Airport flagpole (<http://www.discovergravesham.co.uk/>). This led to a large programme of expansion and buildings works.
- 6.6.6 When war broke out with Germany in 1939, the Air Ministry disbanded the training school and set up Gravesend to act as a satellite station for Biggin Hill. Several squadrons spent time at Gravesend during WWII including the 501 squadron in July 1940, No.66 Spitfire Squadron in September 1940 and the 141 Squadron in October. As the Battle of Britain increased, in November 1940 RAF Gravesend was re-established as an independent station, and the airbase went under a period of redevelopment including the construction of new hangers, barracks, storage buildings, the lengthening of the existing runways together with the construction of a new runway on the Summerfield track. As a result of this expansion, a third squadron was able to be stationed at the airbase.
- 6.6.7 The importance of Gravesend by 1940 made it a potential threat to the German air force and a possible site for airborne attack during an invasion (Smith 2010:23). It was provided with defences against this contingency including entrenchments and retractable Pickett-Hamilton Forts manned by an airfield protection force. The runways were prepared for demolition in such an event with Canadian pipe bombs laid under. Four truck-mounted four-inch guns were also positioned on the higher ground at Shorne along with a series of outer anti-aircraft batteries.

- 6.6.8 As the war progressed and the threat of aerial bombardment by the Luftwaffe faded, Gravesend's use waned. Shortly after D-Day, the smooth flow of operations was interrupted in the early hours of the 13<sup>th</sup> June 1944 when the first of the V1 flying bombs landed nearby at Swanscombe. In the succeeding days, the constant stream of these missiles rendered flying operations too hazardous to continue at Gravesend, so it was decided that the three Squadrons based at Gravesend would move to Thorney Island leaving Gravesend to become the command station for the balloon barrage in the area. The balloons had been placed to try to impede the V1 rockets before they hit their target.
- 6.6.9 After the war, the airfield was put on a care and maintenance program. Throughout the war, Essex Aero Limited had maintained a presence on the airfield with a factory producing self-sealing petrol tanks for aircraft. It had also taken over several factories in Gravesend and Northfleet for these activities. Following cash flow problems, the company went into liquidation in 1956, leaving the airfield.
- 6.6.10 Most of those that were stationed at the airfield were barracked at dispersed camps in Ashenbank Wood to the southeast of the airfield (5-9). The Air Ministry from the start of WWII was concerned that having the stationed personnel inside the airbase would cause higher casualties. The airbases were a primary target of the Luftwaffe with RAF Gravesend targeted several times. Returning aircraft were also a concern as they could crash and injure staff. The dispersed sites were established in 1940/1 and consisted of mainly single-storey barrack huts, ablution and other structures, including three air raid shelters. Figure 12 shows the original plan of the five sites.
- 6.6.11 For a short period, following the decommissioning of the airfield for fighter squadrons, the bases were used by the Royal Navy and later to house the homeless which ceased around 1954. Since then it has been allowed to disintegrate with the site becoming heavily overgrown. Sections of the dispersed camp were also removed during the construction of the HS1 line through Shorne Woods. Traces of the areas occupied by huts may be seen, as well as tarmac roads and three surviving air raid shelters. The latter are small semi-buried structures of pre-cast concrete manufacture, with right-angled brick entrances. However, the entire site is considered to be in poor condition
- 6.6.12 The camps may have utilised the line of a former tramline present close to the camps; however, before this it was related to an area of clay extraction (10).
- 6.6.13 The layout of the airport has been recorded on several occasions with a plan acquired from the RAF Museum and reproduced as Figure 13. The plan shows both the private limits of the airfield and RAF expansions. The centre of the airfield was occupied by a range of buildings including the hangers, command tower, storage buildings, barracks, officer mess, and a variety of other structures. Two runways are evident on the plan. The first was located to the west of the main complex on a broadly north to south alignment. The second was found to the south and broadly aligned west to east. A series of outlying buildings were present in the western limits and in the northwest corner of the airfield that was used by the RAF as the airmen quarters, a laundrette and mortuary.
- 6.6.14 From 1958, a large private housing estate was gradually built on the section of the pre-war airport later followed by two schools, a sports centre and playing fields on the wartime extensions to the airfield. Development of the estate continued in the latter part of the 20<sup>th</sup> century. The Southern Valley Golf Course was also established on the northeast corner of the airfield. Only a portion of the southern section of the airfield returned to agricultural use.



6.6.15 The Environment Agency's publicly accessible LIDAR data was consulted for RAF Gravesend. A series of positive features are visible in the southern section of the airbase within the existing agricultural fields, the most obvious a zig-zag line running north to south (Figure 14). Its function is difficult to discern however it does not appear to be from the agricultural use of the land. The remaining Lidar results are obscured by the golf course, industrial site and housing estate. There are further positive and negative features to the north of the airfield. Some may be former field boundaries while others could be related to the use of the airfield as possible outer defences. These correlate with some of the anomalies identified during the geophysical survey of the site discussed in section 5.4.

## **7 ASSESSMENT OF ARCHAEOLOGICAL SURVIVAL, PREVIOUS IMPACTS AND POTENTIAL IMPACTS**

### **7.1 WWI North Ockendon landing ground**

7.1.1 North Ockendon landing ground has seen minimal previous disturbance. Much of the former landing ground had been redeveloped into the existing golf course, with Lidar showing two positive anomalies running north to south through the golf course southwards into the area marked by the EHER. These anomalies are more apparent in the area marked by the EHER as historically this area has seen limited disturbance caused only by ploughing activities. The landing ground is however not located within the Application Site and will see no physical impact.

### **7.2 WWI Orsett landing ground and later military camps**

7.2.1 Historic maps have confirmed that the majority of the former landing ground has been lost as a result of the residential housing development known as Southfields and due to quarrying activity. The walkover survey did locate concrete debris and three structures that appear to be modern in date, which may relate to the former use of the area as an RASC depot though this cannot be confirmed based on the existing information. The landing ground is not located within the Application Site and will see no physical impact.

### **7.3 RAF Gravesend**

7.3.1 Historically, RAF Gravesend has been subject to several impacts. This includes the construction of the residential development, Southern Valley Golf Club and agricultural activity on the southern portion of the airfield. Several services are also known to run through the former airfield that may have caused localised disturbance.

7.3.2 The 2018 magnetometry survey has confirmed that remains of the airfield may survive within the agricultural land and below Southern Valley Golf Club. The nature of these remains along with their state of preservation cannot be confirmed without intrusive investigation.

### **7.4 Military heritage assets**

7.4.1 The military heritage assets record in the table below are located within the Application Site and therefore may be subject to a physical impact:

<b>Number</b>	<b>MonUID</b>	<b>Name</b>	<b>Easting</b>	<b>Northing</b>
5	MKE41918	RAF Second World War camp site 5, Ashenbank Wood, Cobham, Kent	567580	169360
6	MKE17179	Second World War RAF camps, Ashenbank Wood	567748	169519
7	MKE41916	RAF Second World War camp site 1 in Ashenbank Wood, Cobham	567790	169530





8	MKE41915	RAF Second World War Camp site 3, off Halfpence Lane, Cobham, Kent	568040	169570
9	MKE41919	RAF Second World War dispersed accommodation camp site 4 at Ashenbank Wood, Cobham, Kent	567400	169650
10	MWX20740	Possible line of former tramway, Shorne Wood	568053	169744
11	MWX20697	World War Two RAF camp dispersal site for RAF Gravesend	567731	169792
14	MKE93011	DH Mosquito crash site, Shorne,Gravesham	566741	170164
21	MKE93080	WW1 Homes for Heroes scheme houses, Thong Lane, Shorne, Gravesham	567234	170854
22	MKE41816	Singlewell Second World War air wardens psot and air raid siren, Watling Street, Gravesend	564949	170912
25	MKE9031	Aa battery, gravesend	567300	171090
27	MKE41868	Thong Lane Second World War road block, Gravesend	567180	171130
29	MKE41771	Thong Second World War light anti-aircraft battery, Thong Lane, Gravesend	567300	171200
31	MKE93091	Caves converted to air raid shelters, Thong Lane, Shorne, Gravesham	567151	171208
36	MKE16159	Gravesend airport (site)	566800	171564
43	MKE41850	Rochester Road Second World War road block, Chalk	568330	172310
47	MKE41713	Chalk Second World War Defended Locality DL20	567300	172800
64	MKE41865	Milton 19th/20th century rifle range, Eastcourt Marshes, Gravesend	567930	174154
79	MEX104125 2	Six Air Raid Shelters (destroyed), between railway and Tilbury Fort	564626	175347
81	MEX6052	Tilbury Fort	565147	175477
84	MEX39672	Anti-Glider Ditches SE of Bowaters Farm	568287	176585
86	MEX39674	Anti-glider ditches SE of Bowaters Farm	566053	176835
89	MEX6620	East Tilbury Battery	568658	177360
96	MEX31810	Spigot Mortar Base, Top of Gun Hill, West Tilbury	565640	177990
99	MEX39676	Anti glider ditches N of Orchard House	569018	178485
100	MEX31811	Road Barrier (destroyed), Muckingford Road. West Tilbury	565710	178630
101	MEX31816	Spigot Mortar Site x 2 (destroyed), Muckingford Road	567233	178932
102	MEX31818	Spigot Mortar Site (destroyed), Muckingford Road	567400	179050
103	MEX31801	Spigot Mortar Site (destroyed), N of Chadwell St. Mary	564630	179070
104	MEX31802	Spigot Mortar Site (destroyed), N of Chadwell St. Mary	564610	179120
115	MEX103938 3	Cold War Nuclear Monitoring Post, Orsett	564400	181150
137	TQ 77 SW 1041	Gadshill School Second World War air raid wardens post, Gravesend Road, Higham	571042	170905
141	TQ 67 SW 1168	Tollgate Second World War Battle Headquarters, Gravesend	564200	171300
276	MEX31800	Spigot Mortar Site (destroyed), 24 Brentwood Rd, Chadwell	564600	178630

7.4.2 The majority of these military heritage assets are of WWII origin and were destroyed/removed after the end of the war (22, , 27, 29, 43, 47, 79, 96, 100, 101, 102, 103, 104, 137, 141 and 276). It is unlikely that any remains of them exist. There are however several that are still in existence.

- 7.4.3 The tunnel section of the scheme is expected to run under Eastcourt Marshes which contains Milton Firing Range (64). The range has been used almost continually since its construction in 1862. Surveys of the range have identified surviving remains of the original mounds in addition to the 20<sup>th</sup> century additions. Though the HER entry states there are substantial survivals of the original range structures, their true extent is not known as access by the public is not permitted.
- 7.4.4 Two of the entries relate to former anti-aircraft batteries located southwest of RAF Gravesend (25 and 29). Depending on their design, they may have included the excavation of a large pit to house the guns with the spoil from the pit used to create protective mounds around the battery. Lidar was consulted for this area of the Application Site and no above ground surface features could be discerned. As both are sited within agricultural fields, any above ground remains may have been ploughed out. The potential for below ground remains however cannot be ruled out.
- 7.4.5 Also located within the Application Site are the northern most ‘Homes for heroes’ (21). Both the homes and their associated barns still survive though they have lost part of the former garden plots.
- 7.4.6 The dispersed sites at Ashenbank Wood (5-11) were subject to non-intrusive surveys in the 2000s. These surveys confirmed that remains of the camps are evident on the surface, while there is a high chance of remains to survive below ground. Part of the camps were also removed during the construction of the HS1 line. However additional surveys conducted by the Client in 2018 and 2019 found surviving traces of the dispersed sites in the form of concrete structural remains.
- 7.4.7 Located within the Essex part of the Application Site is a Cold War Nuclear Monitoring Post (115). Little is known about the monitoring post and whether it survives below ground, as the asset located within private land and has not been surveyed.
- 7.4.8 The aerial mapping study completed by the Client identified a large number of anti-glider ditches from aerial photographs within the Tilbury area in the areas delineated by entries 84, 86 and 99. Post-WWII, the marsh was used as landfill which may have impacted upon the anti-glider ditches. However, Wessex Archaeology completed a geophysical survey over part of the marsh to the northwest of the Tilbury power station that identified anomalies that could be the remains of anti-glider ditches. This is supposedly in an area that has been historically used as landfill. While no further investigation has been completed to date, it shows that in the marshes there may be some potential for remains of the anti-glider ditches to survive below ground.
- 7.4.9 Coalhouse Fort and Tilbury Battery are located on the boundary of the Application Site, but are not expected to be physically impacted upon. The scheme does, however, pass through the Tilbury Fort Scheduled Monument utilising the modern road that runs to the west. Although the modern road surface is excluded from the scheduling, the ground below the road surface forms part of the Scheduled Monument. It may therefore be physically impacted. The effect of the proposals on setting and significance of Tilbury Fort is covered in the separate Statement of Significance assessment (Wessex Archaeology, forthcoming).
- 7.4.10 Not all military defensive sites are known. Victor Smith in two publications, highlights that there may have been trenches cut into the Thameside during both the WWI and WWII (Smith 2010; 2019). Medlycott also discusses how further defences were found after the DoB project in East Anglia and during National Mapping Projects, suggesting even more maybe found (Medlycott 2011). The rapid coastal zone assessment (RCZAS) conducted by

Essex County Council on three relatively small areas (Heppel and Brown 2000) which found over two hundred new sites, some military in origin, show that there are a plethora of sites still to be discovered. Areas located within the Application Site that have yet to be investigated may contain unknown buried military archaeological features.

- 7.4.11 It appears from historic map records that the majority of the Application Site has remained as agricultural land over the past 150 years and that prior to this it would have either been open fields, woodland or marshland. The ploughing of fields may have had a slight effect upon sub-surface deposits but this is unlikely to have impacted heavily upon any as yet unrecorded buried military archaeological features which may survive within the Application Site. Although any former earthworks created as defences may not exist on the surface, they may survive below ground.
- 7.4.12 Yet, not every part of the Application Site has the potential to encounter surviving military archaeological remains (if any such remains are present). Figures 3A-F shows all areas affected by intrusive investigation or used post-1950s as landfills or quarries. It is unlikely that any military archaeological remains will be encountered in these areas as both events are destructive by nature.

## **7.5 Statement of potential impact**

### *Archaeological remains*

- 7.5.1 The construction of the proposed development is anticipated to entail some level of ground disturbance in most areas of the Application Site. The nature of this disturbance will depend on the nature of the works conducted. The most significant level of disturbance will occur as a result of the construction of the new road and excavation for the tunnel itself. Installation of services, along with installation of work compounds, will also cause localised disturbance
- 7.5.2 The design of the proposed development and construction activity has yet to be finalised so it is difficult to conclude the level of impact that may occur to existing military heritage assets and unknown military heritage assets that may exist. Any adverse physical impact on buried military archaeological features would be permanent and irreversible. This could, in turn, result in a total or partial loss of significance of these military heritage assets. A more detailed impact assessment will however be included within the ES chapter.

## **8 SIGNIFICANCE AND POTENTIAL**

### **8.1 Introduction**

- 8.1.1 Significance in terms of heritage-related planning policy is defined as the value of a heritage asset to this and future generations because of its heritage interest. Significance derives not only from a heritage asset's physical presence but also from its setting (if relevant). The significance of a heritage asset is the sum of its archaeological, architectural, historic, and artistic interest, while what is defined as a heritage asset not only includes designated heritage assets but also assets identified in a Historic Environment Record, in a local plan, through local listing or during the process of considering an application (Historic England 2015a:1).

### **8.2 WWI landing ground at North Ockendon**

- 8.2.1 Aviation sites form perhaps the largest category of modern military buildings and remains in England (Historic England 2017). About 250 flying stations existed in the summer of 1918, increasing to 740 during WWII. To be considered military heritage assets of national significance, aviation sites would need to show rarity (technical or structural interest), group

value with related structures and operation importance (Historic England 2018a). Based on the evidence collated in this report, North Ockendon would not meet the selection principles to be considered of national interest. Instead, its significance can be defined at a local level and is derived from its historic and archaeological interest. The historic interest is vested almost entirely in its role as one of the many landing grounds that were established to protect the Capital from the Luftstreitkräfte; though there is no record of the landing ground having been used.

- 8.2.2 The Landing ground also draws significance from its setting. Since the removal of the landing ground after WWI, the area designated by the HER as the landing ground has seen minimal impact. In addition, few changes have occurred in the surrounding landscape. As a result, the landing ground still retains its appreciable long distant views over the River Thames and horizon. These views were an important factor in the position of the landing ground as due to a lack of technology at the time, pilots would have required uninterrupted views of the horizon from ground level, especially if they were trying to locate the enemy aeroplanes.

### **8.3 WWI Landing Ground at Orsett**

- 8.3.1 The WWI landing ground at Orsett would also not meet the criteria for consideration as a heritage asset of national significance for the same reasons provided for North Ockendon. It does however have significance at a local level which is informed by its historic and archaeological interest. Historic Interest is derived from its use initially as a WWI landing but also its later involvement in Operation Overlord and as a Cold War base; it has seen use through all three major conflicts of the 20<sup>th</sup> century. The walkover survey identified several areas of concrete debris within the eastern field for Orsett. Whether the concrete relates to the Cold War RASC depot constructed on the site is not clear. Although past activities in the former site of the landing ground are not easy to interpret, the concrete debris would suggest that there may be potential for surviving archaeological remains below ground, thus having an archaeological interest.

- 8.3.2 For Orsett, setting does not contribute to its significance. Today, the landing ground has a residential setting with most of its area built on by the existing estate while areas of scrubland cover the southern portion. Beyond this, lies the Orsett golf course to the south, further scrubland to the west, agricultural land to the east and the A13 to the north. The use of the site as landing ground would have been for its long-distant views over the River Thames and uninterrupted views of the horizon. These views have been almost completely eroded by the construction of the modern housing estate. Though there are views of the horizon within the area of scrubland, they are interrupted by the dramatic change in topography to the south and east. In addition, although both of its later uses would have necessitated some level of concealment as secret military installations (confirmed by the later removal of RASC depot from OS mapping), it cannot be said for certain that the existing foliage/trees were ever around or used to help conceal either of the bases structures.

### **8.4 RAF Gravesend**

- 8.4.1 WWII airfields have to be well preserved, complex and of historical importance to warrant consideration as heritage assets of national significance (Historic England 2018a). While Gravesend played an important role in defence of Britain during WWII, the sum of the remaining selection criteria as set out in Scheduled Monument policy document (DCMS 2013) would not warrant it to be of national significance. However, all airfields constructed from 1939-1945 have strong local resonance and RAF Gravesend is no exception. Airfields have communal value through the personal links that may have developed between military sites and local communities with often strong associations with particular squadrons and

with the individual service personnel who served in Britain during the WWII. As such, it is in this local communal value that the significance of RAF Gravesend lies. This is substantiated by the existing war memorial located at Cascades Leisure centre in Thong Lane.

- 8.4.2 Associated with RAF Gravesend are a number of outer anti-air defences built-in part to help protect the airfield from attack (24, 29, 38, 39, 41, 55, 57, 58 and 60). Ashenbank Wood is also associated with the airfield having been used as a dispersed site away from the RAF base to house those stationed at the base. All the anti-aircraft sites have been lost, though remains of some may survive in the form of earthen banks or below-ground archaeological remains where they have seen limited physical impact. Surveys at the Ashenbank Wood dispersed sites have found surviving standing structures, structural remains and former paths/ancillary areas of activity. Overall these heritage assets contribute to our wider understanding of the use of RAF Gravesend and its impact on the wider landscape as part of a regional defensive installation.
- 8.4.3 RAF Gravesend also has archaeological interest. The surveys conducted within the Southern Valley Golf Course and agricultural fields have identified that there may be some remains of the airbase below ground. This could include remains of the runway, plane turning circle and several trackways. There is, therefore, a strong likelihood that remains of the airfield survive below ground and that these surviving remains may help us better understand the use of the airfield and of the people that were stationed at RAF Gravesend.
- 8.4.4 There are some parts of the asset's setting that make a positive contribution to significance. Views from the northern part of the airfield that are today occupied by the golf course can still be readily appreciated and provide context into why the private airfield was requisitioned for use by the RAF; for its long distant views over the River Thames. Views of and eastwards of the war memorial on Thong Lane also make a positive, marking the former position of the main built elements of the airfield; though these have been lost.
- 8.4.5 However, not all elements of a non-designated heritage assets setting will make a contribution to significance. For RAF Gravesend, the southern parts of the former airfield are now experienced as agricultural land or part of the modern expansion of Gravesend. This has removed the ability to experience the airfield's former long distant oblique views over the landscape to the south, west and east. The agricultural use of the land, which has continued to erode the former topography of the southern part of the airfield also challenges the reasons why the site was selected due to the now serious declines present in topography, which negatively affects the appreciation of the airfield's former setting and appearance

## **8.5 WWI military heritage assets**

- 8.5.1 Milton firing range is the only record of WWI date located within the Scheme (64). As the level of survivability of the range is not fully known, assessing significance is problematic. With that said, based on the selection criteria in Historic England guidance (2018a), it would not meet the requirements for consideration as nationally significance. Its significance instead lies at a local level for the role and history it has with Gravesend and Milton Barracks.
- 8.5.2 Yet, due to a lack of archaeological investigation within the Application Site, the likelihood of encountering surviving WWI military heritage assets cannot be ruled out. The above section has discussed how Victor Smith's current research on the Kent Thameside suggests that WWI defences may survive in the Kent part of the Application Site. Anti-invasion defences of WWI date are rare, and where complete examples have been found they have warranted listing or scheduling.





8.5.3 Some of the pillboxes identified during the DoB project could be WWI origin. During WWI, pillboxes had been constructed as concrete fortifications to defend some localities and temporary trench lines. These pillboxes were designed to a similar shape as those built during the WWII (round, square, rectangular, ovoid etc.). In fact, pillboxes in Kent built in the WWI were of hexagonal shape, the most common type of pillbox built in WWII (Appleby 2015:49). Further study of pillboxes would require specialist input, and they would still need to be standing. Assessing their exact date may also require extensive archival research. Though, any WWI pillboxes identified would be significant discoveries especially if they survive particularly well.

## **8.6 WWII military heritage assets**

8.6.1 Some categories of military heritage assets, particularly from WWII, are legion; others can be rare today despite large number having been built. Assessing significance for these military heritage assets is based on period of construction, rarity and group value (Historic England 2017, 2018a). Most of the military heritage assets recorded in the Application Site and Study Area are either of standardised form where better examples survive around the country, destroyed or are in a poor state of preservation. As such, most sites are likely to be of local rather than national significance. However, heritage assets that are located in areas that have seen minimal disturbance hold an archaeological interest, in that remains of the asset or material culture related to the people stationed at the defence may survive below ground. There are however exceptions to this. WWII military heritage assets located within the boundaries of scheduled sites or have been identified as part of the scheduling are of national significance. Protected aeroplane crash sites can also be considered to be of national significance.

8.6.2 Due to a lack of archaeological investigation within the Application Site, the likelihood of encountering surviving WWII military heritage assets cannot be ruled out. Studies conducted since the DoB project have identified numerous WWII heritage assets that were missed. The significance of these remains would need to be considered on a case by case basis.

## **8.7 Cold War military heritage assets**

8.7.1 The monitoring post identified in the Application Site is common with thousands of such structures built during the Cold War (Historic England 2018a). It would not warrant consideration as nationally significant but holds local heritage value.

8.7.2 Nevertheless, as the Application Site has seen minimal intrusive survey, the likelihood of encountering Cold War military heritage assets cannot be determined. Though, due to the nature of Cold War warfare, it is highly unlikely that any unknown remains of importance survive. Developments in technology and changes in what was perceived as the new enemy saw less of a direct threat to Essex and Kent with most defences built further north.

## **9 BOWATERS FARM ANTI-AIRCRAFT BATTERY SCHEDULED MONUMENT STATEMENT OF SIGNIFICANCE**

### **9.1 History**

9.1.1 During WWII, the site was officially known as Buckland or N13 and was first established in 1939. Its earliest phase comprised of two 3-inch guns which had been moved in September 1939 from Harwich to the site. These were replaced in December 1939 with two 3.7inch mobile guns with a third acquired in May 1940. Construction of the concrete emplacements that would house the 4.5inch guns was built between the 11<sup>th</sup> and 19<sup>th</sup> May with the new



guns in constant action from August 1940 until February 1941 (Oswald 1994:2). The site would see a drop in its use in the subsequent years of WWII especially after the release of the V1 revenge weapons. The site would go on to house the recently developed 5.25inch guns as Britain transitioned into the Cold War and would be one of the first sites to acquire computerised firing systems. These new systems were a necessity to improve accuracy to counter against developments in the speed of aircraft. By 1959, as aircraft technology improved with the introduction of the jet engine, the site became obsolete and was decommissioned.

- 9.1.2 Throughout its period of use, the site underwent considerable episodes of redevelopment. However, not a great deal is known about when these developments took place. Aerial photographs through WWII and the 1950s have been used to show when new defences or buildings were constructed, but with a large time gap between each photograph the actual date of the developments are not known.
- 9.1.3 Outside of the scheduled monument boundary but within the area are eleven surviving buildings. These date to either WWII or the Cold War date and include the gun store (Plate 47), generator room (Plate 34), storage rooms (Plate 35), former headquarters/guardhouse (Plate 51), four former vehicle stores/ barracks (Plates 48-52), three Cold War structures and the Cold War 5.25-inch gun command post (Plate 44). The former concrete fence posts for the site still remain in situ (Plate 46).
- 9.1.4 The buildings survive to varying degrees. Of the five Cold War structures identified during the 1994 RCHME survey only four survive. The command post and the southernmost structure are in a poor state of disrepair. The gun store, generator room and storage rooms have been re-purposed as garages and rudimentary stables. This has seen a complete loss of any surviving internal fixtures and fittings and the addition of stable doors over previous window openings. The former gun store has lost its steel double doors since 1994, with later use as a garage. The remaining buildings were not surveyed in 1994 as access was not permitted. The walkover survey showed that most of these have been re-used as part of the farm; either for storage of machinery and equipment, livestock sheds or storing of animal feed. Their modern use has seen the loss of internal and external features include partition walls and parts of their eastern and western external walls for the installation of garage doors.

