

LAND OFF BLACKTILES LANE, MARTLESHAM, SUFFOLK

DETAILED MAGNETOMETER SURVEY



Report Number: 1197 April 2018



LAND OFF BLACKTILES LANE, MARTLESHAM, SUFFOLK

DETAILED MAGNETOMETER SURVEY

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April 2018

Site Code	MRM 176	NGR	TM 2419 4668	
Planning Ref.	DC/16/1992/FUL	OASIS	britanni1-311960	
Approved By:	Left -	Date	April 2018	



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ABSTRACT

In April 2018, Britannia Archaeology Ltd (BA) undertook a detailed magnetometer survey on Land Off Blacktiles Lane, Martlesham, Suffolk, (NGR TM 2419 4668), over c.3,3 ha of land ahead of a proposed development.

The geophysical survey identified several anomalies which appear to be of archaeological origin. The majority of the anomalies appear as low amplitude positive linear magnetic responses, synonymous with infilled ditch type features and appear to represent the remains of a coaxial field system. Several irregular and circular positive anomalies may also represent infilled archaeological features. The dating of these features cannot be determined at this stage.

The magnetic contrast seen in the survey indicate that the underlying geology and site formation process are suited to magnetic geophysical survey. The overall character of the anomalies identified in this survey are irregular appearance and of varying signal strength, suggestive of disturbed or superficial source features.



1.0 INTRODUCTION

In April 2018, Britannia Archaeology Ltd (BA) undertook a detailed magnetometer survey on Land Off Blacktiles Lane, Martlesham, Suffolk, (NGR TM 2419 4668), over c.3,3 ha of land ahead of a proposed development.

2.0 SITE DESCRIPTION

The site is located 8km north east of Ipswich, on the western edge of the village of Martlesham. The site itself is currently an arable field, bound to the north by fields and agricultural buildings. The east of the site is partially bound by Blacktiles Lane, houses and agricultural fields, to the south the site is bound by further fields and the Matlesham Christian Fellowship Centre, while the A12 forms the western boundary of the site.

The Bedrock geology is described as Red Crag Formation – Sand. A Sedimentary Bedrock formed approximately 2 to 4 million years ago in the Quaternary and Neogene Periods, when the local environment was previously dominated by shallow seas (BSG, 2018).

There are two superficial deposits within the site; the northern part of the site is described as Kesgrave Catchment Subgroup – Sand and Gravel. A Superfical Deposit formed up to 3 million years ago in the Quaternary Period, when the local environment was previously dominated by rivers (BSG, 2018). Whereas the southern portion is described as Lowestoft Formation – Sand and Gravel. Which is a Superficial Deposit formed up to 2 million years ago in the Quaternary Period, when the local environment was previously dominated by ice age conditions (BSG, 2018).

3.0 ARCHAEOLOGICAL BACKGROUND

The following archaeological background utilises the Suffolk Historic Environment Record (HER) (1km search centred on the site), Historic England PastScape (www.pastscape.org.uk), and the Archaeological Data Service (www.ads.ahds.ac.uk) (ADS) (Fig. 2 & 3).

Martlesham is a small village in eastern Suffolk located close to Woodbridge and Ipswich. It is thought to have Roman origins and was established by a least 1086AD having an entry in Doomsday as Merlesham. The historic core of the village lies on high ground overlooking the River Deben and its tributary the River Finn. However the settlement shifted from the high ground towards the west during the medieval period where the main London to Great Yarmouth road bridged the River Finn by the middle 15th century. All that remains of the village core is the Church and Martlesham Hall, the main village now lying 1 – 2km to the west.

Evidence of Mesolithic activity is sparse. A flint microlith was recovered during excavations of a quarry extension at Hall Road in 1992 (BEL018) 900m to the west. The second entry comprises a large assemblage of struck flints within a ditch like feature recorded during excavations at Sinks Pit in 1992 (BEL022) also 900m west of site.



The Neolithic is represented by six entries in the SHER search area. Upper and lower stones of a saddle quern (BEL004) were recovered 650m to the north-west at Bealing Holt. Neolithic settlement and pottery sherds were found during a watching brief at Hall Road (BEL018) 900m to the west. During the Sinks Pit excavations of 1992, Neolithic to Early Bronze Age features containing worked flint and pottery sherds were recorded (BEL022) 900m to the west. Two evaluation phases undertaken at Firecrest Nursery in Little Bealings 800m to the west revealed pits and post-holes containing pottery and burnt flint (BEL024). A Neolithic adze findspot (MRM027) is located just 200m south-east from the centre of site near Blacktiles Lane.

