Geophysical Survey and an Archaeological Strip, Map and Record Excavation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB

November 2020

by Robin Mathieson
Contributions from Dr. Matthew Loughton and Laura Pooley
Figures by Robin Mathieson and Sarah Carter

Fieldwork by Robin Mathieson

commissioned by Nicholas Percival on behalf of Emberworth Ltd

NGR: TL 8857 2883 (centre)
Planning ref.: 172642
CHER project: ECC4588
CAT project ref.: 19/12b
OASIS ref.: colchest3-378075

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CAT Report 1622
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Contents

List of photographs and figures

Cover: site shot

1 Summary

An archaeological excavation was undertaken at Wakes Hall, Colchester Road, Wakes Colne, Essex in advance of the extension of an existing building, its conversion into twelve dwellings, and the construction of a further ten dwellings. Several foundations which are likely to be associated with a World War II camp, a post-medieval pit, a modern drainage system, and a fragmentary modern brick floor surface were uncovered. The camp probably supplied troops manning the pillboxes and defences around the Chappel Viaduct (part of the eastern Command Line) immediately to the east. Later the redundant camp was used for providing accommodation to for displaced persons after the war.

2 Introduction (Fig 1)

This is the report for an archaeological excavation by strip, map and record at Wakes Hall, Colchester Road, Wakes Colne, which was conducted from 17th March to 26th November 2020. The work was commissioned by Nicholas Percival on behalf of Emberworth Ltd in advance of the extension and conversion of an existing building into dwellings. The archaeological monitoring was undertaken by the Colchester Archaeological Trust (CAT).

An archaeological condition was recommended by the Colchester Borough Council Archaeological Advisor (CBCAA). Following a trial-trench evaluation by CAT (CAT Report 1114) acknowledging the aforementioned high archaeological potential. The recommendation based on the guidance given in MHCLG 2019 by the CBCAA was for three excavation areas. Refereed here in Areas 1, 2, and 3.

All archaeological work was carried out in accordance with a *Brief for a geophysical and strip, map and record excavation*, detailing the required archaeological work, written by Jess Tipper (CBCAA 2019). A written scheme of investigation (WSI) prepared by The Colchester Archaeological Trust which was agreed with the CBCAA.

In addition to the brief and WSI, all fieldwork and reporting was done in accordance with Historic England's Management of Research Projects in the Historic Environment (MoRPHE) (Historic England 2015), with Standards for field archaeology in the East of England (EAA 14 and 24). This report mirrors standards and practices contained in the Institute for Archaeologists' *Standard and guidance for archaeological excavation* (CIfA 2014a) *and Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b).

3 Archaeological background

The following archaeological background draws on the Colchester Archaeological Trust report archive, and the Colchester Historic Environment Record (CHER) accessed via the Colchester Heritage Explorer (www.colchesterheritage.co.uk):

The site is situated within the grounds of Wakes Hall (MCC5202). Built in 1857, the Hall was designed by F. Chancellor, who utilised the format of the 'model' farm, with buildings located in a regular layout. Model farms were conceived during the Victorian period as part of a broader effort to make agriculture more efficient and productive to meet the needs of a growing population (Wade-Martins, 2002). The main brick farm house is laid out in an 'E'-shaped plan (MCC4616), with a cart lodge and granary (MCC4618) and a 19th-century gate lodge (MCC4616). Its construction coincided with that of several houses and the water mill (MCC4590) in Wakes Colne and the nearby village of Chappel. There is only one house built prior to the 18th century in the vicinity, 'Gages', which is located 450m east-southeast of the site, and dates to the late 15th or early 16th century (MCC4620). There are, however, a small concentration of historic properties 1km to the south-east around St Barnabas Church in Chappel (MCC10030-1 and MCC3824) which were variously built during the late 14th century (The Swan Inn,

MCC3830), the 16th century (MCC3818, MCC3827 and MCC3839) and the 18th century.

The site lies 425m north-west of All Saints Church, the origins of which lie in the 12th century (MCC7005). A chancel was added to the church in the 14th century and a tower in the 15th century. In the 19th century, restoration work included the rebuilding of the eastern wall, south vestry and the addition of the organ chamber (MCC7006). Archaeological remains related to early medieval occupation may survive in the vicinity of the church. The site is also located close to the River Colne, above the floodplain and within an area topographically favourable for occupation. In June 2017 CAT carried out an evaluation approximately 1.24km to the west at land south of Colchester Road, White Colne and found stretches of a 13th- to 14th-century boundary ditch, which may have delineated a roadside plot (CAT Report 1114). CAT also carried out a trial-trenching evaluation on the site in January 2019 (CAT Report 1374), which uncovered foundations that are likely to form part of building remains of a camp possibly associated with a Second World War ammunition depot.

Personal recollections from people associated with Wakes Hall and communicated to the site team during the trial-trenching stage of archaeological work hold that the camp was converted to house displaced persons after the end of the war, predominantly for Polish nationals. A search of the internet, the Local Studies Library and the Essex Records office found no documentary evidence for the official status of such a camp. It does not appear on the list of camps that were part of the Polish Resettlement Corps (a holding unit for members of the Polish armed forces who had been serving with the British armed forces during the Second World War and did not wish to return to a Communist Poland after 1945), nor does it appear on the lists of Polish Civilian Family camps (Biegus & Biegus, 2013) of which the closest was at Kelvedon.

It is likely the camp was vacated by the military at the end of the war and subsequently taken over informally by displaced persons or returning servicemen as happened at the former POW camp (HQ 129 Italian Labour Battalion) located at Ashford Lodge, Halstead (Osborne, 1983). Whilst this can only be conjecture the huts at Wakes Hall were probably the same as those depicted at Ashford Lodge in the photograph below (Photograph 5); Nissen huts. A Nissen hut was a prefabricated steel structure for military use, especially as barracks, made from a half-cylindrical skin of corrugated steel on shallow concrete foundations. Designed during the First World War by the engineer and inventor Major Peter Norman Nissen, it was used extensively during the Second World War.

In 2019 Magnitude Surveys undertook a ground penetrating radar survey within area 3 of the development area (Magnitude Surveys 2020). The results recorded the foundations of at least one building that corresponds with a mapped World War II camp. Other potential remains identified include more structural remains and a ditch, along with several unidentified anomalies.

4 Aims

The aim of the archaeological excavation was to record the extent of any surviving archaeological deposits and to further the understanding of what was discovered in the previous archaeological evaluation on the site.

5 Results (Figs 2-3)

Three areas were machine-excavated under the supervision of a CAT archaeologist. They were excavated through modern topsoil (L1, *c* 0.13-0.29m thick, friable, dry/moist medium/dark brown silty-clay) and subsoil (L2, 0.11-0.26m thick, firm, dry/moist medium orange/brown clay with >5% stones) onto natural (L3, firm/hard, dry/moist medium yellow/orange/brown silty-clay with >35% stones).

Area 1 (215m^2)
This area contained modern concrete foundations (F1a). F1 was aligned north to south and then turned to align east to west. Also within the area was a modern brick manhole, possibly associated with F1.

Area 2 (441m^2)
Within this area was a modern trench which probably contained a service (F4), this was north/south aligned. Also present within the area was a shallow post-medieval pit (F5), which was 100cm wide and 6cm deep.

Area 3 (859m^2)
This area contained modern concrete foundations (F1b) Like Area 1, a modern brick manhole was uncovered, possibly associated with with F1b. This area also contained a modern drainage service (F6), aligned north/south. In the south-east of the area was a fragmentary modern brick floor surface (F7) comprised of various 19th-century bricks and decorated tiles. The ditch (F2) seen in the evaluation was not observed in the excavation by CAT.

Photograph 1 Area 1 shot – looking west

Photograph 2 Area 2 shot – looking north

Photograph 3 Area 3 shot – looking west

Photograph 4 Detail of concrete foundation F1 in Area 1 – Looking north-east

6 Finds

6.1 The small finds

by Laura Pooley and Robin Mathieson

Two small finds were recovered, a 1920 farthing of George V from F1 and a .50 caliber machine gun cartridge from L2. The gun cartridge most likely dates to the WWII encampment on the site.

SF1, F1, finds no.2. Bronze farthing of George V, 1920. Obverse: bare-headed bust looking left, GEORGIVS V DEI GRA BRITT OMN REX FID DEF IND IMP. Reverse: Britannia seated left, FARTHING 1920.

SF2, L2, finds no. 3. A .50 caliber M2 machine gun cartridge. The headstamp reads "SL 42", which was an American aircraft bullet that was manufactured in St. Louis Ordnance Plant, St. Louis, Missouri (http://www.nebraskaaircrash.com/50caliber.html).

6.2 Pottery

Dr. Matthew Loughton

The evaluation produced two sherds (20 g) of post-medieval red earthenware pottery, dating to c.1500-19th/20th century, from the pit F5.

7 Discussion

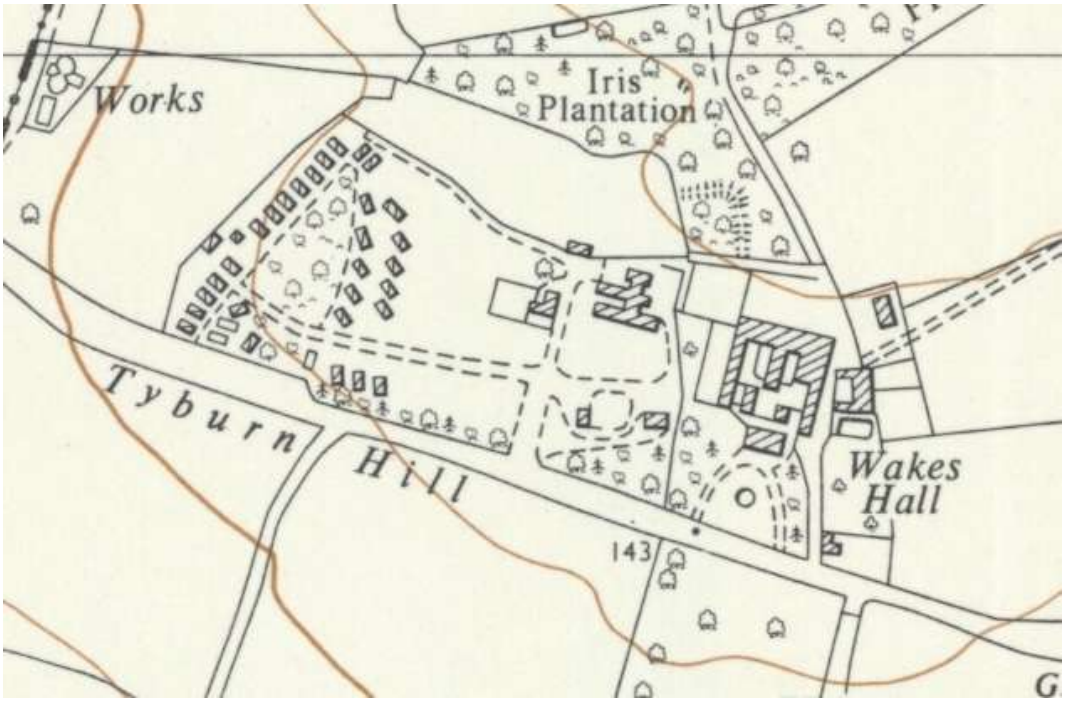
During the archaeological work at Wakes Hall, excavations revealed foundations associated with the camp, possibly attached to an ammunition depot dating to the Second World War which was located at Wakes Hall and shown on a map from 1954 provided by Nicholas Percival (Map 1 and Figure 2). This camp may have supplied troops manning the pillboxes and defences around Chappel Viaduct immediately to the east, part of the eastern Command Line which followed the River Colne from its outlet at Mersea Island, around Colchester, westwards to Chappel Viaduct (ECC2017). The discovery of the American bullet cartridge may indicate their was an American unit present at some stage.

The eastern Command Line at Chappel is a Scheduled Monument (NHLE 1020687) and the list entry describes Wakes Colne as a `Defended Place Class C', i.e. where the object of holding the defended place was to deny use of the roads to the enemy. The 8th Battalion of the Essex Home Guard manned the defences. Chappel is noted as a `Class B Defended Place' in the North Essex Sub District, defined as a major centre of road communications and provided with a garrison sufficient to hold its defences (specified as less than 1,000 men but more than two battle platoons of 80 men each). The map evidence indicates that the camp uncovered during this work comprised over 80 structures surrounded by a barbed wire fence so the size of this installation would seem to suggest an association with the eastern Command Line.

Map 1 Extract from a 1954 map of Wakes Hall – the first part of the title is illegible but the remainder reads "*attached to the ammunition dump at Wakes Colne*". The development area is indicated by the green polygon.

Photograph 5 The former POW camp at Ashford Lodge, Halstead shortly after 1945 when it was informally taken over by returning servicemen and their families as cheap housing (Osborne, 1983).

Map evidence shows that some of the huts that comprised the camp at Wakes Hall were still standing in 1958 (Map 2). The reduction in number from 1954-58 suggests that there was a gradual decline in the population of the camp as the inhabitants were able to secure the better quality housing that was constructed after 1945 to meet the needs of the expanding population. The Nissen hut was never a long-term solution to housing only an expedient one.



Map 2 1958 edition of the 1:10,560 Ordnance Survey showing a reduction in the number of huts in the camp.

Photograph 6 Showing F7 in Area 3 – Looking north

Ephemeral remains of the camp seen on site are shown in Photograph 3 and 4. The building identified in Trench 1 of the evaluation shows up perfectly as a parch mark and is identical to its plan form on the 1954 map.

The remains uncovered during the excavation, besides the modern ditch in (F2) match up with the evaluation trenches and confirm the interpretations made in that report (CAT Report 1114). The finding of the American cartridge and 1920 coin provide good supporting dating of the site and adds further information to the goings on at the camp.

In terms of the geophysical work, the monitoring works identified a small quantity of the anomalies (Fig 4). The anomalies associated with the former camp building could be aligned with the foundations excavated (F1). This building was recorded on the 1958 OS map. F6 and a modern manhole are correctly located to explain some of the unidentified anomalies. The ditch excavated in the 2019 evaluation (CAT Report 1374) was also identified.

8 Acknowledgements

CAT thanks Nicholas Percival and Emberworth Ltd for commissioning and funding the work. The project was managed by C Lister, fieldwork was carried out by R Mathieson. Figures are by R Mathieson and S Carter. Report by R Mathieson and contributions by M Loughton and L Pooley. The project was monitored for Colchester Borough Council by Jess Tipper & Richard Hoggett.

9 References

Note: all CAT reports, except for DBAs, are available online in PDF format at http://cat.essex.ac.uk

Biegus, Z & Biegus, J	2013	*Polish Resettlement Camps in England and Wales 1946-1969*
CAT	2020	*Health & Safety Policy*
CAT	2019	*Written Scheme of Investigation (WSI) for a geophysical survey and an archaeological strip, map and record excavation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB*

CAT Report 1114	2017	*Archaeological evaluation on land south of Colchester Road, White Colne, Essex: June 2017*
CAT Report 1374	2019	*Archaeological evaluation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB: January 2019*
CBCAA	2019	*Brief for Archaeological Mitigation at Wakes Hall, Colchester Road, Wakes Colne, CO6 2DB*
CIfA	2014a	*Standard and Guidance for archaeological excavation*
CIfA	2014b	*Standard and guidance for the collection, documentation, conservation and research of archaeological materials*
Gurney, D	2003	*Standards for field archaeology in the East of England*. East Anglian Archaeology Occasional Papers 14 (EAA 14)
Historic England	2016	*Management of Research Projects in the Historic Environment (MoRPHE)*
Magnitude Surveys	2020	*Geophysical Survey Report of Wakes Hall, Colchester Road, Wakes Colne, Essex*
Medlycott, M	2011	*Research and archaeology revisited: A revised framework for the East of England*. East Anglian Archaeology Occasional Papers 24 (EAA 24)
MHCLG	2019	*National Planning Policy Framework*. Ministry of Housing, Communities and Local Government
Osborne, D	1983	*Halstead and Colne Valley at War*
Wade-Martins, S	2002	*The English Model Farm: Building the Agricultural Ideal, 1700-1914*
Perez, A & Carli, I & Swinbank L Magnitude Surveys	2020	*Geophysical Survey Report of Wakes Hall, Colchester Road, Wakes Colne, Essex. (Magnitude Survey Reff: MSTL596) (HER Event No: ECC4415)*

Websites consulted include:

http://www.nebraskaaircrash.com/50caliber.html

10 Abbreviations and glossary

CAT	Colchester Archaeological Trust
CBCAA	Colchester Borough Council Archaeological Advisor
CBCPS	Colchester Borough Council Planning Services
CHER	Colchester Historic Environment Record
CIfA	Chartered Institute for Archaeologists
context	a single unit of excavation, which is often referred to numerically, and can be any feature, layer or find.
feature (F)	an identifiable thing like a pit, a wall, a drain: can contain 'contexts'
layer (L)	distinct or distinguishable deposit (layer) of material
medieval	period from AD 1066 to *c* 1500
modern	period from *c* AD 1800 to the present
natural	geological deposit undisturbed by human activity
NGR	National Grid Reference
OASIS	**O**nline **A**cces**S** to the **I**ndex of Archaeological Investigation**S**, http://oasis.ac.uk/pages/wiki/Main
POW	prisoner of war
section	(abbreviation sx or Sx) vertical slice through feature/s or layer/s
WSI	Written Scheme of Investigation