## 9.2 The asset

- 9.2.1 Bowaters Farm is statutorily protected as a scheduled monument (NHLE list entry no. 1012185) and so is a nationally designated heritage asset. The scheduled monument covers the 4.5- and 5.25-inch gun emplacements and the command post for the 4.25inch emplacements (Plates 35-44).
- 9.2.2 The list entry describes the asset as follows:

*“The monument includes eight concrete gun emplacements with their connecting roads and vehicle parks, magazine and command post. The battery forms two groups of anti-aircraft artillery. The earlier group comprises four octagonal emplacements of concrete covered by asphalt, which measure some 16m across. Two entrances are located on opposite sides of the emplacements and earthen banks protect their outer sides. Inside the emplacements, the ten bolts which fixed the guns to the ground survive, as do the ammunition lockers against the walls. Between the middle two emplacements is a rectangular magazine building some 12m long with five compartments for shells with different fuses. At the rear of the group is a larger building which formed a command post and which included height and range-finding equipment, although this no longer survives. This group housed 4.5 inch guns*

from mid-1940 to 1944. To the east is a second group of four emplacements, these examples comprising a deep circular pit lined with concrete, again measuring some 16m across, with an adjoining sunken engine room to the west or south-west. A gun turret, which no longer survives, capped the circular pit, and housed a 5.25-inch gun. This group superseded the 4.5-inch guns in 1944 and continued in use until after the war”

9.2.3 Also, the list entry states the reason why the site has been scheduled:

*“Anti-aircraft batteries are small clusters of artillery dedicated to firing at aerial targets. They were constructed from the First World War to the 1950s, after which time missile batteries took over from artillery as fixed weaponry while anti-aircraft artillery became increasingly mobile. They were constructed in large numbers in the immediate pre and early Second World War periods in response to the threat of air attack. Many took the form of simple sandbagged emplacements which left no substantial remains when they were abandoned. Others took the form of concrete emplacements arranged around a command post, while the latest types of battery were fully automatic and included radar-guidance equipment. Artillery of 3.7 inch and 4.5 inch and later 5.25 inch calibre was the usual armament of these batteries. Anti-aircraft batteries were widely distributed around England, with a marked concentration in the South East around London. As a result of development pressure in the South East few have survived. The example at Bowaters Farm is the last surviving example of such batteries in this area of Essex. It forms the latest part of a series of important defensive installations at Coalhouse Point which illustrate the development of coastal defences from the Tudor period to the mid-20th century.”*

9.2.4 Scheduled monument status indicates that the site is a nationally important site/historic building, warranting every effort to preserve it. Sites are designated because of their historic, archaeological, architectural or artistic interest. Bowaters Farm significance lies in its historical, archaeological, architectural interest and its setting.

9.2.5 HISTORIC INTEREST -The monument has high historic interest due to the role it played in two key historic events in British history; WWII and the Cold War. Constructed in the 1940's, the AA battery was the last in a long line of defensive installations built along the Thames. From 1940 to its partial decommissioning in 1944, the installation played a key role in the aerial defence of Tilbury, Tilbury docks and London during the Battle of Britain as the German Luftwaffe enacted their aerial assault on Britain. Following the end of WWII, part of the battery would remain in operation as Britain sought now to defend itself from the new Russian threat. In fact, the battery would be one of the first in Essex to have a complement of 5.25-inch guns as the emplacements and facilities met the criteria for the new weapons with no need for modification (Oswald 1994). From the 1950s, the gun emplacements were connected to a new computerised system which allowed automatic target lock and firing with the sole task of the gun crew being to reload the batteries when required. Bowaters Farm was again one of the first batteries to receive this new firing system. The surviving military buildings outside of the scheduled monument also contribute to its historic interest as they help understand its past use and are an illustration of the overall size and importance of the battery.

9.2.6 ARCHITECTURAL INTEREST- Although the buildings themselves are unimpressive, constructed from basic materials and simple design, too few of these batteries remain. The placement of the main defensive installations and the separation of the entire site into designated zones (accommodation, batteries, magazines storage etc) can help us understand military design philosophy. The walkover survey also identified that the emplacements still survive particularly well and contain original features such as the iron

ladders providing access to the emplacements identified in emplacement 1 of the 5.25-inch gun group.

- 9.2.7 **ARCHAEOLOGICAL INTEREST-** The monument and area surrounding the battery has the potential to contain archaeological remains related to the use of the anti-aircraft battery while remains of prehistoric, medieval and post-medieval date have been identified along the scarp edge. There is already a great deal of information on what battalions were stationed at the battery and how the site evolved but more could be uncovered. War diary records indicate that the units which manned the battery were rotated at irregular intervals (Oswald 1994:2). Material culture from the site could hold vital clues about the people that were stationed at the battery, at what time they were stationed and the type of experience they had during WWII and the Cold War. Further archaeological interest exists outside the scheduled monument where there may be material culture below ground in areas of grassland or in the main compound to the west.
- 9.2.8 **GROUP VALUE-** Bowaters Farm Anti-Aircraft Battery holds group value in a national sense as part of the network of WWII anti-aircraft military defences that were built to protect the River Thames, Tilbury Docks and the approach to London. The battery would have provided a pattern of crossfire with the batteries located on the Kent Thameside but also those positioned in Tilbury Fort, Coalhouse Fort, East Tilbury Battery and further AA installations to the north, west and east.
- 9.2.9 **SETTING-** Today, the scheduled monument is still situated in the rural setting that existed when it was constructed. The monument itself is positioned in a natural dip in the landscape that offers protection from the north, with an escarpment to the south that would have afforded it broad long-distant views towards the River Thames and clear views of the sky. This natural change in topography was a deciding factor in its position and forms an important part of its setting. However, due to the level of scrub and a coppice of woodland just south of the Scheduled Monument, views towards the River Thames have been blocked (Plate 54). As a result, this part of the setting is best experienced through the use of mapping rather than in views from the monument; although this does not preclude upon their contribution to setting and to significance.
- 9.2.10 In the wider landscape, the anti-glider ditches located to the northwest and southeast, along with Coalhouse Fort, East Tilbury Battery and Tilbury Fort make a positive contribution to setting. All three of the former post-medieval fortifications saw reuse during WWII as part of the defense of the River Thames and London. The anti-glider ditches would have been created along with Bowater AA Battery as part of a package of anti-air defences designed to prevent the landing of paratroopers in the event of an invasion. However, there is no visibility with either three defensive installations or with the marshland in which the anti-glider ditches. Their relationship, as a result, is best appreciated in plan rather than in terms of visibility. A lack of visibility does mean that the setting contributes any less to significance.
- 9.2.11 Today, the monument is completely overgrown by scrub with only two of the emplacements visible. Although the scrub would not have existed as part of the original battery, concealment was a major factor. This is evident by the overall design of the emplacement which allowed the gun to be concealed and the plate it was positioned on to be raised when needed. Most of the structures too are built underground to aid in concealment, with designated concrete paths between the buildings to help circulate round the battery. Whilst the level of overgrowth is at present a detriment to longevity of the monument, it does form an important part of its setting through helping maintain a level of concealment.

- 9.2.12 The main access to the battery is through the farm, with former trackways identified in the 1994 survey now lost. The surviving military structures within this area form part of the wider setting of the monument and help understand its past use as a battery and a military site. Although many of the military buildings have been lost, again, the monument was not designed to have clear views towards this area as their relationship can be appreciated on plan.
- 9.2.13 Overall, it is considered that the setting of the monument contributes to the significance of the monument.

## **10 CONCLUSIONS**

- 10.1.1 The assessment has been successful in meeting its aims and objectives with detailed assessment completed for the WWI North Ockendon landing ground, WWI Orsett landing ground and RAF Gravesend. A statement of significance has been completed for the Bowaters Farm scheduled monument that discusses the nature, extent and level of its significance. A comprehensive assessment has been completed for the remaining DoB military heritage assets with significance identified in line with existing guidance.
- 10.1.2 Essex and Kent Thameside area have featured prominently in military planning doctrine throughout the 20<sup>th</sup> century. Throughout history, this geographical area has been susceptible to invasion whether by land, sea or air. The defence of this area has and always will be of vital importance in any armed conflict where the threat of invasion is a possibility. These factors have led to similar ideas in how best to defend the area. As a result, similar defences are found either side of the River Thames. Of course, there are some subtle differences, such as a greater emphasis of aerial defence during WWI in Essex with the construction of the landing grounds, with a shift to the Kent Thameside in WWII. Yet, overall the same form of military planning occurred in both areas.
- 10.1.3 The report has found that both North Ockendon and Orsett WWI landing grounds are not, based on existing guidance, of national significance. The significance of these two assets is vested in their archaeological and historic interest, whilst further significance for North Ockendon is also derived from its setting. Neither will be physically impacted as they are not located within the Application Site. However, the level of impact through change to setting for North Ockendon will be considered in the ES chapter.
- 10.1.4 RAF Gravesend has been identified as a non-designated heritage asset of local significance as it does not meet the criteria to be considered to have national significance. Its significance is derived from its archaeological and historic interest, and parts of its setting. The airfield is located within the Application Site and will therefore be impacted by the proposals. They too may also cause change to the parts of its setting identified to contribute to its significance. The level of impact will be determined in the ES chapter.
- 10.1.5 The statement of significance for the Bowaters Farm scheduled monument has found that the monument's significance lies in its historical, architectural and archaeological interest, and through its setting. Contribution to the significance of the monument is made not only by the surviving buildings within its boundary but what remains of its associated military base to the west and due to group value with designated and non-designated heritage assets in the wider landscape. This asset is outside the Application Site so would not experience any physical impact. There may be an impact to significance through change to setting, the level of which will be determined in the ES chapter.



- 10.1.6 The assessment has found that there is a range of military heritage assets within the Application Site. With the exception of the small scheduled area of Tilbury Fort located within Fort Road there are no designated military heritage assets and no aircraft crash site classified as protected military remains within the Application Site. Therefore the majority of the military heritage assets within the Application Site are of local significance. In those cases where remains of military heritage assets survive within the Application Site their significance derives from their archaeological interest, either through survival of structural remains or material culture relating to the people that built or were stationed at the sites. The level of impact to these remains will be determined in the ES chapter.

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### **Historic Environment Records**

Kent Historic Environment Record

Essex Historic Environment Record

Greater London Historic Environment Record

Kent Archive and Local History Centre

Essex Record Office

RAF Museum. London

### **Cartographic and documentary sources**

6inch first edition Ordnance Survey map Kent Edition sheet 5

13inch second edition Ordnance survey map Kent edition sheet 5SE

13inch third edition Ordnance survey map Kent edition sheet 5SE

13inch revised edition Ordnance survey map Kent edition sheet 5SE

25inch first edition Ordnance Survey map Essex edition sheet 75.11

25inch second edition Ordnance Survey map Essex edition sheet 75.11

25inch third edition Ordnance Survey map Essex edition sheet 88.2

6inch second edition Ordnance Survey map Essex edition sheet 74NW

Revised edition Ordnance Survey map Essex edition sheet 88SE

6inch third edition Ordnance Survey map Essex edition sheet 88

25inch first edition Ordnance Survey map Essex edition sheet 74.1

6inch first edition Ordnance Survey map Essex edition sheet 74 SW

25inch second edition Ordnance Survey map Essex edition sheet 84.1

25inch second edition Ordnance Survey map Essex edition sheet 84.2

1959-1961 25inch Ordnance Survey map



1965-1967 1:10560 Ordnance Survey map

1973-1976 1:10000 Ordnance Survey map

1987-1994 1:10000 Ordnance Survey map

MFC78/24/535; Gravesend, Record Site Plan, Airfield Site, 1945

MFC78/24/536; Gravesend, Record Site Plan, dispersed sites, 1945

**Online resources**

<http://archaeologydataservice.ac.uk/>

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<http://planningguidance.planningportal.gov.uk/>

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## APPENDICES

### Appendix 1: Terminology

#### Glossary

The terminology used in this assessment follows definitions contained within Annex 2 of NPPF:

<b>Archaeological interest</b>	There will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point.
<b>Conservation (for heritage policy)</b>	The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance.
<b>Designated heritage asset</b>	A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.
<b>Heritage asset</b>	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing).
<b>Historic environment</b>	All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.
<b>Historic environment record</b>	Information services that seek to provide access to comprehensive and dynamic resources relating to the historic environment of a defined geographic area for public benefit and use.
<b>Setting of a heritage asset</b>	The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
<b>Significance (for heritage policy)</b>	The value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting. For World Heritage Sites, the cultural value described within each site's Statement of Outstanding Universal Value forms part of its significance.

#### Chronology

Where referred to in the text, the main archaeological periods are broadly defined by the following date ranges:

Prehistoric		Historic	
<b>Palaeolithic</b>	970,000–9500 BC	<b>Romano-British</b>	AD 43–410
<b>Early Post-glacial</b>	9500–8500 BC	<b>Saxon</b>	AD 410–1066
<b>Mesolithic</b>	8500–4000 BC	<b>Medieval</b>	AD 1066–1500
<b>Neolithic</b>	4000–2400 BC	<b>Post-medieval</b>	AD 1500–1800
<b>Bronze Age</b>	2400–700 BC	<b>19th century</b>	AD 1800–1899
<b>Iron Age</b>	700 BC–AD 43	<b>Modern</b>	1900–present day



## Appendix 2: Legislative and planning framework

### Designated Heritage Assets

Designation	Associated Legislation	Overview
<b>World Heritage Sites</b>	-	The United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Committee inscribes World Heritage Sites for their Outstanding Universal Value (OUV) – <i>cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity</i> . England protects its World Heritage Sites and their settings, including any buffer zones or equivalent, through the statutory designation process and through the planning system. The National Planning Policy Framework sets out detailed policies for the conservation and enhancement of the historic environment, including World Heritage Sites, through both plan-making and decision-taking.
<b>Scheduled Monuments and Areas of Archaeological Importance</b>	<i>Ancient Monuments and Archaeological Areas Act 1979</i>	Under the <i>Ancient Monuments and Archaeological Areas Act 1979</i> , the Secretary of State (DCMS) can schedule any site which appears to be of national importance because of its historic, architectural, traditional, artistic or archaeological interest. The historic town centres of Canterbury, Chester, Exeter, Hereford and York have been designated as Archaeological Areas of Importance under Part II of the <i>Ancient Monuments and Archaeological Areas Act 1979</i> . Additional controls are placed upon works affecting Scheduled Monuments and Areas of Archaeological Importance under the Act. The consent of the Secretary of State (DCMS), as advised by Historic England, is required for certain works affecting Scheduled Monuments.
<b>Listed Buildings</b>	<i>Planning (Listed Buildings and Conservation Areas) Act 1990</i>	In England, under Section 1 of the <i>Planning (Listed Buildings and Conservation Areas) Act 1990</i> , the Secretary of State is required to compile lists of buildings of special architectural or historic interest, on advice from English Heritage/Historic England. Works affecting Listed Buildings are subject to additional planning controls administered by Local Planning Authorities. Historic England is a statutory consultee in certain works affecting Listed Buildings. Under certain circumstances, Listed Building Consent is required for works affecting Listed Buildings.
<b>Conservation Areas</b>	<i>Planning (Listed Buildings and Conservation Areas) Act 1990</i>	A Conservation Area is an area which has been designated because of its special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. In most cases, Conservation Areas are designated by Local Planning Authorities. Section 72 (1) of the <i>Planning (Listed Buildings and Conservation Areas) Act 1990</i> requires authorities to have regard to the fact that there is a Conservation Area when exercising any of their functions under the Planning Acts and to pay special attention to the desirability of preserving or enhancing the character or appearance of Conservation Areas. Although a locally administered designation, Conservation Areas may nevertheless be of national importance and significant developments within a Conservation Area are referred to Historic England.
<b>Registered Parks and Gardens and Registered Battlefields</b>	<i>National Heritage Act 1983</i>	The Register of Parks and Gardens was established under the <i>National Heritage Act 1983</i> . The Battlefields Register was established in 1995. Both Registers are administered by Historic England. These designations are non-statutory but are, nevertheless, material considerations in the planning process. Historic England and The Garden's Trust (formerly known as The Garden History Society) are statutory consultees in works affecting Registered Parks and Gardens
<b>Protected Wreck Sites</b>	<i>Protection of Wrecks Act 1973</i>	The <i>Protection of Wrecks Act 1973</i> allows the Secretary of State to designate a restricted area around a wreck to prevent uncontrolled interference. These statutorily protected areas are likely to contain the remains of a vessel, or its contents, which are of historical, artistic or archaeological importance.





## National Policy Statement for National Networks and Local Planning Policy

<b>5.126</b>	Where the development is subject to EIA the applicant should undertake an assessment of any likely significant heritage impacts of the proposed project as part of the Environmental Impact Assessment and describe these in the environmental statement.
<b>5.127</b>	The applicant should describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the asset's importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant Historic Environment Record should have been consulted and the heritage assets assessed using appropriate expertise. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should include an appropriate desk-based assessment and, where necessary, a field evaluation.
<b>5.128</b>	In determining applications, the Secretary of State should seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development (including by development affecting the setting of a heritage asset), taking account of the available evidence and any necessary expertise from: <ul style="list-style-type: none"><li>• relevant information provided with the application and, where applicable, relevant information submitted during examination of the application;</li><li>• any designation records;</li><li>• the relevant Historic Environment Record(s), and similar sources of information;</li><li>• representations made by interested parties during the examination; and</li><li>• expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it.</li></ul>
<b>5.129</b>	In considering the impact of a proposed development on any heritage assets, the Secretary of State should take into account the particular nature of the significance of the heritage asset and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal.
<b>5.130</b>	The Secretary of State should take into account the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that their conservation can make to sustainable communities – including their economic vitality. The Secretary of State should also take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example, screen planting).
<b>5.131</b>	When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight should be. Once lost, heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Given that heritage assets are irreplaceable, harm or loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of a grade II Listed Building or a grade II Registered Park or Garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance, including World Heritage Sites, Scheduled Monuments, grade I and II* Listed Buildings, Registered Battlefields, and grade I and II* Registered Parks and Gardens should be wholly exceptional.
<b>5.132</b>	Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss.
<b>5.133</b>	Where the proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply: <ul style="list-style-type: none"><li>• the nature of the heritage asset prevents all reasonable uses of the site; and</li></ul>



	<ul style="list-style-type: none"> <li>• no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and</li> <li>• conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and</li> <li>• the harm or loss is outweighed by the benefit of bringing the site back into use.</li> </ul>
<b>5.134</b>	Where the proposed development will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.
<b>5.135</b>	Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. The Secretary of State should treat the loss of a building (or other element) that makes a positive contribution to the site's significance either as substantial harm or less than substantial harm, as appropriate, taking into account the relative significance of the elements affected and their contribution to the significance of the Conservation Area or World Heritage Site as a whole.
<b>5.136</b>	Where the loss of significance of any heritage asset has been justified by the applicant based on the merits of the new development and the significance of the asset in question, the Secretary of State should consider imposing a requirement that the applicant will prevent the loss occurring until the relevant development or part of development has commenced.
<b>5.137</b>	Applicants should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably.
<b>5.138</b>	Where there is evidence of deliberate neglect of or damage to a heritage asset the Secretary of State should not take its deteriorated state into account in any decision.
<b>5.139</b>	A documentary record of our past is not as valuable as retaining the heritage asset and therefore the ability to record evidence of the asset should not be a factor in deciding whether consent should be given.
<b>5.140</b>	Where the loss of the whole or part of a heritage asset's significance is justified, the Secretary of State should require the applicant to record and advance understanding of the significance of the heritage asset before it is lost (wholly or in part). The extent of the requirement should be proportionate to the importance and the impact. Applicants should be required to deposit copies of the reports with the relevant Historic Environment Record. They should also be required to deposit the archive generated in a local museum or other public depository willing to receive it.
<b>5.141</b>	The Secretary of State may add requirements to the development consent order to ensure that this is undertaken in a timely manner in accordance with a written scheme of investigation that meets the requirements of this section and has been agreed in writing with the relevant Local Authority (or, where the development is in English waters, with the Marine Management Organisation and English Heritage) and that the completion of the exercise is properly secured.
<b>5.142</b>	Where there is a high probability that a development site may include as yet undiscovered heritage assets with archaeological interest, the Secretary of State should consider requirements to ensure that appropriate procedures are in place for the identification and treatment of such assets discovered during construction.

<b>Local Planning Policy</b>		
<b>Gravesham Local Plan Core Strategy</b>	<b>Policy CS20</b>	The Council will accord a high priority towards the preservation, protection and enhancement of its heritage and historic environment as a non-renewable resource, central to the regeneration of the area and the reinforcement of sense of place. Particular attention in this regard will be focused on those heritage assets most at risk through neglect, decay or other threats. Securing viable, sustainable and appropriate futures for such assets at risk will need to be reconciled with the sensitivity to change that many present.



Local Planning Policy		
		<p>Proposals and initiatives will be supported which preserve and, where appropriate, enhance the significance of the Borough's heritage assets, their setting where it contributes to the significance of the asset and their interpretation and enjoyment, especially where these contribute to the distinct identity of the Borough.</p> <p>These include:</p> <ul style="list-style-type: none"><li>• Gravesend Town Centre, its development as a heritage riverside town, and its setting;</li><li>• The Borough's urban and rural conservation areas; and</li><li>• Surviving built features and archaeology relating to the Borough's maritime, military, industrial and transport history.</li></ul> <p>When considering the impact of a proposed development on a designated heritage asset, the weight that will be given to the asset's conservation value will be commensurate with the importance and significance of the asset. For non-designated assets, decisions will have regard to the scale of any harm or loss and the significance of the heritage asset.</p>
<b>Thurrock Local Development framework: Core strategy and policies for management of development</b>	<b>CSTP24</b>	<p>1. Protecting and Enhancing Heritage Assets I.</p> <p>The Council will preserve or enhance the historic environment by:</p> <ol style="list-style-type: none"><li>i. Promoting the importance of the heritage assets, including their fabric and their settings;</li><li>ii. Encouraging the appropriate use of heritage assets and their settings;</li><li>iii. Supporting increased public access to historic assets, including military and industrial heritage;</li><li>iv. Reviewing the designation of local heritage assets, including considering the designation of new Conservation Areas;</li><li>v. Retaining non-designated heritage assets which are considered locally important as well as those with statutory protection; and</li><li>vi. Encouraging proposals that include enhancement of surrounding landscapes and integration between priority heritage assets and the Greengrid.</li></ol> <p>2. Proposed Development</p> <p>I. All development proposals will be required to consider and appraise development options and demonstrate that the final proposal is the most appropriate for the heritage asset and its setting, in accordance with:</p> <ol style="list-style-type: none"><li>i. The objectives in part 1 above;</li><li>ii. The requirements of PMD 4 Historic Environment;</li><li>iii. Conservation Area Character Appraisals and Management Proposals as appropriate; and</li><li>iv. Relevant national and regional guidance.</li></ol> <p>2. Priorities for Heritage Regeneration and Enhancement I.</p> <p>The Council will work collaboratively with owners and partners to encourage the appropriate regeneration and use of priority heritage assets to secure their long-term future. The Council will identify priority heritage assets from:</p> <ol style="list-style-type: none"><li>i. English Heritage's national Heritage at Risk Register;</li><li>ii. The Thurrock Heritage at Risk Register, which will be reviewed annually;</li><li>iii. The Conservation Area Management Proposals, which will be reviewed at least every five years, and</li></ol>



Local Planning Policy		
		<p>iv. A local list of heritage assets once produced.</p> <p>v. The Historic Environment Record II.</p> <p>Of priority heritage assets already identified, the Council will:</p> <p>i. Ensure that the setting of Tilbury Fort, including views of it from the river, are appropriately protected and enhanced, and that encroachment on the open land around it is not permitted.</p> <p>ii. Ensure that the setting of Coalhouse Fort is appropriately protected from development and that its fabric is conserved.</p> <p>iii. Resist development that undermines an understanding of the role the river Thames has played in the historic development of Thurrock.</p> <p>iv. Promote public access between Tilbury Fort and Coalhouse Fort through riverside links.</p> <p>v. Ensure that any new development close to, or within, Bata Village or the Bata Factory complex is well designed and contributes positively to their settings.</p> <p>vi. Ensure that Thurrock's historic landscapes, and the contribution made to them by ancient woodland, hedgerows and trees, are appropriately considered in all development proposals.</p>
<b>Having Borough Council Core Strategy and Development Control Policies Development Plan Document</b>	<b>CP18</b>	All new development affecting sites, buildings, townscapes and landscapes of special architectural, historical or archaeological importance must preserve or enhance their character or appearance. Contributions may be sought towards the preservation or enhancement of historic assets where appropriate.
<b>Having Borough Council Core Strategy and Development Control Policies Development Plan Document</b>	<b>DC67-71</b>	<p><b>DC67 – BUILDINGS OF HERITAGE INTEREST</b> Planning permission involving Listed Buildings or their setting will only be allowed where: • it does not involve the demolition of a Listed Building • it does not adversely affect a Listed Building or its setting A change of use which is contrary to other Development Control policies may be considered more favourably if it is necessary in the interests of conserving a Listed Building. When dealing with planning applications the Council will also take into account the contribution that other buildings of historical and/or architectural interest make to heritage.</p> <p><b>DC68 – CONSERVATION AREAS</b> The character or appearance of Conservation Areas will be preserved or enhanced. Planning permission for development within a Conservation Area will only be granted where: • It does not involve the demolition of a building that makes a positive contribution to the character or appearance of the area • It preserves or enhances the character or appearance of the Conservation Area and is well designed • It does not involve the loss of trees which contribute towards the character or appearance of the Conservation Area • In the case of Gidea Park Conservation Area, it ensures that all subdivision of plots particularly within the 1911 Exhibition and Competition housing areas result in plot sizes similar to those of surrounding properties. The revision of boundaries of existing Conservation Areas and the designation of additional Conservation Areas will be based on the Heritage SPD.</p> <p><b>DC69 - OTHER AREAS OF SPECIAL TOWNSCAPE OR LANDSCAPE CHARACTER</b> Planning permission will only be granted if it maintains, or enhances, the special character of: • the Emerson Park Policy Area which is typified by large and varied dwellings set in spacious mature, well landscaped grounds • the Hall Lane Policy Area which is typified by large detached and semi-</p>