Three bowl barrow Scheduled Ancient Monuments dating from the Late Neolithic to Early Bronze Age are located nearby. The closest (MRW018) is present c.500m south of the site and is 30m in diameter, standing 2.6m high with Second World War (WWII) slit trench damage to one side. The second (MRW014) is located c.730m southwest of the site measuring 20m in diameter and 0.80m high, it has also suffered recent (WWII) damage by slit trenching. The third bowl barrow (MRW015) is sited c.830m south of the site, it is 25m in diameter and 1m high. Another round barrow was present 700m south of the site but was excavated in 1905 where some cremated bone and beaker pottery was found (MRM001). There are a further four well preserved examples situated 2km further south.

Evidence of Bronze Age activity in a 1km radius around the site is substantial. At Dunnetts Hill Plantation fragments of four Late Bronze Age urns (BEL005) were found on the drive of a house 600m to the north. During a watching brief at Hall Road in 1992 (BEL018) 900m to the west, Beaker pottery was recovered from six postholes or pits. A Bronze Age palstave (BEL019) was found by metal detector 600m to the north-west. At the Sinks Pit excavations in 1992 Early Bronze Age features containing pottery sherds, a quern and a worked object (BEL022) were recovered 900m to the west. An evaluation at Firecrest Nursery uncovered a Bronze Age pit containing Beaker pottery (BEL024), located 900m to the west. Beaker sherds, an arrowhead and a worked object (MRM002) were present during construction of a new build 400m to the southwest. An evaluation in 2003 on the park and ride site immediately adjacent to the west of the A12 and 100m west of the site, revealed pits containing Beaker pottery and ditches of a contemporary field system (MRM075). The last Bronze Age entry within the radius is located 500m to the southeast, it comprises flint tools and burnt flints (MRM144) recovered during fieldwalking and metal detecting and is possibly associated with enclosure type anomalies recorded by a magnetometer survey. An evaluation c.240m south of the site identified prehistoric features including a possible barrow ditch (MRM154).

Iron Age activity is not as well represented within the 1km search radius. A watching brief at Hall Road on a quarry site recorded a small pit containing Iron Age pottery (BEL018) located 900m to the west. Excavations at Sinks Pit 900m west (BEL022) most notably revealed a possible Iron Age roundhouse. One Iron Age ditch (BEL024) was recorded during the evaluation At Firecrest Nursery 900m to the west. An Iron Age pottery rim sherd was also recorded in the garden of St Mary's (MRM005) 520m to the east.

Roman activity is relatively sparse throughout the majority of the search radius with more substantial activity present to the east and north-east of the site. Roman pottery sherds (BEL009) were recovered from the garden of Finntoft at Little Bealings 700m to the north-



west. A watching brief at the gravel quarry revealed 1st to 3rd Century AD ditches, pits and postholes (BEL018). Roman field boundary ditches were recorded at Sinks Pit in 1992 (BEL022) 900m to the west. One Roman coin (KSG MISC) was found by metal detector 900m to the west. An up-draught kiln (MRM007) was recorded 490m to the east. A Roman bronze vase, pottery and a coin were recovered from St Mary's garden (MRM008) 660m to the east. One blue glass bead was recovered from a mole hill (MRM020) 450m to the south-east of site and south of Main Road. Roman Tesserae and tile (MRM039) were recovered at Mill Farm 750m southeast of the site. A pit containing Roman pottery was recorded during a watching brief (MRM066) 900m to the north-east. During the evaluation at the park and ride (MRM075) 100m west of site, one Roman ditch was recorded.

Saxon activity is rare within the search radius. At Firecrest Nursery in Little Bealings 900m to the west (BEL024) a large pit (or possible Grubenhaus) with pottery and a copper alloy brooch, strap and a pin were recorded. Three Saxon round barrows containing primary inhumations are present 650m to the south-east (MRM016). A probable Saxon burial site has been recorded 1Km west of the site (BEL010) which is evidenced by a shield boss, 2 spears, a javelin, and fragments of a cooking pot, all of which were found with cremated bone. In addition a Saxon silver decorated pin head was found c.1km northeast of the site (MRM040).