11 Contents of archive

Finds: n/a

Paper record

One A4 document wallet containing:
The report (CAT Report)
CBC evaluation brief, CAT written scheme of investigation
Original site record (trench sketch sheets, feature and layer sheets, sections)
Digital photographic thumbnails and log

Digital record

The report (CAT Report)
CBC evaluation brief, CAT written scheme of investigation
Digital photographic thumbnails and log
Graphics
Survey data

12 Archive deposition

The paper and digital archive is currently held by the Colchester Archaeological Trust at Roman Circus House, Roman Circus Walk, Colchester, Essex CO2 7GZ, but will be permanently deposited with Colchester Museum under accession code COLEM: ECC4588

Distribution list:
Nicholas Percival
Emberworth Ltd
Richard Hoggett, Colchester Borough Council Planning Services
Essex Historic Environment Record

Colchester Archaeological Trust
Roman Circus House,
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Essex, CO2 7GZ

tel.: 01206 501785
email: cl@catuk.org

Checked by: Philip Crummy
Date: 08/01/2021

Appendix 1 Context List

Context Number	Area number	Finds number	Feature / layer type	Description	Date
L1	Area 1,2,3	-	Modern topsoil	13-29cm thick, friable, dry/moist medium/dark brown silty-clay	modern
L2	Area 1,2,3	3 (Area 3)	Subsoil	11-26cm thick, firm, dry/moist medium orange/brown clay with >5% stones	?
L3	Area 1,2,3	-	Natural	firm/hard, dry/moist medium yellow/orange/brown silty-clay with >35% stones	post-glacial
F1a	Area 1	-	Concrete foundations	45cm wide and 17cm deep (depending on the condition). Area 1 had 4 separated parts of F1a. Likely to have all originally been formed as one foundation.	20th century
F1b	Area 3	2	Concrete foundations	45cm wide and 17cm deep (depending on the condition). Area 3 had 3 separated parts of F1b. The 2 northern most parts likely to have originally formed as one foundation.	20th century
F4	Area 2	-	Service/ foundation cut	north/south aligned feature, 15.2m in length and 3.9m at the widest point. Friable, dry light/medium brown sandy silt	19th-20th century
F5	Area 2	1	Pit	Rounded shallow pit. 100Cm wide and 6cm in depth. Friable, dry, slightly moist medium/dark grey/brown sandy silt.	post-medieval
F6	Area 3	-	Drainage service	Constructed of ceramic building material, aligned north/south	19th-20th century
F7	Area 3	-	Brick floor surface	Comprised of various 19th-century bricks and decorated tiles	19th-20th century

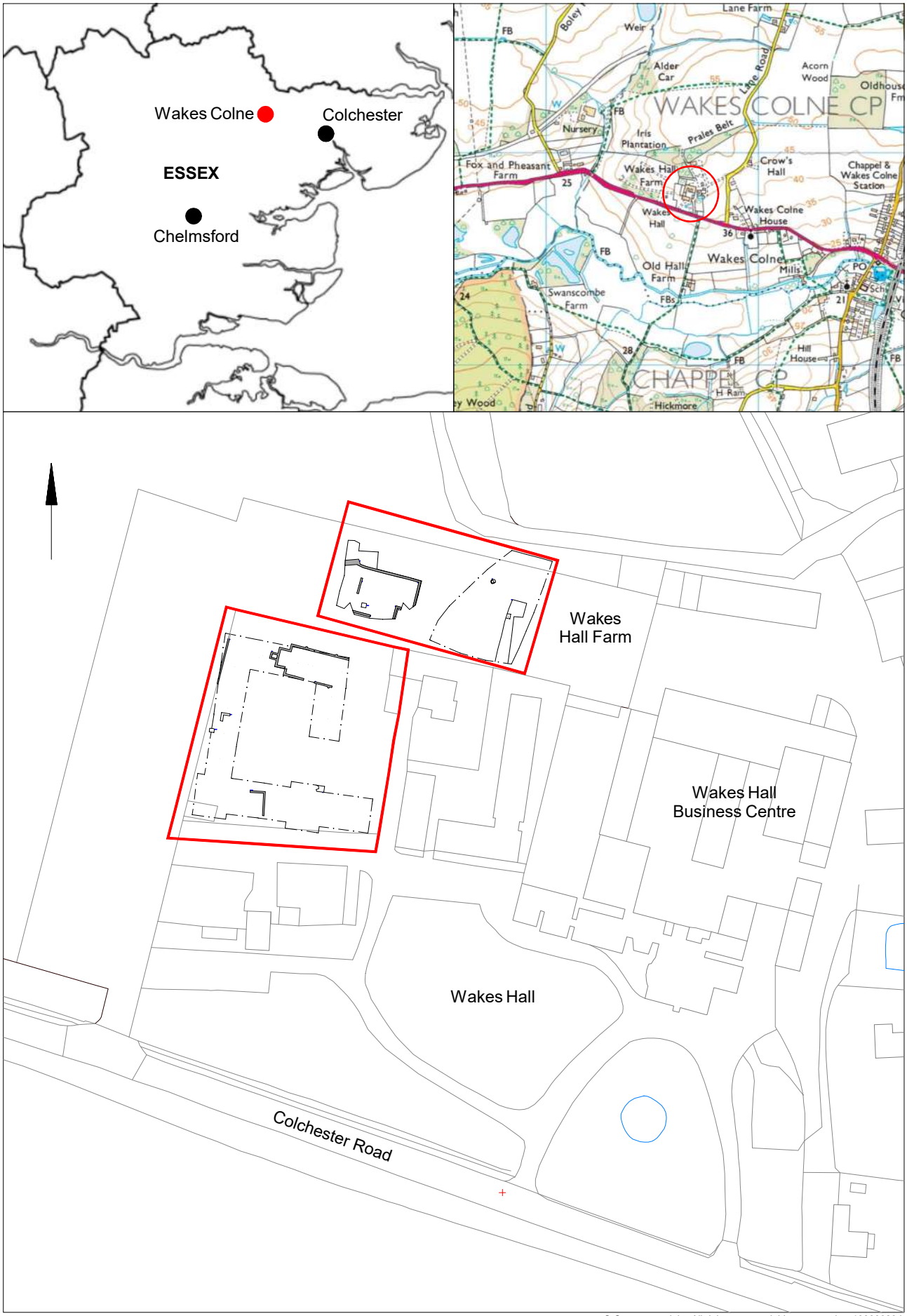
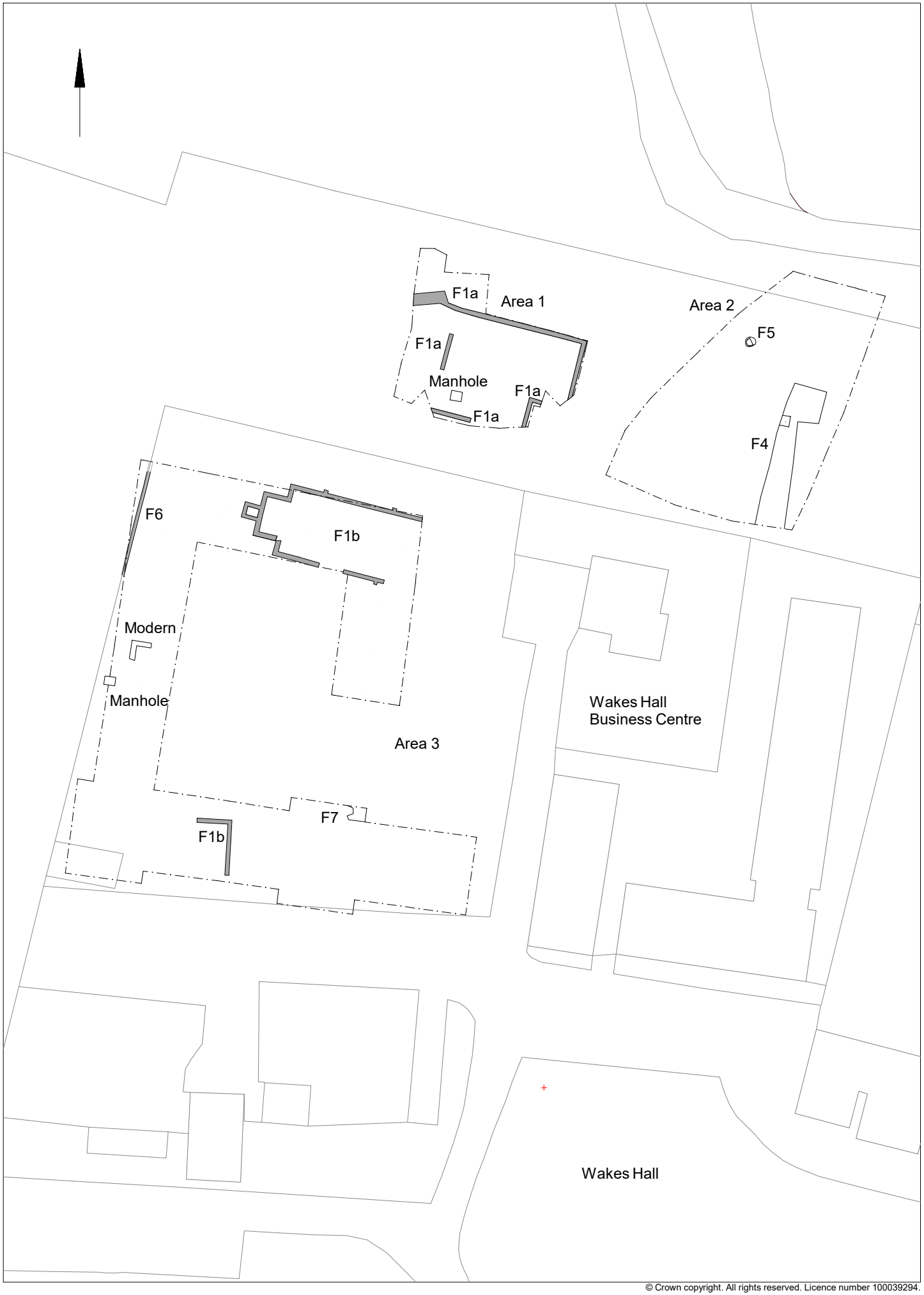


Fig 1 Site location.



0 20 m

Fig 2 Results.

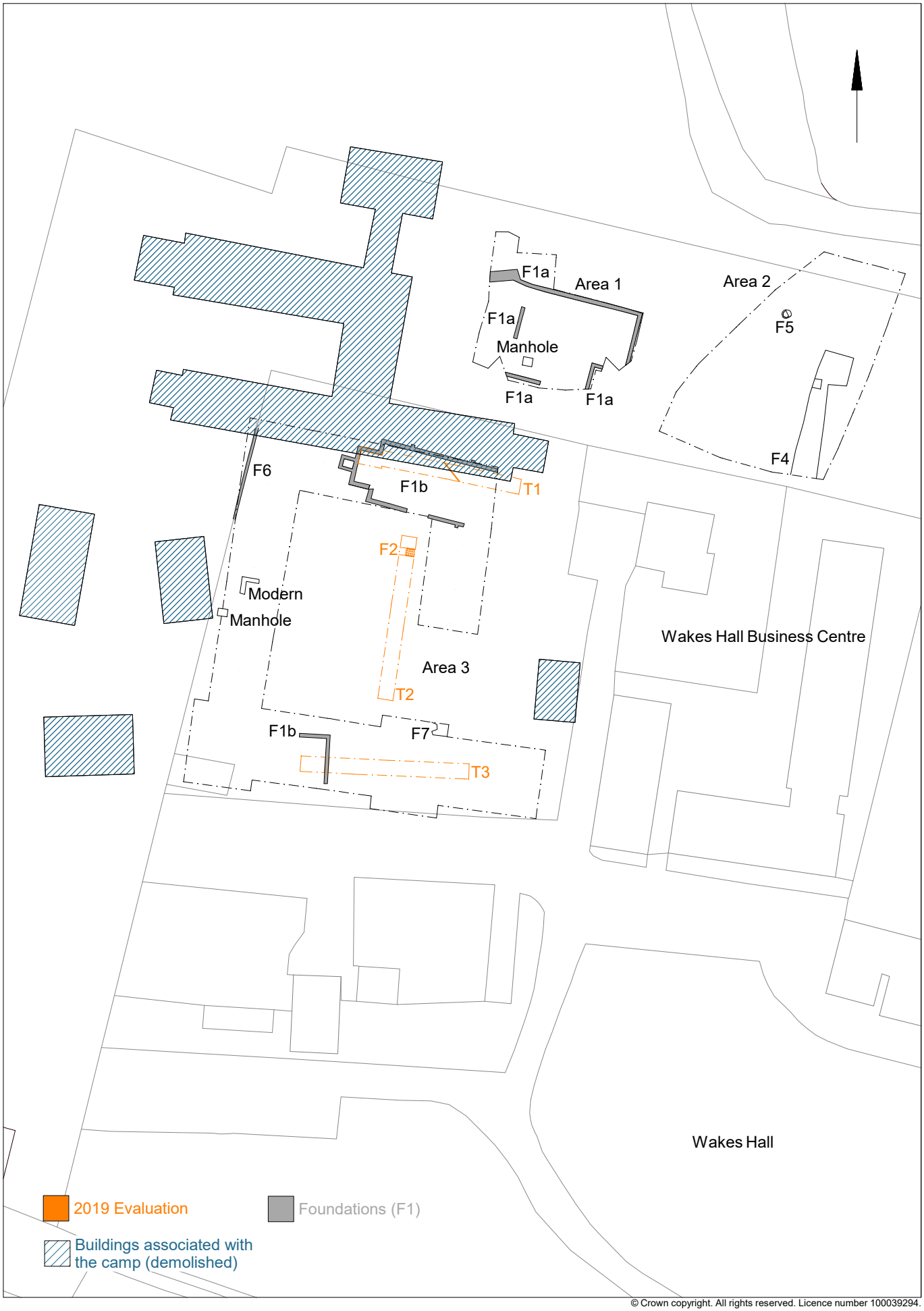
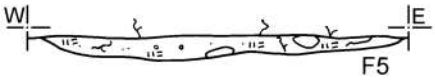


Fig 3 2020 GEO & SME with 2019 evaluation in relation to structures shown on the 1954 plan of the camp associated with the ammunition dump.

0 20 m

Fig 4 Area 3 Results with geophysical survey results. Limit of surveyed area in blue.



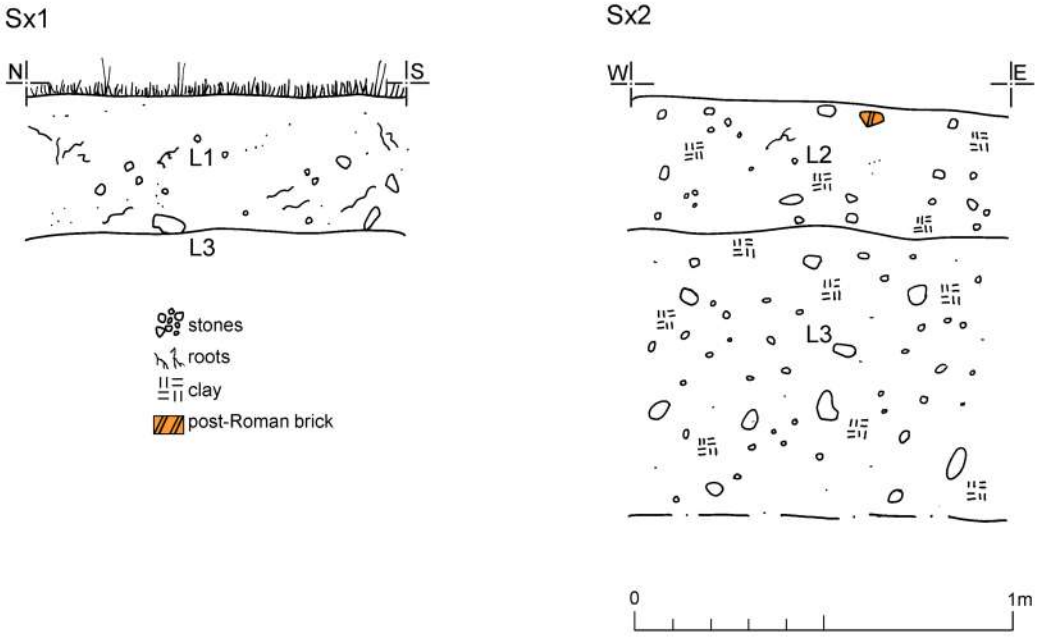


Fig 5 Feature and representative sections.