Local Planning Policy	
	<p>detached dwellings set in large gardens with considerable tree and shrub planting • the Gidea Park Special Character Area which is derived from the quality of its urban design and architectural detailing and also its locally important heritage and historical associations. Detailed criteria for dealing with planning applications in these areas will be contained within three separate SPDs. The Council will also seek to preserve the special character of Havering Ridge including protecting views to and from the area.</p> <p>DC70 – ARCHAEOLOGY AND ANCIENT MONUMENTS The Council will ensure that the archaeological significance of sites is taken into account when making planning decisions and will take appropriate measures to safeguard that interest. Planning permission will only be granted where satisfactory provision is made in appropriate cases for preservation and recording of archaeological remains in situ or through excavation. Where nationally important archaeological remains exist there will be a presumption in favour of their physical preservation. Particular care will need to be taken when dealing with applications in archaeological 'hotspots' where there is a greater likelihood of finding remains. Planning permission will not be granted for development which adversely affects the three Ancient Monuments in the Borough or their settings.</p> <p>DC71 - OTHER HISTORIC LANDSCAPES The character of historic parks and Common Land will be protected or enhanced giving particular attention to the protection of views to and from common land and other historic landscapes</p>

### Appendix 3: Gazetteer

WA	HER ID	Name	County	Easting	Northing
1	MKE41701	Owletts Second World War Civil Defence depot, The Street, Cobham	Kent	566500	168750
2	MKE41714	Cobham Second World War Vulnerable Point V7	Kent	569300	168900
3	MKE99278	Cobham Hall, Cobham, Dartford	Kent	568327	168921
4	MKE89812	Crash site of Supermarine Spitfire I	Kent	568000	169000
5	MKE41918	RAF Second World War camp site 5, Ashenbank Wood, Cobham, Kent	Kent	567580	169360
6	MKE17179	Second World War RAF camps, Ashenbank Wood	Kent	567748	169519
7	MKE41916	RAF Second World War camp site 1 in Ashenbank Wood, Cobham	Kent	567790	169530
8	MKE41915	RAF Second World War Camp site 3, off Halfpence Lane, Cobham, Kent	Kent	568040	169570
9	MKE41919	RAF Second World War dispersed accommodation camp site 4 at Ashenbank Wood, Cobham, Kent	Kent	567400	169650
10	MWX20740	Possible line of former tramway, Shorne Wood	Kent	568053	169744
11	MWX20697	World War Two RAF camp dispersal site for RAF Gravesend	Kent	567731	169792



12	MKE92881	Bomb caters, located either side of Brewers Road, Shorne, Gravesham	Kent	568638	170026
12	MKE92881	Bomb caters, located either side of Brewers Road, Shorne, Gravesham	Kent	568671	169999
14	MKE93011	DH Mosquito crash site, Shorne, Gravesham	Kent	566741	170164
15	MKE16413	Barracks (1940-45)	Kent	568978	170276
16	MKE41860	Furzy Leas Wood army barrack site, Shorne	Kent	568943	170310
17	MWX20668	Probable World War 2 Storage Tank base, Randall Wood	Kent	568965	170345
18	MKE92998	Site of 6 Nissan Huts, located on land off Woodlands Lane, Shorne, Gravesham	Kent	569033	170533
19	MKE93001	V1 bomb site off Woodlands Lane, Shorne, Gravesham	Kent	569039	170547
20	MKE41864	Bunny Hill private Second World War air raid shelter, Shorne	Kent	569232	170548
21	MKE93080	WW1 Homes for Heroes scheme houses, Thong Lane, Shorne, Gravesham	Kent	567234	170854
22	MKE41816	Singlewell Second World War air wardens post and air raid siren, Watling Street, Gravesend	Kent	564949	170912
23	MKE98436	Shorne War Memorial	Kent	569063	171059
24	MKE41940	Rose and Crown Second World War Emergency Mortuary, The Street, Shorne, near Gravesend, Kent	Kent	569110	171070
25	MKE9031	Aa battery, gravesend	Kent	567300	171090
26	MKE41723	Shorne School Second World War Battle Headquarters, Shorne	Kent	568960	171120
27	MKE41868	Thong Lane Second World War road block, Gravesend	Kent	567180	171130
28	MKE41861	Shorne Hill Second World War spigot mortar emplacement, Shorne	Kent	568910	171190
29	MKE41771	Thong Second World War light anti-aircraft battery, Thong Lane, Gravesend	Kent	567300	171200
30	MKE9226	Spigot mortar emplacement, shorne	Kent	568900	171200
31	MKE93091	Caves converted to air raid shelters, Thong Lane, Shorne, Gravesham	Kent	567151	171208
32	MKE41777	Shorne Second World War anti-aircraft searchlight post, Shorne, near Gravesend	Kent	568920	171250
33	MKE21080	A post pit containing backfill of nineteenth and twentieth century date, Gravesend	Kent	565052	171378





34	MKE41773	Riverview Park Second World War light anti-aircraft battery, Gravesend	Kent	566500	171400
35	MKE41858	RAF Gravesend, Thong Lane, Gravesend	Kent	567100	171500
36	MKE16159	Gravesend airport (site)	Kent	566800	171564
37	MKE43015	Cedar Avenue Second World War gas decontamination centre, Gravesend, Kent	Kent	565210	171599
38	MKE41840	King's Farm Second World War air raid wardens post, Cedar Road, Gravesend	Kent	565150	171750
39	MKE41772	Thong Lane Second World War light anti-aircraft battery, Nr. Gravesend	Kent	567300	171800
40	MKE93067	P47 Thunderbolt crash site, Crown Lane, Shorne, Gravesham	Kent	569183	171860
41	MKE41774	Riverview Park Second World War anti-aircraft battery, Gravesend	Kent	566100	171900
42	MKE89775	Crash site of Hawker Hurricane I	Kent	567002	172084
43	MKE41850	Rochester Road Second World War road block, Chalk	Kent	568330	172310
44	MKE41724	Dust Heap Second World War Defended Locality, Gravesend	Kent	566500	172600
45	MKE41673	'Polperro' Second World War, anti-aircraft headquarters, Rochester Road, Chalk	Kent	567460	172730
46	MKE41791	Rochester Road Second World War Police Telephone Box, Chalk, Nr. Gravesend	Kent	567780	172785
47	MKE41713	Chalk Second World War Defended Locality DL20	Kent	567300	172800
48	MKE41847	East Court Farm Second World War road block buoys, Church Lane, Chalk	Kent	568420	172890
49	MKE41732	White Hart Inn Second World War Battle Headquarters, Rochester Road, Chalk	Kent	566720	172970
50	MKE41815	Brown Road Second World War air raid wardens post, Gravesend	Kent	566460	173020
51	MKE41904	Brown Road Second World War National Fire Service Action Station, Gravesend, Kent	Kent	566460	173020
52	MKE41787	Lower Higham Road Second World War Police Telephone Box	Kent	566570	173070
53	MKE41763	Malthouse Second World War sandbagged position, Lower Higham Road, Chalk	Kent	566590	173140
54	MKE41848	Lower Higham Road Second World War road block, Chalk	Kent	568061	173199



55	MKE41764	Maltings Second World War searchlight position, Lower Higham Road, Chalk, Kent	Kent	566610	173280
56	MKE41912	Northcourt School Second World War Emergency Feeding Centre, Dickens Road, Denton near Gravesend, Kent	Kent	566430	173400
57	MKE15477	Air raid warden post, Gravesend	Kent	567300	173520
58	MKE1615	Second World War searchlight battery, formerly interpreted as a Bronze Age settlement	Kent	566913	173602
59	MKE41731	Denton Sewage Works Battle Headquarters, Mark Lane, Gravesend	Kent	566800	173800
60	MKE41878	Denton Heavy anti aircraft battery, Mark Lane, Denton, Gravesend, Kent	Kent	566366	173881
60	MKE41878	Denton Heavy anti aircraft battery, Mark Lane, Denton, Gravesend, Kent	Kent	566422	173910
62	MKE8438	Site of Milton Range halt	Kent	568048	173920
63	MKE89771	Crash site of Messerschmitt Bf109E-1	Kent	569000	174000
64	MKE41865	Milton 19th/20th century rifle range, Eastcourt Marshes, Gravesend	Kent	567930	174154
65	MWX18633	Denon Wharf, Gravesend	Kent	566625	174233
66	MWX19089	Causeway, Gravesend	Kent	566722	174339
67	MWX0243	Two concrete platforms near the Sea Training Centre, Gravesend	Kent	567215	174349
68	MKE100520	Shooting Butts at former Milton Rifle Ranges, Shorne Marshes	Kent	568348	174374
69	MWX19090	Mooring post on foreshore by Shorne Marshes	Kent	568209	174549
70	MWX18485	Barrage balloon, with submerged mooring in Thames, by EastCourt Marshes, Gravesend	Kent	567960	174562
71	MWX0246	Possible Hard, Shorne Marshes	Essex	568457	174627
72	MWX0248	Angled stakes and rubble on foreshore by Shorne Marshes	Essex	568599	174684
73	MWX0247	Wooden posts, foreshore by Shorne Marshes	Essex	568595	174692
74	MWX19091	Rectangular Feature on foreshore, by Shorne Marshes	Essex	568695	174714
75	MWX0249	Rectangular wooden post structure on foreshore by Shorne Marshes	Essex	568881	174779
76	MEX1036402	Tilbury landing stage and passenger terminal	Essex	567300	175100
78	MEX1041253	ARP shelter / Guard post, Tilbury Fort	Essex	564830	175310
79	MEX1041252	Six Air Raid Shelters (destroyed), between railway and Tilbury Fort	Essex	564626	175347



80	MEX31812	Pillbox, S of Tilbury Power Station	Essex	566320	175360
81	MEX31803	Spigot Mortar Base, NW Bastion, Tilbury	Essex	565147	175477
81	MEX31804	Spigot Mortar Base, SE Bastion, Tilbury Fort	Essex	565147	175477
81	MEX6052	Tilbury Fort	Essex	565147	175477
82	MEX31822	Radar Tower, Coalhouse Point	Essex	568973	176232
82	MEX6359	East Tilbury - Coalhouse Fort, Quick Firing Battery	Essex	569050	176493
82	MEX1041251	Eighteen Air Raid Shelters (destroyed), Recreation Ground, Tilbury	Essex	564586	176272
82	MEX31805	Road Barrier (destroyed), Nr Level Crossing, Fort Rd, W. Tilbury	Essex	565302	176379
82	MEX31820	Pillbox, Thames Foreshore, East Tilbury Marshes	Essex	568100	175850
82	MEX31806	Turret (destroyed), Allotments, Fort Road	Essex	565336	176429
83	MEX31824	Spigot Mortar Pedestals (2) at Coalhouse Fort	Essex	569074	176576
83	MEX31830	Tett Turret (destroyed), Coalhouse Fort	Essex	569074	176576
83	MEX31833	Concrete Building, Coalhouse Fort	Essex	569074	176576
83	MEX31832	Minefield Control Tower at Coalhouse Fort	Essex	569074	176576
84	MEX39672	Anti-Glider Ditches SE of Bowaters Farm	Essex	568287	176585
85	MEX1041248	D-Day Assembly Area, Tilbury	Essex	564626	176615
86	MEX39674	Anti-glider ditches SE of Bowaters Farm	Essex	566053	176835
87	MEX28727	St Catherine's Church Cemetery, East Tilbury - a small searchlight/ gun battery	Essex	569001	177020
88	MEX28877	WWII HAA Gun Site "TN13 Bucklands", Bowaters Farm, Thurrock	Essex	567865	177077
89	MEX6620	East Tilbury Battery	Essex	568658	177360
90	MEX31807	Road Barrier (destroyed), Cooper's Lane, West Tilbury	Essex	565770	177470
91	MEX31813	Spigot Mortar Pit, corner of field, St. James Church, W. Tilbury	Essex	566190	177710
92	MEX31814	Spigot Mortar Pit, Church Road, West Tilbury	Essex	566210	177710
93	MEX28728	Alan Williams Turret, Love Lane/Princess Margaret Road, East Tilbury	Essex	568267	177832
94	MEX31821	Alan-Williams Steel Turret (destroyed), Love Lane/Prin. Marg	Essex	568260	177850
95	MEX31809	Road Barrier (destroyed), Rectory Road, West Tilbury	Essex	565690	177970



96	MEX31810	Spigot Mortar Base, Top of Gun Hill, West Tilbury	Essex	565640	177990
97	MEX31815	Spigot Mortar Site (destroyed), Manor Farm, West Tilbury	Essex	566110	178000
98	MEX31834	Pillbox (destroyed), sea wall, East Tilbury marshes	Essex	569450	178250
99	MEX39676	Anti glider ditches N of Orchard House	Essex	569018	178485
100	MEX31811	Road Barrier (destroyed), Muckingford Road. West Tilbury	Essex	565710	178630
101	MEX31816	Spigot Mortar Site x 2 (destroyed), Muckingford Road	Essex	567233	178932
102	MEX31818	Spigot Mortar Site (destroyed), Muckingford Road	Essex	567400	179050
103	MEX31801	Spigot Mortar Site (destroyed), N of Chadwell St. Mary	Essex	564630	179070
104	MEX31802	Spigot Mortar Site (destroyed), N of Chadwell St. Mary	Essex	564610	179120
105	MEX31786	Road Barrier (destroyed), Sockett's Heath	Essex	562700	179290
106	MEX31791	WWII HAA Gun Site "TN15 Chadwell", Thurrock	Essex	564202	179314
107	MEX31787	Pillbox (destroyed), Sockett's Heath	Essex	562710	179320
108	MEX31788	Spigot Mortar Base, E of roundabout, Sockett's Heath	Essex	562900	179320
109	MEX31819	Spigot Mortar Site (destroyed), "George and Dragon", Linstead	Essex	567500	179330
110	MEX31784	Spigot Mortar Site (destroyed), Allotments, Sockett's Heath	Essex	562680	179370
111	MEX39670	Anti-glider ditch E of Gobions	Essex	568576	179474
112	MEX6598	East of Merrie Loots Farm	Essex	567694	179554
113	MEX1041240	Military Camp (destroyed), S of Stanford Road, Orsett	Essex	565940	180924
114	MEX1031027	WWI landing ground at Orsett	Essex	565941	181114
115	MEX1039383	Cold War Nuclear Monitoring Post, Orsett	Essex	564400	181150
116	MEX1041236	Alan-Williams Turret (destroyed), Chapel Field, Orsett	Essex	564640	181680
117	MEX1041235	Road Barrier (destroyed), Rectory Road, Orsett	Essex	564530	181970
118	MEX1041237	Spigot Mortar Emplacement, Orsett Park Farm, Orsett	Essex	564750	182260
119	MEX1041239	Road Barrier (destroyed), Orsett Road, Orsett	Essex	565550	182340



120	MEX1041238	Pillbox, Orsett Road, Orsett	Essex	565530	182350
121	MEX1041234	WWII HAA Gun Site "TN14 Orsett", NW of Orsett, Thurrock	Essex	563667	182763
122	MEX1032827	WWI landing ground at North Ockendon	Essex	560193	184646
123	MEX1041229	Observation Post (destroyed), Blankets Farm, Bulphan	Essex	562190	185270
124	MEX1031059	Bomb Crater at Tooks Farm	Essex	558471	190239
125	MEX1035555	Road Barrier (destroyed), Gt. Warley St, Great Warley	Essex	558403	190605
126	TQ 66 NE 180	Hartland House Second World War Home Guard Command Post, Sole Street Road, Sole Street, Nr Cobham, Kent	Kent	565870	167990
127	TQ 66 NE 193	Second World War Hansworth House, Divisional Headquarters, Round Street, Sole Street, Meopham, Kent	Kent	565910	168070
128	TQ 66 NE 59	World War II Heavy Anti-aircraft gunsite (TS15), 250m east of Cobhambury Farm	Kent	567618	168254
129	TQ 66 NE 221	Crash site of Vickers Wellington X	Kent	566719	168470
130	TQ 66 NE 198	Leather Bottle Second World War Home Guard headquarters, Cobham	Kent	566999	168475
131	TQ 66 NE 176	Cobham Primary School Second World War air raid shelter (Eastern), The Street, Cobham, Kent	Kent	567172	168475
132	TQ 66 NE 74	Surface Air Raid Shelters at Cobham Primary School	Kent	567143	168485
133	TQ 66 NE 175	Cobham Primary School Second World War air raid shelter (western), The Street Cobham, Kent	Kent	567145	168486
134	TQ 66 NE 73	Surface Air Raid Shelters at Cobham Primary School	Kent	567116	168493
135	TQ 66 NE 190	Meadow Rooms Second World War First Aid Post, The Street, Cobham	Kent	566892	168511
136	TQ 66 NE 186	Cobham Cold War Royal Observer Corps Post	Kent	566500	168600
137	TQ 77 SW 1041	Gadshill School Second World War air raid wardens post, Gravesend Road, Higham	Kent	571042	170905
138	TQ 67 SW 370	Northumberland Bottom Anti-Aircraft Battery and Camp (Site of)	Kent	563740	171131
139	TQ 67 SW 1305	Northumberland Bottom Second World War Police Telephone Box	Kent	564110	171280
140	TQ 67 SW 1164	Northumberland Bottom Second World War Defended Locality, Gravesend	Kent	564100	171300
141	TQ 67 SW 1168	Tollgate Second World War Battle Headquarters, Gravesend	Kent	564200	171300
142	TQ 77 SW 1042	Upper Higham Second World War air raid siren	Kent	571170	171420
143	TQ 77 SW 114	Oast house on the North side of Hermitage Road	Kent	571699	171465
144	TQ 77 SW 1046	Higham Working Men's Club Second World War First Aid Post	Kent	571425	171495



145	TQ 77 SW 1053	Walmers Avenue Second World War garden air raid shelter, Higham, Kent	Kent	570394	171549
146	TQ 77 SW 1044	The Knowle Second World War civil defence headquarters, School Lane, Higham	Kent	571291	171963
147	TQ 67 SE 358	Crash site of Consolidated B24J Liberator	Kent	564000	172000
148	TQ 67 SW 1241	Singlewell Road Second World War Police Box, Gravesend	Kent	564752	172095
149	TQ 67 SW 1162	Shears Green Second World War Defended Locality, Northfleet	Kent	563600	172100
150	TQ 67 SW 1350	Packham Road Cold War air raid siren, Northfleet	Kent	563930	172170
151	TQ 67 SW 1286	Shears Green School Cold War rest centre, Packham Road, Northfleet, Kent	Kent	563800	172200
152	TQ 67 SW 1261	Hog's lane Second World War fire trench, Northfleet	Kent	563580	172270
153	TQ 67 SW 1300	Pepper Hill Second World War light anti-aircraft battery, Northfleet	Kent	562641	172389
154	TQ 67 SW 567	Springhead Second World War air raid shelter, Dartford, Kent	Kent	561890	172430
155	TQ 67 SW 1181	Pepper Hill Second World War Battle Headquarters, Northfleet	Kent	562000	172500
156	TQ 67 SW 1215	Wombell Park Second World War Emergency Water Tank, Northfleet	Kent	562575	172635
157	TQ 67 SW 1304	Springhead Second World War light anti-aircraft battery	Kent	562000	173000
158	TQ 67 SW 1235	Colyer Road School Second World War First Aid Post, Colyer Road, Northfleet, Kent	Kent	562960	173010
159	TQ 67 SW 1185	Fleet Tavern Second World War air raid wardens post, Waterdales, Northfleet	Kent	562580	173030
160	TQ 67 SW 1327	Springhead Road Second World War Drill Hall, Northfleet	Kent	562310	173030
161	TQ 67 SW 1200	Springhead Road Second World War balloon barrage site, Northfleet	Kent	562180	173100
162	TQ 67 SW 1247	Springhead Road Recreation Ground Second World War Decontamination Centre, Northfleet	Kent	562510	173130
163	TQ 67 SW 1189	Waterdales Second World War air raid wardens post, Northfleet	Kent	562751	173141
164	TQ 67 SW 178	Community air raid shelter tunnel, Tile hill, Northfleet	Kent	562400	173200
165	TQ 67 SW 1193	Northfleet Recreation Ground Second World War balloon barrage site, Northfleet	Kent	562660	173230
166	TQ 67 SW 1328	Brookvale Council Depot Second World War Decontamination Centre, Springhead Road, Northfleet, Kent	Kent	562450	173350
167	TQ 67 SW 183	Royal Observer Corps post west of Southfleet Road, Swanscombe	Kent	560800	173400
168	TQ 67 SE 340	Gravesend Grammar School Second World War air raid shelter, Church Walk, Gravesend, Kent	Kent	565710	173540





169	TQ 67 SE 1232	Rochester Road Second World War air raid wardens post, Gravesend	Kent	566031	173641
170	TQ 67 SW 1224	Springhead Road Second World War air raid shelter, Northfleet	Kent	562475	173715
171	TQ 67 SE 1157	East Milton Road Second World War air raid wardens post, Gravesend	Kent	565620	173790
172	TQ 67 SE 1204	Ellerslie Second World War air raid wardens post, Milton Road, Gravesend, Kent	Kent	565640	173790
173	TQ 67 SW 585	Manor Road, Second World War air raid wardens post, Swanscombe, Dartford, Kent	Kent	560275	173830
174	TQ 67 SE 1208	Norfolk Road Second World War tunnel air raid shelter, Gravesend	Kent	565794	173898
175	TQ 67 SW 484	WWII PoW camp. Demolished	Kent	560500	173900
176	TQ 67 SW 574	Swanscombe cemetery Mortuary Chapel, Dartford	Kent	560470	174055
177	TQ 67 SW 576	Park Road recreation ground Second World War trench air raid shelters, Swanscombe, Dartford, Kent	Kent	560330	174090
178	TQ 67 SW 578	Ebbsfleet International Station post Cold War anti-vehicle bomb obstacles, Ebbsfleet, Dartford, Kent	Kent	561460	174105
179	TQ 67 SE 1163	Suffolk Road Second World War air raid siren, Gravesend	Kent	565740	174130
180	TQ 67 SE 1211	Canal Basin Council depot Second World War decontamination centre and rescue unit base, Canal Road, Gravesend, Kent	Kent	565690	174140
181	TQ 67 SW 579	Ebbsfleet International Station Post Cold War anti-vehicle bomb obstacles, Dartford, Kent	Kent	561520	174150
182	TQ 67 SE 1164	Canal Road Second World War air raid wardens post, Gravesend	Kent	565690	174160
183	TQ 67 SW 575	Park Road Boating Pond Second World War emergency water supply, Swanscombe, Dartford, Kent	Kent	560320	174180
184	TQ 67 SW 1252	New Road Second World War air raid wardens post, Gravesend, Kent	Kent	564561	174205
185	TQ 67 SW 1287	Civil Defence Control Centre, the Old Town Hall, Council Avenue, Northfleet, Gravesend, Kent	Kent	562140	174220
186	TQ 67 SW 648	Gravesend Hospital, Bath Street, Gravesend	Kent	564436	174236
187	TQ 67 SW 1159	Town Hall Second World War air raid shelter, Council Avenue, Northfleet	Kent	562156	174239
188	TQ 67 SE 292	Crash site of Hawker Hurricane V6550	Kent	566105	174246
189	TQ 67 SW 184	Civil defence control centre, Council Ave, Northfleet	Kent	562140	174250
190	TQ 67 SW 1310	Rose Street Second World War public air raid shelter tunnel, Northfleet	Kent	561810	174270
191	TQ 67 SW 1340	Old Town Hall National Fire Service Station, Market Place, Gravesend, Kent	Kent	564810	174290



192	TQ 67 SW 583	Stanhope Road Second World War trench air raid shelter, Swanscombe, Dartford, Kent	Kent	560775	174300
193	TQ 67 SE 1227	Promenade Second World War Police Telephone Box, Gravesend	Kent	565560	174310
194	TQ 67 SE 1031	Wharf, Gravesend	Kent	565898	174325
195	TQ 67 SW 1266	Lawn Road Second World War Emergency Water Tank, Northfleet	Kent	562196	174331
196	TQ 67 SE 1029	Wharf, Gravesend	Kent	565789	174335
197	TQ 67 SW 1283	Second World War High Street tunnel air raid shelter, Northfleet, Kent	Kent	562140	174340
198	TQ 67 SE 169	MOSQUITO MK VI HR153	Kent	565610	174340
199	TQ 67 SW 1237	Lawn Road Second World War air raid wardens post, Northfleet	Kent	562197	174343
200	TQ 67 SW 1257	St. George's Hall Second World War mortuary and civil defence store, Church Street, Gravesend	Kent	564640	174350
201	TQ 67 SW 1341	Church Street School Second World War Auxiliary Fire Service building, Church Street, Gravesend, Kent	Kent	564580	174350
202	TQ 67 SW 1334	Horn Yard Second World War public air raid shelter, Gravesend, Kent	Kent	564800	174360
203	TQ 67 SW 1217	Wardona Cinema Second World War air raid shelter, High Street, Northfleet	Kent	562010	174370
204	TQ 67 SW 1291	Lawn Road School Second World War air raid siren, High Street, Northfleet	Kent	562100	174380
205	TQ 67 SW 1251	Crooked Lane Second World War public air raid shelter, Gravesend, Kent	Kent	564880	174380
206	TQ 67 SW 1255	Bull Yard Second World War public air raid shelter, Gravesend, Kent	Kent	564800	174390
207	TQ 67 SW 1317	Russells Brewery Second World War air raid shelter, West Street, Gravesend	Kent	564430	174400
208	TQ 67 SW 1281	High Street Second World War chalk tunnel air raid shelter, Northfleet, Kent	Kent	561990	174401
209	TQ 67 SW 573	Harmer Road School fire services lecture room, Swanscombe, Dartford, Kent	Kent	560710	174415
210	TQ 67 SW 1049	Wharf, Gravesend	Kent	564916	174416
211	TQ 67 SW 1306	West Street Second World War air raid wardens post, Gravesend	Kent	564610	174420
212	TQ 67 SE 1226	Port of London Authority Cold War Thames Navigation Control Centre, Royal Pier Road, Gravesend	Kent	565070	174420
213	TQ 67 SW 613	Northfleet Cement Works No. 4 Second World War air raid shelter, Northfleet, Kent	Kent	562000	174420
214	TQ 67 SW 1048	Coal Wharf	Kent	564889	174420