Records of medieval activity in the search area are also rare. Scatters of medieval pottery were found during field walking c.1km north of the site in an area where cropmarks of possible medieval field boundaries and a track/road have been identified by aerial photography (BEL035, BEL036, BEL037, BEL038, MRM113). The possible location of a gallows, recorded as a field name on the 1840 tithe map (MRM MISC) and a few sherds of pottery present during archaeological monitoring (ESF18943) 900m to the east and south of Creek Hill. An artefact scatter found c.1km northeast of the site included a bronze strap end and strap fastener (MRM040). A scatter of medieval pottery was found close to these finds, c.900m northeast of the site (MRM043). Some sherds of Medieval pottery were also found during the park and ride evaluation 100m west of the site (MRM075).

Post-Medieval ditches were identified at the park and ride c.100m west of the site which are likely associated with a trackway visible on early OS maps (MRM075). Post-Medieval field boundaries were also identified at a site c.500m southeast of the site (MRM157). Probable post-medieval field boundary type anomalies are present on air photographs on the southern side of Martlesham village (MRM124) 1km east.

Two second world war sites are present 100m and 200m to the north-east (MRM 116/117) that comprise slit trenches and a camp for possible outlying defensive positions. A Second World War anti-aircraft battery (MRM119) is also present 800m to the south-east. One pill-box or battle headquarters (MRM152) is recorded 650m to the east.

Given the above records the site had a **moderate** to **high** potential for features and finds relating to the prehistoric period, a **moderate** potential for Romano-British archaeology, and a **low** to **moderate** potential for features and finds relating to the medieval and post-medieval periods particularly in the form of agricultural activity.



4.0 PROJECT AIMS

A non-intrusive geophysical survey was required of this development site; this will inform a programme of trial trenching (under a separate brief) to enable the archaeological resource, both in quality and extent, to be accurately quantified (Brief Section 3.1).

5.0 METHODOLOGY

The survey grid was be set out to the Ordnance Survey OSGB36 datum to an accuracy of ± 0.01 m using a Leica Viva Glonnass Smart Rover GS08.

A Bartington Dual Grad 601-2 fluxgate gradiometer was used to undertake the survey, because of its high sensitivity and rapid ground coverage. The soils and underlying geology are receptive to magnetometer survey, but good results are heavily dependent on the contrast between the fills of a feature (with humic and charcoal rich deposits providing the best results) and the relative weakness of the local magnetic background field.

Only minimal processing of the datasets has been undertaken, data processing allows for the correction of errors introduced during the survey and instrument errors. The survey data has been processed using TerraSurveyor software V 3, where the following data processes were applied:

Destripe: Removes striping effects from the raw data caused by discrepancies between different sensors and walking directions caused by alternate zig-zag traverses.

Destagger: Corrects the displacement of anomalies caused by alternate zig-zag traverse.

Clip: The range of the data can be set to specified maximum and minimum values in order to improve the contrast of weaker anomalies within the data.

Compress: Weak anomalies were further enhanced by applying an arctangent weighing to the data.

Grad. Shade: The overall appearance of the data was improved

The raw and processed greyscale plots have been produced for comparison. An XY trace plot consisting of the processed data will be used in combination with raw and processed greyscale data. An interpretation plan characterising the anomalies has been produced based on the evidence collated from the greyscale and XY trace plots.



6.0 RESULTS (Figs. 4 - 8)

The following numbered anomalies refer to the numerical labels of the interpretation plot (Fig. 8).

6.1 Gradiometer Results (Figs. 4 - 8)

Positive linear anomalies

The survey revealed a series of low amplitude positive trending linear anomalies, which are irregular in appearance, with varying signal strength. The first of which 1000 has an east to west orientation, running for c.150m before disappearing out of the survey area on the western boundary. Perpendicular to the former are two weakly positive linear anomalies 1001 and 1003 which adjoin anomaly 1000.

The first of these, anomaly **1001**, is located on the north side of **1000** running north for c.44m before turning 90 degrees to the west for c.20m and disappearing out of the data. Anomaly **1001** appears to have an internal feature **1002** which is a low amplitude linear anomaly and appears to respects the east to west alignments of both **1000** and **1001** and is only visible in the data for c.9m and most likely forms an internal division of **1001**.