Essex Historic Environment Record/
Essex Archaeology and History

Summary sheet

Address: **Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB.**	
Parish: Colchester	***District:*** Wakes Colne
NGR: TL 8857 2883 (centre)	***Site code:*** CAT project ref.: 19/12b CHER ref: ECC4588 OASIS ref: colchest3-378075
Type of work: Monitoring	***Site director/group:*** Colchester Archaeological Trust
Date of work: Between 17th March and 26th November 2019	***Size of area investigated:*** 0.38ha
Location of curating museum: Colchester Museum	**Funding source:** Developer
Further seasons anticipated? no	***Related CHER/SMR number:*** ECC4287, ECC4415
Final report: CAT Report 1622	
Periods represented: Modern	
Summary of fieldwork results: An archaeological excavation was undertaken at Wakes Hall, Colchester Road, Wakes Colne, Essex in advance of the extension of an existing building, its conversion into twelve dwellings, and the construction of a further ten dwellings. Several foundations which are likely to be associated with a World War II camp, a post-medieval pit, a modern drainage system, and a fragmentary modern brick floor surface were uncovered. The camp probably supplied troops manning the pillboxes and defences around the Chappel Viaduct (part of the eastern Command Line) immediately to the east. Later the redundant camp was used for providing accommodation to for displaced persons after the war.	
Previous summaries/reports: none	
CBC monitor: Dr Jess Tipper and Dr Richard Hoggett	
Keywords: -	***Significance:*** -
Author of summary: Robin Mathieson	***Date of summary:*** January 2021

Geophysical Survey Report

of

Wakes Hall, Colchester Road

Wakes Colne, Essex

For

Colchester Archaeological Trust

On behalf of

Emberworth Ltd

Magnitude Surveys Ref: MSTL596

HER Event Number: ECC4415

January 2020

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Issue Date:

23 January 2020

Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 0.23ha area of land at Wakes Hall, Colchester Road, Wakes Colne, Essex. A ground penetrating radar survey was successfully completed across the site. The geophysical results have recorded the foundations of at least one building that corresponds with a mapped world war II camp. A buried surface, and further structural remains, have been identified which are likely related to the camp. The buried surface corresponds to a former parade ground visible on historic maps. A ditch has also been detected within the dataset which matches the results of previous trial trench investigations on the survey area. The impact of modern activity on the results is present as agricultural tracks, vehicle soil compaction and the trial trenches. Some anomalies of undetermined origin have also been identified, these have no typical characteristics, or pattern to enable a confident interpretation.

Contents

List of Figures

1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Colchester Archaeological Trust on behalf of Emberworth Ltd to undertake a geophysical survey on a c.0.23ha area of land at Wakes Hall, Colchester Road, Wakes Colne, Essex (TL 8857 2883).

1.2. The geophysical survey comprised hand pushed, cart-mounted ground penetrating radar (GPR) survey. MS' Ofcom Ground Probing Radar licence number is 1200059/1.

1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David et al., 2008), the Chartered Institute for Archaeologists (CIfA, 2014) and the European Archaeological Council (Schmidt et al., 2015).

1.4. Survey was conducted in line with a written scheme of investigation (WSI) produced by MS in December 2019 (Swinbank, 2019).

1.5. The survey commenced on 17/12/2019 and took 2 days to complete.

2. Objective

2.1. The objective of this geophysical survey is to assess the subsurface archaeological potential of the survey area.

2.2. A ground penetrating radar (GPR) survey was required of the area of the new dwellings. The aim was to identify any buried archaeological features. The survey was conducted with a high-density array of 400MHz antennas, although a pilot study was undertaken at the start of fieldwork to test for the most appropriate centre frequency of antenna. An animation of the time slices is included with the subsequent report.

3. Quality Assurance

3.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society of Archaeological Prospection).

3.2. Director Dr. Chrys Harris is a Member of CIfA, has a PhD in archaeological geophysics from the University of Bradford and is the Vice-Chair of ISAP. Director Finnegan Pope-Carter is a Fellow of the London Geological Society, the chartered UK body for geophysicists and geologists, as well as a member of GeoSIG, the CIfA Geophysics Special Interest Group. Reporting Analyst Dr. Kayt Armstrong has a PhD in archaeological geophysics from Bournemouth University, is the Vice Conference Secretary and Editor of ISAP News for ISAP, and is the UK Management Committee representative for the COST Action SAGA.

3.3. All MS managers have relevant degree qualifications to archaeology or geophysics. All MS field and office staff have relevant archaeology or geophysics degrees and/or field experience.

4. Geographic Background

4.1. The site is located 265m northwest from Wakes Colne, a village c.10km northwest of Colchester, Essex (Figure 1). Survey was undertaken across one field under undifferentiated grassland. The site is bounded by the buildings of Wakes Hall, the A1124, agricultural and woodland (Figure 2).

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
1	Flat lawn with several muddy areas along the boundaries.	Bound to the east and south by unnamed small roads, and trees and metal fences to the north and west. The presence of large amount of construction materials in the south west corner prevented a small section of the survey.

4.3. The underlying geology comprises clay, silt and sand of the London Clay Formation. Superficial deposits consist of diamicton of the Lowestoft Formation (British Geological Survey, 2019).

4.4. The soils consist of slightly acid loamy and clayey soils with impeded drainage (Soilscapes, 2019). This is confirmed by a borehole (BGS TL82NE10) found at c.170m north west from the survey area. The data reveals that the topsoil is c.0.60m think and consists of dark brown sand clay. This overlays a c.1m thick layer of more consolidated very clayey sand mixed with gravel.

5. Archaeological Background

5.1. The following is a summary of an archaeological evaluation produced and provided by Colchester Archaeological Trust (Hicks and Lister, 2019).

5.2. Within the survey area is the 19th century Wakes Hall “model farm” (MCC5202). Previous trial trenching within the survey area revealed two modern foundations and an undated ditch. The two foundations probably relate to a hutted camp attached to an ammunition dump from the Eastern Command Line, dating to the Second World War. The camp probably comprised Nissen-type huts, made from a half-cylindrical skin of corrugated steel on shallow concrete foundations. The survey area appears to be located in the east of the camp, where a 1954 map shows a building with either a parade ground or parking area to its immediate south. The southern extent of this building has been identified within one of the trenches and has been interpreted as administration related. The ditch identified through trenching is uncertain in date but might be associated with the Second World War camp as well.

5.3. Medieval to post-medieval activity has been recorded in the wider environs with All Saints Church (MCC7005) c.425m southeast from the survey area, along with historic properties 1km to the southeast around St Barnabas Church in Chappel (MCC10030-1 and MCC3824) which including The Swan Inn (MCC3830) from the late 14th century.

6. Methodology

6.1.Data Collection

6.1.1. Geophysical survey will comprise the ground penetrating radar method as described in the following table.

6.1.2. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Ground Penetrating Radar	Mini Mira with 400MHz Antennas	0.08m	0.05m

6.1.3. GPR data were collected along lines, using the system's odometer wheel to position sampling points. The lines were set out within a grid established using a Carlson BRx6 GNSS Smart Antenna RTK GPS which is accurate to 0.008 m + 1 ppm in the horizontal and 0.015 m + 1 ppm in the vertical.

6.1.4. Where blocks of data were collected, the lines of data were collected at intervals of 0.5m. The radar was set to sample every 0.05m along the line.

6.2.Data Processing

6.2.1. GPR data were processed in the standard commercial software package ReflexW 3D. GPR Processing steps were limited to:

DC Shift – The waveform response for each traverse was centred to correct for striping effects caused by small variations in sensor electronics and orientation.

Bandpass Filter – Frequencies outside the normal range of the measuring antennae were filtered out to remove errors from external sources.

Gain Adjust – A gain curve was manually calculated to account for signal attenuation with depth. The gain adjust allows features at depth with a weaker signal to be resolved at the same plotting scale as near surface features.

Hyperbola fitting – Manual fitting of hyperbola curves was conducted to calculate the velocity of the wave. This allows the calculation of response depth from response time.

6.3. Data Visualisation and Interpretation

6.3.1. The individual GPR radargrams will be stacked to form a three-dimensional cube of measurements. Greyscales were created by horizontally slicing the cube to produce plan-view time-slices. These "timeslices" were initially considered in an animated GIF form to analyse the three-dimensional extent of anomalies. For print purposes, three gross soil volumes have been considered: shallow, middle, and deep. The mean of the timeslices within each gross soil volume was taken and used as a representative time slice for the interpretation figures. Timeslices have been interpreted in a layered environment, overlaid against open street mapping, satellite imagery, historic mapping, LiDAR data, and soil and geology mapping. The timeslices were also interpreted in consideration with the radargrams, which visualise the form of the geophysical response, aiding in anomaly interpretation

7. Results

7.1.Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports as well as reports of further work in order to constantly improve our knowledge and service.

7.2.Discussion

7.2.1.1. The geophysical results are presented in consideration with satellite imagery (Figure 12) and with a 1958 OS map provided in the Archaeological evaluation document (Hicks and Lister, 2019) (Figure 11).

7.2.1.2. The GPR was successfully completed across the survey area, enabling the detection of a number of possible structures. The survey demonstrated good depth penetration to c.0.6m, after which the signal attenuated due to the presence of high conductive clay soil (see Section 4.4). For this reason, timeslices for the deeper depths have not been included within the report. The survey area exhibits a very compact sequence of activities which occur in the shallowest recorded depths. The geophysical data is dominated by the foundation remains of a building which was part of a World War II camp, and by a series of further possible structural remains and a buried surface which are possibly related to the same camp. A shallow ditch unknown in date was identified as well.

7.2.1.3. Anomalies detected within the north of the survey area share a good correlation with the southern portion of a former building, originally part of the WWII camp (Figures 4-7). This building is visible on historic maps until 1958 (1954 map of Wakes Hall; 1958 Ordnance Survey map, Figure 11), the outline of the former building is visible on satellite imagery in the form of parch marks (Google Satellite 2020, Figure 12). The identified anomalies appear to consist of shallow foundations (c.0.13m-c.0.35m deep, Figure 13). A portion of concrete foundations was also found in one of the evaluation trenches undertaken in the survey area by Colchester Archaeological Trust (Hicks and Lister, 2019).

7.2.1.4. Further anomalies suggestive of structural remains have been identified throughout the survey area (Figure 4-9; c.0.22m-0.55m deep, Figure 15). These potential structural remains are on the same alignment as the recorded building in the north of the survey area and exhibit a similar response within the data.

These linear and rectilinear anomalies likely represent the foundations of unmapped structures which were part of the World War II camp.

7.2.1.5. Remains of a buried surface have been found in the west of the survey area and are visible both in the timeslices (Figures 4-7) and radargrams (Figure 14) and appears to be in a fragmented state of preservation, suggesting that the surface was only partially removed. This surface is present between c.0.29m-0.34m deep, sharing the same depth as the WWII buildings. The surface corresponds with the site of a square parking area or parade ground, visible in the 1954 map of Wakes Hall (See Section 5.2) and is probably related to this.

7.2.1.6. A shallow ditch feature has been detected in the centre-east of the survey area (c.0.23m-0.52m deep, Figures 6-7 and 14). The response within the GPR data crosses the north of trench "T2" excavated by Colchester Archaeological Trust (Hicks and Lister, 2019) corresponding with the undated ditch recorded by the excavation. The GPR data shows that ditch extends east and west, and cuts into the northeast corner of the buried surface.

7.2.1.7. The western side of the survey area contains vehicle tracks and signs of heavy machinery related soil compaction which reflect a more recent use of land (Figures 4-7 and 13). These are on the surface or at very shallow depths. A number of linear and amorphous anomalies has been categorised as undetermined as a more specific origin could not be ascribed.

7.3.Interpretation

7.3.1. General Statements

7.3.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

7.3.1.2. **Shadow** – Shadow is an effect whereby a specific material causes the radar energy to behave in an unusual way, producing strong amplitude responses within the radargram well below the object in question. These can make it appear that there are deeper reflectors present, when in fact this is a data artefact caused by an object higher up in the soil or sediment.

7.3.1.3. **Undetermined** – Anomalies are classified as Undetermined when the anomaly origin is ambiguous through the geophysical results and there is no supporting or correlative evidence to warrant a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally not ferrous in nature.

7.3.2. GPR Results - Specific Anomalies

7.3.2.1. **Former building (World War II camp)** – A rectilinear configuration of anomalies have been detected within the timeslices in the north of the survey area, [**1a**] (Figures 4-7). These anomalies are present between 0.13-0.35m below the

ground surface and form a rectangle 17m in length and c.5m in width. The western end of the rectangle is open, and a short protrusion extends south then further west (c.5m in total). 7m south of the rectangle, a further linear anomaly 27m in length has also been identified. Within Radargram 1 (Figure 13), the strong reflector signal of the southern section of the rectangular anomaly is clearly visible. This reflector has been identified as a possible foundation due the absence of the signal in neighbouring radargrams indicating a narrow feature. The alignment of these linear anomalies is on a consistent sub east-west axis. The alignment and location of these possible structural anomalies correspond to a former building recorded on historic maps up to 1958, and parch marks visible on recent satellite imagery (Google Earth, 2020) (Figure 12). Concrete foundations related to this same building have also been identified in one of the trial trenches, T1, previously undertaken in the survey area (Hicks and Lister, 2019).

7.3.2.2. **Buried surface/Contrast Material** – The timeslices show a contrast in the background reflectors over a broad rectangular zone, [**1e**] (Figure 3-7). The decrease of background reflectors across [**1e**] may be due to a slight attenuation of signal compared to the surrounding area (across the region classified as "Contrast Material"). The radargram of [**1e**] shows a buried surface (Figure 14) which is visible as a thin layer occurring between 0.29-0.34 m deep which gently slopes down eastwards and is in a fragmented state of preservation. The buried surface is likely attenuating the signal penetration over this zone which is producing the contrasting background within the timesclices. The c.20m by 23m zone corresponds with the location of a possible parade ground or parking area visible in the 1954 map of Wakes Hall.

7.3.2.3. **Possible Former Structures**– To the west of the survey area, a rectilinear response [**1b**] has been detected between c.0.17m-0.43m deep (Figure 7). This rectilinear anomaly is found at the same depth as the buried surface, which indicates a probable relationship/ contemporality between the possible structure and the buried floor. To the east, a larger rectilinear response [**1c**] has been identified between c.0.17m-0.86m depth, measuring c.0.19m x 0.12m. To the north of [**1c**], a linear anomaly [**1d**] has been detected, which does not seem to have any direct connection with the surrounding features. The signal occurs between c.0.26m-0.86m deep, and the feature runs parallel to the former WWII linear features at c.4.20m distance (Figure 6 and 7). Based on the similar alignment with [**1a**] and given the similar type of foundations, these structures, despite not being present on any map, may have possibly been part of the former World War II camp recorded on historic maps; yet an earlier provenance cannot be ruled out.

7.3.2.4. **Ditch** – A linear anomaly c.9m in length, [**1f**], is visible within the timeslices close to the centre of the survey area (Figures 6-7). The linear anomaly follows a sub east-west alignment, and is 0.32m in width and 0.28m in depth (present at 0.23m to 0.52m beneath the ground surface). Within the radargrams (Radargram 2, Figure 14), this linear anomaly has a tapering profile characteristic of a shallow

ditch feature. The ditch anomaly corresponds with the ditch recorded in the trial trenching, in T2, by Colchester Archaeological Trust (Hicks and Lister, 2019). The GPR results have shown that the ditch extends beyond the bounds of T2, an additional c.3m to the east and west, and cuts into the northeast corner of the buried surface.

7.3.2.5. **Undetermined** – A number of thin linear responses have been detected, the majority located in the west of the survey area; each of these anomalies are present in more than one timeslice indicating a level of depth (albeit ~5cm). the majority of these anomalies follow a northwest to southeast alignment by vary in length from 6-21m. These linear anomalies have been classified as "Undetermined" as they do not share correlation with mapped features within the survey area and are not indicative of any specific feature type. In the north of the survey area two of the undetermined anomalies are located close to the trackway which may indicate a possible origin, however the signal strength varies significantly.

8. Conclusions

8.1. A ground penetrating radar survey has successfully been undertaken across the site despite the highly conductive clay soil which has decreased the signal penetration at depths below c.0.6m. The geophysical survey has detected a range of different types of anomalies, mostly related to structures located in the near surface. The anomalies are likely related to the World War II camp formerly present in the survey area. The identified anomalies confirmed and expanded on the features previously identified in satellite imagery and evaluation trenching.

8.2. In the north of the survey area a section of a former building corresponding to a World War II camp has been identified. This building is recorded on the 1958 OS map, and is visible in parch marks on satellite imagery. Trial trenching in 2019 identified a portion of the building foundation as modern concrete. A buried surface in the west of the survey area has been interpreted as a parade ground or parking area belonging to the World War II which is also recorded on historic maps.

8.3. To the south of the mapped building and within the boundaries of the buried surface possible additional structural remains have been detected. While these anomalies do not correspond with any mapped feature it is likely they do relate to the World War II camp given their relative depths and spatial alignments.

8.4. In the centre of the survey area a shallow ditch has been detected. This ditch corresponds with the undated ditch featured recorded in the 2019 trial trenching.

8.5. Tracks and compacted soil related to a modern use of the survey area together with numerous anomalies undetermined in origin have also been identified.

9. Archiving

9.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This archive stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report. A copy of this archive will be included in a disk with the final printed report.

9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to the any dictated time embargoes.