215	TQ 67 SW 1347	Pope's Head Second World War civil defence store, West Street, Gravesend, Kent	Kent	564730	174430
216	TQ 67 SW 572	Hope Road Second World War air raid shelters, Swanscombe, near Dartford, Kent	Kent	560700	174430
217	TQ 67 SW 1047	Wharf, Gravesend	Kent	564849	174436
218	TQ 67 SW 1195	Wood Street Second World War public air raid shelter, Northfleet	Kent	561810	174440
219	TQ 67 SW 1201	Gravesend-Tilbury First World War Pontoon Bridge, Royal Pier Road, Gravesend	Kent	564951	174444
220	TQ 67 SW 1191	Yacht Club First World War Voluntary Aid Detachment Hospital, The Undershore, Northfleet	Kent	564209	174445
221	TQ 67 SW 1349	Clifton Marine Parade air raid siren and Police Telephone Box, Gravesend	Kent	563995	174445
222	TQ 67 SW 1239	Station Road Second World War air raid wardens post, Northfleet	Kent	561657	174446
223	TQ 67 SW 1046	Jetty, Gravesend	Kent	564851	174447
224	TQ 67 SW 1045	Landing Stage/Steps, Gravesend	Kent	564820	174450
225	TQ 67 SW 1044	Landing Stage/Steps, Gravesend	Kent	564811	174451
226	TQ 67 SW 1379	Rosherville Hotel, Burch Road, Northfleet	Kent	563666	174454
227	TQ 67 SW 1043	Landing Stage/Steps	Kent	564804	174459
228	TQ 67 SW 1321	Northfleet High Street Second World War British Restaurant	Kent	561824	174466
229	TQ 67 SW 1036	Coal Wharf (3rd ed OS)	Kent	564343	174466
230	TQ 67 SW 1040	Marriot's Wharf, Gravesend	Kent	564613	174466
231	TQ 67 SW 1039	Union Wharf, Gravesend	Kent	564547	174470
232	TQ 67 SW 1038	Commercial Wharf, Gravesend	Kent	564499	174479
233	TQ 67 SW 1231	Clifton Marine Parade Second World War minewatching post, Gravesend	Kent	564340	174480
234	TQ 67 SW 1042	Landing Stage/Steps, Gravesend	Kent	564739	174482
235	TQ 67 SW 191	Minewatchers observation post, Gravesend	Kent	563713	174484
236	TQ 67 SW 1035	Baltic Wharf (3rd ed OS), Gravesend	Kent	564309	174484
237	TQ 67 SW 1034	Causeway (3rd ed OS), Gravesend	Kent	564214	174485
238	TQ 67 SW 1041	Landing Stage/Steps by Kent and Essex steam ferry pier	Kent	564651	174485
239	TQ 67 SW 1037	South-east and Central Pier, Gravesend	Kent	564409	174489



240	TQ 67 SW 201	Drill hall (c1905)	Kent	562086	174494
241	TQ 67 SW 1230	1905 Volunteer Training Battery at the north end of Factory Road, Northfleet	Kent	562080	174500
242	TQ 67 SW 1338	Second World War civil defence site at the end of the former car ferry pier, West Street, Gravesend	Kent	564675	174515
243	TQ 67 SW 577	Green's Yard Second World War air raid shelter, Swanscombe, Dartford, Kent.	Kent	560700	174525
244	TQ 67 SW 581	Mitchell's Yard trench air raid shelters off Milton Road, Swanscombe, Dartford, Kent	Kent	560610	174540
245	TQ 67 SW 610	Northfleet Cement Works No. 3 Second World War air raid shelter, Northfleet, Kent	Kent	562070	174550
246	TQ 67 SW 1344	Huggens College Second World War emergency water tank at Huggens College, College Road, Northfleet, Kent	Kent	561700	174600
247	TQ 67 SW 179	Air raid shelter, college rd, northfleet	Kent	561810	174640
248	TQ 67 SW 586	Road tunnel Second World War air raid shelter, south of Taunton Road, Swanscombe, Dartford, Kent	Kent	561215	174640
249	TQ 67 SW 1196	Huggens College Second World War public air raid shelter, Northfleet	Kent	561536	174664
250	TQ 67 SW 1172	Grove Road Second World War Defended Locality Northfleet	Kent	561500	174700
251	TQ 67 SW 1197	Stonebridge Road Second World War public air raid shelter, Northfleet	Kent	561424	174750
252	TQ 67 SW 1188	Stonebridge Road Second World War balloon barrage site, Northfleet	Kent	561340	174760
253	TQ 67 SW 1198	Grove House Second World War Battle Headquarters, Grove Road, Northfleet	Kent	561600	174800
254	TQ 67 SW 181	Air raid shelter under factory, Taunton Road, dartford	Kent	561200	174820
255	TQ 67 SE 1035	Jetty by Shorne Marshes	Kent	568963	174825
256	MEX1041242	D-Day Embarkation Hard 'NZ2 Main Dock East' (destroyed), Tilbury Docks	Essex	563120	175550
257	MEX1041241	D-Day Embarkation Hard 'NZ1 Main Dock West' (destroyed), Tilbury Docks	Essex	563000	175560
258	MEX1041243	D-Day Embarkation Hard 'NZ3 West Branch Dock', Tilbury Docks	Essex	563330	175800
259	MEX1041244	D-Day Embarkation Hard 'NZ4 Centre Branch Dock', Tilbury Docks	Essex	563520	175940
260	MEX1041245	D-Day Embarkation Hard 'NZ5 East Branch Dock', Tilbury Docks	Essex	563710	176020
261	MEX31779	P.L.U.T.O. Line Construction & Assembly Site (destroyed), Tilbury Main Dock	Essex	562987	176176
262	MEX31779	P.L.U.T.O. Line Construction & Assembly Site (destroyed), Tilbury Main Dock	Essex	562987	176176



263	MEX1041246	Eight Air Raid Shelters (destroyed), Ellerman Road Broadway, Tilbury	Essex	563680	176420
264	MEX31790	Spigot Mortar Site (destroyed), Dock Road	Essex	563340	176640
265	MEX1032172	WWII anti-aircraft ditches N of Little Thurrock Marshes	Essex	563479	177344
266	MEX1032172	WWII anti-aircraft ditches N of Little Thurrock Marshes	Essex	563479	177344
267	MEX31795	Tett Turret (destroyed), Adj. junc. St. Chad's Rd/Feenan Hig	Essex	564460	177420
268	MEX1041256	Military Camp (destroyed), junc St. Chad's Road / Feenan Highway, Tilbury	Essex	564536	177453
269	MEX1041256	Military Camp (destroyed), junc St. Chad's Road / Feenan Highway, Tilbury	Essex	564536	177453
270	MEX31793	Spigot Mortar Base, W of St. Chad's Rd/Feenan Highway juncti	Essex	564380	177460
271	MEX31796	Spigot Mortar Site (destroyed), OS138 Grassland E of Chadwell	Essex	564532	177493
272	MEX31797	Tett Turret (destroyed), S of Chadwell St. Mary	Essex	564480	177950
273	MEX31789	Alan-Williams Turret (destroyed), Rookery Hill	Essex	563120	178190
274	MEX31798	Spigot Mortar Site (destroyed), Chadwell House, Chadwell St.	Essex	564590	178480
275	MEX31799	Spigot Mortar Site (destroyed), N of Cross Keys Inn, Chadwell	Essex	564580	178590
276	MEX31800	Spigot Mortar Site (destroyed), 24 Brentwood Rd, Chadwell	Essex	564600	178630
277	MEX31782	Spigot Mortar Site (destroyed), Parade, Sockett's Heath	Essex	562650	179270
278	MEX31772	WWII HAA Gun Site "TN23 Belmont Castle", W of Grays	Essex	560913	179393
279	MEX31772	WWII HAA Gun Site "TN23 Belmont Castle", W of Grays	Essex	560913	179393
280	MEX1041232	Ammunition Shelter (destroyed), Gravel Pit, Long Lane, Stifford	Essex	561060	179680
281	MEX1041233	Spigot Mortar Emplacement (destroyed), Crossways Café, Stifford	Essex	561480	180070
282	MEX39867	WWII HAA Gun Site "TN16 Buckles", Buckles Lane, South Ockendon	Essex	559834	181384
283	MEX31838	Road Barrier (destroyed), London Road, Stanford-le-Hope	Essex	567750	182150
284	MEX31836	Road Barrier (destroyed), Stanford-le-Hope by-pass	Essex	567680	182240
285	MEX1032823	WWI landing ground at Horndon on the Hill	Essex	564498	183496
286	MEX1032823	WWI landing ground at Horndon on the Hill	Essex	564498	183496
287	MLO100557	North Ockenden {Second World War heavy anti aircraft battery}	Essex	559900	185600
288	MEX1031054	Bomb crater	Essex	560140	189185



<b>289</b>	MEX1031054	Bomb crater	Essex	560140	189185
<b>290</b>	MEX1035529	Alan-Williams Turret (destroyed), Brook House, Brook Street	Essex	557668	192855
<b>291</b>	MEX1035530	Spigot Mortar Emplacement (destroyed), Brook St.	Essex	557668	192855
<b>292</b>	MEX1035529	Alan-Williams Turret (destroyed), Brook House, Brook Street	Essex	557668	192855
<b>293</b>	MEX1035530	Spigot Mortar Emplacement (destroyed), Brook St.	Essex	557668	192855



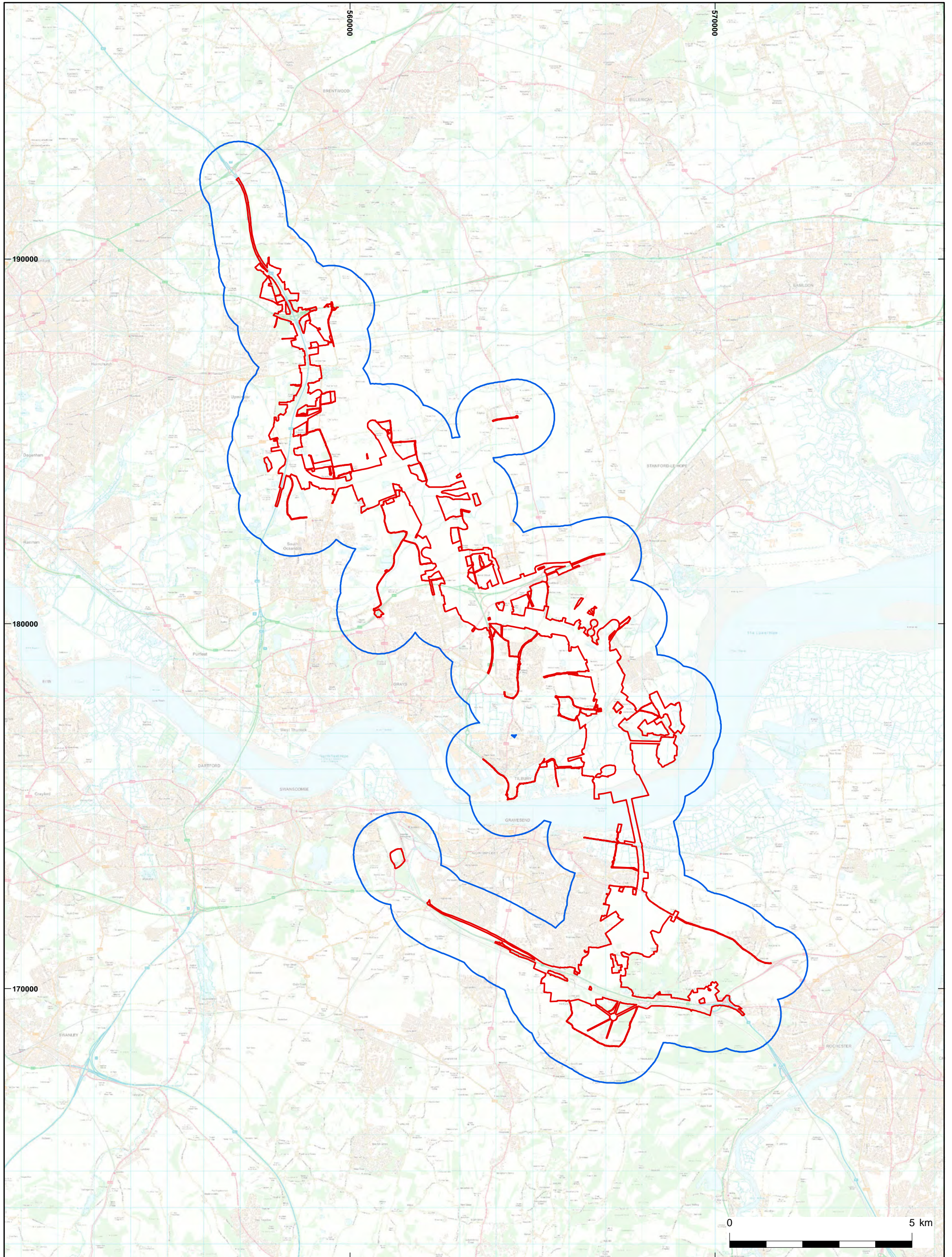


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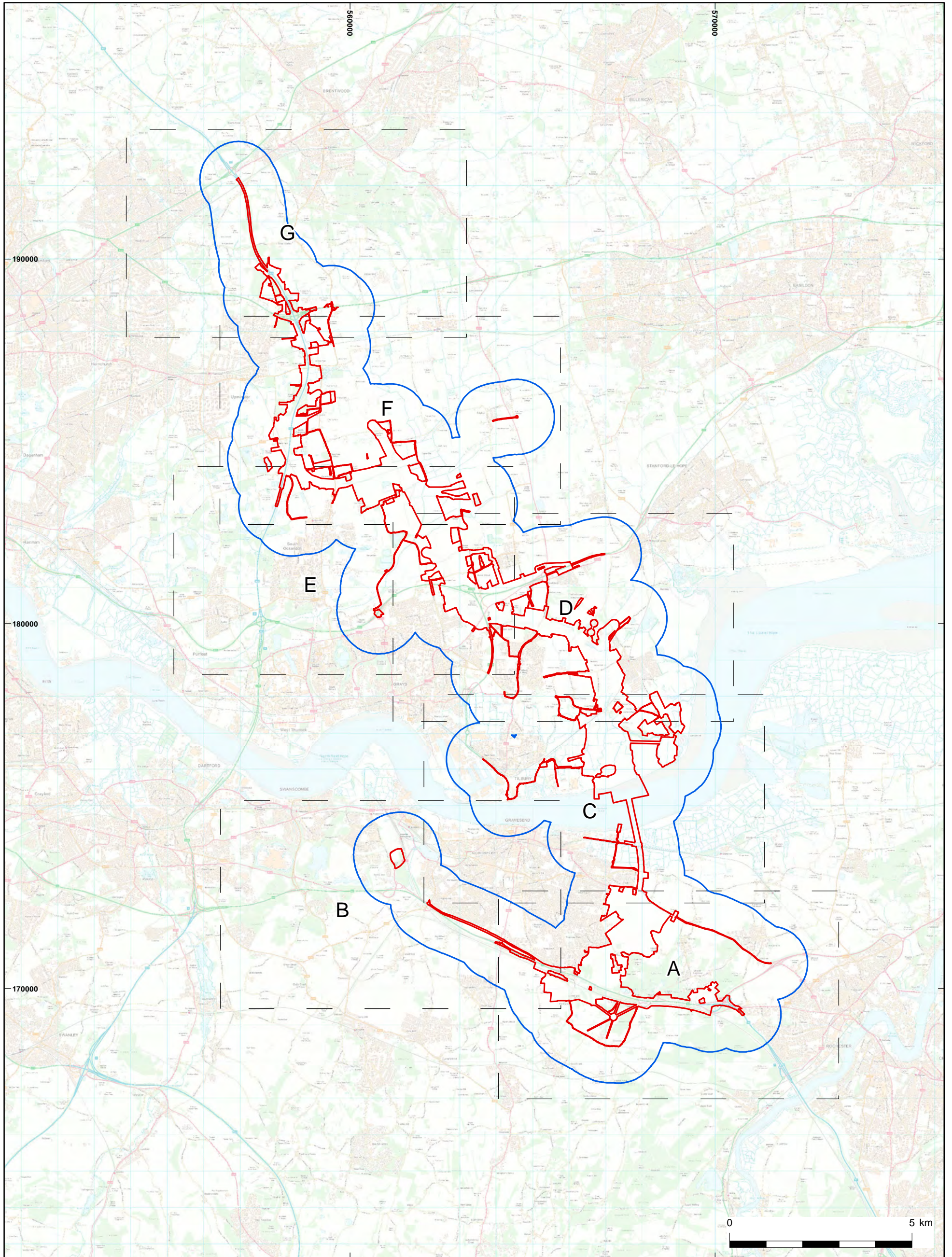
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Scheme location and Study Area

Figure 1





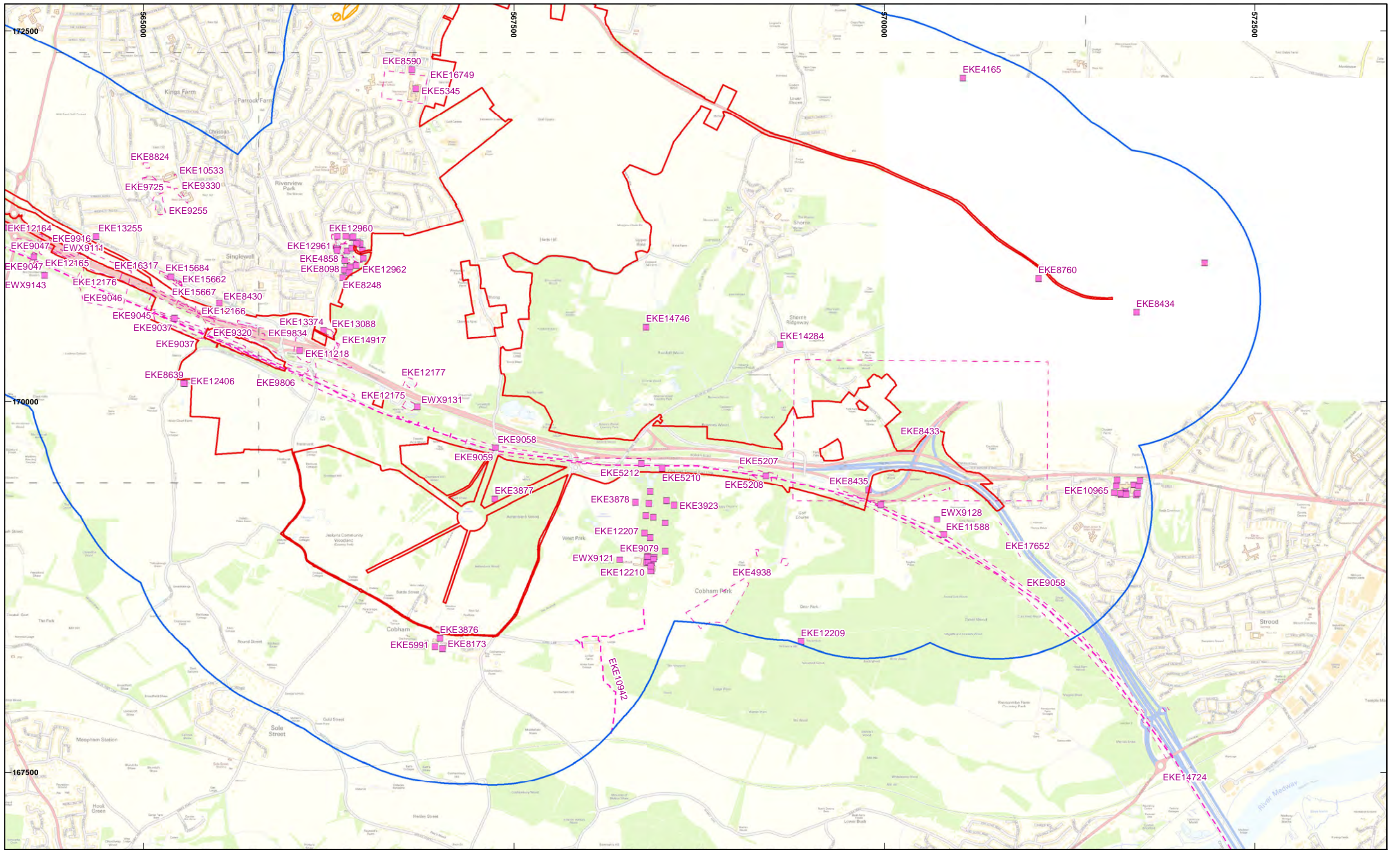
- Site
- Study Area (1km)
- Figure Extents



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- Site
- Study Area (1km)
- Intrusive Archaeological Investigation
- Figure Extents
- Historic Landfills
- Intrusive Archaeological Investigation



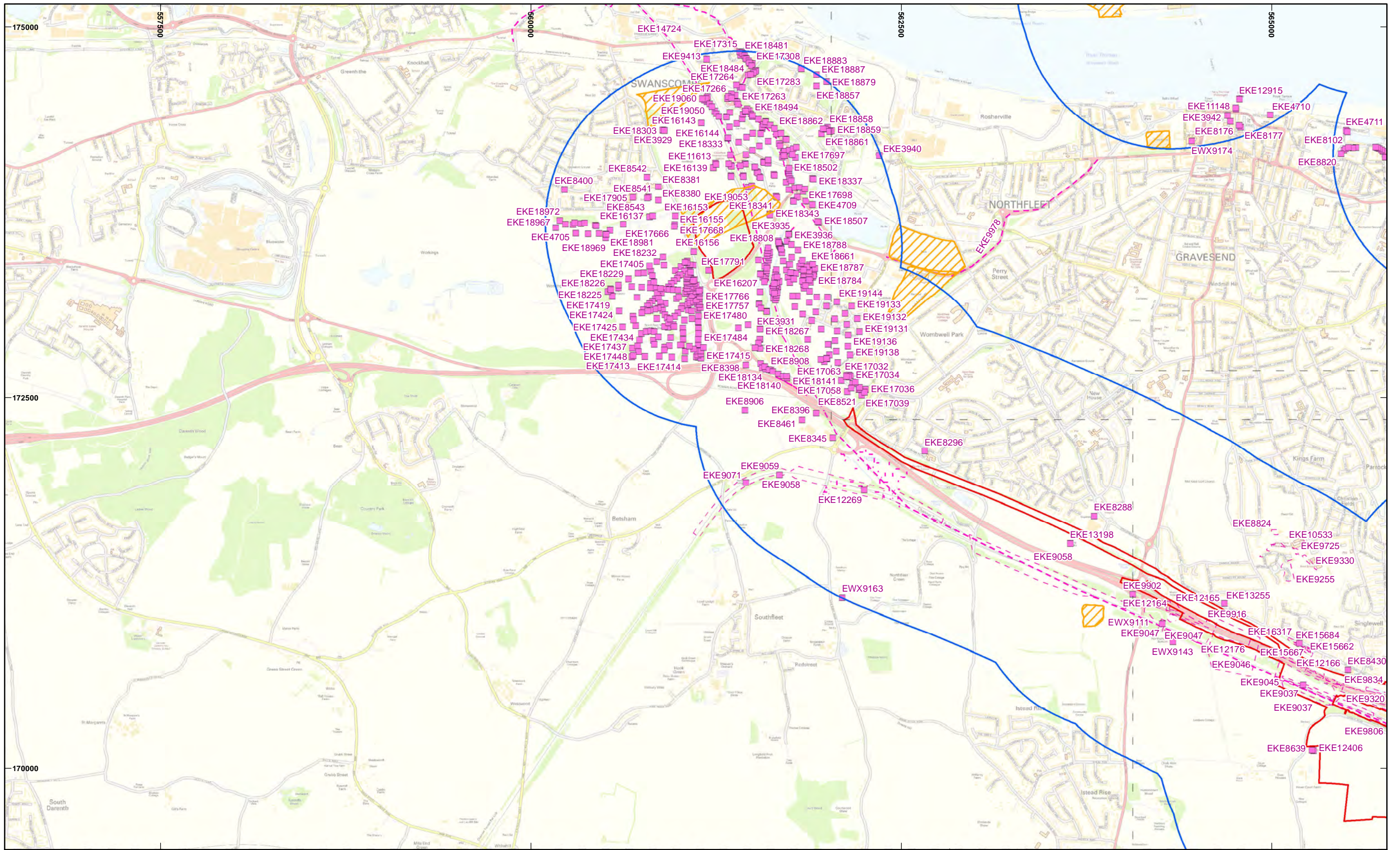
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Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency

Figure 3A





	Site		Intrusive Archaeological Investigation
	Study Area (1km)		Intrusive Archaeological Investigation
	Figure Extents		
		Historic Landfills	