The second, anomaly **1003** is located south of anomaly **1000**, running south for c.60m then turning 90 degrees to the west for c.90m before disappearing out of the survey area. Running on a parallel north to south orientation, c.7m apart from the former is another low amplitude linear anomaly **1004**, this anomaly crosses **1000** and is only visible in the data for c.44m before appearing to terminate at both ends.

A further linear anomaly **1005** was detected during the survey c.13m to the south of, but running parallel to anomaly **1000** and somewhat lower in amplitude, which suggests a more superficial source. This anomaly runs west for c.44m before curving towards the south-west for c.18m before appearing to terminate.

The magnetic response produced by these anomalies is synonymous with infilled ditch type features, which appear to represent the remains of a coaxial field system. The overall character of these anomalies is of an irregular appearance and of varying signal strength, suggestive of disturbed or superficial source features.

Discrete positive anomalies

A total of 14 discrete positive anomalies, **1006**, **1007**, **1008** and **1009** were revealed by the survey, ranging in size from c.1m - c.4.5m. The shape of the anomalies vary greatly, However, the responses observed in terms of shape and amplitude, are consistent with those resulting from infilled pit type features, and therefore might be archaeological in source.



Geological anomalies

A single geomorphological feature has been identified in the data **1010**, this feature has a broadly north-east to south-west orientation, with various associated channels. This anomaly is characterised as a low amplitude positive irregular linear spread, the signal of which has derived from slightly higher magnetic material being deposited by water following down the slope of the hill towards the bottom of a river valley.

Modern Disturbance

The data has displayed several strong magnetic responses which are described below.

A series of strong bipolar responses are visible running across the north-eastern corner of the survey area (1011). These have been generated by a modern service pipe.

Numerous discrete dipolar responses are present in the data throughout the survey **1012**. These are well defined positive and negative responses with no separation between the polarities, which suggest the presence of ferrous material in the topsoil.

A series of strong magnetic responses **1013** can be seen running along the southern boundary of the site. These have resulted from close proximity to a wire fencing and car park. Further magnetic responses can be seen on the western **1014** and northern **1015** boundary of the field where parked caravans and an out building have produced a large distortion to the local magnetic field.

7.0 CONCLUSION

The geophysical survey identified several anomalies which appear to be of archaeological origin (1000, 1001, 1002, 1003, 1004 and 1005). The majority of the anomalies appear as low amplitude positive linear magnetic responses, synonymous with infilled ditch type features and appear to represent the remains of a coaxial field system. Several irregular and circular positive anomalies (1006, 1007, 1008 and 1009) may also represent infilled archaeological features. The dating of these features cannot be determined at this stage.

The magnetic contrast seen in the survey indicate that the underlying geology and site formation process are suited to magnetic geophysical survey. The overall character of the anomalies identified in this survey are irregular appearance and of varying signal strength, suggestive of disturbed or superficial source features.

8.0 PROJECT ARCHIVE AND DEPOSITION

A full archive will be prepared for all the work undertaken in accordance with the *Selection, Retention and Dispersion of Archaeological Collections,* Archaeological Society for Museum Archaeologists 1993. Arrangements will be made for the archive to be deposited with the relevant museum/HER office.



9.0 ACKNOWLEDGEMENTS

Britannia Archaeology Ltd would like to thank Nicky Silvey of Potter Raper for commissioning the work and Kate Batt of Suffolk County Council for her input and advice throughout.

The survey was undertaken by Matthew J. Baker and Dan Hills of Britannia Archaeology Ltd.



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Websites

The British Geological Survey, 2018, (Natural Environment Research Council) – Geology of Britain Viewer -



APPENDIX 1 - OASIS FORM

OASIS DATA COLLECTION FORM: **England**

List of Projects | Manage Projects | Search Projects | New project | Change your details | HER coverage | Change country | Log out

Printable version

OASIS ID: britanni1-311960

Project details

Project name Land off Blacktiles Lane, Martelsham, Suffolk

Short description of the project

In April 2018, Britannia Archaeology Ltd (BA) undertook a detailed magnetometer survey on Land Off Blacktiles Lane, Martlesham, Suffolk, (NGR TM 2419 4668), over c.3,3 ha of land ahead of a proposed development. The geophysical survey identified several anomalies which appear to be of archaeological origin. The majority of the anomalies appear as low amplitude positive linear magnetic responses, synonymous with infilled ditch type features and appear to represent the remains of a coaxial field system. Several irregular and circular positive anomalies may also represent infilled archaeological features. The dating of these features cannot be determined at this stage. The magnetic contrast seen in the survey indicate that the underlying geology and site formation process are suited to magnetic geophysical survey. The overall character of the anomalies identified in this survey are irregular appearance and of varying signal strength, suggestive of disturbed or superficial source

Start: 09-04-2018 End: 13-04-2018 Project dates

Previous/future

work

No / Yes

Any associated project reference codes P1231 - Contracting Unit No.