9.3. An OASIS form will be filled in on completion of the survey, providing permission from the client.

10. Copyright

10.1. Copyright and the intellectual property pertaining to all reports, figures, and datasets produced by Magnitude Services Ltd. is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

11. References

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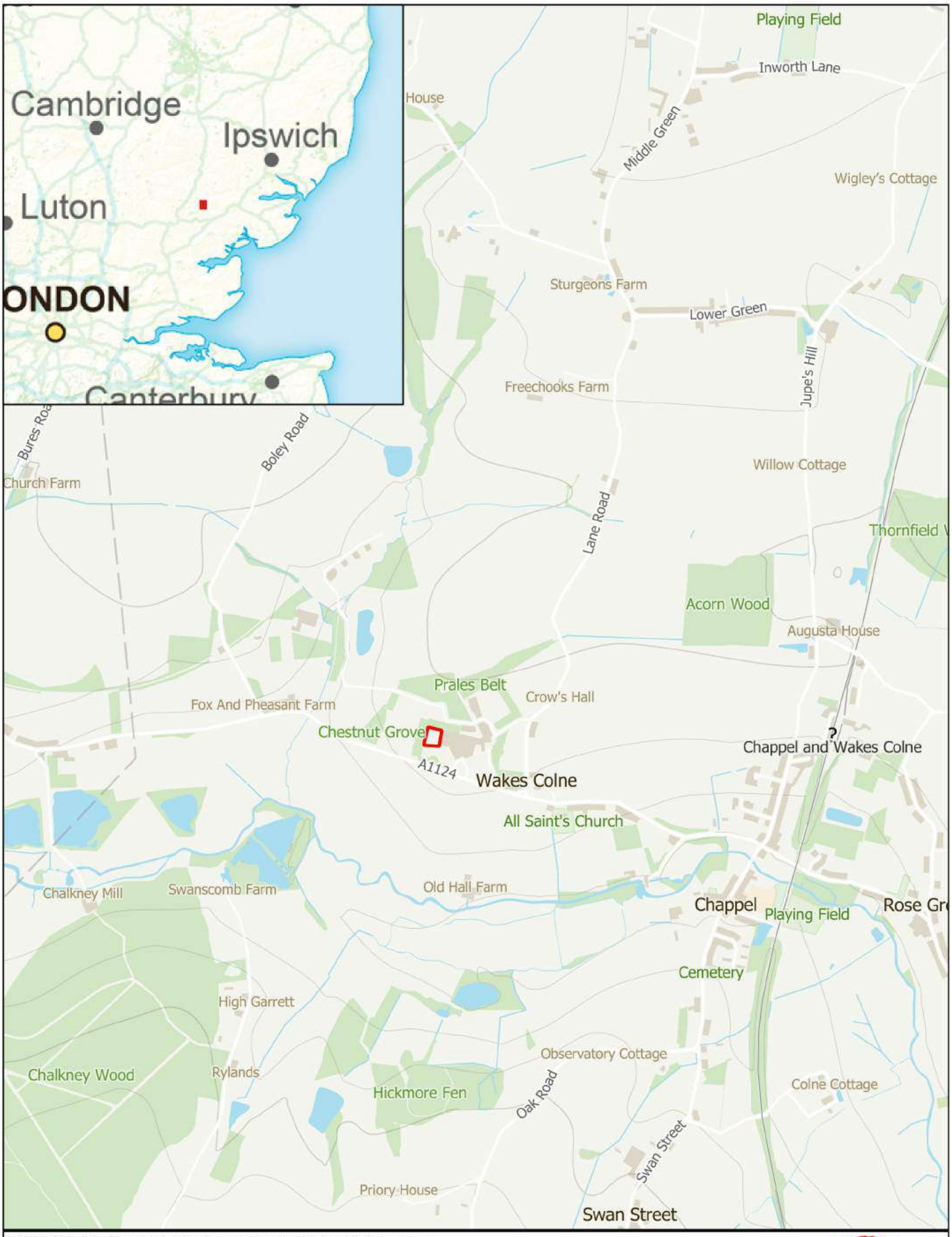
Swinbank, L., 2019. Geophysical Written Scheme of Investigation for Wakes Hall, Colchester Road, Wakes Colne, Essex. MSTL596.

12. Project Metadata

MS Job Code	MSTL596
Project Name	Wakes Hall, Colchester Road, Wakes Colne, Essex
Client	Colchester Archaeological Trust
Grid Reference	TL 8857 2883
Survey Techniques	Ground Penetrating Radar
Survey Size (ha)	0.23ha Ground Penetrating Radar
Survey Dates	2020-12-17 to 2020-12-18
Project Manager	Dr. Chrys Harris MCIfA
Project Officer	Leanne Swinbank BA ACIfA
HER Event No	ECC4415
OASIS No	N/A
S42 Licence No	N/A
Report Version	1.0

13. Document History

Version	Comments	Author	Checked By	Date
0.1	Initial draft for Project Officer to Review	AP & IC	LS	09 January 2020
0.2	Corrections from Project Officer	AL	FPC	17 January 2020
1.0	No corrections from client, updated to final version	N/A	LS	23 January 2020



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 1 - Site Location
1:15,000 @ A4

Site Boundary

N

0 0.25 0.5 km

magnitude surveys

229000
588400
588500
588600
588700
588800
588900
229000
228900
228800
228700
Iris Plantation
Prales End
Chestnut Grove
Lane Road
A1124
Wakes Colne
Lane Road
Lane Road

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 2 - Location of Survey Area
1:1,500 @ A3

Background mapping provided by the client.

Mapped former building
Mapped trench
Survey Extent

N
0 25 50 75 m

magnitude surveys

Depth: 4cm

Depth: 13cm

Depth: 26cm

Depth: 56cm

Depth: 43 cm

Depth: 35cm

588550 588600 228850 228800

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 3 - Indicative GPR Timeslices (top-left, moving clockwise)
1:800 @ A3

Contains mapping provided by the client

Low Amplitude High

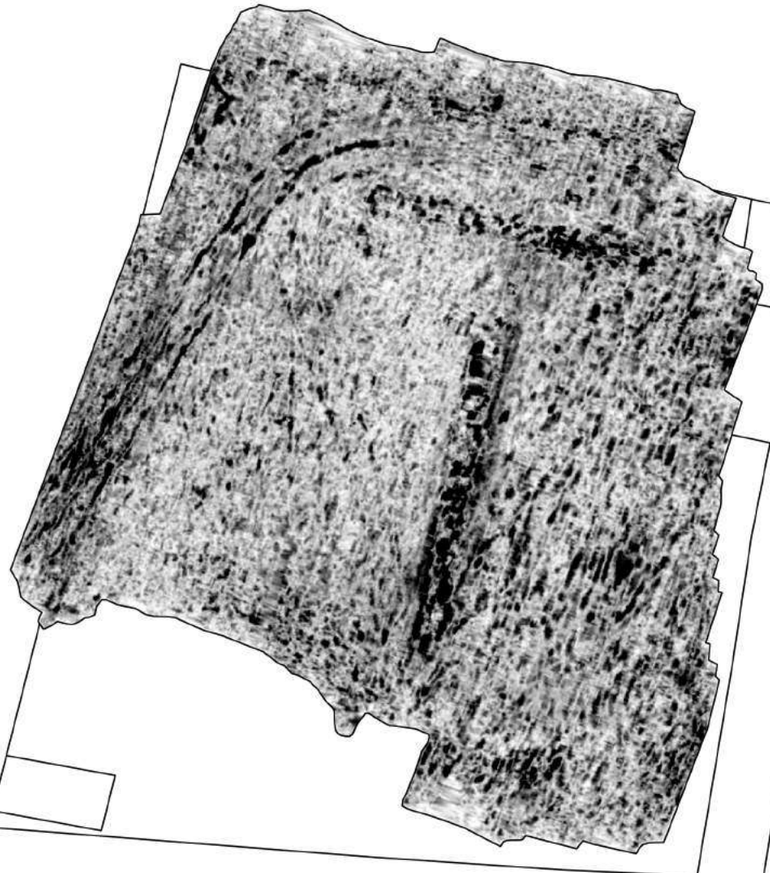
N

0 10 20 30 m

magnitude surveys

588550
588600
228850
228800

Timeslice depth: 4cm



Composite Interpretation 0-17cm

1a
1b
1e

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 4 - GPR Interpretation (Indicative Timeslice Depth: 4cm)
1:400 @ A3

Contains mapping provided by the client

- Former building- WWII camp
- Possible former structure
- Contrast material
- Buried surface
- Tracks
- Trial trenches
- Undetermined
- Undetermined

Low Amplitude High

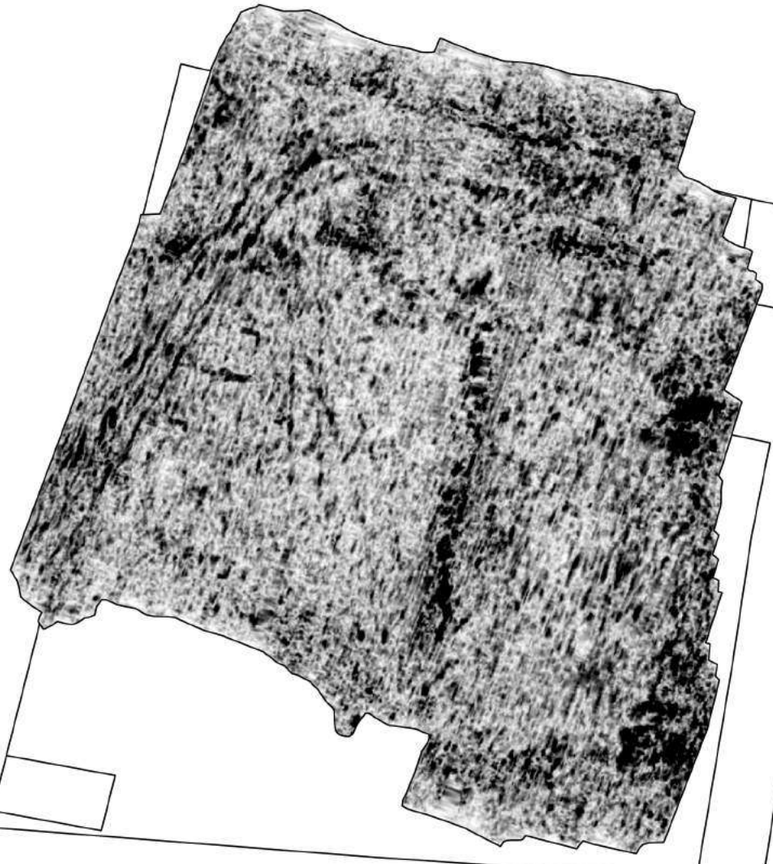
N

0 10 20 30 m

magnitude surveys

588550
588600
228850
228800

Timeslice depth: 13cm



Composite Interpretation 0-17cm

1a
1b
1e

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 5 - GPR Interpretation (Indicative Timeslice Depth: 13cm)
1:400 @ A3

Contains mapping provided by the client

- Former building- WWII camp
- Possible former structure
- Contrast material
- Buried surface
- Tracks
- Trial trenches
- Undetermined
- Undetermined

Low Amplitude High

N

0 10 20 30 m

magnitude surveys

588550 588600

Timeslice depth: 26cm

228850

228800

588550 588600

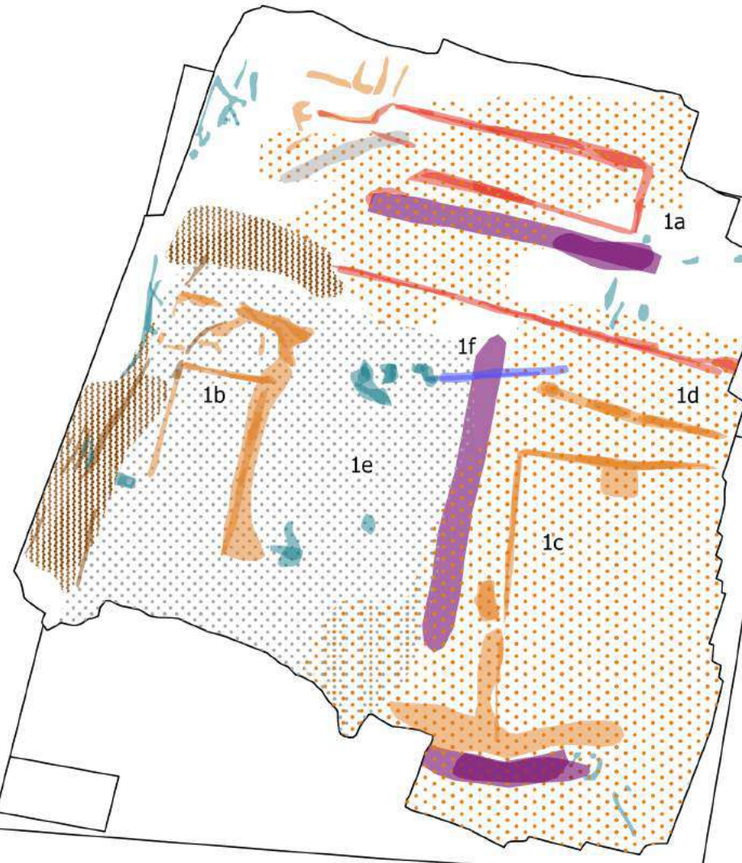
588550 588600

Composite Interpretation 17-43cm

228850

228800

588550 588600



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 6 - GPR Interpretation (Indicative Timeslice Depth: 26cm)
1:400 @ A3

Contains mapping provided by the client

- Former building- WWII camp
- Possible former structure
- Contrast material
- Ditch
- Buried surface
- Tracks
- Vehicle compaction
- Trial trenches
- Shadow
- Undetermined

Low Amplitude High

N

0 10 20 30 m

magnitude surveys

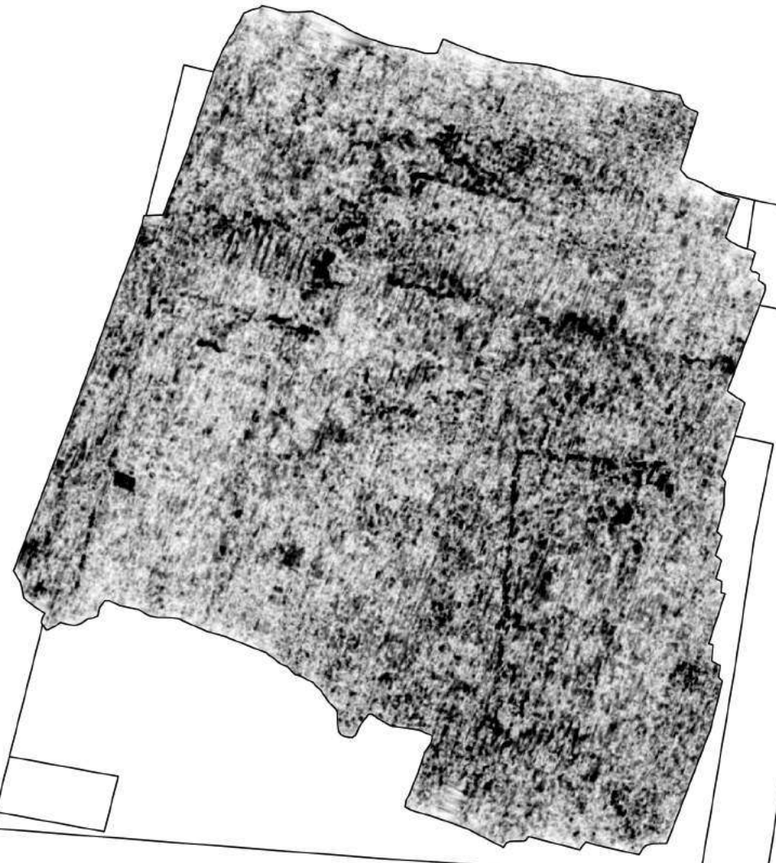
588550 588600

Timeslice depth: 35cm

228850

228800

588550 588600



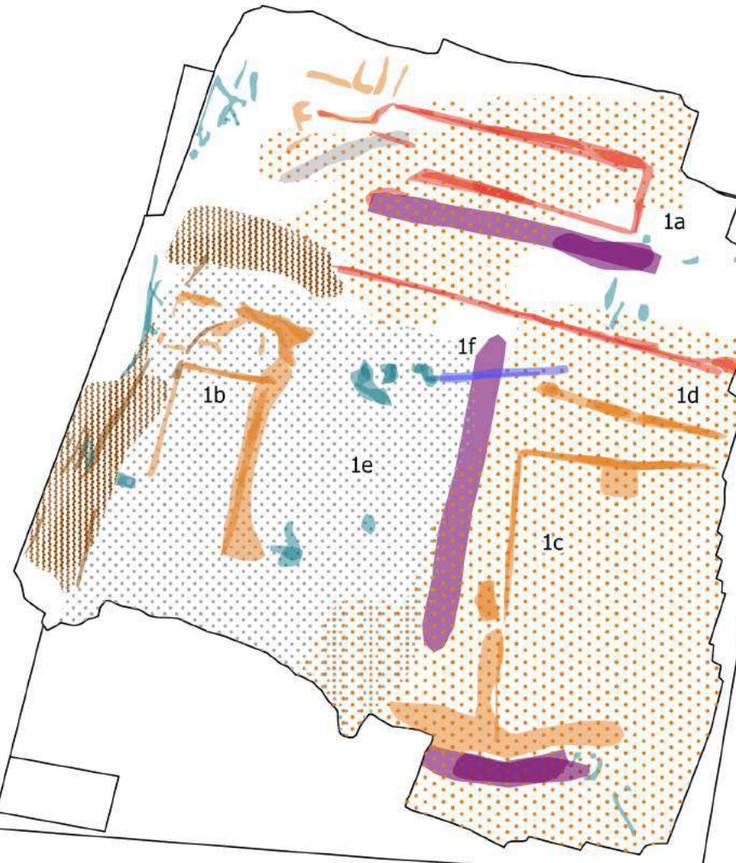
588550 588600

Composite Interpretation 17-43cm

228850

228800

588550 588600



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 7 - GPR Interpretation (Indicative Timeslice Depth: 35cm)
1:400 @ A3