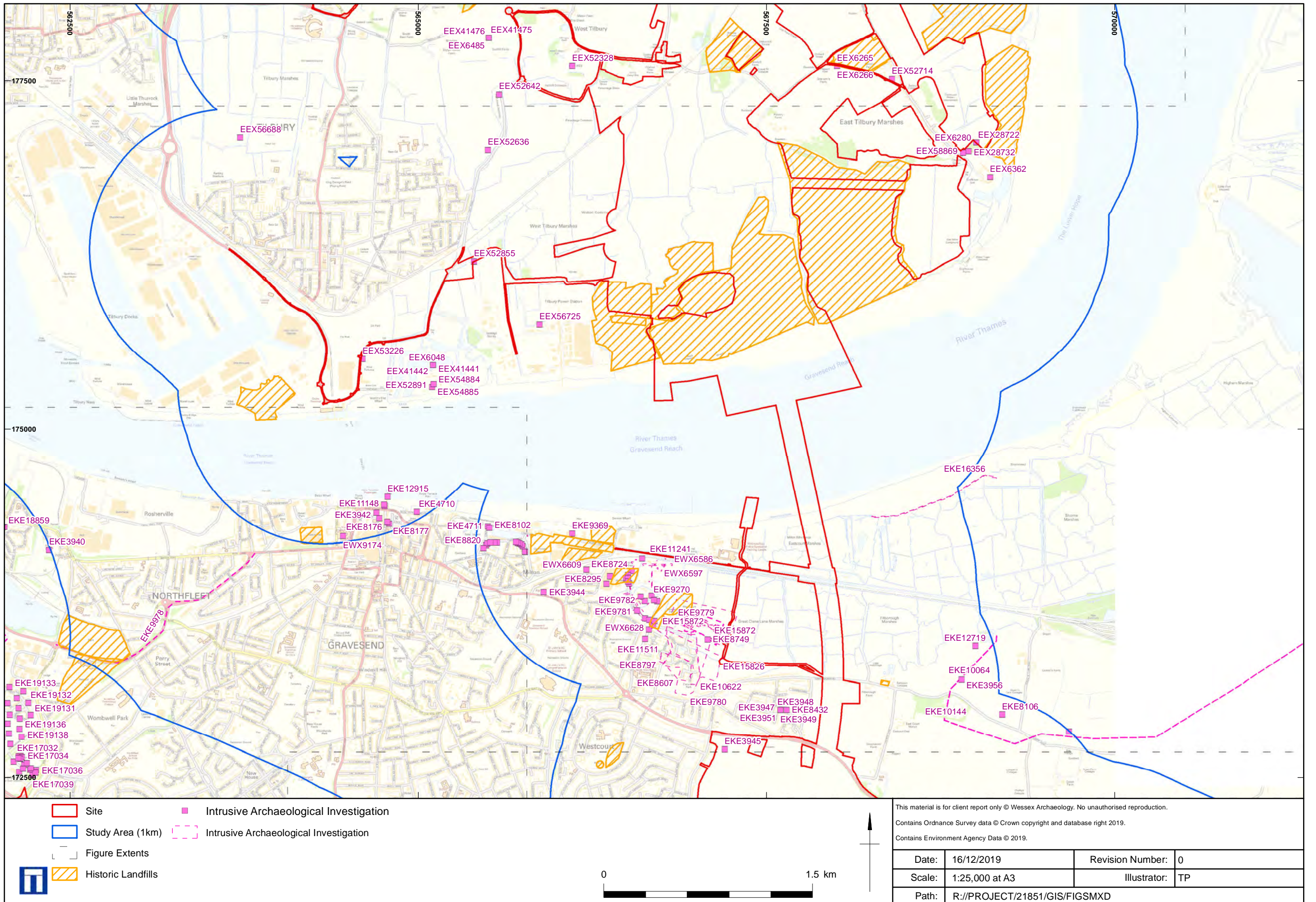
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Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency

Figure 3B





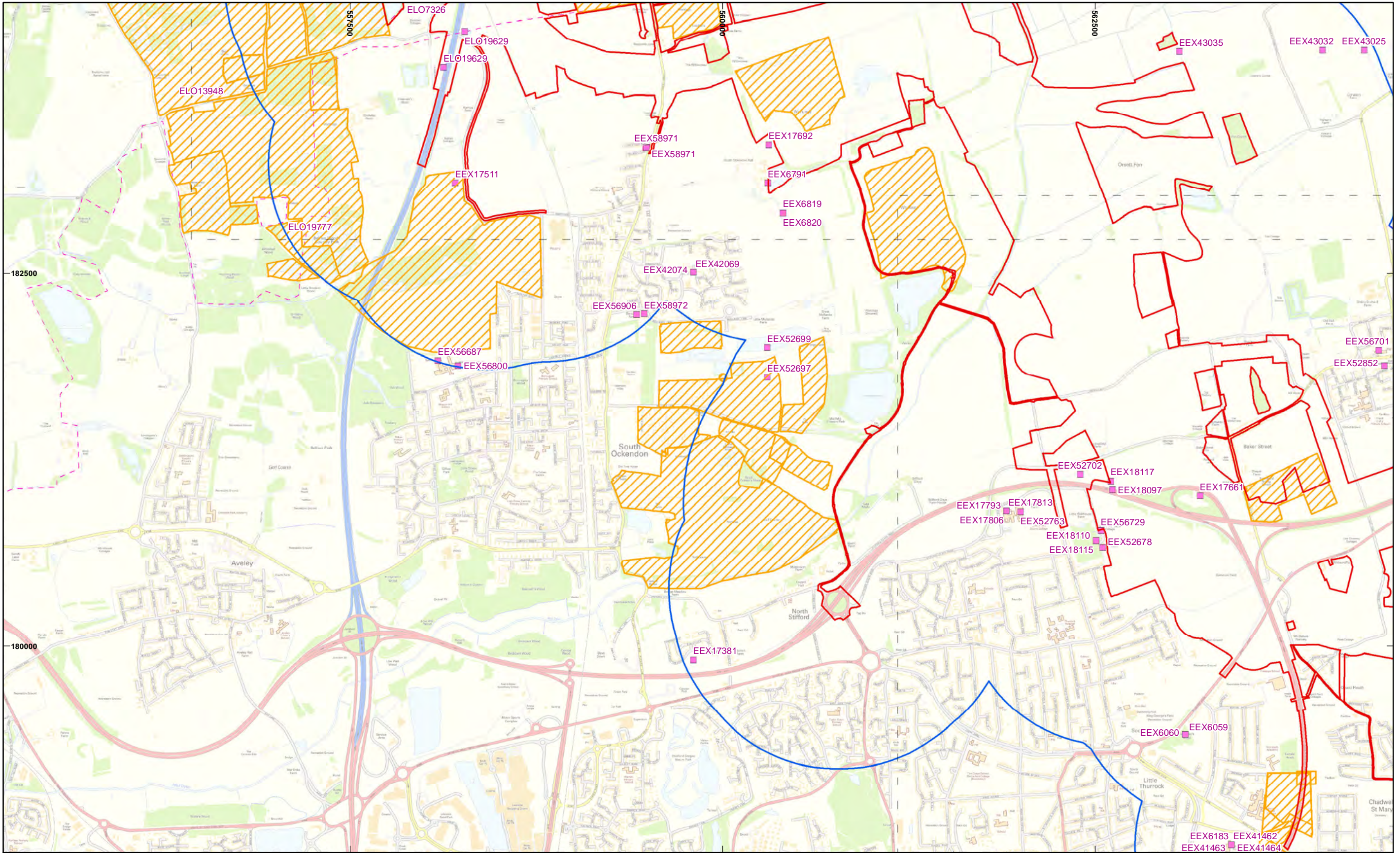
Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency

Figure 3C









 Site	 Intrusive Archaeological Investigation
 Study Area (1km)	 Intrusive Archaeological Investigation
 Figure Extents	
 Historic Landfills	

0 1.5 km

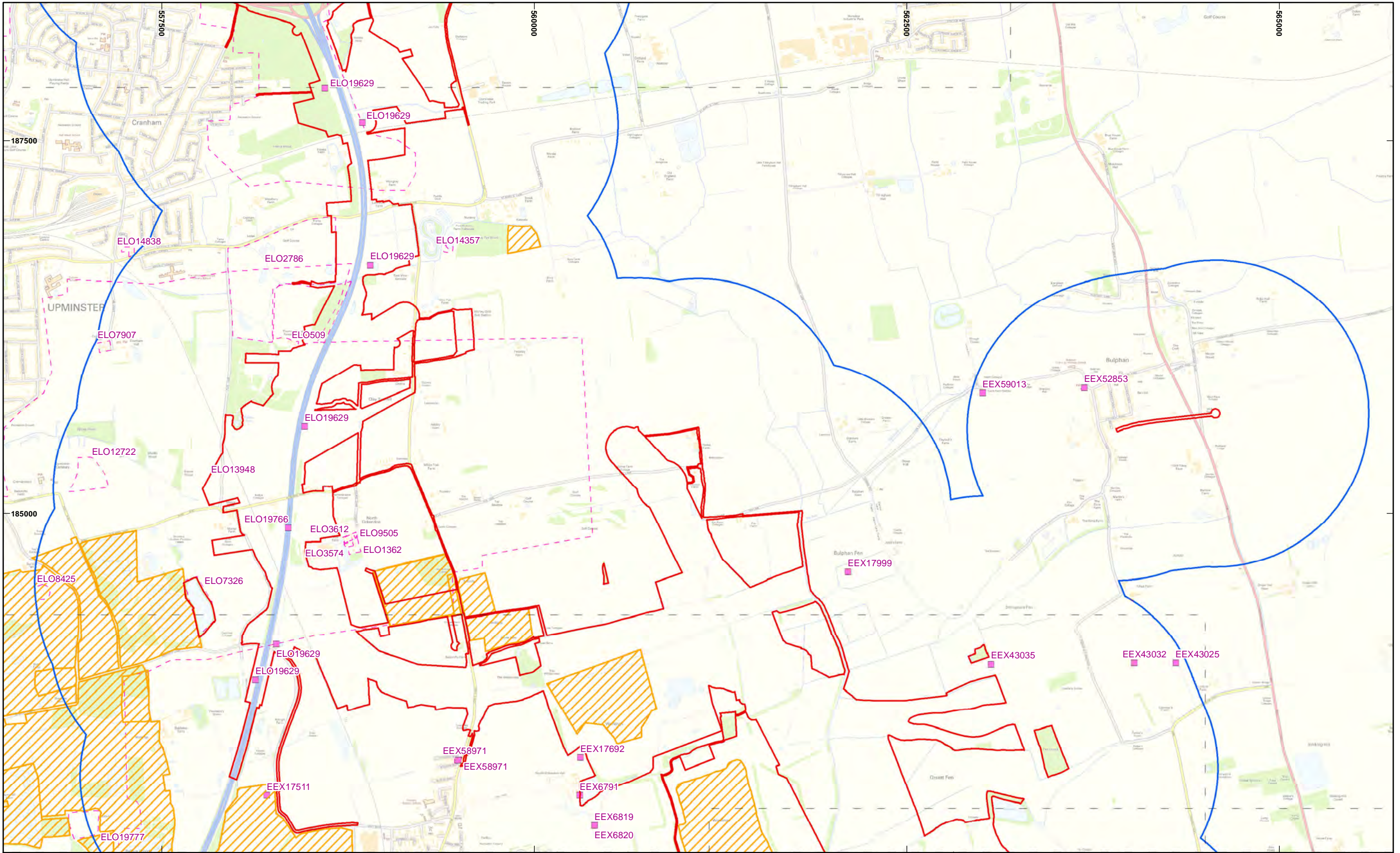
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Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency

Figure 3E





	Site		Intrusive Archaeological Investigation
	Study Area (1km)		Intrusive Archaeological Investigation
	Figure Extents		
	Historic Landfills		



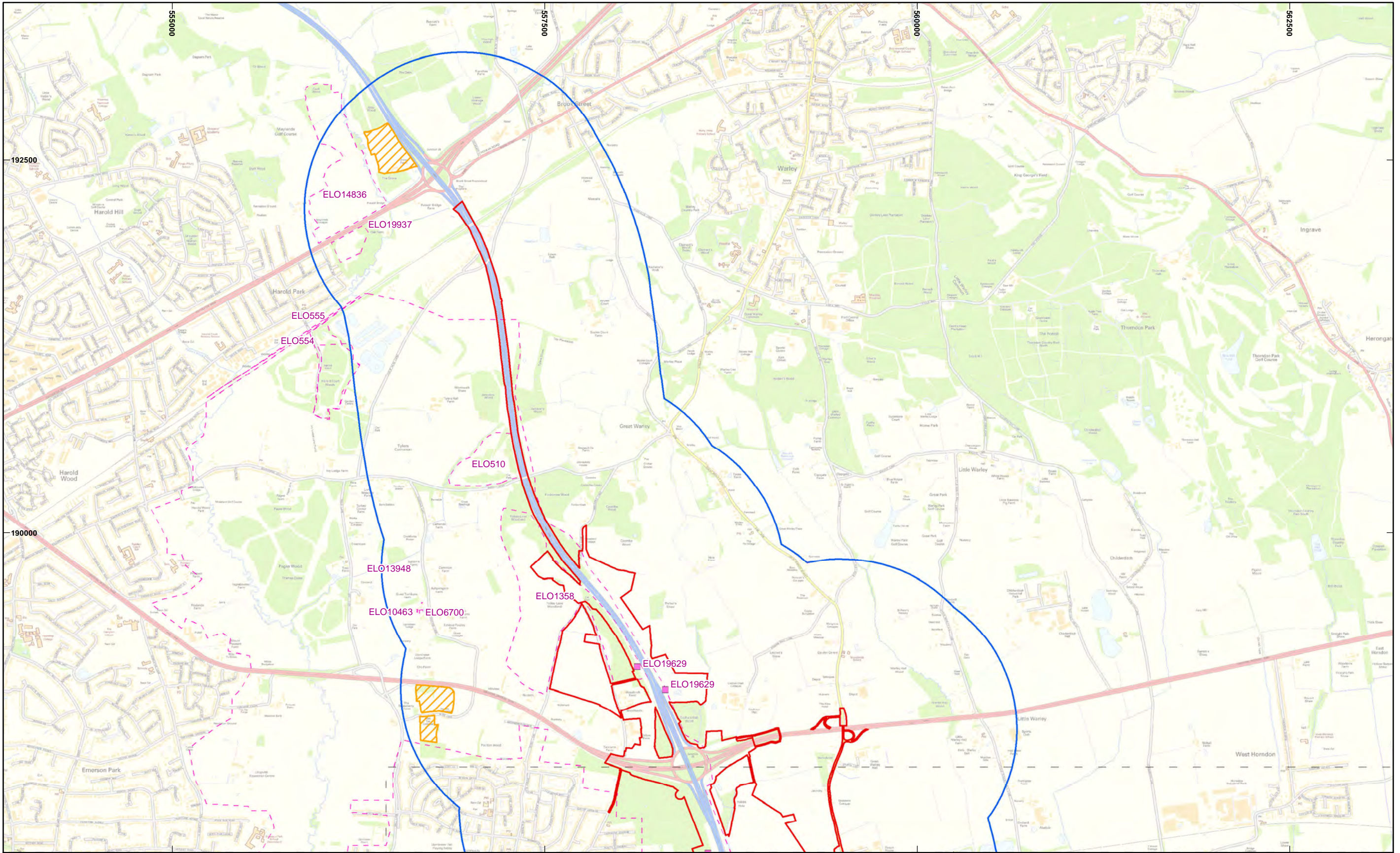
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Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency

Figure 3F





 Site	 Intrusive Archaeological Investigation
 Study Area (1km)	 Intrusive Archaeological Investigation
 Figure Extents	
 Historic Landfills	

0 1.5 km

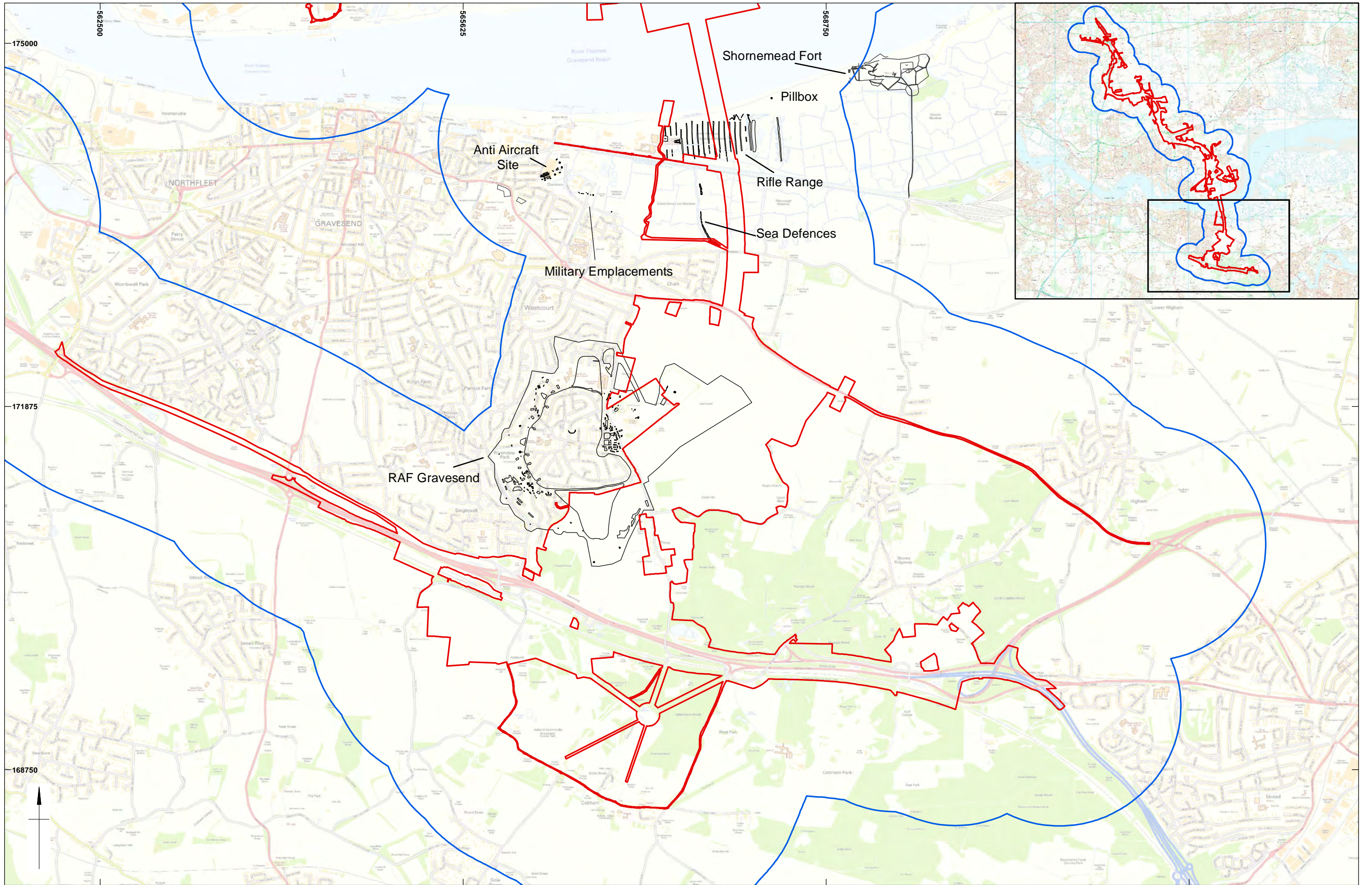
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Site, Study Area, Intrusive Archaeological Events and Historic Landfill Sites based on KHER, EHER, GLHER and the Environment Agency

Figure 3G





 Site  
 Study Area (1km)

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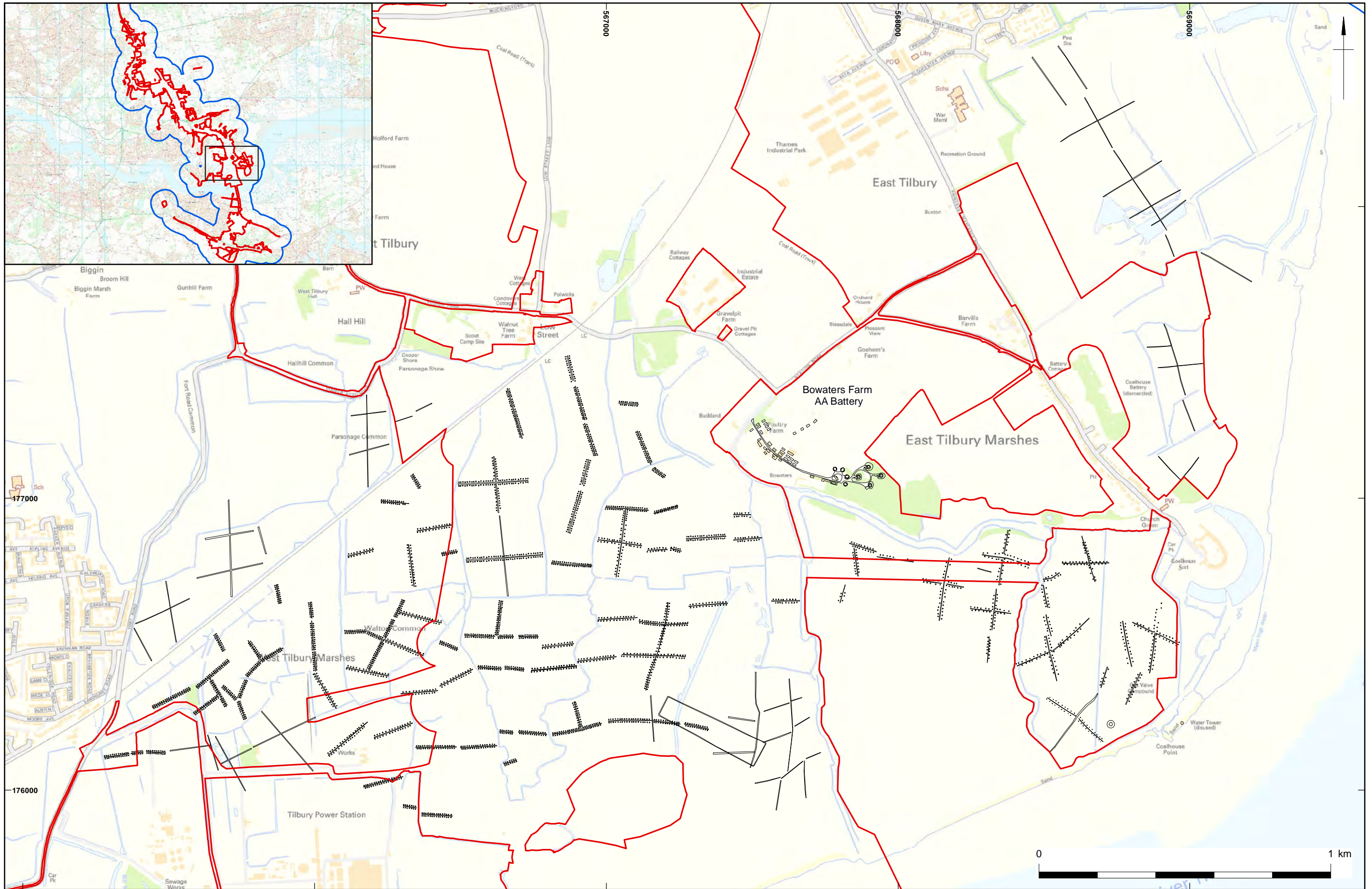



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Site, Study Area and National Mapping Programme data for Kent of military assets based on KHER

Figure 4






 Site
  Study Area (1km)
  WW2

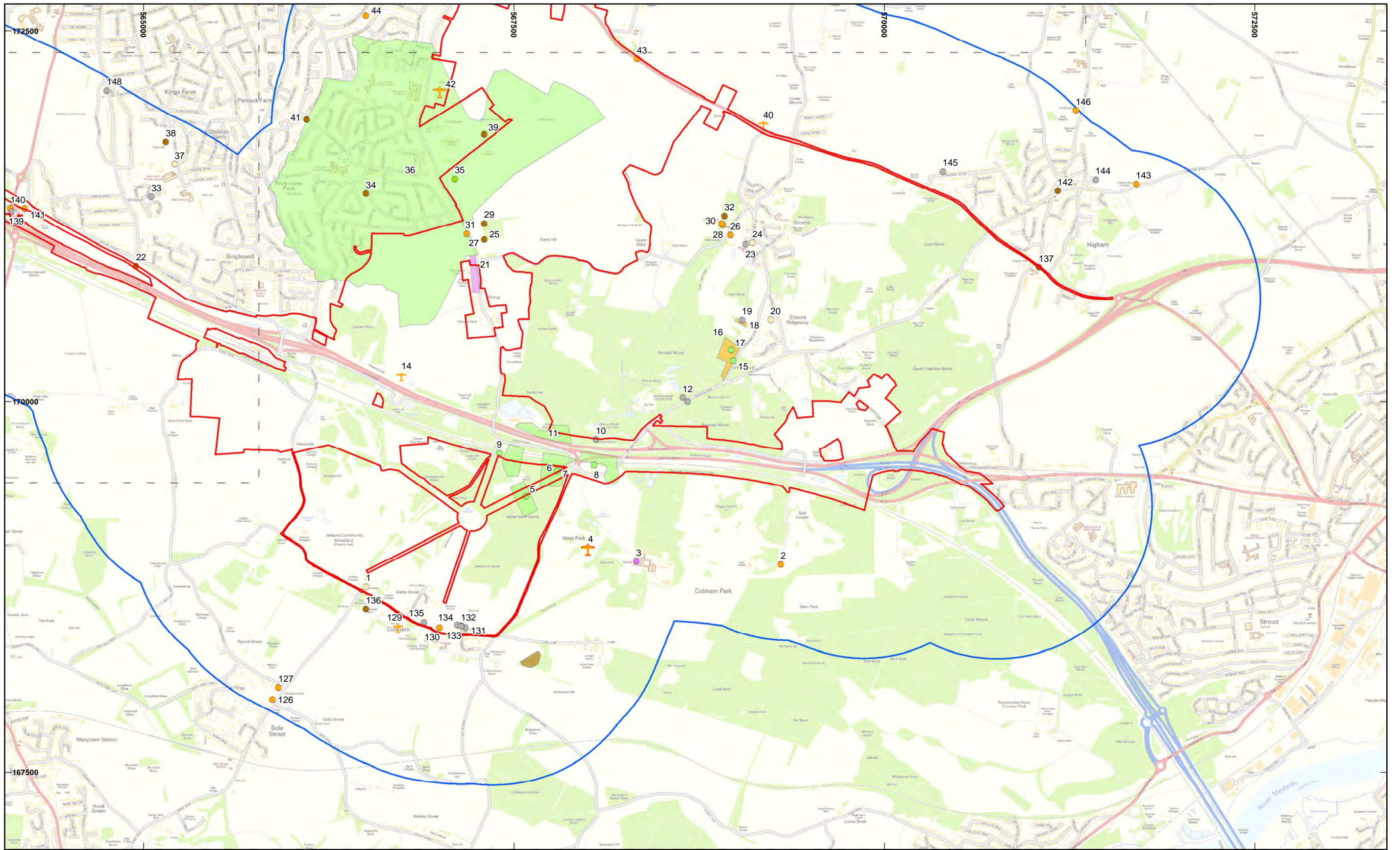
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Results of the Aerial Mapping Study for the Tilbury Area