Type of project Field evaluation

Site status None

Current Land use Cultivated Land 1 - Minimal cultivation FIELD BOUNDARY Uncertain Monument type

Significant Finds NONE None

Methods & techniques ""Geophysical Survey""

Development

Housing estate

Prompt Position in the planning process National Planning Policy Framework - NPPF After full determination (eg. As a condition)

Solid geology Unknown



Drift geology SAND AND GRAVEL OF UNCERTAIN AGE OR ORIGIN

Techniques Magnetometry

Project location

Country England

SUFFOLK SUFFOLK COASTAL MARTLESHAM Land off blacktiles lane, Site location

martlesham, suffolk

Postcode IP12 4SS Study area 3.3 Hectares

Site coordinates TM 2419 4668 52.072468531725 1.271715127742 52 04 20 N 001 16 18 E

Point

Height OD / Min: 26.7m Max: 32.5m

Depth

Project creators

Name of Britannia Archaeology Ltd

Organisation Project brief

Local Authority Archaeologist and/or Planning Authority/advisory body

originator Project design

Matthew Baker

originator

Project Martin Brook

director/manager

Project Matthew Baker

supervisor

Type of

sponsor/funding

body

Name of

sponsor/funding

body

Hastoe Group

developer

Project archives

Physical Archive No

Exists?

Suffolk HER

Digital Archive

recipient

Digital Archive ID P1231 Digital Contents "none"

Digital Media available

"Geophysics", "Survey", "Text"

Paper Archive

Suffolk HER

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Paper Contents "none"

Paper Media available

"Photograph", "Plan", "Report", "Survey "



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OASIS:

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APPENDIX 2 – APPROVED WRITTEN SCHEME OF INVESTIGATION

2.0 INTRODUCTION

This Written Scheme of Investigation (WSI) has been prepared by Britannia Archaeology Ltd (BA) on behalf of the Hastoe Group, as a scheme of archaeological works in response to a brief issued by Suffolk County Council (Batt, K. 13th December 2017). This WSI is specific for a gradiometer survey for Land off Blacktiles lane, Martlesham, Suffolk (NGR TM 2419 4668).

This WSI presents a programme of archaeological investigation by means of detailed magnetometer survey. The proposed survey will comprise of one 3.3ha field in which below ground impacts as part of a planning application (DC/16/1992/FUL) are to occur (Fig. 5). This WSI is for the geophysical survey of this areas only, with a further WSI to be produced for archaeological evaluation trenching following the results of this survey.

2.0 SITE DESCRIPTION

The site is located 8km north east of Ipswich, on the western edge of the village of Martlesham. The site itself is currently an arable field, bound to the north by fields and agricultural buildings. The east of the site is partially bound by Blacktiles Lane, houses and agricultural fields, to the south the site is bound by further fields and the Matlesham Christian Fellowship Centre, while the A12 forms the western boundary of the site.

The Bedrock geology is described as Red Crag Formation – Sand. A Sedimentary Bedrock formed approximately 2 to 4 million years ago in the Quaternary and Neogene Periods, when the local environment was previously dominated by shallow seas (BSG, 2018).

There are two superficial deposits within the site; the northern part of the site is described as Kesgrave Catchment Subgroup – Sand and Gravel. A Superfical Deposit formed up to 3 million years ago in the Quaternary Period, when the local environment was previously dominated by rivers (BSG, 2018). Where as the southern portion is described as Lowestoft Formation – Sand and Gravel. Which is a Superficial Deposit formed up to 2 million years ago in the Quaternary Period, when the local environment was previously dominated by ice age conditions (BSG, 2018).

3.0 PLANNING BACKGROUND

The archaeological assessment was carried out in accordance with guidance laid down by the National Planning and Policy Framework (NPPF, DCLD 2012) which replaced Planning Policy Statement 5: Planning for the Historic Environment (PPS5, DCLG 2010) in March 2012. The relevant local development plan is the *Suffolk Coastal District Local Plan (2013)*.