Contains mapping provided by the client

- Former building- WWII camp
- Possible former structure
- Contrast material
- Ditch
- Buried surface
- Tracks
- Vehicle compaction
- Trial trenches
- Shadow
- Undetermined

Low Amplitude High

N

0 10 20 30 m

magnitude surveys

Timeslice depth: 43cm

Composite Interpretation 43-86cm

588550
588600
228850
228800

1d
1c

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 8 - GPR Interpretation (Indicative Timeslice Depth: 43cm)
1:400 @ A3

Contains mapping provided by the client

Possible former structure
Contrast material
Trial trenches
Shadow
Undetermined
Undetermined

Low Amplitude High

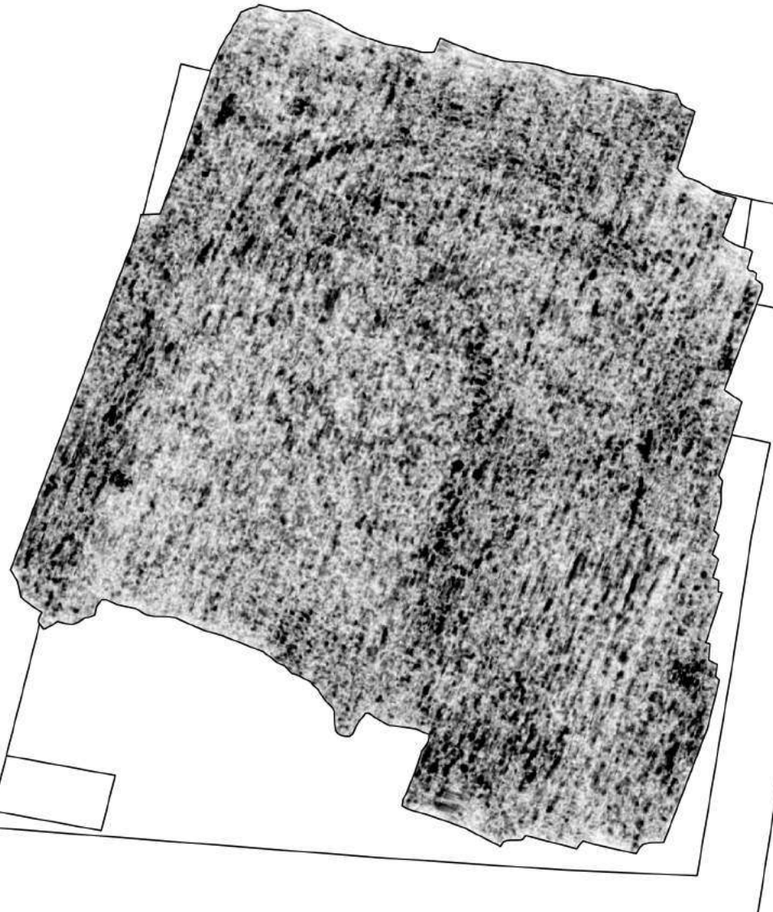
N

0 10 20 30 m

magnitude surveys

588550
588600
228850
228800

Timeslice depth: 56cm



Composite Interpretation 43-86cm

1d
1c

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 9 - GPR Interpretation (Indicative Timeslice Depth: 56cm)
1:400 @ A3

Contains mapping provided by the client

- Possible former structure
- Contrast material
- Trial trenches
- Shadow
- Undetermined
- Undetermined

Low Amplitude High

N

0 10 20 30 m

magnitude surveys

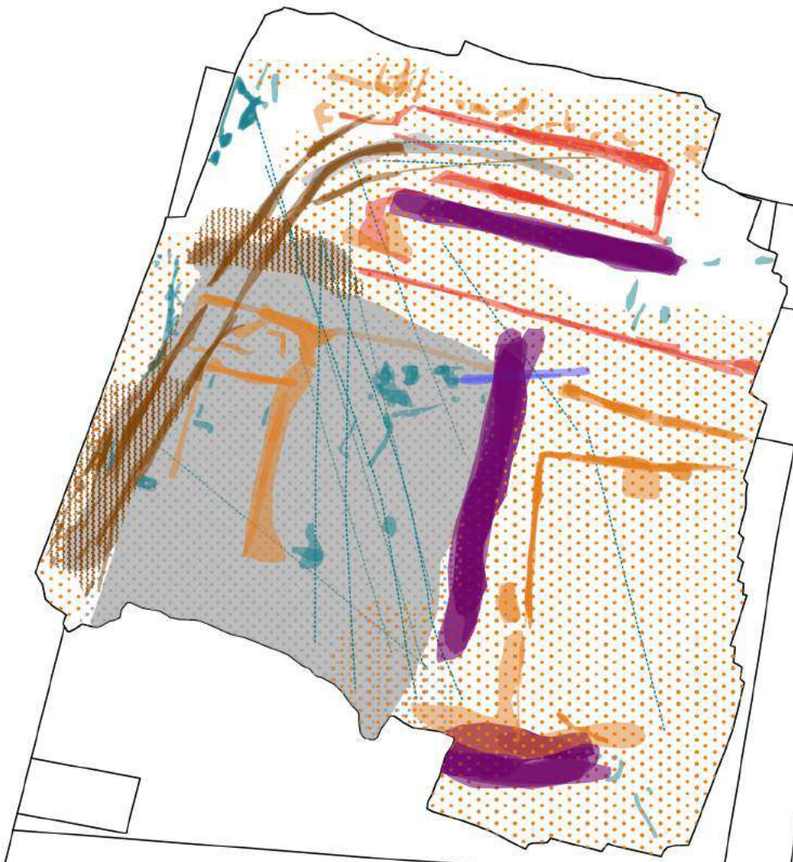
588500 588525 588550 588575 588600 588625 588650

228875

228850

228825

228800



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 10 - GPR Combined Interpretation
1:400 @ A3

Contains mapping provided by the client

- Former building- WWII camp
- Possible former structure
- Contrast material
- Ditch
- Buried surface
- Tracks
- Vehicle compaction
- Trial trenches
- Shadow
- Undetermined
- Undetermined

N

0 5 10 15 m

magnitude surveys

588400 588450 588500 588550 588600 588650 588700 588750

228950 228900 228850 228800 228750

H i l l

Wak
Ha

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 11 - GPR Combined Interpretation Over Historic Mapping
1:1,000 @ A3

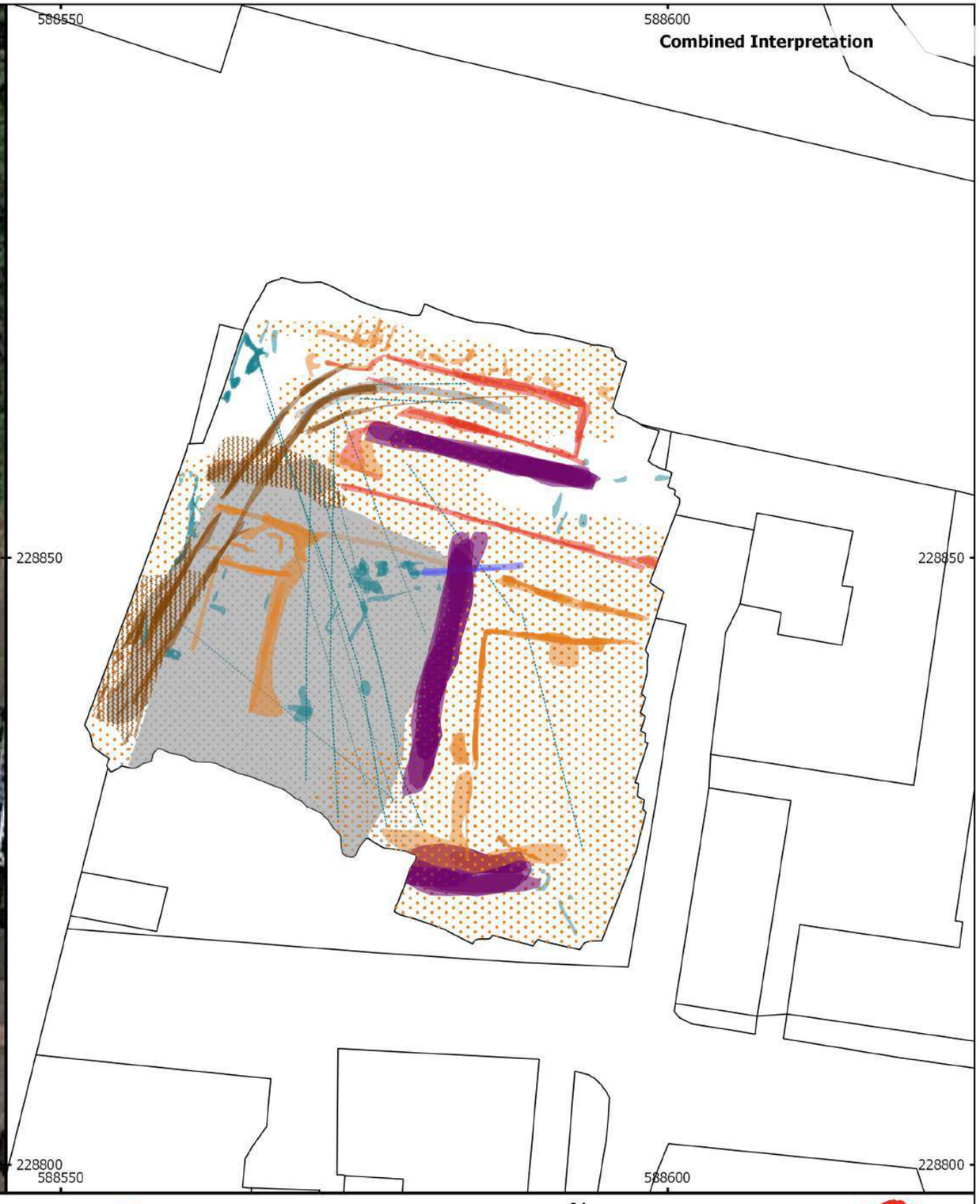
Contains historic maps: Ordnance Survey, 1:10,000, 1958, provided by the client.

- Former building- WWII camp
- Possible former structure
- Contrast material
- Ditch
- Buried surface
- Tracks
- Vehicle compaction
- Trial trenches
- Shadow
- Undetermined
- Undetermined

N

0 20 40 60 m

magnitude surveys



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 12 - GPR Combined Interpretation compared to Satellite Imagery
1:400 @ A3

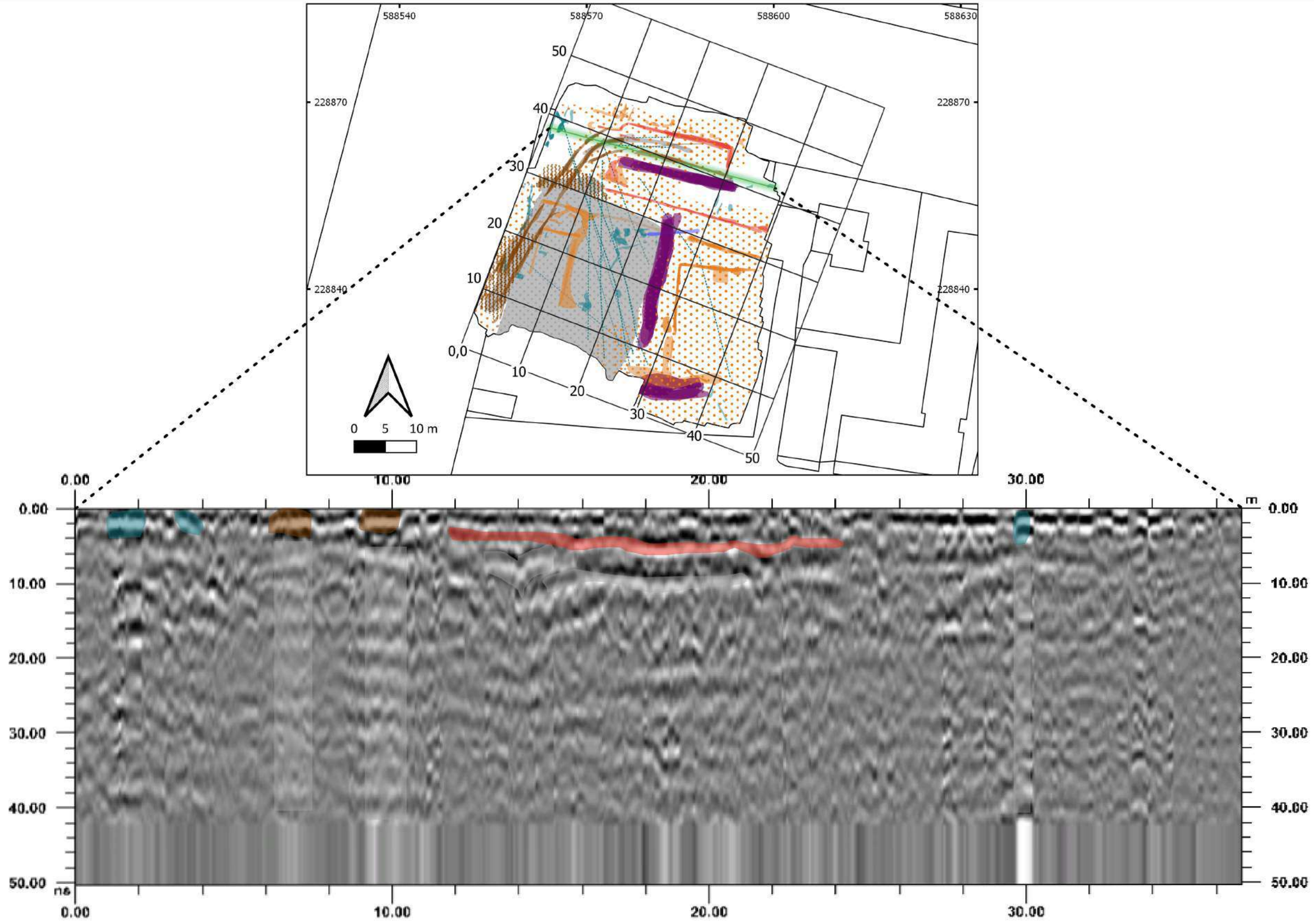
Background mapping provided by the client

- Survey Extent
- Former building- WWII camp
- Possible former structure
- Contrast material
- Ditch
- Buried surface
- Tracks
- Vehicle compaction
- Trial trenches
- Shadow
- Undetermined
- Undetermined

N

0 10 20 30 m

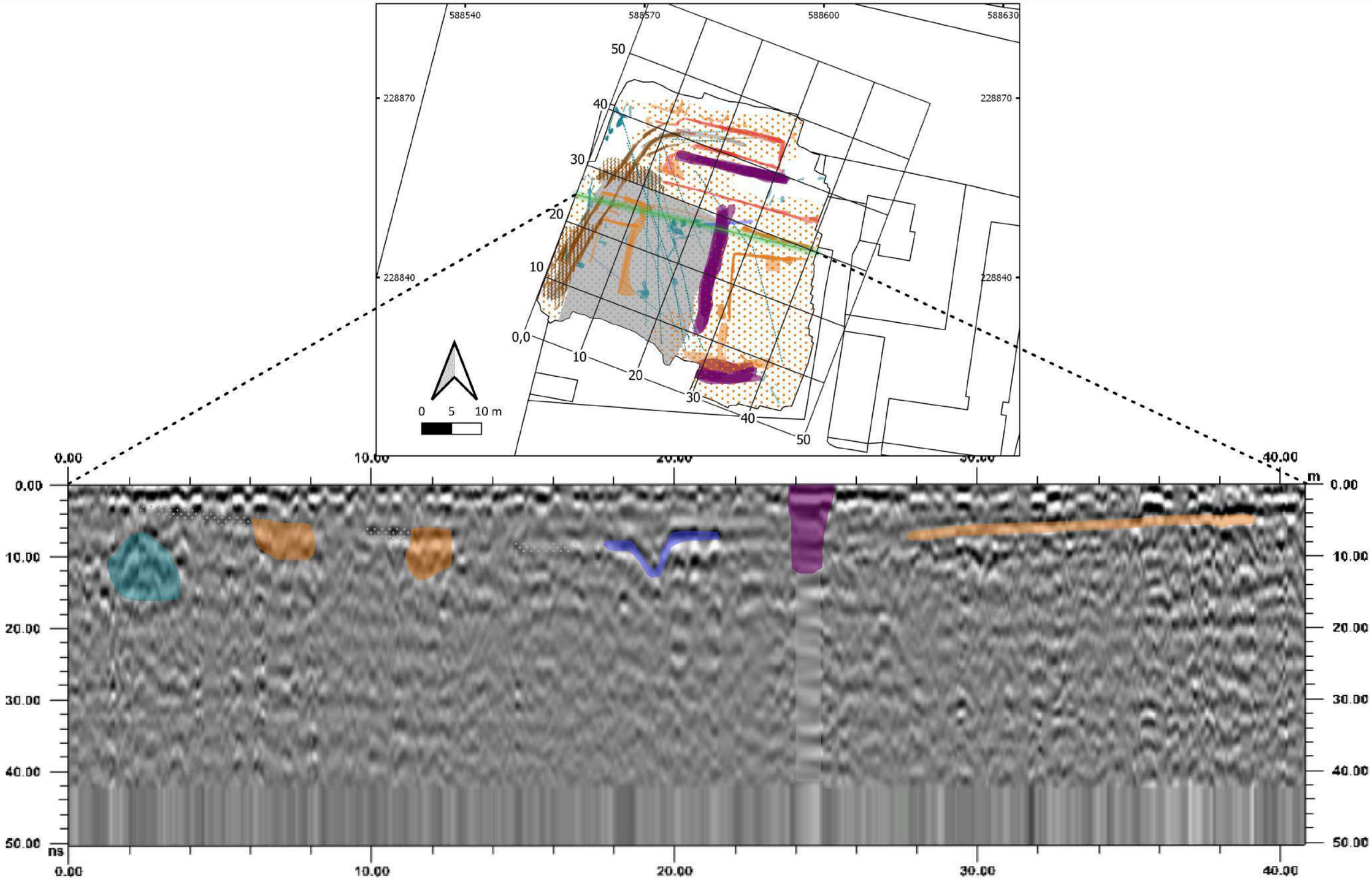
magnitude surveys



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 13 - Radargram 1 with Interpretation
Depth [cm] = 7 x Time [ns]/ 2
(7 is velocity in cm/ns)