Figure 5





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

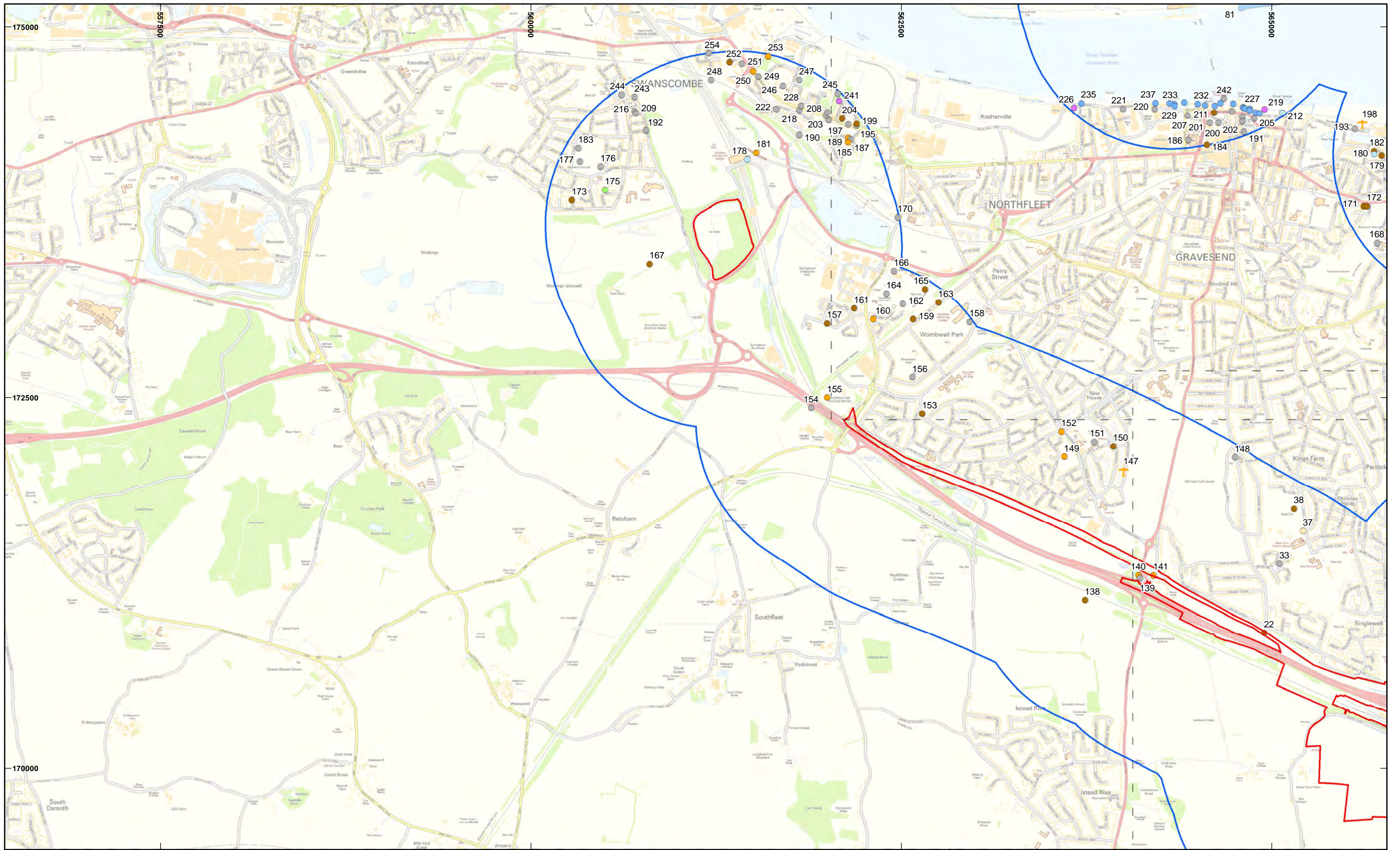
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6A





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

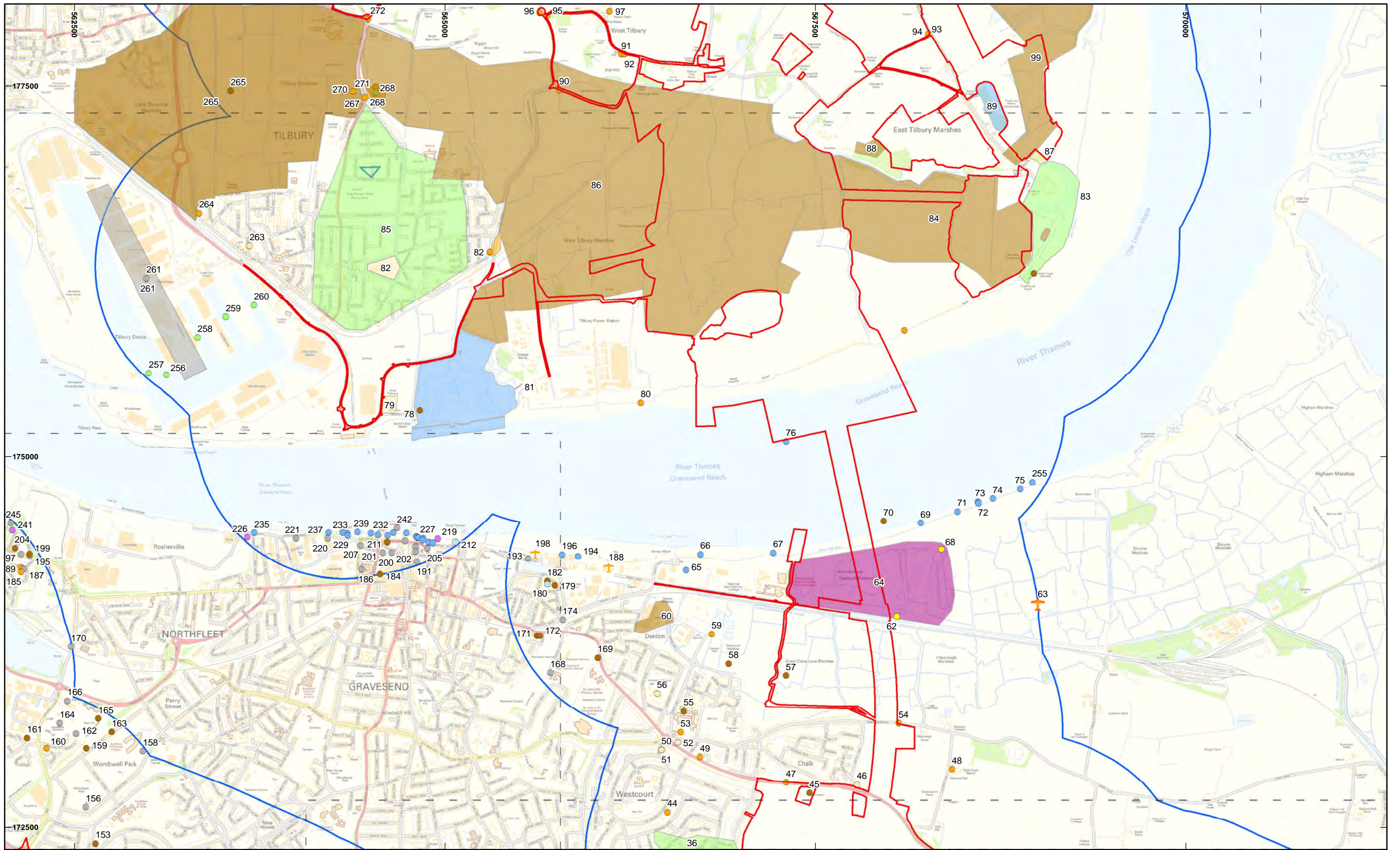
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6B





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

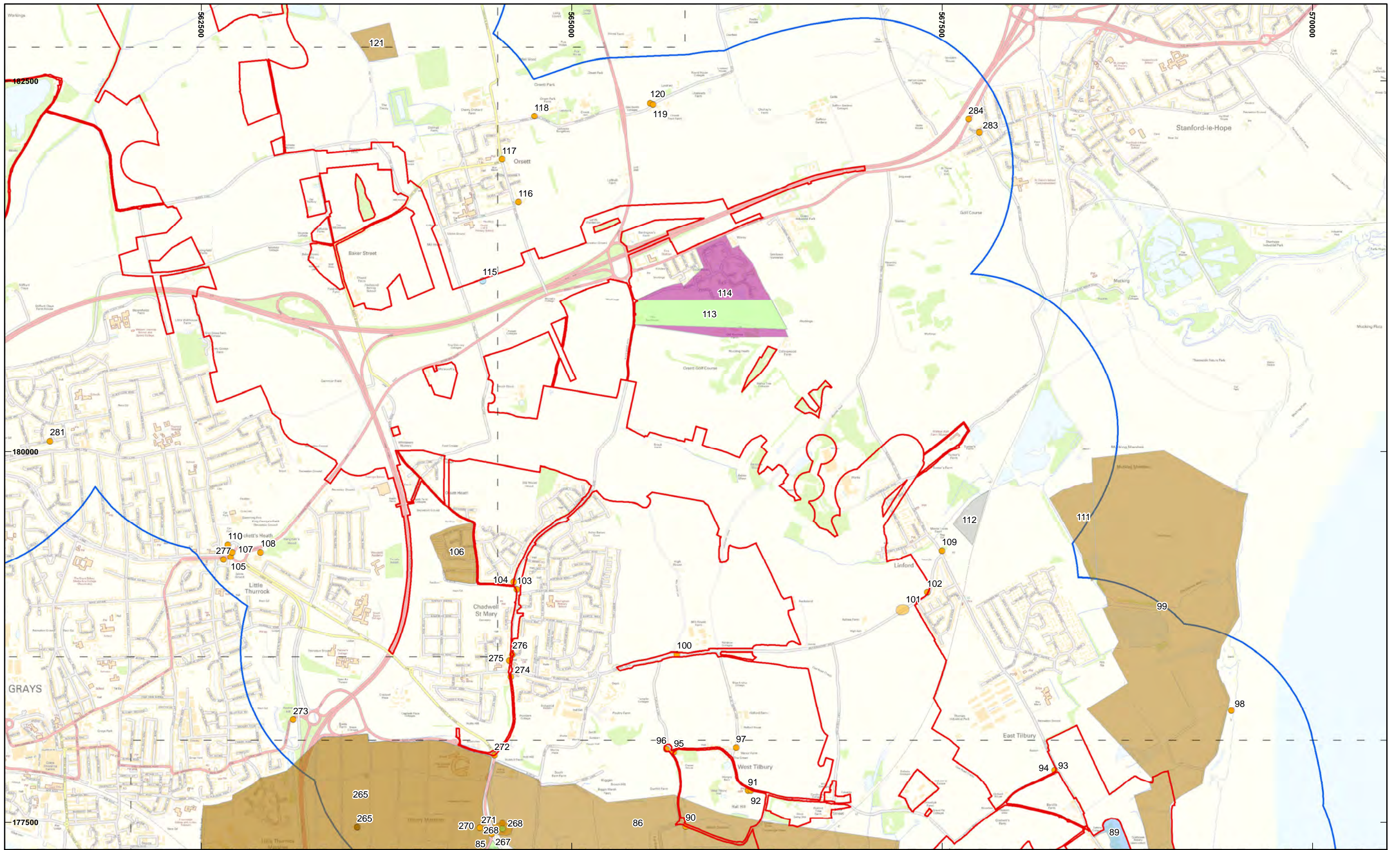
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6C





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

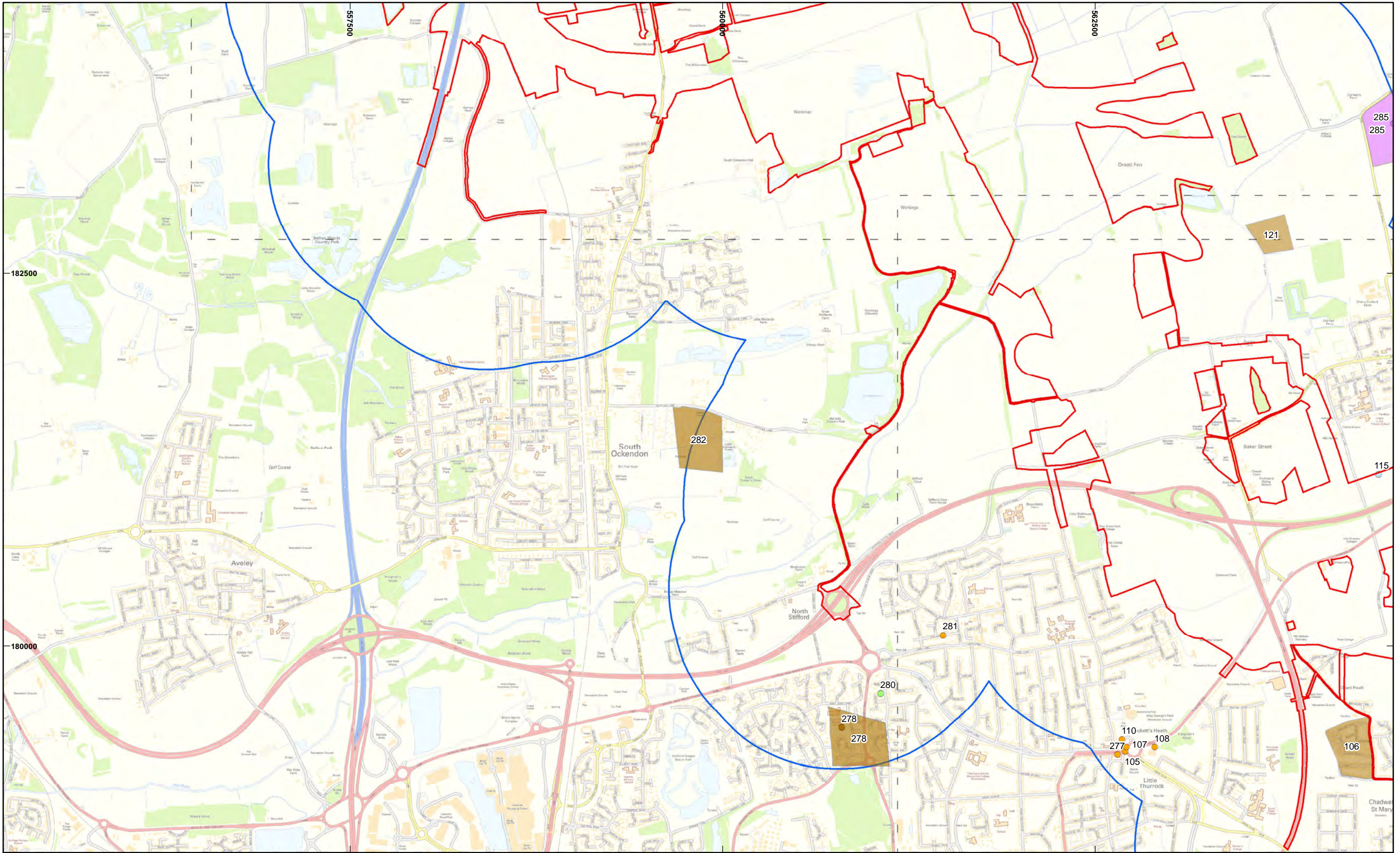
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6D





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

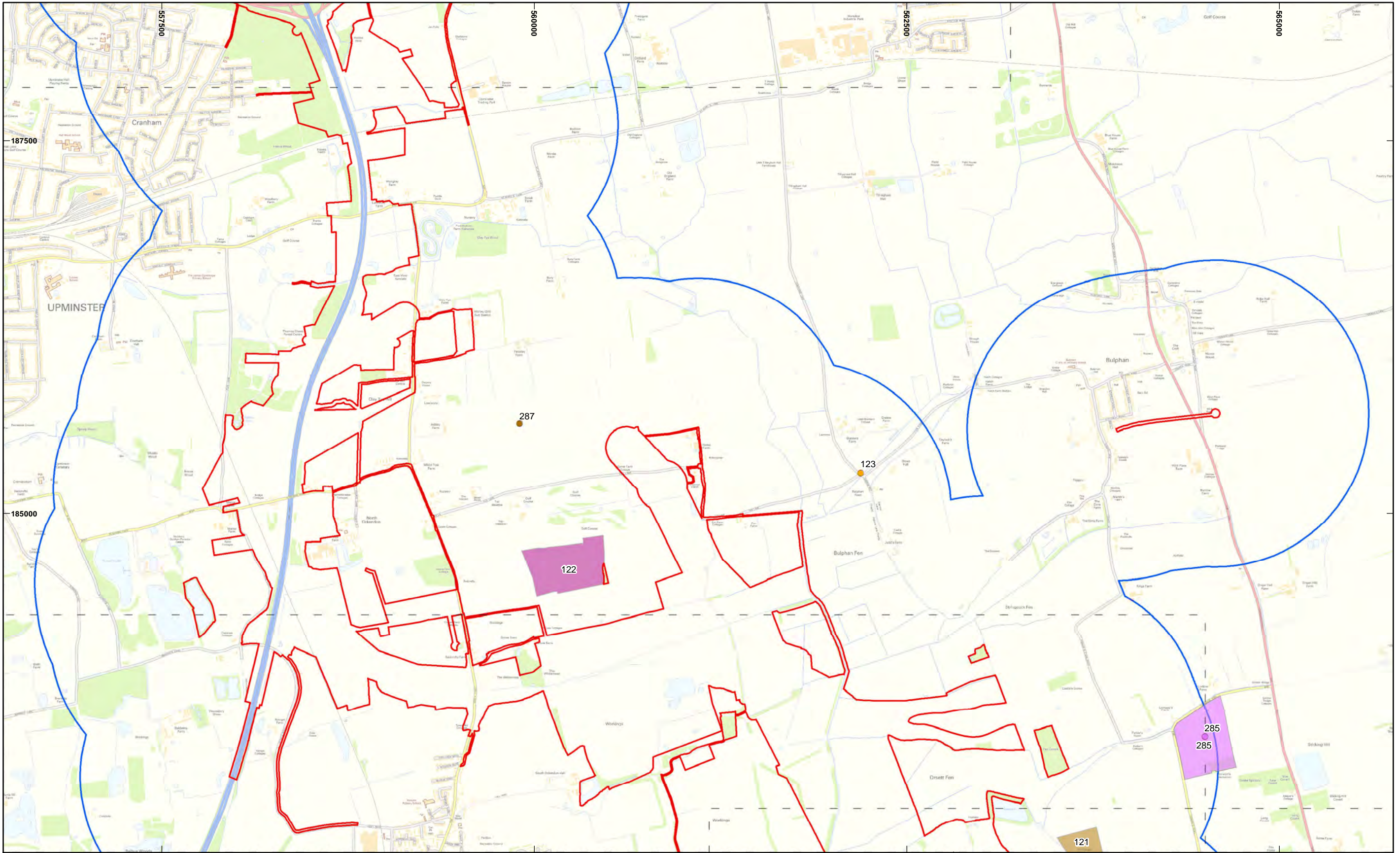
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6E





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

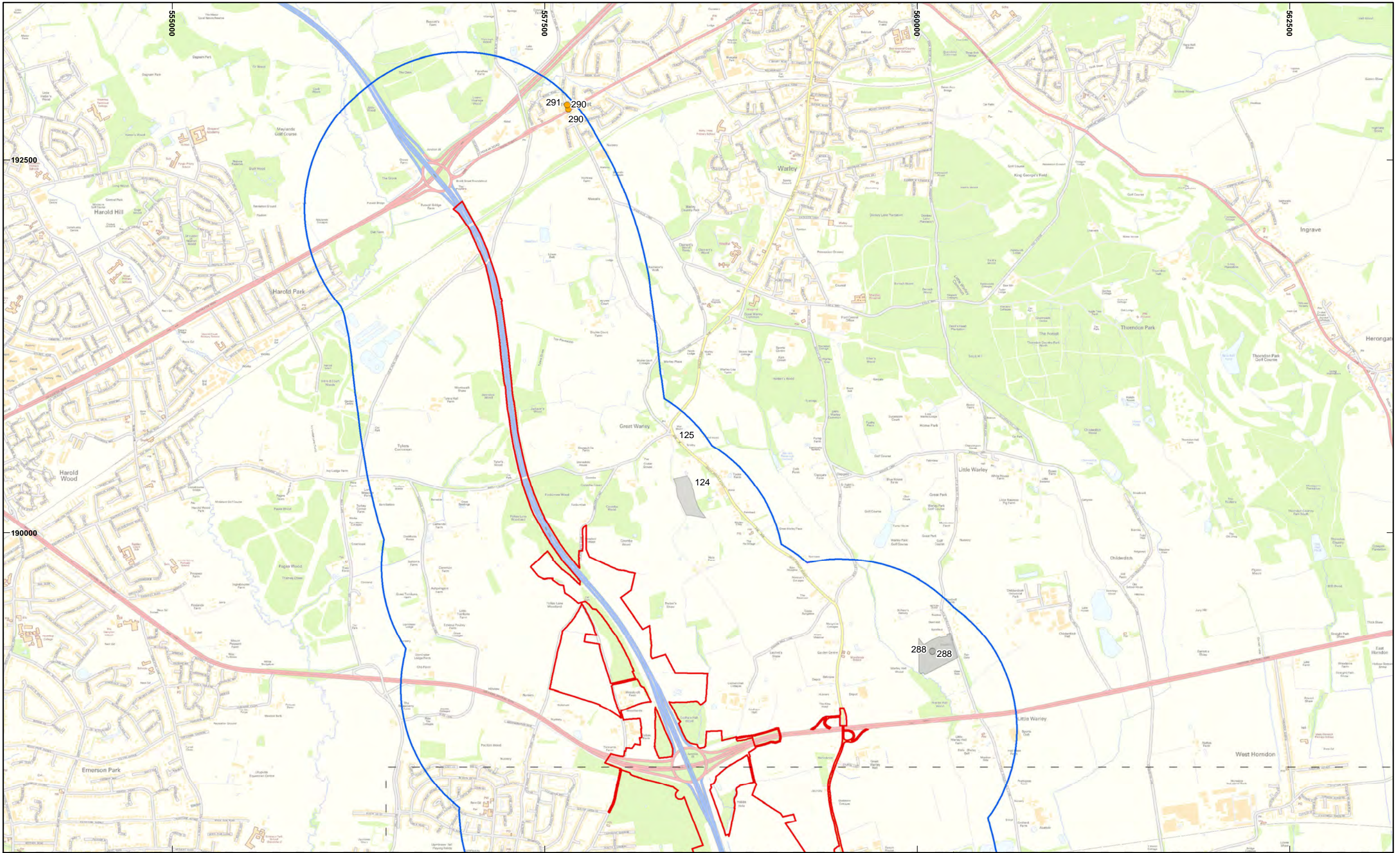
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6F





Site	<b>Military Archaeology</b>	Land Defence	World War One
Study Area (1km)	RAF Airfield/Camp	Firing Range	Cold War
Figure Extents	Air Defence	Naval Defence	Other
	Army Camp	Civilian	Protected Military Remains