3.1 National Planning Policy Framework (NPPF, DCLG March 2012)

The NPPF recognises that 'heritage assets' are an irreplaceable resource and planning authorities should conserve them in a manner appropriate to their significance when considering development. It requires developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. The key areas for consideration are:

- The significance of the heritage asset and its setting in relation to the proposed development;
- The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance;
- Significance (of the heritage asset) can be harmed or lost through alteration or destruction, or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification;
- Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred;
- Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

3.2 Suffolk Coastal District Local Plan (2013)

The relevant section in the local plan states the following aims and objectives:

- 3.149 The importance of buildings and places is recognised as contributing to peoples' general quality of life. The district contains a rich historic legacy. Its historic market towns and villages together with their landscape settings, archaeology, individual buildings and groups of, and historic street patterns all add to the social and cultural history of the area.
- 3.150 In relation to the built environment, the designation of conservation areas, scheduled ancient monuments, historic parklands and the listing of buildings are all issues that can be addressed outside of the Local Plan process. The role of the Core Strategy in relation to these topics will be to provide general advice supporting their retention and enhancement whilst minimising any significant adverse impacts upon them. Section 12 of the NPPF supports this aim and will be applied rigorously. More generally, decisions on development proposals affecting heritage assets will be informed as



appropriate by Conservation Area Appraisals, information from the Historic Environment Record and Archaeological Assessments.

4.0 ARCHAEOLOGICAL BACKGROUND (Figs. 2, 3 & 4)

Martlesham is a small village in eastern Suffolk located close to Woodbridge and Ipswich. It is thought to have Roman origins and was established by a least 1086AD having an entry in Doomsday as Merlesham. The historic core of the village lies on high ground overlooking the River Deben and its tributary the River Finn. However the settlement shifted from the high ground towards the west during the medieval period where the main London to Great Yarmouth road bridged the River Finn by the middle 15th century. All that remains of the village core is the Church and Martlesham Hall, the main village now lying 1 – 2km to the west.

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The Neolithic is represented by six entries in the SHER search area. Upper and lower stones of a saddle quern (BEL004) were recovered 650m to the north-west at Bealing Holt. Neolithic settlement and pottery sherds were found during a watching brief at Hall Road (BEL018) 900m to the west. During the Sinks Pit excavations of 1992, Neolithic to Early Bronze Age features containing worked flint and pottery sherds were recorded (BEL022) 900m to the west. Two evaluation phases undertaken at Firecrest Nursery in Little Bealings 800m to the west revealed pits and post-holes containing pottery and burnt flint (BEL024). A Neolithic adze findspot (MRM027) is located just 200m south-east from the centre of site near Blacktiles Lane.

Three bowl barrow Scheduled Ancient Monuments dating from the Late Neolithic to Early Bronze Age are located nearby. The closest (MRW018) is present c.500m south of the site and is 30m in diameter, standing 2.6m high with Second World War (WWII) slit trench damage to one side. The second (MRW014) is located c.730m southwest of the site measuring 20m in diameter and 0.80m high, it has also suffered recent (WWII) damage by slit trenching. The third bowl barrow (MRW015) is sited c.830m south of the site, it is 25m in diameter and 1m high. Another round barrow was present 700m south of the site but was excavated in 1905 where some cremated bone and beaker pottery was found (MRM001). There are a further four well preserved examples situated 2km further south.

Evidence of Bronze Age activity in a 1km radius around the site is substantial. At Dunnetts Hill Plantation fragments of four Late Bronze Age urns (BEL005) were found on the drive of a house 600m to the north. During a watching brief at Hall Road in 1992 (BEL018) 900m to the west, Beaker pottery was recovered from six postholes or pits. A Bronze Age palstave (BEL019) was found by metal detector 600m to the north-west. At the Sinks Pit excavations in 1992 Early Bronze Age features containing pottery sherds, a quern and a worked object (BEL022) were recovered 900m to the west. An evaluation at Firecrest Nursery uncovered a Bronze Age pit containing Beaker pottery (BEL024), located 900m to the west. Beaker sherds, an arrowhead and a worked object (MRM002) were present



during construction of a new build 400m to the southwest. An evaluation in 2003 on the park and ride site immediately adjacent to the west of the A12 and 100m west of the site, revealed pits containing Beaker pottery and ditches of a contemporary field system (MRM075). The last Bronze Age entry within the radius is located 500m to the southeast, it comprises flint tools and burnt flints (MRM144) recovered during fieldwalking and metal detecting and is possibly associated with enclosure type anomalies recorded by a magnetometer survey. An evaluation c.240m south of the site identified prehistoric features including a possible barrow ditch (MRM154).