Contains vector mapping provided by the client

magnitude surveys



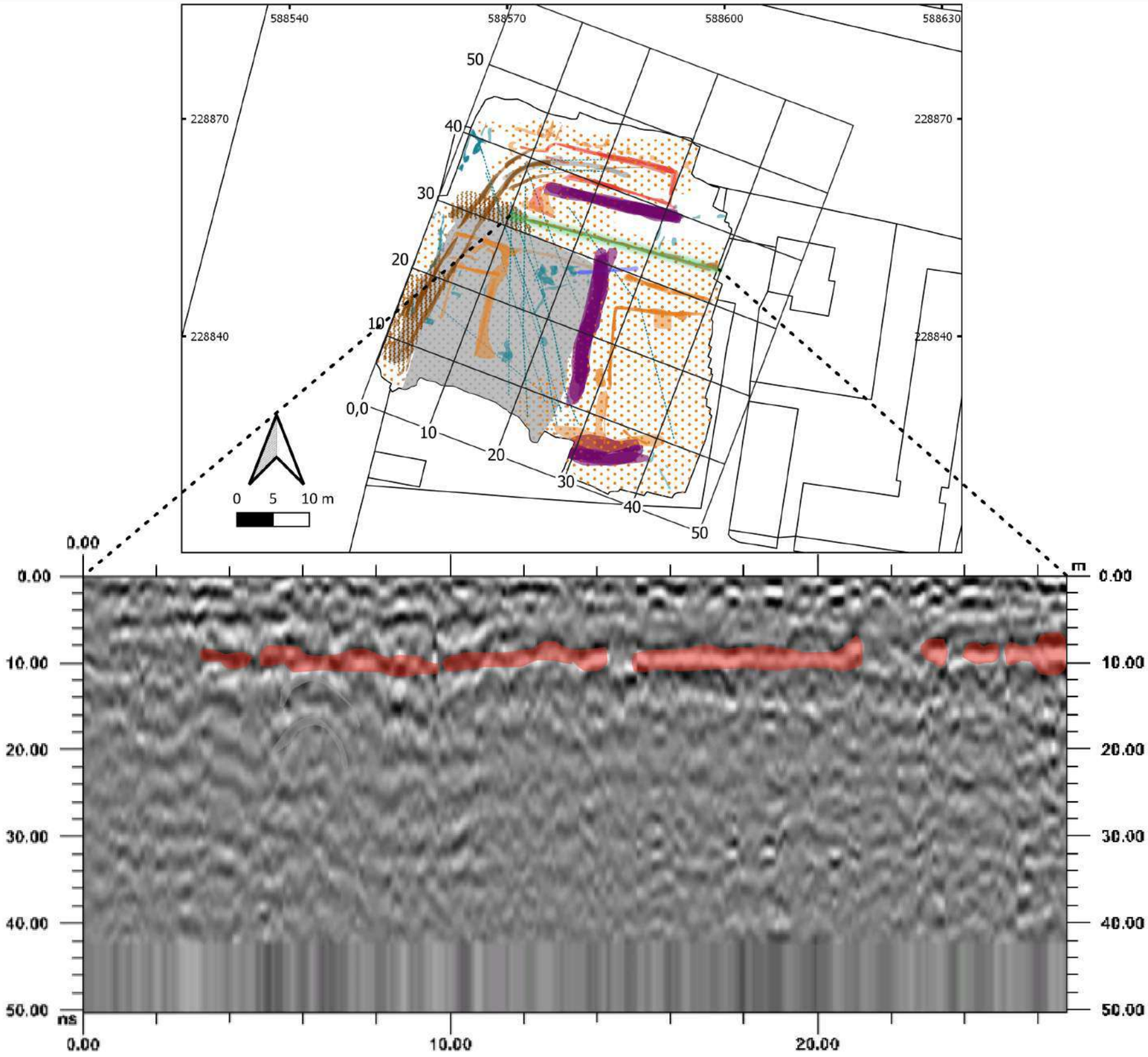
MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 14 - Radargram 2 with Interpretation
Depth [cm] = 7 x Time [ns]/ 2
(7 is velocity in cm/ns)

Contains vector mapping provided by the client

Low Amplitude High

- Possible former structures
- Buried surface
- Ditch
- Undetermined
- Trial Trenches
- Shadow

magnitude surveys



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 15 - Radargram 3 with Interpretation

Contains vector mapping provided by the client

Former building - WWII camp
Shadow

Low Amplitude High

magnitude surveys

Written Scheme of Investigation (WSI) for a geophysical survey and an archaeological strip, map and record excavation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB.

NGR: TL 88577 28842 (centre)

Planning reference: 190877 (and 172642)

Commissioned by: Nicholas Percival
On behalf of: Emberworth Ltd

Curating museum: Colchester
CHER project code: 1) Geophysical survey: ECC4415
2) Strip, map and record excavation: tbc

CAT project code: 2019/12b

Oasis project ID: 1) Geophysical survey: tbc
2) Excavation: colchest3-378075

Site manager: Chris Lister

CBC monitor: Jess Tipper

This WSI written: 18/12/2019 (revised)

COLCHESTER ARCHAEOLOGICAL TRUST,
Roman Circus House,
Roman Circus Walk,
Colchester,
Essex, CO2 7GZ

tel: 01206 501785
email: eh@catuk.org

Site location and description

The proposed development site is located on the northern side of Tyburn Hill at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB (Fig 1). Site centre is NGR TL 88577 28842.

Proposed work

The development comprises the demolition of part of an existing building, to be replaced with a new extension. This building will be converted into twelve dwellings. There will also be the construction of ten new dwellings, associated car parking any other associated groundworks.

Archaeological background (Fig 1)

The following archaeological background draws on the Colchester Archaeological Trust report archive, the Colchester Historic Environment Record (CHER) accessed via the Colchester Heritage Explorer (www.colchesterheritage.co.uk):

The proposed site is situated within the grounds of Wakes Hall (MCC5202). Built in 1857, the Hall was designed by F. Chancellor, who utilised the format of the 'model' farm, with buildings located in a regular layout. Model farms were conceived during the Victorian period as part of a broader effort to make agriculture more efficient and productive to meet the needs of a growing population (Wade-Martins, 1995). The main brick farm house is laid out in an 'E' shaped plan (MCC4616), with a cart lodge and granary (MCC4618) and a 19th-century gate lodge (MCC4616). Its construction coincided with that of several houses and the water mill (MCC4590) in Wakes Colne and the nearby village of Chappel. There is only one house built prior to the 18th century in the vicinity, 'Gages', which is located 450m east-southeast of the site, and dates to the late 15th or early 16th century (MCC4620). There are, however, a small concentration of historic properties 1km to the southeast around St Barnabas Church in Chappel (MCC10030-1 and MCC3824) which were variously built during the late 14th century (The Swan Inn, MCC3830), the 16th century (MCC3818, MCC3827 and MCC3839) and the 18th century.

The site lies 425m northwest of All Saints Church, the origins of which lie in the 12th century (MCC7005). A chancel was added to the church in the in 14th century and a tower in the 15th century. In the 19th century, restoration work included the rebuilding of the eastern wall, south vestry and the addition of the organ chamber (MCC7006). Archaeological remains related to early medieval occupation may survive in the vicinity of the church. The site is also located close to the River Colne, above the floodplain and within an area topographically favourable for occupation. In June 2017 CAT carried out an evaluation approximately 1.24km to the west at land south of Colchester Road, White Colne and found stretches of a 13th- to 14th-century boundary ditch, which may have delineated a roadside plot (CAT Report 1114).

In January 2019 CAT carried out an evaluation of three trial-trenches in advance of the partial demolition and extension of an existing building on the site. Two modern foundations which may form part of building remains from a camp associated with a Second World War ammunition dump at Wakes Colne were uncovered, along with a ditch of uncertain date. The camp probably supplied troops manning the pillboxes and defences around Chappel Viaduct immediately to the east, part of the Eastern Command Line and was reportedly converted to house displaced persons after the war (CAT Report 1374, ECC4287).

Planning background

Planning application (172642) was submitted to Colchester Borough Council in October 2018 proposing demolition part of existing buildings, then extend and convert into 12 dwellings and erect 10 dwellings (22 dwellings in total), including associated car parking. An additional application was added in March 2019 to allow the development to be completed in phases (190877).

As the site lies within an area highlighted by the CHER as having a high potential for

archaeological deposits, an archaeological condition was recommended by the Colchester Borough Council Archaeological Advisor (CBCAA). The recommended archaeological condition is based on the guidance given in the *National Planning Policy Framework* (MHCLG 2019).

Based on the results of the evaluation undertaken by CAT in January 2019, the CBCAA requested further archaeological mitigation and issued a new brief.

Requirement for work (see Figs 1-2)

The required archaeological work is for a ground penetrating radar (GPR) survey and an archaeological excavation. Details are given in a Project Brief written by CBCAA (CBC 2018).

Specifically, the archaeological mitigation will comprise of two parts:

1) Geophysical survey
A ground penetrating radar survey will be undertaken on the area of the proposed new dwellings. This has the aim to identify any potential buried archaeological features.

2) Archaeological excavation
The areas of the new dwellings and car parking are to be excavated using archaeological strip, map and record method.

If unexpected remains are encountered the CBCAA will be informed immediately and the CBCAA will decide if amendments to the brief are required to ensure adequate provision for archaeological recording.

General methodology

All work carried out by CAT will be in accordance with:

- professional standards of the Chartered Institute for Archaeologists, including its *Code of Conduct* (CIfA 2014a, b)
- Standards and Frameworks published by East Anglian Archaeology (Gurney 2003, Medlycott 2011)
- relevant Health & Safety guidelines and requirements (CAT 2019)
- the Project Brief issued by the CBCAA (CBC 2019).

Professional CAT field archaeologists will undertake all specified archaeological work, for which they will be suitably experienced and qualified.

Notification of the supervisor/project manager's name and the start date for the project will be provided to CBCAA one week before start of work.

Unless it is the responsibility of other site contractors, CAT will study mains service locations and avoid damage to these.

At the start of work (immediately before fieldwork commences) an OASIS online record http://ads.ahds.ac.uk/project/oasis/ will be initiated and key fields completed on Details, Location and Creators forms. At the end of the project all parts of the OASIS online form will be completed for submission to CHER. This will include an uploaded .PDF version of the entire report.

A project or site code will be sought from the curating museum. This code will be used to identify the project archive when it is deposited at the curating museum.

Staffing

The number of field staff for this project is estimated as follows: one supervisor plus three

archaeologist for one day.
In charge of day-to-day site work: Ben Holloway/Mark Baister

Geophysics methodology

This part has been contracted out to Magnitude Survey, see Appendix 1 for their written scheme of investigation.

The survey will be undertaken using a high density array of 400MHz antennas, with a pilot study undertaken at the start of the fieldwork to test for the most appropriate frequency of antenna. The subsequent report will include an animation of the time slices.

Strip, map and record excavation methodology

Where appropriate, modern overburden and any topsoil stripping/levelling will be performed using a mechanical excavator equipped with a toothless ditching bucket under the supervision and to the satisfaction of a professional archaeologist. If no archaeologically significant deposits are exposed, machine excavation will continue until natural subsoil is reached.

Where necessary, areas will be cleaned by hand to ensure the visibility of archaeological deposits.

If archaeological features or deposits are uncovered, time will be allowed for these to be excavated, planned and recorded.

There will be sufficient excavation to give clear evidence for the period, depth and nature of any archaeological deposit. For linear features 1m wide sections will be excavated across their width to a total of 10% of the overall length. Discrete features, such as pits, will have 50% of their fills excavated, although certain features may be fully excavated. Complex archaeological structures such as walls, kilns, ovens or burials will be carefully cleaned, planned and fully recorded, but where possible left *in situ*. Only if it can be demonstrated that the complex structure/feature is likely to be destroyed by groundworks, and only then after discussion with the CBCAA, will it be removed.

Fast hand-excavation techniques involving (for instance) picks, forks and mattocks will not be used on complex stratigraphy.

A metal detector will be used on all areas of the strip and map both before and during excavation. All features and spoil heaps will be scanned and finds recovered. All CAT senior site staff have been trained in the use of metal-detectors and used them for more than five years. CAT also works in partnership with Geoff Lunn as a metal-detecting advisor. Geoff has over four years experience detecting and has worked with CAT to recover finds from recent excavations including the Mercury Theatre site in Colchester, and who has also worked with the Colchester Archaeological Group, Suffolk Archaeology, Access Cambridge Archaeology, The Citizan Project (MOLA) and others

Individual records of excavated contexts, layers, features or deposits will be entered on proforma record sheets. Registers will be compiled of finds, small finds and soil samples.

All features and layers or other significant deposits will be planned, and their profiles or sections recorded. A representative section will be drawn to include ground level and the depth of machining. The normal scale will be site plans at 1:20 and sections at 1:10, unless circumstances indicate that other scales would be appropriate.

The photographic record will consist of general site shots, and shots of all archaeological features and deposits. A photographic scale (including north arrow) shall be included in the case of detailed photographs. Standard “record” shots of contexts will be taken on a digital

camera. A photographic register will accompany the photographic record. This will detail as a minimum feature number, location, and direction of shot.

Site surveying

The excavation area and any features will be surveyed by Total Station or GPS, unless the particulars of the features indicate that manual planning techniques should be employed. Normal scale for archaeological site plans and sections is 1:20 and 1:10 respectively, unless circumstances indicate that other scales would be more appropriate.

The site grid will be tied into the National Grid. Corners of excavation areas will be located by NGR coordinates.

Environmental sampling policy

The number and range of samples collected will be adequate to determine the potential of the site, with particular focus on palaeoenvironmental remains including both biological remains (e.g. plants, small vertebrates) and small sized artefacts (e.g. smithing debris), and to provide information for sampling strategies on any future excavation. Samples will be collected for potential micromorphical and other pedological sedimentological analysis. Environmental bulk samples will be 40 litres in size (assuming context is large enough).

Sampling strategies will address questions of:

- the range of preservation types (charred, mineral-replaced, waterlogged), and their quality
- concentrations of macro-remains
- and differences in remains from undated and dated features
- variation between different feature types and areas of site

CAT has an arrangement with Val Fryer / Lisa Gray whereby any potentially rich environmental layers or features will be appropriately sampled as a matter of course. Trained CAT staff will process the samples and the flots will be sent to Val Fryer or Lisa Gray for analysis and reporting.

Should any complex, or otherwise outstanding deposits be encountered, VF or LG will be asked onto site to advise. Waterlogged 'organic' features will always be sampled. In all cases, the advice of VF/LG and/or the Historic England Regional Advisor in Archaeological Science (East of England) on sampling strategies for complex or waterlogged deposits will be followed, including the taking of monolith samples.

Human remains

CBCAA will be notified immediately if any human remains are encountered during the excavation.

CAT follows the policy of leaving human remains *in situ* unless there is a clear indication that the remains are in danger of being compromised as a result of their exposure or unless advised to do so by the project osteologist or CBCAA. CAT follows HE guidance for the excavation of human remains (HE 2018). If the human remains are not to be lifted, the project osteologist will be available to record the human remains *in situ* (i.e. a site visit).

If circumstances indicated it were prudent or necessary to remove remains from the site, the following criteria would be applied; if it is clear from their position, context, depth, or other factors that the remains are ancient, then normal procedure is to apply to the Department of Justice for a licence to remove them. Conditions laid down by the DoJ license will be followed. If it seems that the remains are not ancient, then the coroner, the client, and the CBCAA will be informed, and any advice and/or instruction from the coroner will be followed.

Human remains removed from site for analysis may be sent for radiocarbon dating (see finds section).

Photographic record

Will include both general and feature-specific photographs, the latter with scale and north arrow. A photo register giving context number, details, and direction of shot will be prepared on site, and included in site archive. Digital site photographs will be taken and archived as per Historic England guidelines (HE 2015a).