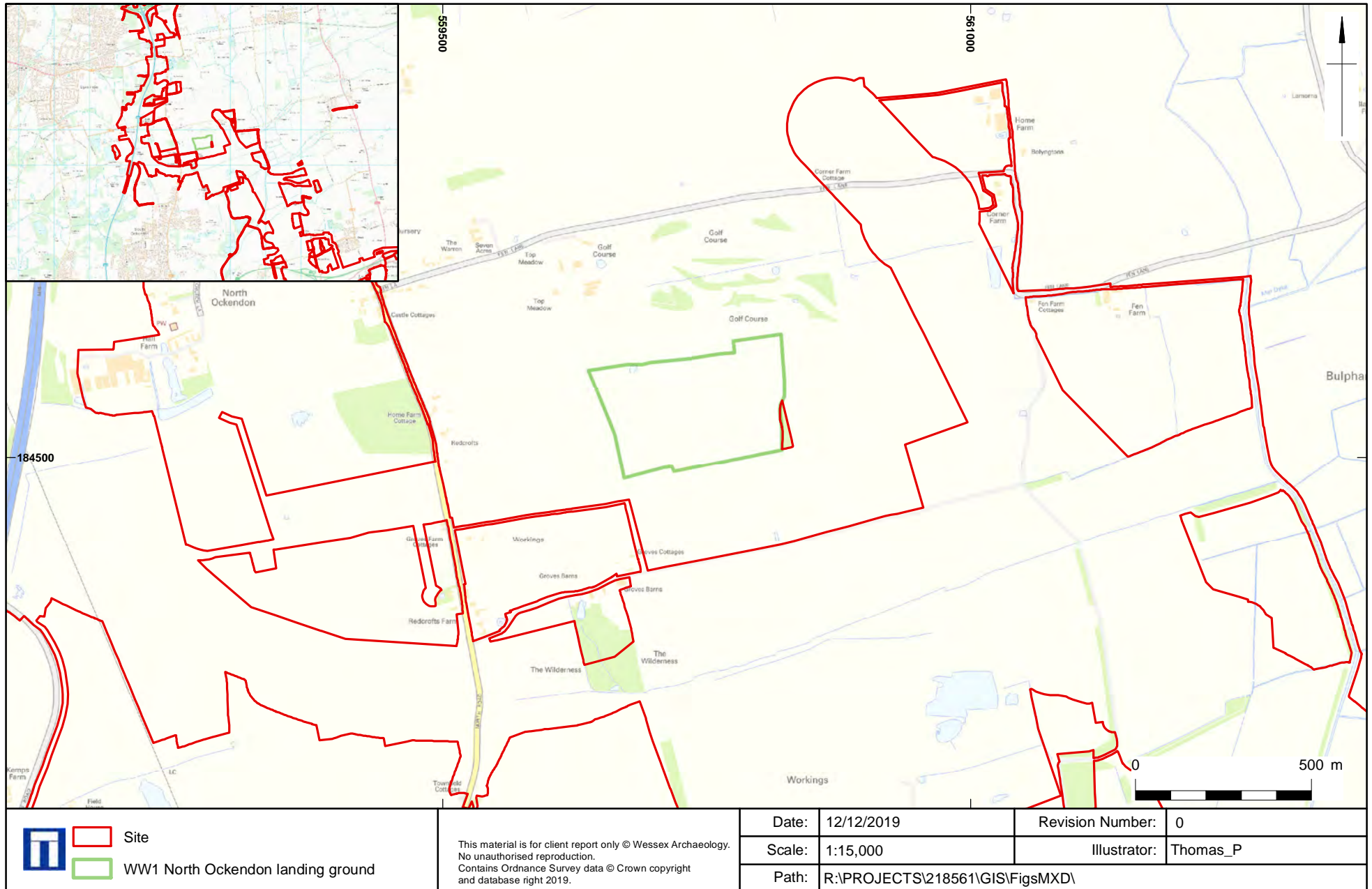
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Site, Study Area and Military Archaeological Records based on KHER, EHER and GLHER

Figure6G





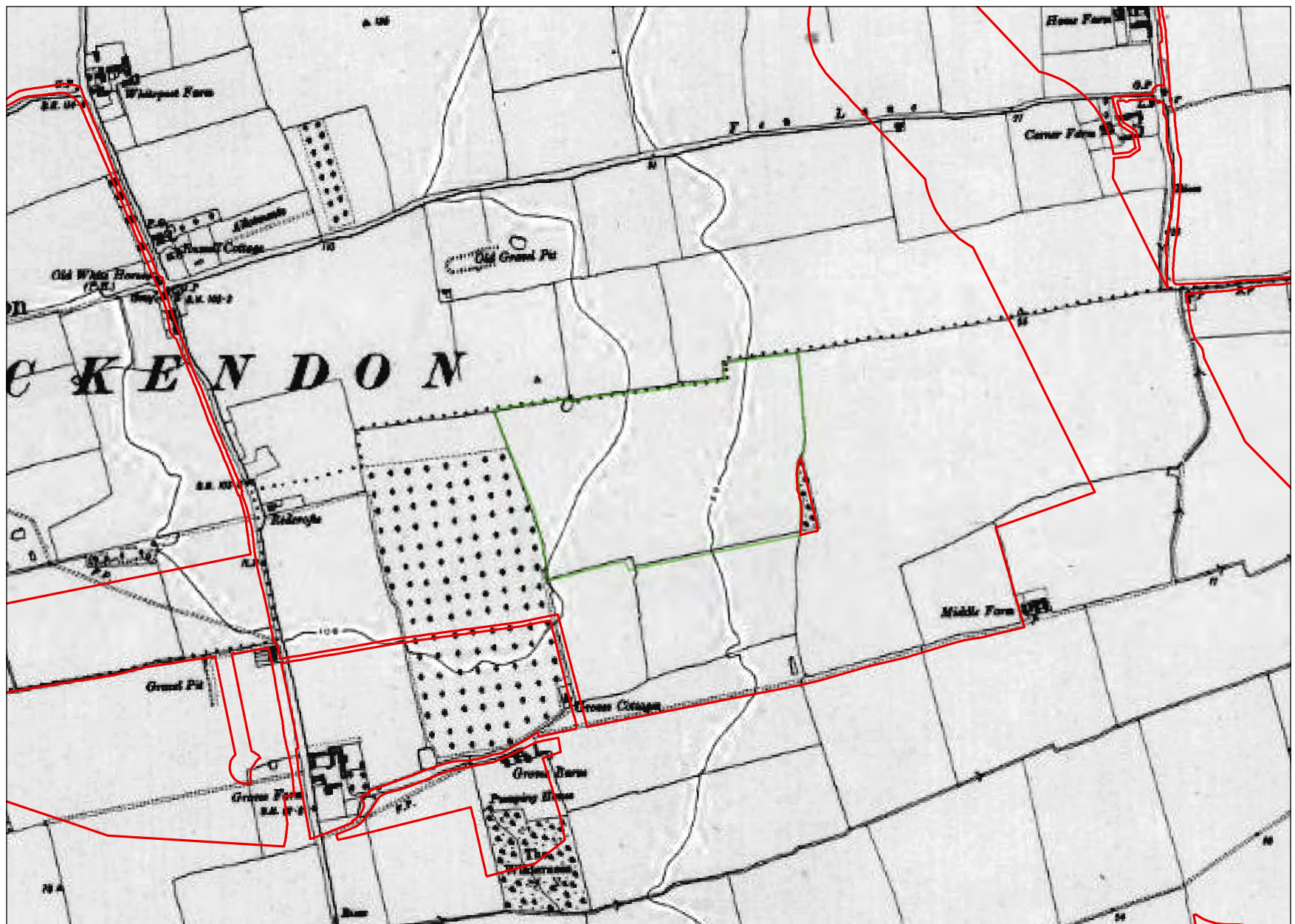
WW1 North Ockendon Landing Ground: Location Figure

Figure 7





A) 1896 2nd edition Ordnance Survey map (25inch)



B) 1912 third edition Ordnance Survey map (6inch)



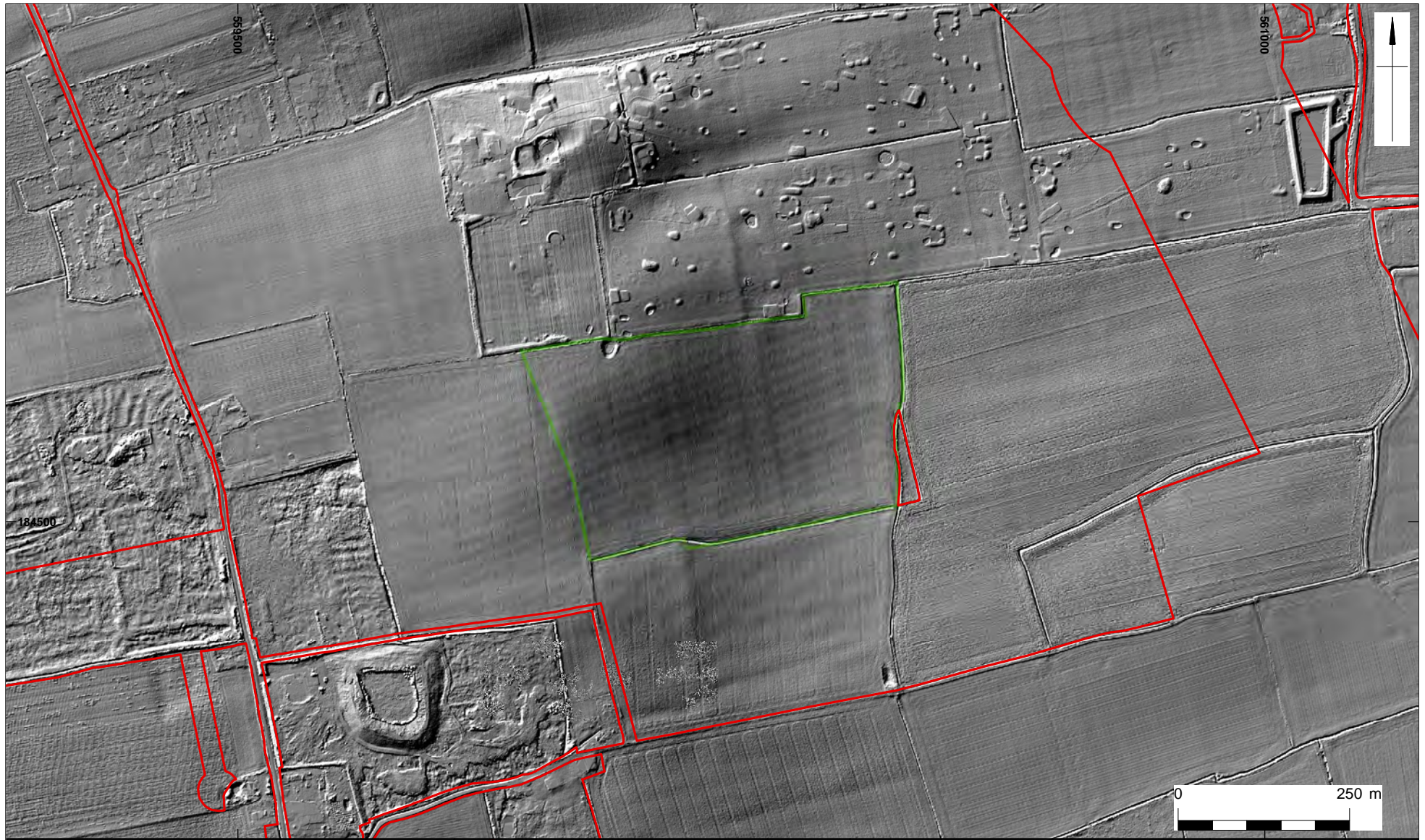
- Site
- North Ockendon Landing Ground






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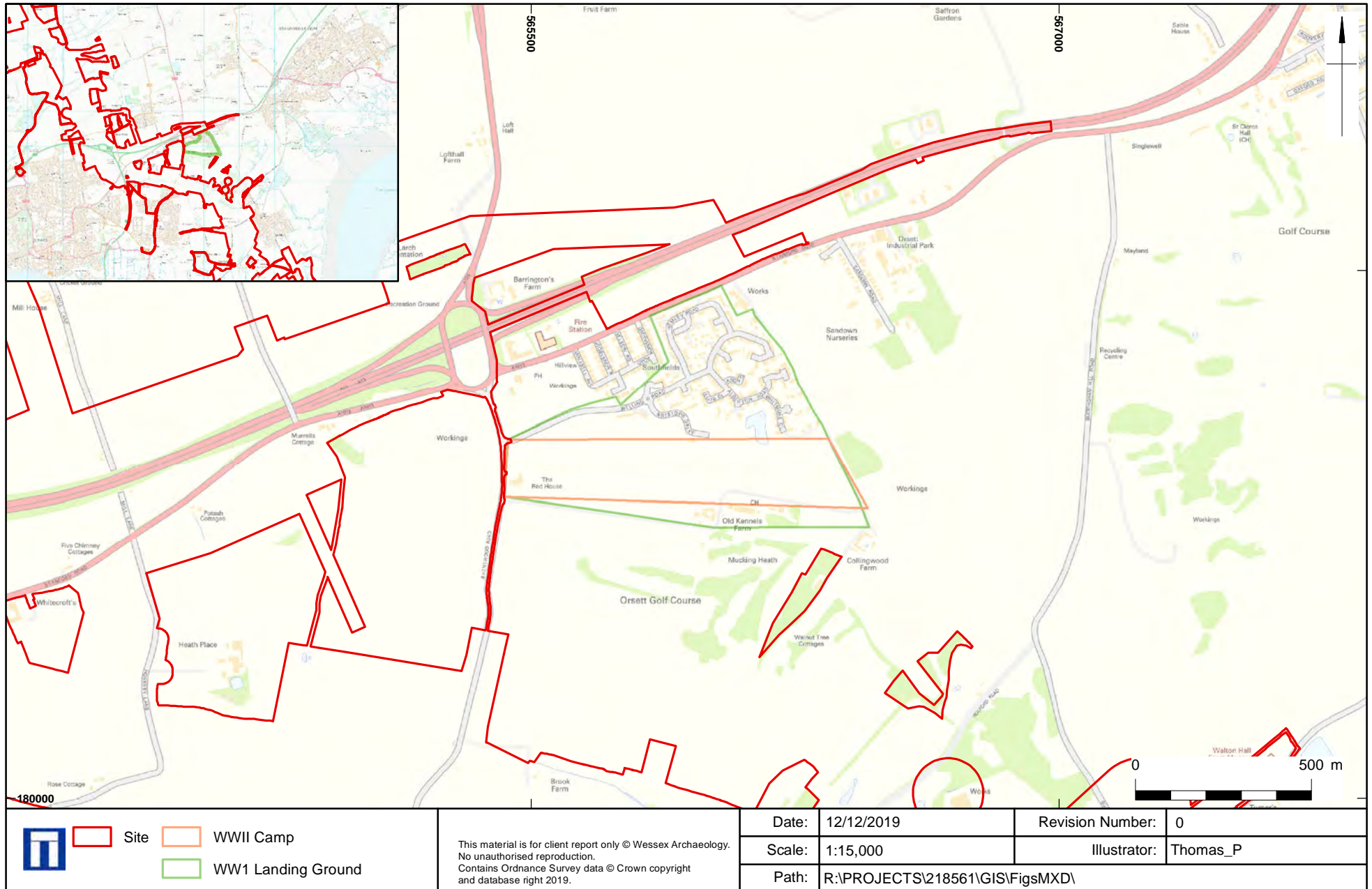


  Site  WW1 North Ockendon landing ground	This material is for client report only © Wessex Archaeology. No unauthorised reproduction. Contains Ordnance Survey data © Crown copyright and database right 2019. Environment Agency © Crown copyright and database right 2019.	Date:	12/12/2019	Revision Number:	0
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WW1 North Ockendon Landing Ground: 50cm DTM Lidar data

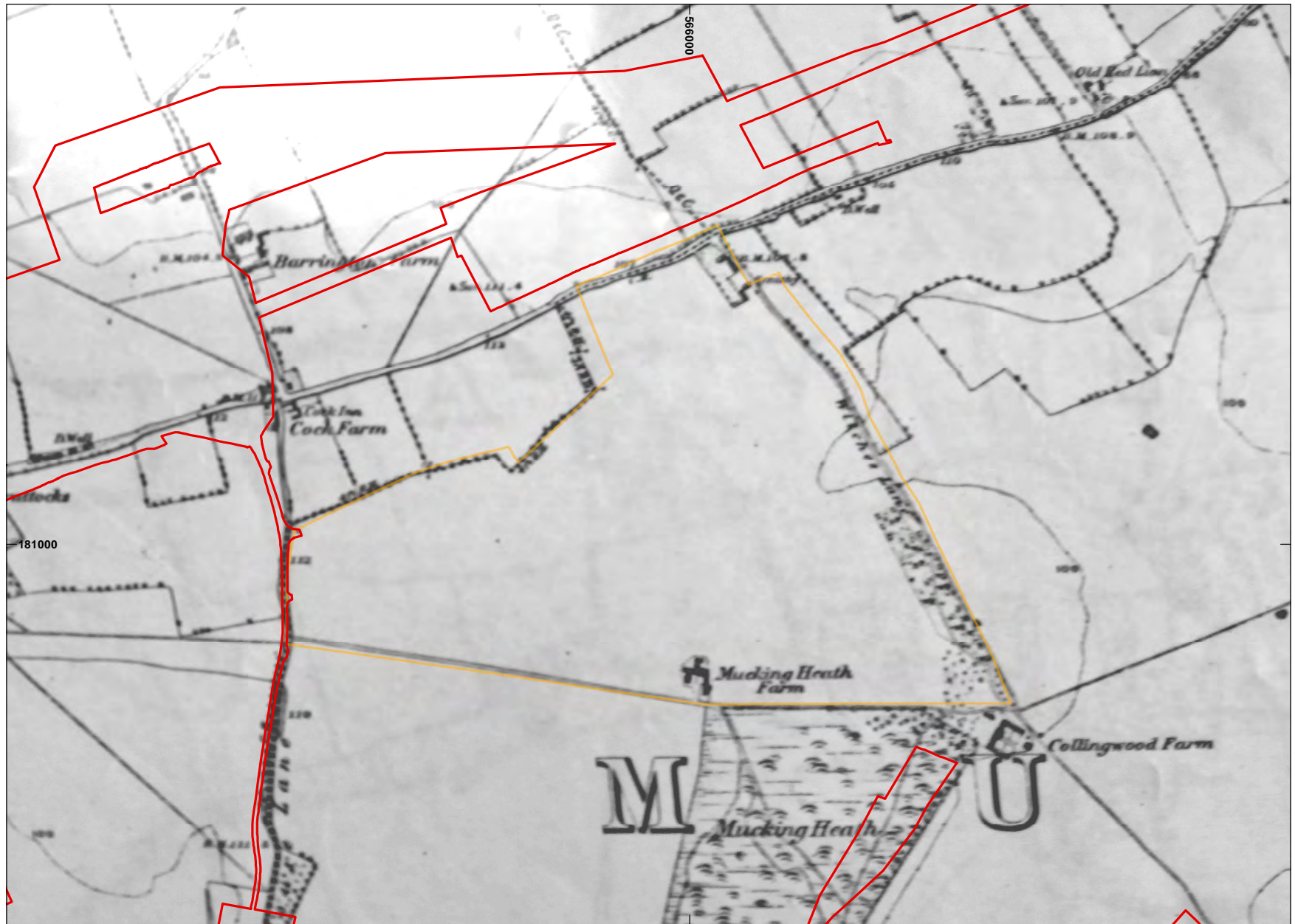
Figure 9





WW1 Orsett Landing Ground and World War II Camp: Location Figure

Figure 10



A) 1886 1st edition Ordnance Survey map (6inch)



B) 1897 2nd edition Ordnance Survey map (25inch)

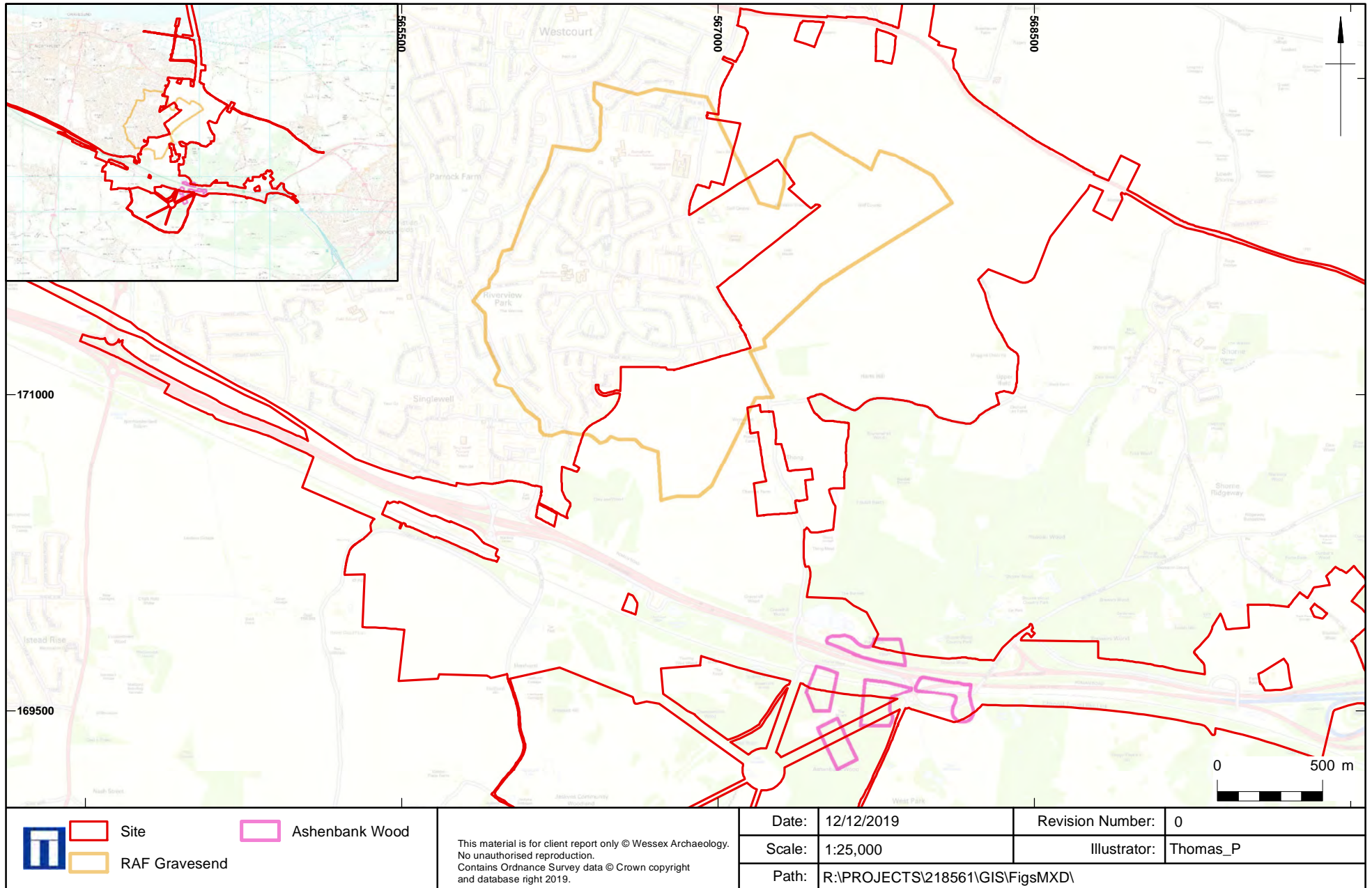
 Site  
 Orsett Landing Ground



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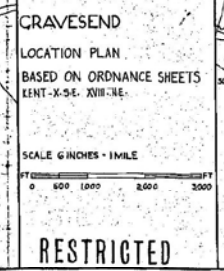
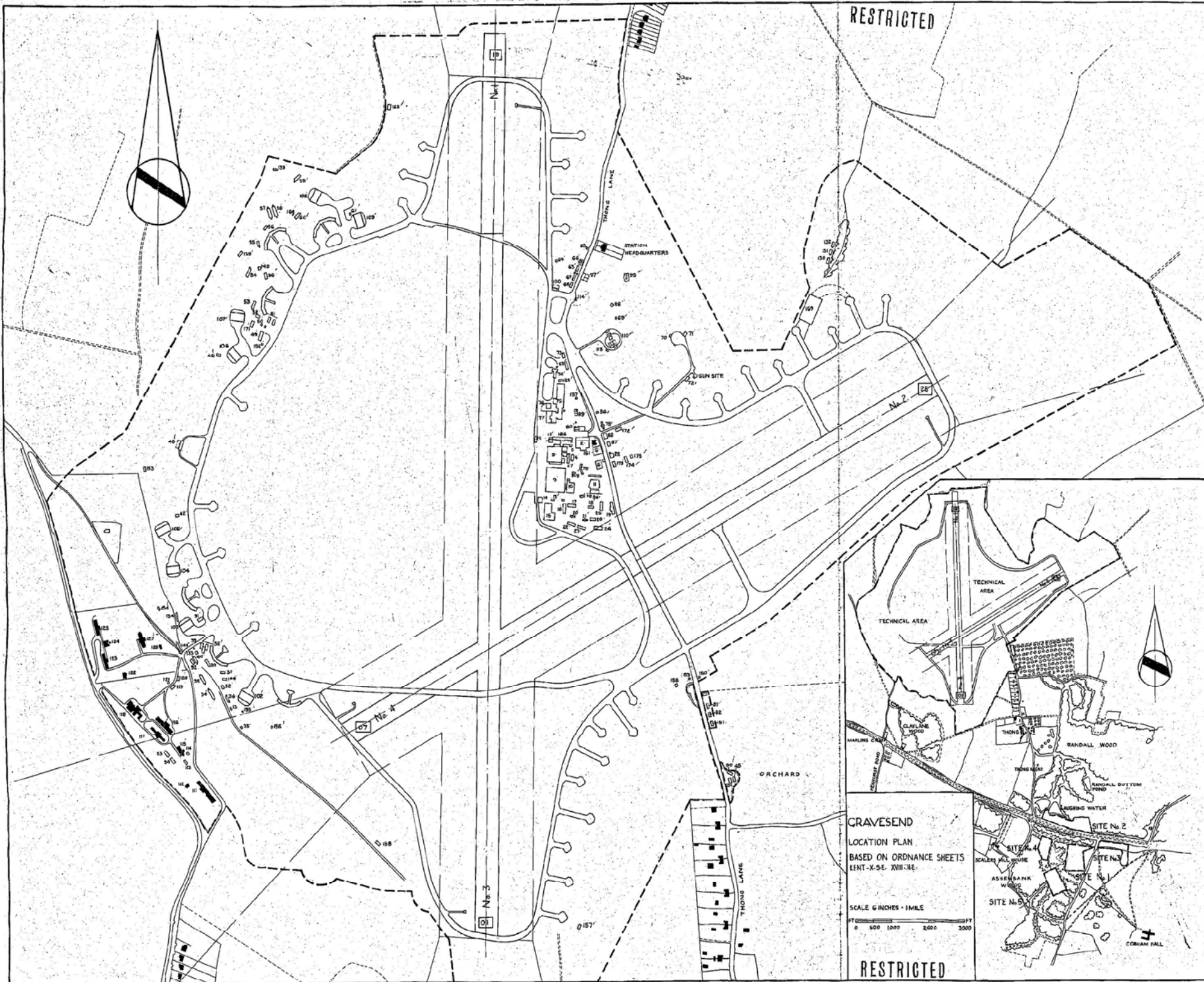




RAF Gravesend and AshenbankWood: Location Figure

Figure 12





REFERENCE			
BUILDING	CONSTR	DRAWING No.	DATE
1 SQUADRON OFFICE			
2 SQUADRON ROOM			
3 ESSEX AERO			
4 AIRMENS SHOWERS	TR		
5 COAL COMPOUND			
6 FUEL			
7 LATRINE	TR		
8 BATTERY ROOM			
9 HANGAR			
10 N.A.A.F.I.			
11 M.O. BURY			
12 M.T. PETROL INSTALLATION (2000+100)	AIRPORTS		
13 AVIATION PETROL INSTALLATION (2000+100)	AIRPORTS		
14 STATIC WATER TANK (10,000+10)			
15 STATION DEFENCE & SERGANTS MESS	AIRPORTS		
16 SERGANTS MESS			
17			
18 LUBRICANT STORE	15896/40		
19 OCCUPATION CENTRE	2367/41		
20 BLAST SHELTER			
21 SQUADRON OFFICE	14376/40		
22 GAS DEFENCE STORE	TR		
23 EQUIPMENT STORE (50'x10')	LOCAL		
24 SLEEPING HUT (30'x10')	N		
25 MEAT STORE	TR		
26 LINN TRAINING	N		
27 LATRINE	TR		
28			
29 ABLUCTIONS	00 37		
30 SLEEPING HUT (30'x10')	N		
31 TECHNICAL BLOCK	TR		
32 S.A.A. STORE	1712/40		
33 TECHNICAL BLOCK	15885/41		
34			
35 SLEEPING SHELTER	15876/41		
36 PILOTS REST ROOM (30'x10')	N		
37 MESS HUT & KITCHEN	S.D.P.		
38 SLEEPING SHELTER	24260-26400		
39			
40			
41 S.A.A. STORE	TR		
42 LATRINE	TR		
43 SLEEPING HUT (30'x10')	N		
44 S.A.A. STORE	17112/40		
45			
46 BULK PETROL INSTALLATION (2000+10)	2608/39		
47 MESS HUT	TR		
48 LATRINE	TR		
49 SLEEPING HUT (30'x10')	N		
50 PILOTS LOCKER ROOM	TR		
51 SLEEPING SHELTER	54760-64000		
52			
53			
54			
55 LATRINE	TR		
56 TECHNICAL BLOCK	TR		
57 SLEEPING SHELTER	TR		
58			
59 S.A.A. STORE	54760-64000		
60			
61 S.A.A. STORE	17112/40		
62			
63 SLEEPING HUT (30'x10')	N		
64 LATRINE	TR		
65 SUB-STATION (GRAVESEND CORP)	B		
66			
67 ARMY GUARD REST HUT (35'x10')	N		
68			
69 GAS CHAMBER	TR		
70 MESS HUT	TR		
71 GAS CRAWLING SLEEPING QUARTERS (30'x10')	N		
72 WORKS FLIGHT OFFICE (30'x10')	T		
73			
74 AMBULANCE & FIRE TENDER	TR		
75 BARRACK HUT	TR		
76 STATIC WATER TANK (10,000+10)	TR		
77 CONTROL TOWER & OFFICERS MESS	TR		
78 BLAST SHELTER	TR		
79 SHELTER (UNDERGROUND)	TR		
80 GUARD ROOM	TR		
81 SLEEPING HUT (30'x10')	TR		
82			
83			
84 GAS CLOTHING STORE (10'x20')	TR		
85			
86 BROADCASTING HOUSE	TR		
87 CYCLE STORE (30'x10')	N		
88 REPAIRS (30'x20')	TR		
89 M.T. VEHICLE RAMP	TR		
90 SLEEPING HUT (30'x10')	N		
91			
92			
93			
94			
95 STAND-BY SET HOUSE	TR		
96 SLEEPING HUT (30'x10')	N		
97 FUEL COMPOUND	TR		
98 S.A.A. STORE	1712/40		
99 PETROL INSTALLATION (2000+10) (TYPE C)	14376/40		
100 BULK PETROL INSTALLATION (2000+10)	10576/39		
101 BARBERS SHOP & STORE (16'x10')	TR		
102 BUSTER HANGAR	TR		
103			
104			
105			
106			
107			
108			
109			
110 BULK PETROL INSTALLATION (2000+10)	TR		
111 SERGANTS MESS (REQUISITIONED)	TR		
112 SLEEPING QUARTERS	TR		
113 MESS HUT	TR		
114 ABLUCTIONS 2HP	TR		
115 SLEEPING QUARTERS (REQUISITIONED)	TR		
116 SICK QUARTERS	TR		
117			
118 W.A.F.	TR		
119 DISINFECTION BLOCK (GRAVESEND CORP)	TR		
120 GARAGE	TR		
121 WATER TOWER (REQUISITIONED)	TR		
122 LAUNDRY	TR		
123 AIRMENS STRS (20'x40')	TR		
124			
125			
126			
127			
128			
129			
130 SLEEPING QUARTERS (30'x10')	N		
131			
132			
133 TRANSFORMER PLINTH	TR		

AMENDMENTS

ABBREVIATIONS

TEMPORARY BRICK THUS	TR
PERMANENT	TR
BRICK	B
CONCRETE	C
TIMBER	T
NISSAN	N
SECO	S
STEEL	ST
HUTTING	H
AM BOUNDARY THUS	---

PREPARED FROM WORKS AREA DRAWING NUMBER GD/09 WORKS AREA BUILDING NUMBERS RETAINED

GRAVESEND RECORD SITE PLAN AIRFIELD SITE FOR DISPERSED SITES SEE DRG. NO. 4876/45 SCALE 1/2500

FEET 0 100 200 300 400 500 600 700 800 900 1000

SECRET NO. D.C. of W 4875/45 AIR MINISTRY

FOR W.B. FOR D.G.W.

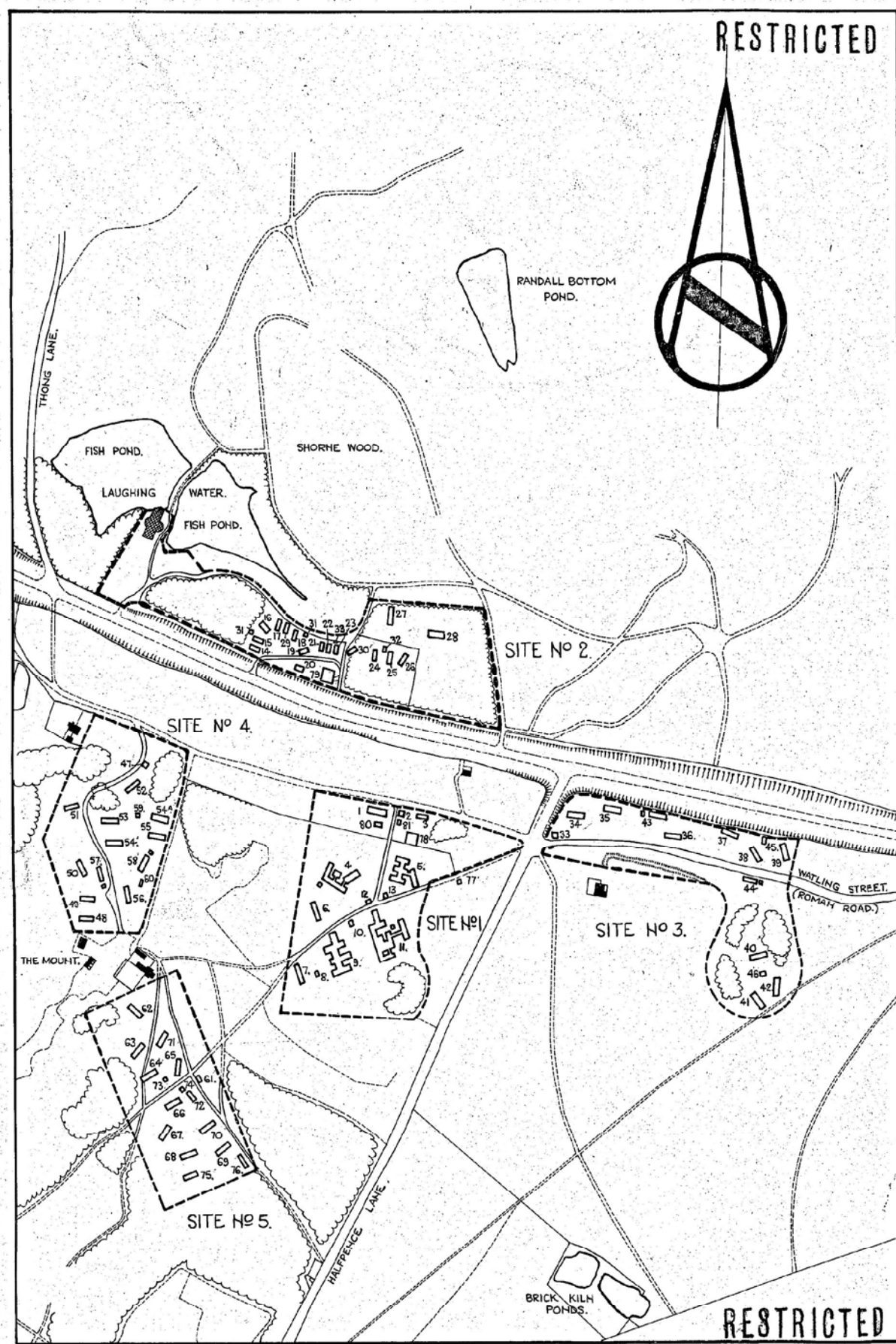


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R E F E R E N C E			
NO. SITE	B U I L D I N G.	CONSTRN.	DRAWING NO.
<b>SITE NO 1.</b>			
1.	DECONTAM. CENTRE.		
2.	PICKET POST.		16161/40
3.	MEDICAL INSPECTION		
4.	OFFICERS MESS		
5.	SERGEANTS "	G.P. 41.	
6.	GROCERY STORE.	14382/40	
7.	RATION STORE.	14387/40	
8.	CUTLERY WASH-UP		
9.	DINING ROOM & COOK HOUSE.	14387/40-G.D.42	
10.	BY- PRODUCTS		
11.	INSTITUTE.	G.D. 42.	
12.	LATRINE.		
13.	"		
14.	INCINERATOR.		
15.	FUEL COMPOUND.		
16.	STORE HUT.		
17.	E-T ROOM.		
<b>SITE NO 2.</b>			
14.	O/R'S QUARTERS.		13903/40
15.	"		
16.	"		
17.	"		
18.	"		
19.	"		
20.	"		
21.	"		
22.	"		
23.	"		
24.	"		
25.	"		
26.	"		
27.	"		
28.	"		
29.	" ABLUTIONS.	G.D. 40.	
30.	"		
31.	LATRINE BLOCK.	G.D. 43.	
32.	"		
33.	PICKET POST.	16161/40	
34.	FUEL COMPOUND.		
35.	"		
<b>SITE NO 3.</b>			
33.	OFFICERS QUARTERS		13903/40
34.	"		
35.	"		
36.	SERGEANTS		
37.	O/R'S		
38.	"		
39.	"		
40.	"		
41.	"		
42.	"		
43.	OFFICERS & SGT'S ABLUTIONS & LATRINE	G.D. 44.	
44.	O/R'S ABLUTION BLOCK.	G.D. 43.	
45.	" LATRINE.		
46.	"		
<b>SITE NO 4.</b>			
47.	PICKET POST.		16161/40
48.	OFFICERS QUARTERS.		13903/40
49.	"		
50.	SERGEANTS		
51.	O/R'S.		
52.	"		
53.	"		
54.	"		
54A.	"		
55.	"		
56.	"		
57.	OFFICERS & SGT'S ABLUTIONS & LATRINE.	G.D. 45.	
58.	O/R'S ABLUTIONS	G.D. 43.	
59.	" LATRINE.		
60.	"		
<b>SITE NO 5.</b>			
61.	PICKET POST		16161/40
62.	OFFICERS QUARTERS		13903/40
63.	"		
64.	"		
65.	SERGEANTS		
66.	O/R'S.		
67.	"		
68.	"		
69.	"		
70.	"		
71.	OFFICERS & SGT'S ABLUTIONS & LATRINE.	G.D. 44.	
72.	O/R'S ABLUTIONS.	"	
73.	" LATRINE.	G.D. 43.	
74.	"		
75.	" QUARTERS.	13903/40	
76.	"		
<b>A M E N D M E N T S.</b>			
<b>A B B R E V I A T I O N S.</b>			
TEMPORARY BRICK	THUS	TB.	
PERMANENT	"	PB.	
BRICK	"	B.	
CONCRETE.	"	C.	
TIMBER	"	T.	
MISSEN.	"	H.	
SECO.	"	S.	
STEEL.	"	ST.	
HUTTING	"	H.	
A.M. BOUNDARY. THUS. -----			
DOWN GRADED. <i>James [Signature]</i>			
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<b>GRAVESEND</b>			
RECORD SITE PLAN			
DISPERSED SITES			
FOR AIRFIELD SITE SEE DRG. NO: 4875/45.			
SCALE: 1/2500			
FEET. 0 100 200 300 400 500 600 700 800 900 1000.			
<i>[Signature]</i>	<i>[Signature]</i>	SECRET NO.	D.G. of W.
FOR W.8.	FOR D.G.W.		4876/45
A.J.F.			AIR MINISTRY
J.E. BENNETT.			
CONTRACT TRACED. 30' X 22'			



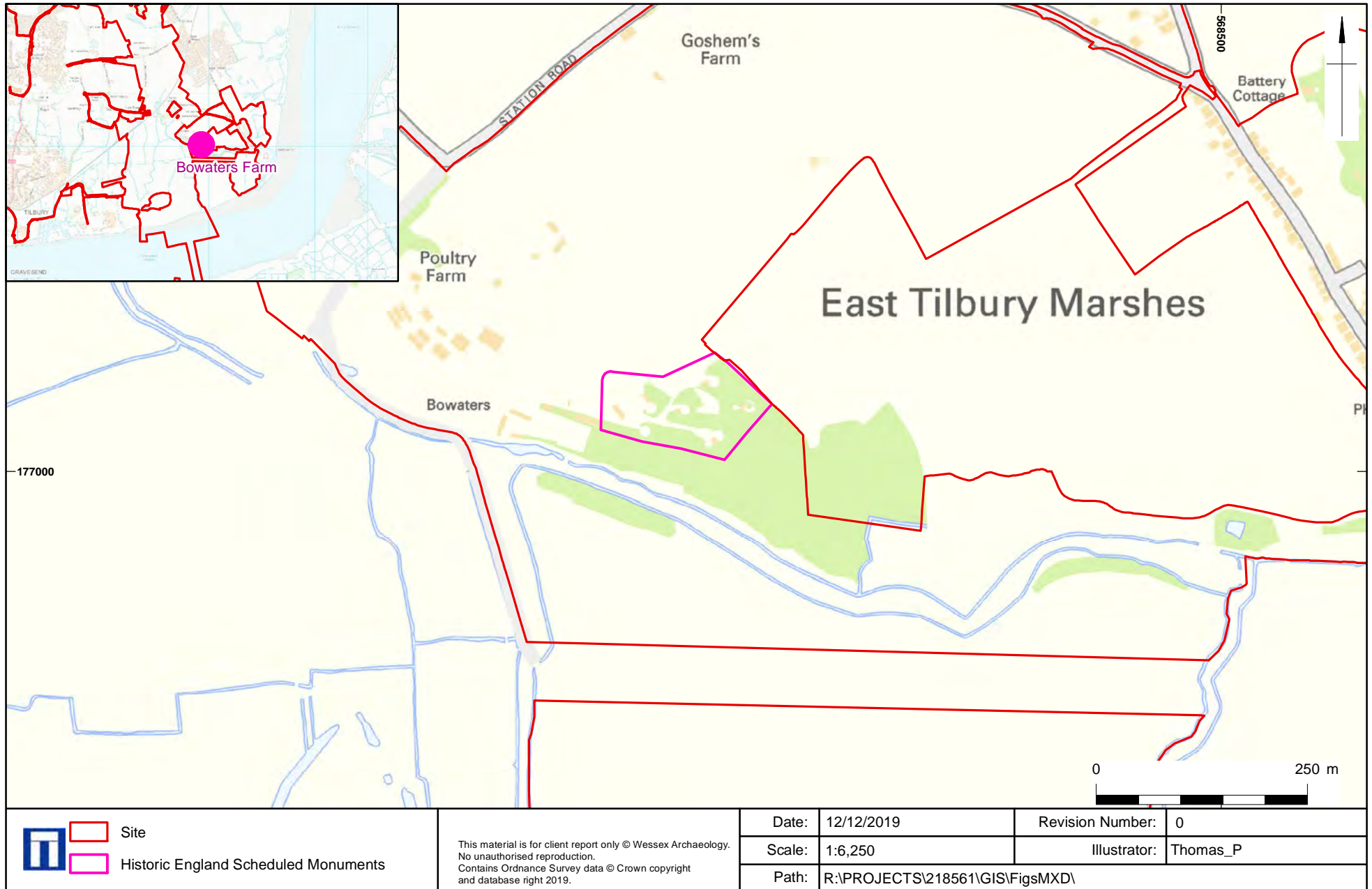
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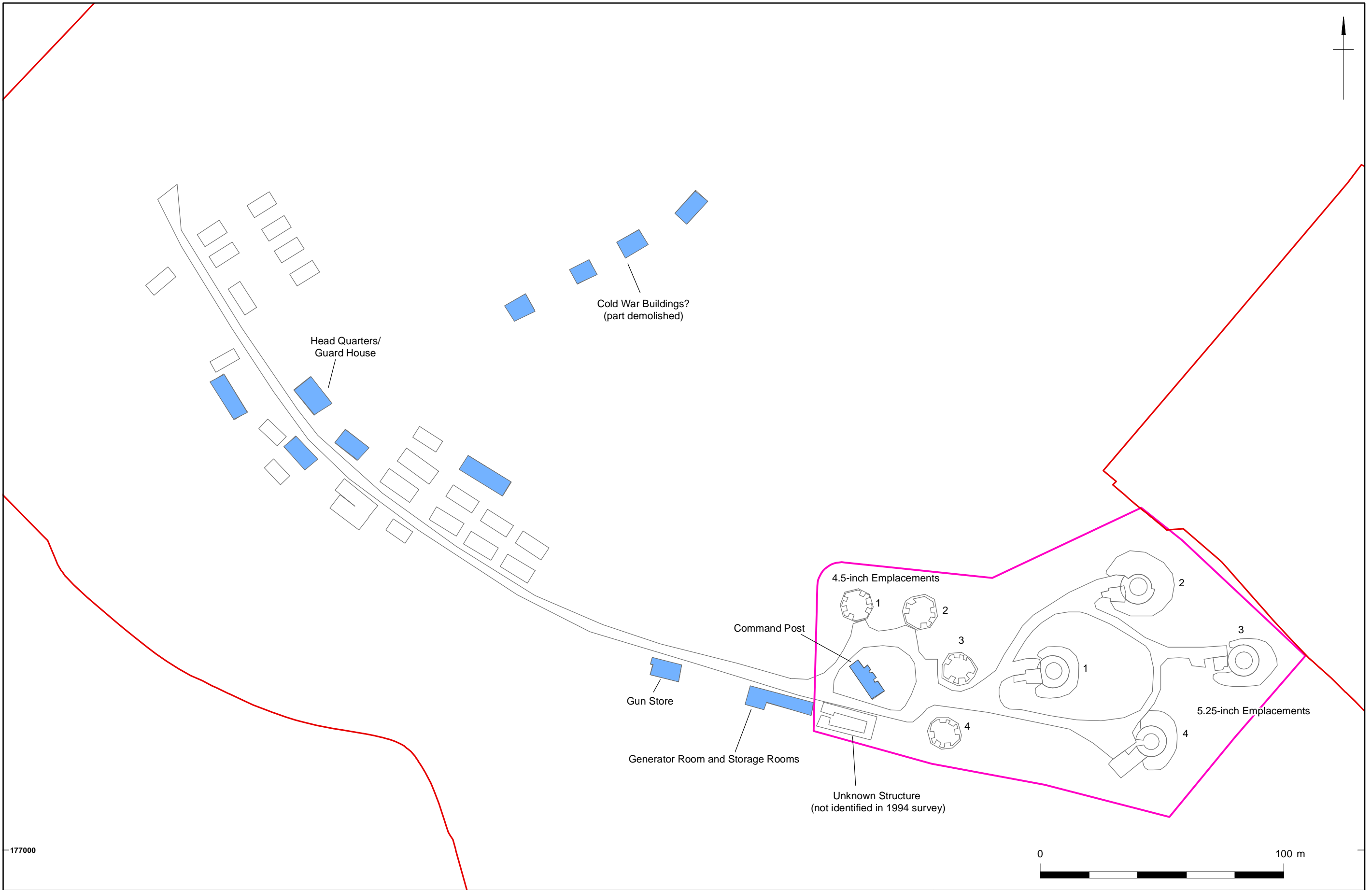










Bowaters Farm Scheduled Monument: Site location

Figure 16



177000

	Site		Bowaters Farm Structures
	Scheduled Monument Boundary		Bowaters Farm Surviving Structures

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Bowaters Farm Layout

Figure 17





Plate 1: North Ockendon: view from the northern boundary, facing southwest



Plate 2: North Ockendon: view from the northern boundary, facing southeast





Plate 3: North Ockendon: view from the centre of the northern boundary, facing southwest



Plate 4: North Ockendon: view from the centre of the northern boundary, facing southeast





Plate 5: Orsett: view of Whitmore car park, facing southwest



Plate 6: Orsett: Unidentified cylindrical concrete structure





Plate 7: Orsett: crescent shaped mound, facing south



Plate 8: Orsett: second crescent shaped mound, facing east





Plate 9: Orsett: view from the approximate centre of the eastern field, facing southwest



Plate 10: Orsett: view from the southern boundary of the eastern field, facing south to Orsett Golf Club





Plate 11: Orsett: concrete rubble identified in the eastern field



Plate 12: Orsett: view of Orsett Golf Club car park, facing southeast





Plate 13: Orsett: general building debris noted in the eastern fields, facing north



Plate 14: Orsett: view from the southern boundary of the eastern field, facing east





Plate 15: Orsett: view from the southeast area of the eastern field, facing east



Plate 16: Orsett: man-made hole in the southeast area of the eastern field with concrete at the base





Plate 17: Orsett: view from the southeast area of the eastern field, facing northeast



Plate 18: Orsett: concrete identified in the eastern section of the eastern field, facing west





Plate 19: Orsett: view from the northeast corner of the eastern field, facing north



Plate 20: Orsett: modern manhole on earlier concrete structure?





Plate 21: Orsett: View of the eastern field from west of Whitmore Hall, facing southwest



Plate 22: Orsett: view of the western field from Bristowe Drive, facing south





Plate 23: Orsett: view of the western field from Bristowe Drive, facing southwest



Plate 24: RAF Gravesend: view from the southern boundary of the southern field, facing north





Plate 25: RAF Gravesend: view from the central field, facing north showing existing powerlines



Plate 26: RAF Gravesend: View of the existing paddock, facing northeast





Plate 27: RAF Gravesend: view from the western boundary of the paddock, facing southwest



Plate 28: RAF Gravesend: View of the northern field, facing northeast





Plate 29: RAF Gravesend: view from the northern field, facing south



Plate 30: RAF Gravesend: view from the centre of Southern Valley Golf Club, facing north



Plate 31: RAF Gravesend: View of the field to the north of the golf course, facing northwest



Plate 32: RAF Gravesend: view from the northern boundary of the golf course, facing southwest





Plate 33: RAF Gravesend: view from the centre of the golf course, facing west



Plate 34: Bowaters Farm: View of former generator building, facing southwest



Plate 35: Bowaters Farm: view of former storage buildings, facing southeast



Plate 36: Bowaters Farm: view of 4.5 inch gun emplacement, facing north





Plate 37: Bowaters Farm: view of the command post, facing south



Plate 38: Bowaters Farm: view of surviving concrete path, facing west





Plate 39: Bowaters Farm: View of 5.25inch gun emplacement, facing west



Plate 40: Bowaters Farm: View of 5.25inch gun emplacement, facing northwest





Plate 41: Bowaters Farm: View of 5.25inch gun emplacement entrance with its surviving iron ladder, facing southeast



Plate 42: Bowaters Farm: surviving concrete surface, facing north





Plate 43: Bowaters Farm: View of the headquarters buildings, facing southeast



Plate 44: Bowaters Farm: View of the southern range of Cold War buildings, facing southwest





Plate 45: Bowaters Farm: view of the northern range of Cold War buildings, facing northwest



Plate 46: Bowaters Farm: view of surviving concrete boundary fence posts along the Western boundary, facing southwest





Plate 47: Bowaters Farm: view of the original entrance into the battery, facing east



Plate 48: Bowaters Farm: building 1, facing north





Plate 49: Bowaters Farm: building 2, facing northwest



Plate 50: Bowaters Farm: building 3, facing southwest



Plate 51: Bowaters Farm: building 4, facing north



Plate 52: Bowaters Farm: building 5, facing west





Plate 53: Bowaters Farm: view from the main entrance into the farm, facing east



Plate 54: Bowaters Farm: view from trackway south of the AA battery facing north towards the emplacements



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