Finds

All significant finds will be retained.

All finds, where appropriate, will be washed and marked with site code and context number. CAT may use local volunteers to assist the CAT Finds Officer with this task.

Most of our finds reports are written internally by CAT Staff under the supervision and direction of Philip Crummy (Director) and Howard Brooks (Deputy Director). This includes specialist subjects such as:

ceramic finds (pottery and ceramic building material): Matthew Loughton
animal bones: Alec Wade / Pip Parmenter (or Adam Wightman, small groups only)
small finds, metalwork, coins, etc: Laura Pooley
non-ceramic bulk finds: Laura Pooley
flints: Adam Wightman
environmental processing: Bronagh Quinn
project osteologist (human remains): Meghan Seehra

or to outside specialists:

animal and human bone: Julie Curl (*Sylvanus*)
environmental assessment and analysis: Val Fryer / Lisa Gray
radiocarbon dating: SUERC Radiocarbon Dating Laboratory, Glasgow
conservation/x-ray: Laura Ratcliffe (LR Conservation) / Norfolk Museums Service, Conservation and Design Services

Other specialists whose opinion can be sought on large or complex groups include:

flint: Hazel Martingell
prehistoric pottery: Stephen Benfield / Nigel Brown / Paul Sealey
Roman pottery: Stephen Benfield / Paul Sealey / Jo Mills / Val Rigby / Gwladys Monteil
Roman brick/tile: Ernest Black / Ian Betts (MOLA)
Roman glass: Hilary Cool
small finds: Nina Crummy
other: EH Regional Adviser in Archaeological Science (East of England).

All finds of potential treasure will be removed to a safe place, and the coroner informed immediately, in accordance with the rules of the Treasure Act 1996. The definition of treasure is given in pages 3-5 of the Code of Practice of the above act. This refers primarily to gold or silver objects.

Requirements for conservation and storage of finds will be agreed with the appropriate museum prior to the start of work, and confirmed to CBCAA.

Post-excavation assessment

An updated post-excavation assessment (PXA) will be submitted within 2 months or at an alternatively agreed time with the ECCHEA. Post-excavation assessments and updated project designs will be prepared in accordance with Historic England principals of MoRPHE (HE 2006) and East Anglian Archaeology notes (2015). PXAs will include an assessment of the archaeological value of the results, and include a statement of significance for retention of artefacts, based on specialist advice, for retention or discard agreed with the depositing museum.

Where archaeological results do not warrant a post-excavation assessment then agreement will be sought from the ECCHEA to proceed straight to grey literature / publication.

Results

Notification will be given to CBCAA when the fieldwork has been completed.

An appropriate archive will be prepared to minimum acceptable standards outlined in *Management of Research Projects in the Historic Environment* (English Heritage 2006).

The report will be submitted within 6 months of the end of fieldwork, with a copy supplied to CBCAA as a PDF.

The report will contain:

- Location plan of the groundworks in relation to the proposed development. At least two corners of the site will be given 10 figure grid references.
- Section/s drawings showing depth of deposits from present ground level with Ordnance Datum, vertical and horizontal scale.
- Archaeological methodology and detailed results including a suitable conclusion and discussion and results referring to Regional Research Frameworks (Medlycott 2011).
- All specialist reports or assessments
- A concise non-technical summary of the project results.
- An inventory of the archive and any statement of retention and discard strategy based on specialist advice. CAT has a non-site specific finds retention strategy approved by Colchester Museum (CAT 2016).

An EHER summary sheet will also be completed within four weeks and supplied to CBCAA.

Results will be published, to at least a summary level (i.e. round-up in *Essex Archaeology & History*) in the year following the archaeological field work. An allowance will be made in the project costs for the report to be published in an adequately peer reviewed journal or monograph series

Archive deposition

It is a policy of Colchester Borough Council that the integrity of the site archive be maintained (i.e. all finds and records should be properly curated by a single organisation), with the archive available for public consultation. To achieve this desired aim it is assumed that the full archive will be deposited in Colchester Museums *unless otherwise agreed in advance*. (A full *copy* of the archive shall in any case be deposited).

By accepting this WSI, the client agrees to deposit the archive, including all artefacts, at Colchester & Ipswich Museum.

The requirements for archive storage will be agreed with the curating museum.

If the finds are to remain with the landowner, a full copy of the archive will be housed with the curating museum and provision must be made for additional recording (e.g. photography, illustration and analysis) as appropriate.

The archive will be deposited with Colchester & Ipswich Museum or an alternate repository (approved by COLEM and CBCAA) within 3 months of the completion of the final publication report, with a summary of the contents of the archive supplied to CBCAA. Digital archives will be curated with the Archaeology Data Service, or similar accredited digital archive repository, that safeguard the long-term curation of digital records. Prior to deposition CAT's data management plan (based on the official guidelines from the Digital Curation Centre [DCC 2013]) will ensure the integrity of the digital archive.

The CBCAA will be notified of the archiving timetable throughout the project and once deposition has occurred.

A digital / vector drawing of the site be given to the CBCAA for integration into the HER

Monitoring

CBCAA will be responsible for monitoring progress and standards throughout the project, and will be kept regularly informed during fieldwork, post-excavation and publication stages.

Notification of the start of work will be given to CBCAA one week in advance of its commencement.

Any variations in this WSI will be agreed with CBCAA prior to them being carried out. CBCAA will be notified when the fieldwork is complete.

The involvement of CBCAA shall be acknowledged in any report or publication generated by this project.

References

Note: CAT reports, except for DBAs, are available online in PDF format at http://cat.essex.ac.uk

Brown, D	2011 2nd ed	*Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation*
CAT	2016	*Colchester Archaeological Trust Finds Retention Policy.* By S Benfield
CAT	2019	*Health & Safety Policy*
CAT Report 1114	2017	*Archaeological evaluation on land south of Colchester Road, White Colne, Essex :June 2017.* By M Baister
CAT Report 1374	2019	*Archaeological evaluation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB, January 2019*. By E Hicks & C Lister
CBCAA	2019	*Brief for Archaeological Mitigation at Wakes Hall, Colchester Road, Wakes Colne, CO6 2DB.* By J Tipper
CIfA	2014a	*Standard and Guidance for archaeological evaluation*
CIfA	2014b	*Standard and guidance for the collection, documentation, conservation and research of archaeological materials*
East Anglian Archaeology	2015	*Advice note for Post Excavation Assessment*
Gurney, D	2003	*Standards for field archaeology in the East of England.* East Anglian Archaeology Occasional Papers 14 (EAA **14**).
Historic England	2006	*Management of Research Projects in the Historic Environment* (MoPHE)
Historic England (HE)	2015a	*Digital Image capture and File Storage: Guidelines for best practice.* By S Cole & P Backhouse.
Historic England (HE)	2015b	*Management of Research Projects in the Historic Environment (MoRPHE).*
Historic England (HE)	2018	*The Role of the Human Osteologist in an Archaeological Fieldwork Project*. By S Mays, M Brickley and J Sidell.
Medlycott, M	2011	*Research and archaeology revisited: A revised framework for the East of England*. East Anglian Archaeology Occasional Papers 24 (EAA **24)**
MHCLG	2019	*National Planning Policy Framework.* Ministry of Housing, Communities and Local Government.
Wade Martins, S	1995	Farms and fields

E Holloway

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Roman Circus House,
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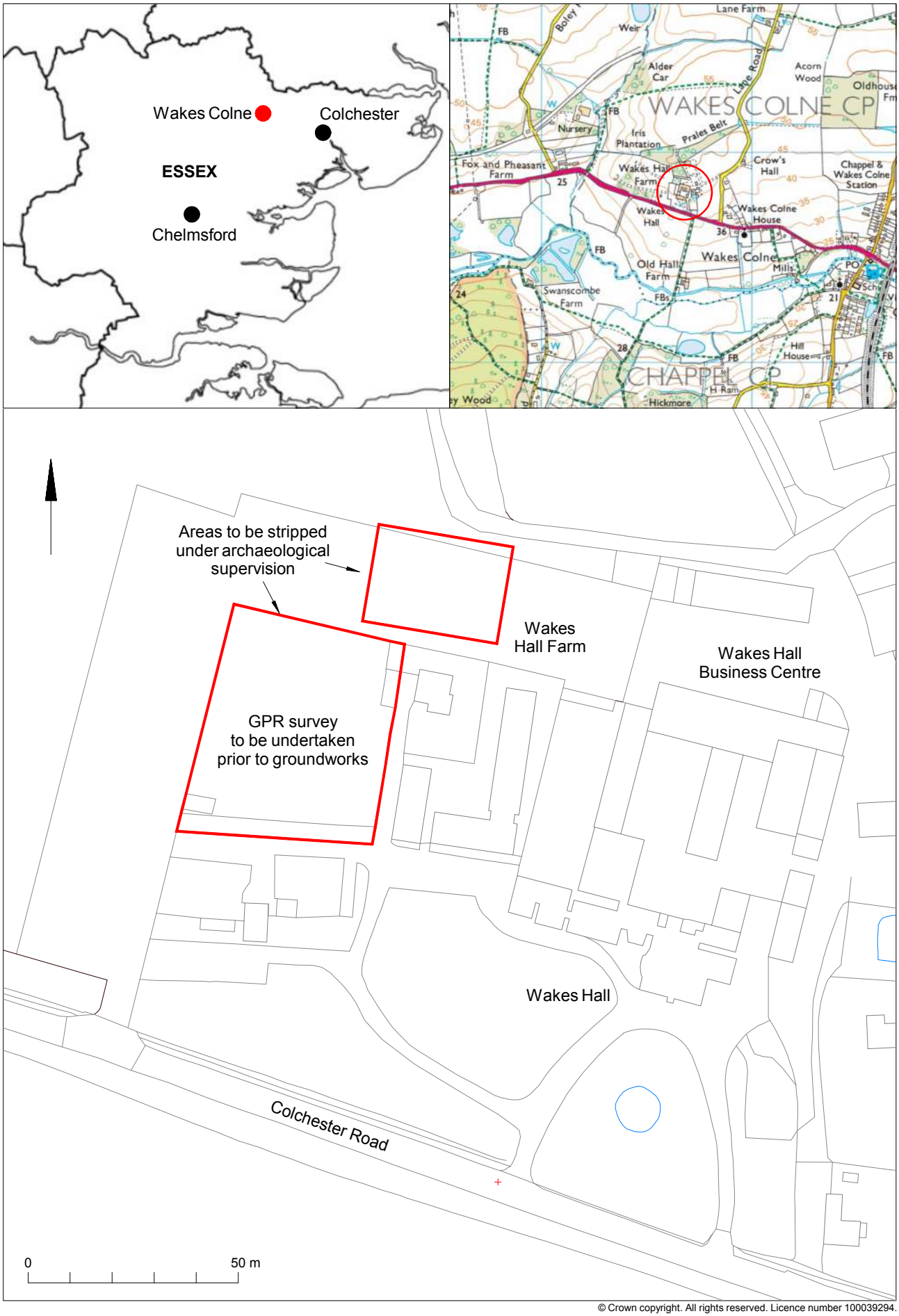


Fig 1 Site location.

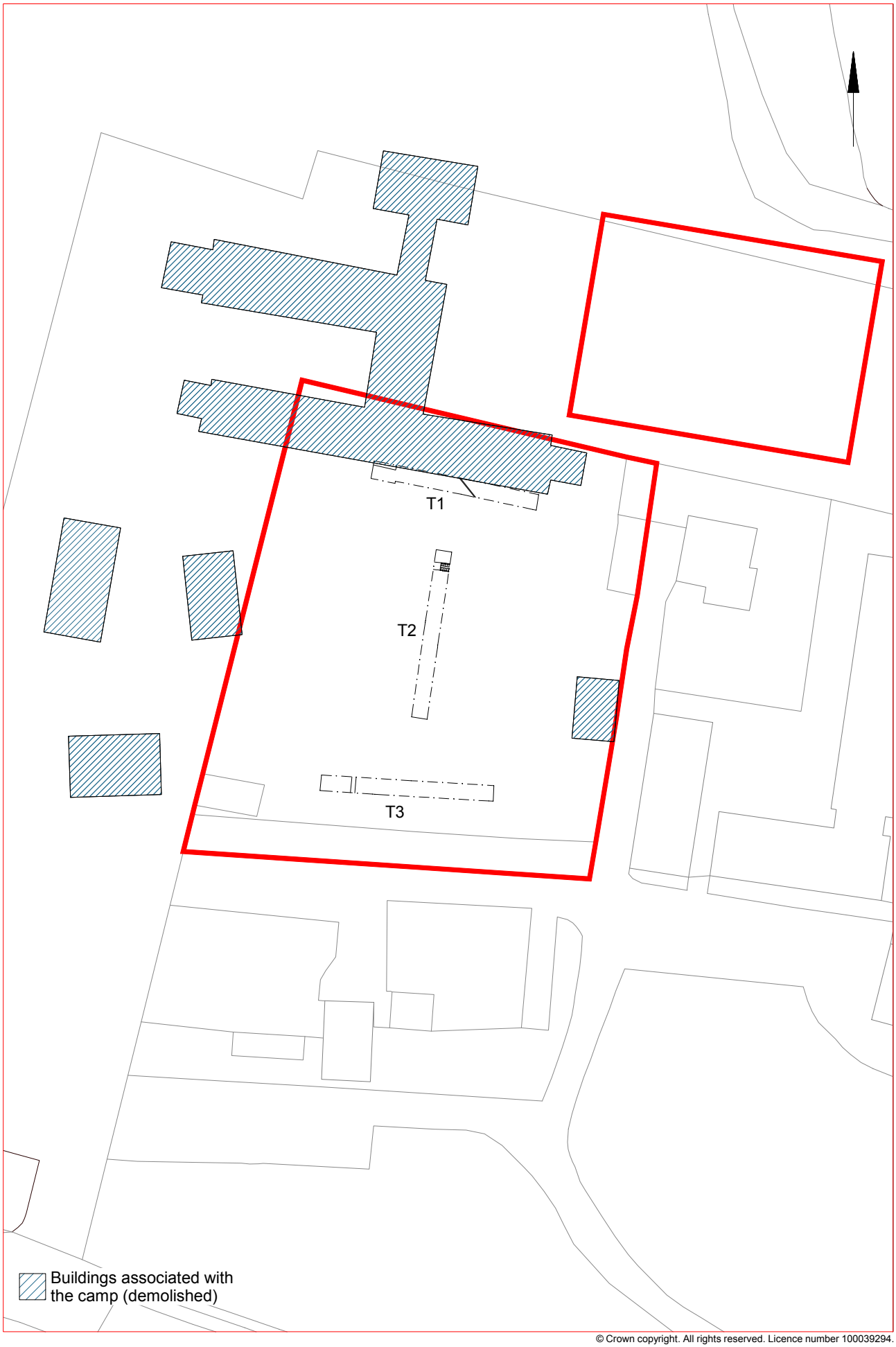


Fig 2 2019 evaluation in relation to structures shown on the 1954 plan of the camp associated with the ammunition dump.

0 20 m

Written Scheme of Investigation

For a Geophysical Survey

of

Wakes Hall, Colchester Road,

Wakes Colne, Essex

For

Colchester Archaeological Trust

Magnitude Surveys Ref: MSTL596

December 2019

Unit 17, Commerce Court

Challenge Way

Bradford

BD4 8NW

01274 926020

info@magnitudesurveys.co.uk

Version	Purpose/Revision	Author	Figures	Approved By	Date Issued
1.0	WSI to client	Leanne Swinbank BA ACIfA	Leanne Swinbank BA ACIfA	Leanne Swinbank BA ACIfA	13 December 2019

Print Name:	Signature:	Role:	Date:

Contents

1. Introduction

1.1. This document details a Written Scheme of Investigation for a geophysical survey by Magnitude Surveys Ltd (MS) for Colchester Archaeological Trust. The survey comprises a c.0.23ha area of land Wakes Hall, Colchester Road, Wakes Colne, Essex (TL 8857 2883).

1.2. The geophysical survey will comprise hand-pushed, cart-mounted ground penetrating radar (GPR). MS' Ofcom Ground Probing Radar licence number is 1200059/1.

1.3. The survey will be conducted in line with the current best practice guidelines produced by Historic England (David et al., 2008), the Chartered Institute for Archaeologists (2014) and the European Archaeological Council (Schmidt et al., 2015).

2. Objective

2.1. The objective of this geophysical survey is to assess the subsurface archaeological potential of the survey area.

2.2. A ground penetrating radar (GPR) survey is required of the area of the new dwellings. The aim will be to identify any buried archaeological features. The survey will be conducted with a high density array of 400MHz antennas, although a pilot study will be undertaken at the start of fieldwork to test for the most appropriate centre frequency of antenna. An animation of the time slices will be included with the subsequent report.

3. Quality Assurance

3.1. Project management, survey work, data processing and report production have been carried out by qualified and professional geophysicists to standards exceeding the current best practice (CIfA, 2014; David *et al*., 2008, Schmidt *et al*., 2015).

3.2. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society of Archaeological Prospection).

3.3. Director Dr. Chrys Harris is a Member of CIfA, has a PhD in archaeological geophysics from the University of Bradford and is the Vice-Chair of ISAP. Director Finnegan Pope-Carter is a Fellow of the London Geological Society, the chartered UK body for geophysicists and geologists, as well as a member of GeoSIG, the CIfA Geophysics Special Interest Group. Reporting Analyst Dr. Kayt Armstrong has a PhD in archaeological geophysics from Bournemouth University, is the Vice Conference Secretary and Editor of ISAP News for ISAP, and is the UK Management Committee representative for the COST Action SAGA.

3.4. All MS managers have relevant degree qualifications to archaeology or geophysics. All MS field and office staff have relevant archaeology or geophysics degrees and/or field experience.

4. Risk Assessment

4.1. MS' standard GPR fieldwork risk assessment and site-specific risk assessment have been appended to the end of this document. Before geophysical survey will commence, a brief walkover will be undertaken to identify any additional hazards of an unusual or site-specific

nature. If any additional hazards are identified, the site-specific risk assessment will be updated to include these hazards and all surveyors will be informed of the risk. If appropriate mitigation factors cannot be put in place, then the field or part thereof will not be surveyed.

4.2. Field staff will attend a site induction if required. Necessary PPE will be supplied and worn. Wet and cold/hot weather protection is also supplied.

4.3. All surveyors have been issued company mobile phones. Survey teams are expected to make regular contact with the office to keep all parties updated with survey progress. Any change in conditions that may affect the health and safety of the survey team must be reported immediately.

4.4. The survey van contains suitable welfare facilities. Antiseptic hand gel is provided, as is bottled drinking water. A first aid kit is stored in the cab of the van, with a second kit near personnel within the survey area.

4.5. The nearest NHS urgent care centre is at Fryatt Hospital, 419 Main Road, Harwich, Essex, CO12 4EX Should toilets be unavailable on site the nearest public accessible toilet is located at Queens Road Car Park, 4, 5 Queen's Rd, Earls Colne, Colchester CO6 2RP.

5. Methodology

5.1.Data Collection

5.1.1. Geophysical survey will comprise the GPR method as described in the following table.

5.1.2. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Ground Penetrating Radar	MALA Mini MIRA 400MHz	0.08m	0.05m

5.1.1. GPR data will be collected along lines, using the system's odometer wheel and a Hemisphere S321 GNSS Smart Antenna RTK GPS, which is accurate to 0.008m +- 1ppm in the horizontal and 0.015m +- 1ppm in the vertical, to position sampling points.

5.1.2.The lines of GPR data will be collected at intervals of 0.5m in a rectangular grid area. The radar will be set to sample every 0.05m along the line.

5.2.Data Processing

5.2.1. GPR data will be processed in the standard commercial software package ReflexW 3D. GPR Processing steps will be limited to:

DC Shift – The waveform response for each traverse will be centred to correct for striping effects caused by small variations in sensor electronics and orientation.

Bandpass Filter – Frequencies outside the normal range of the measuring antennae will be filtered out to remove errors from external sources.

Background Removal – Background 'noise' will be filtered out of the data to improve clarity and aid in the detection of weak anomalies.

Gain Adjust – A gain curve will be manually calculated to account for signal attenuation with depth. The gain adjust will allow features at depth with a weaker signal to be resolved at the same plotting scale as near surface features.

5.3.Data Visualisation and Interpretation

5.3.1. The individual GPR radargrams will be stacked to form a three-dimensional cube of measurements. Greyscales will be created by horizontally slicing the cube to produce plan-view time-slices. These "timeslices" will initially considered in an animated GIF form to analyse the three-dimensional extent of anomalies. For print purposes, three gross soil volumes will be considered: shallow, middle, and deep. The mean of the timeslices within each gross soil volume will be taken and used as a representative time slice for the interpretation figures. Timeslices will be interpreted in a layered environment, overlaid against open street mapping, satellite imagery, historic mapping, LiDAR data, and soil and geology mapping. The timeslices will also interpreted in consideration with the radargrams, which visualise the form of the geophysical response, aiding in anomaly interpretation.

5.3.2. Geodetic position of results - All vector and raster data will be projected into OSGB36 (ESPG27700) and provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures will be provided with raster and vector data projected against the vector OS mapping provided by Colchester Archaeological Trust.

6. Reporting

6.1. A detailed report of the survey will be produced after data collection is completed. The Planning Archaeologist will be provided with a draft report for approval, and the approved report will be submitted to the HER. A copy of georeferenced results and interpretative plots will An OASIS number will be obtained and a copy of the OASIS form appended to the approved report, as well as a copy of the approved WSI. The final report will include as standard:

- Abstract
- Introduction – Details site location and client details.
- Quality Assurance – Details the expertise of Magnitude Surveys and Magnitude Surveys employees undertaking the work.
- Objectives—Details survey objectives.
- Geographic Background – Details the soils and geology of the survey area, as well as providing a general summary of site conditions at time of survey.
- Archaeological Background – Details a brief summary of the archaeological and historical background of the site and its immediate environs. While this will not be an exhaustive assessment of the known sites, it will draw on elements relevant to the results obtained during survey.
- Methodology—Details survey strategy employed, instruments used, data collection strategy, data processing and visualisation methods.
- Survey Considerations – Details specific points of note for each survey area, including topography, upstanding obstructions or neighbouring objects.
- Results—Details the results and interpretation of the geophysical survey, both in a general context and discusses specific anomalies of archaeological interest. Geophysical reports will be discussed in consideration with satellite imagery, historic mapping and LiDAR data—if freely available—as supporting interpretative evidence.
- Conclusions
- Archiving
- Copyright
- References
- Figures—The site location and individual survey areas will be presented. Greyscale images and corresponding interpretations will be displayed at appropriate scales. Interpretations will also be displayed over satellite imagery, historic mapping and LiDAR—as applicable—to provide further context to the interpretations. All figures will include a detailed scale bar, north arrow and key.

7. Archiving

7.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This archive stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report. A copy of this archive will be included in a disk with the final printed report.

7.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to the any dictated time embargoes.

7.3. An OASIS form will be filled in on completion of the survey, providing permission from the client.

8. Copyright

8.1. Copyright and the intellectual property pertaining to all reports, figures, and datasets produced by Magnitude Services Ltd. is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

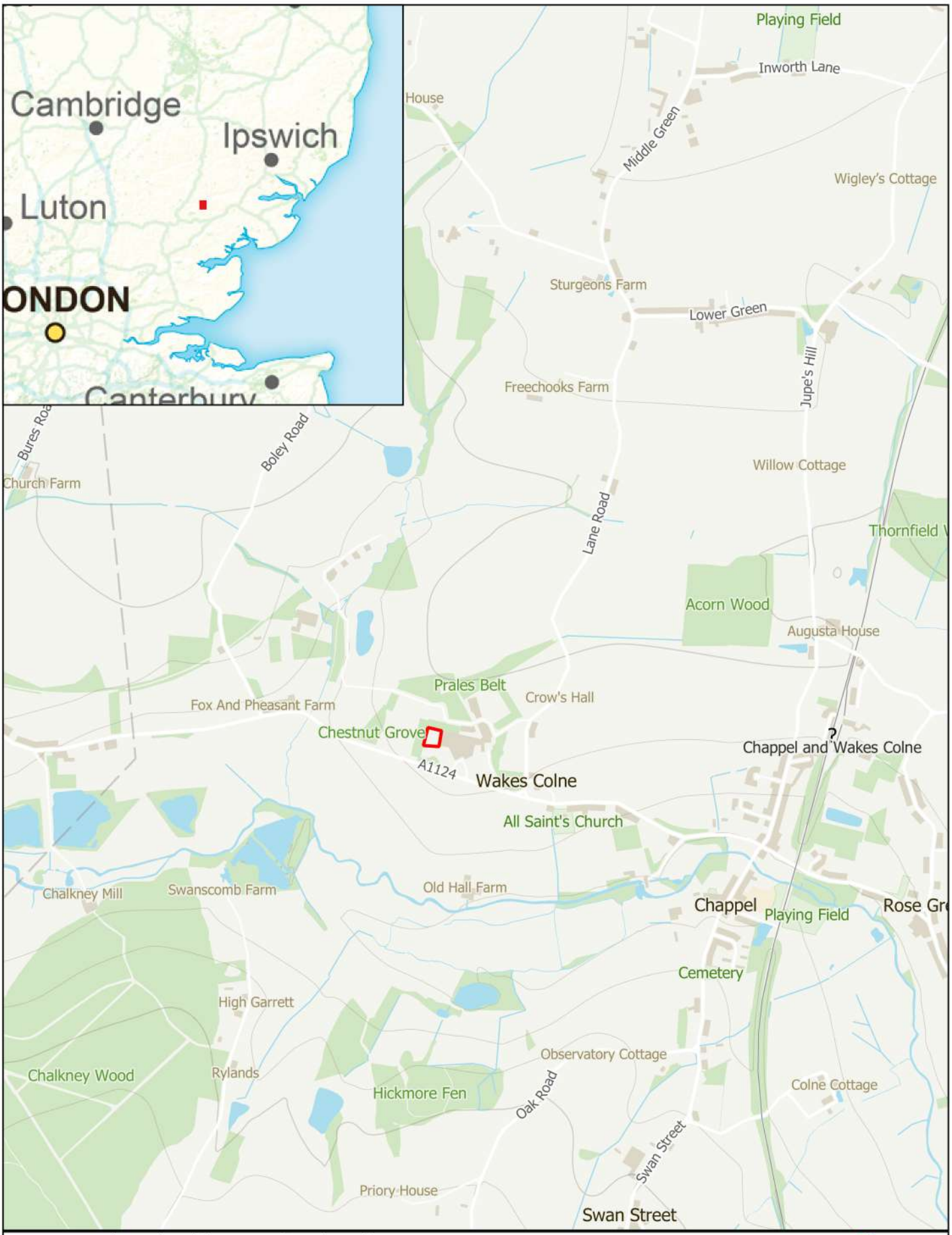
9. References

Chartered Institute for Archaeologists, 2014. Standards and guidance for archaeological geophysical survey. CIfA.

David, A., Linford, N., Linford, P. and Martin, L., 2008. Geophysical survey in archaeological field evaluation: research and professional services guidelines (2nd edition). Historic England.

Schmidt, A. and Ernenwein, E., 2013. Guide to Good Practice: Geophysical Data in Archaeology. 2nd ed., Oxbow Books, Oxford.

Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. and Fassbinder, J., 2015. Guidelines for the use of geophysics in archaeology: questions to ask and points to consider. EAC Guidelines 2.



MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 1 - Site Location
1:15,000 @ A4

Site Boundary

N

0 0.25 0.5 km

magnitude surveys

589000

229000

229000

Iris Plantation

Prales Belt

Crow's Hall

Lane Road

Chestnut Grove

A1124

Wakes Colne

All Saint's Church

MSTL596 - Wakes Hall, Colchester Road, Wakes Colne, Essex
Figure 2 - Location of Survey Area
1:3,000 @ A3

Survey Extent

N

0 50 100 150 m

magnitude surveys

Magnitude Surveys
www.magnitudesurveys.co.uk
+44 (0)1274 926020

STANDARD GPR FIELDWORK RISK ASSESSMENT

Likelihood of Accident/Incident Occurring	Severity of Consequences
1. Highly improbable 2. Probable – annually 3. Infrequent – 2-3 times/year 4. Occasional – monthly 5. Frequent – weekly	1. Minor injury minor damage to plant/equipment/buildings 2. Injury (no time lost) damage repair costs are low 3. Injury (time lost) high damage repair costs 4. Major reportable injury very high damage repair costs 5. Fatality major damage and major costs

Details of tasks to be carried out	Potential Hazard	A Likelihood	B Severity Rating	Overall Risk Rating A x B	Control Measures	Action	Revised Risk Rating
Driving company vehicle	Losing control of vehicle, sudden breaking or swerving.	2	5	10 Moderate	Do not drive vehicle if feeling unwell or tired. Take regular breaks on long journeys. Take turns driving when working in groups. Try to avoid driving in adverse weather	If weather is severe pull over. Stay in a hotel if work has been delayed or weather conditions are extreme.	1x5=5 Low
	Hitting another road user, pedestrian or stationary object.	2	5	10 Moderate			1x5=5 Low
Parking company vehicle	Parking in an unsafe location, such as a blind corner or hidden dip or on the side of a major highway.	3	5	15 High	Where possible park off-road in car parks, farm yards, fields or lay-bys. If it is not possible to access a survey area in a safe manner, stop and make new arrangements, such as obtaining keys or codes to locked gates. Use vehicle lights, such as dipped headlights, and hazards. Avoid packing or unpacking the vehicles in the dark.	Wear high visibility clothing when working around vehicles. Use the floodlight when necessary and safe to do so. Return early during winter months to prevent working in dusk conditions	1x5=5 Low
	Pausing while farm gates are opened in order to exit highway.	4	4	16 High	When performing reversing procedures while entering or exiting fields, position a colleague in a safe place where they can be seen and heard in order to direct and	Only stop on highway if safe to do so. Use hazard lights.	1x4=4 Low

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					communicate information on the road traffic.		
Loading and unloading the GPR cart	Muscle strain, dropping equipment, slips trips and falls.	4	2	8 Moderate	Follow manual handling training.	Clear both the interior and surrounding van area before attempting to lift the cart in or out the van.	2x1=2 Low
Entering and commencing work in a new survey area	Coming into contact with unknown hazards in a new survey area.	4	2	8 Moderate	Where possible, arrange for livestock to be removed from survey areas before work is begun. Liaise with farmer with regard to livestock. Complete a walkover survey and dynamic risk assessment of the survey area to identify any hidden or unusual hazards, remove or reduce the hazard as best as possible and inform all other staff members of both the hazard and the measures that are being implemented to minimise the risk.	Provide a project questionnaire a to be completed by the client before commencement of fieldwork to reduce or eliminate hazards before commencing fieldwork.	2x1=2 Low
Surveying with the GPR cart	Slips, trips and falls while walking with instrument. Strains to muscles while pushing cart.	4	3	12 Moderate	Care taken when working in field. Work not to be undertaken where there are poor field conditions, such as heavy plough or thick vegetation - where a clear view of the underfoot condition is not possible.	Safety survey boots to be worn while walking. Warm up/ down in cold conditions.	3x2=6 Low

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Working in all weather conditions.	Hypothermia and heat stroke.	3	3	9 Moderate	Stop survey and take shelter in heavy rain and strong wind to avoid accidents and illness. Take regular breaks in hot weather.	Appropriate PPE to be worn, full waterproofs and safety boots are provided. Make use of the provided, water, sun tan lotion and aftersun. Wear a hat.	3x1=3 Low

Magnitude Surveys
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SITE SPECIFIC RISK ASSESSMENT

Project Name: Project No:

Client: Assessor:

Date of Survey: Signature:

Description:

Hazard	Who could be harmed?	Mitigation strategies?	Any further action required?	Who should take action? When?	Has the hazard been resolved?

OASIS DATA COLLECTION FORM: England

Printable version

OASIS ID: colchest3-378075

Project details

Project name	An archaeological strip, map and record excavation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB.
Short description of the project	An archaeological excavation was undertaken at Wakes Hall, Colchester Road, Wakes Colne, Essex in advance of the extension of an existing building, its conversion into twelve dwellings, and the construction of a further ten dwellings. Several foundations which are likely to be associated with a World War II camp, a post-medieval pit, a modern drainage system, and a fragmentary modern brick floor surface were uncovered. The camp probably supplied troops manning the pillboxes and defences around the Chappel Viaduct (part of the eastern Command Line) immediately to the east. Later the redundant camp was used for providing accommodation to for displaced persons after the war.
Project dates	Start: 17-03-2020 End: 26-11-2020
Previous/future work	Yes / Not known
Any associated project reference codes	172642 - Planning Application No.
Any associated project reference codes	2019/12b - Contracting Unit No.
Type of project	Recording project
Site status	None
Current Land use	Other 2 - In use as a building
Current Land use	Other 5 - Garden
Monument type	FOUNDATIONS Modern
Monument type	PIT Post Medieval
Monument type	BRICK FLOOR Modern
Significant Finds	COIN Modern
Significant Finds	MACHINE GUN CARTRIDGE Modern
Significant Finds	POTTERY SHERDS Post Medieval
Investigation type	"'Part Excavation"'
Prompt	National Planning Policy Framework - NPPF

Project location

Country	England
Site location	ESSEX COLCHESTER WAKES COLNE Wakes Hall, Colchester Road, Wakes Colne, Essex
Postcode	CO6 2DB
Study area	0.4 Hectares
Site coordinates	TL 88577 28842 51.925603328514 0.742887648974 51 55 32 N 000 44 34 E Point

Project creators

Name of Organisation	Colchester Archaeological Trust
Project brief originator	CBC Archaeological Officer
Project design originator	Emma Holloway
Project director/manager	Chris Lister
Project supervisor	Robin Mathieson
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Emberworth Ltd

Project archives

Physical Archive recipient	Colchester Museum
Physical Contents	"Metal"
Digital Archive recipient	Archaeological Data Service
Digital Contents	"none"
Digital Media available	"Database","Images raster / digital photography","Survey","Text"
Paper Archive recipient	Colchester Museum
Paper Contents	"none"
Paper Media available	"Context sheet","Photograph","Plan","Report","Section"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Geophysical Survey and an Archaeological Strip, Map and Record Excavation at Wakes Hall, Colchester Road, Wakes Colne, Essex, CO6 2DB

Author(s)/Editor(s)	Mathieson, R.
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