Iron Age activity is not as well represented within the 1km search radius. A watching brief at Hall Road on a quarry site recorded a small pit containing Iron Age pottery (BEL018) located 900m to the west. Excavations at Sinks Pit 900m west (BEL022) most notably revealed a possible Iron Age roundhouse. One Iron Age ditch (BEL024) was recorded during the evaluation At Firecrest Nursery 900m to the west. An Iron Age pottery rim sherd was also recorded in the garden of St Mary's (MRM005) 520m to the east.

Roman activity is relatively sparse throughout the majority of the search radius with more substantial activity present to the east and north-east of the site. Roman pottery sherds (BEL009) were recovered from the garden of Finntoft at Little Bealings 700m to the north-west. A watching brief at the gravel quarry revealed 1st to 3rd Century AD ditches, pits and postholes (BEL018). Roman field boundary ditches were recorded at Sinks Pit in 1992 (BEL022) 900m to the west. One Roman coin (KSG MISC) was found by metal detector 900m to the west. An up-draught kiln (MRM007) was recorded 490m to the east. A Roman bronze vase, pottery and a coin were recovered from St Mary's garden (MRM008) 660m to the east. One blue glass bead was recovered from a mole hill (MRM020) 450m to the south-east of site and south of Main Road. Roman Tesserae and tile (MRM039) were recovered at Mill Farm 750m southeast of the site. A pit containing Roman pottery was recorded during a watching brief (MRM066) 900m to the north-east. During the evaluation at the park and ride (MRM075) 100m west of site, one Roman ditch was recorded.

Saxon activity is rare within the search radius. At Firecrest Nursery in Little Bealings 900m to the west (BEL024) a large pit (or possible Grubenhaus) with pottery and a copper alloy brooch, strap and a pin were recorded. Three Saxon round barrows containing primary inhumations are present 650m to the south-east (MRM016). A probable Saxon burial site has been recorded 1Km west of the site (BEL010) which is evidenced by a shield boss, 2 spears, a javelin, and fragments of a cooking pot, all of which were found with cremated bone. In addition a Saxon silver decorated pin head was found c.1km northeast of the site (MRM040).

Records of medieval activity in the search area are also rare. Scatters of medieval pottery were found during field walking c.1km north of the site in an area where cropmarks of possible medieval field boundaries and a track/road have been identified by aerial photography (BEL035, BEL036, BEL037, BEL038, MRM113). The possible location of a gallows, recorded as a field name on the 1840 tithe map (MRM MISC) and a few sherds of pottery present during archaeological monitoring (ESF18943) 900m to the east and south of Creek Hill. An artefact scatter found c.1km northeast of the site included a bronze strap end and strap fastener (MRM040). A scatter of medieval pottery was found close to these



finds, c.900m northeast of the site (MRM043). Some sherds of Medieval pottery were also found during the park and ride evaluation 100m west of the site (MRM075).

Post-Medieval ditches were identified at the park and ride c.100m west of the site which are likely associated with a trackway visible on early OS maps (MRM075). Post-Medieval field boundaries were also identified at a site c.500m southeast of the site (MRM157). Probable post-medieval field boundary type anomalies are present on air photographs on the southern side of Martlesham village (MRM124) 1km east.

Two second world war sites are present 100m and 200m to the north-east (MRM 116/117) that comprise slit trenches and a camp for possible outlying defensive positions. A Second World War anti-aircraft battery (MRM119) is also present 800m to the south-east. One pill-box or battle headquarters (MRM152) is recorded 650m to the east.

Given the above records the site has a **moderate** to **high** potential for features and finds relating to the prehistoric period, a **moderate** potential for Romano-British archaeology, and a **low** to **moderate** potential for features and finds relating to the medieval and post-medieval periods particularly in the form of agricultural activity.

5.0 PROJECT AIMS

A non-intrusive geophysical survey is required of the development site; this will inform a programme of trial trenching (under a separate brief) to enable the archaeological resource, in both quality and extent, to be accurately quantified (Brief Section 3.1).

6.0 METHODOLOGY

6.1 Fieldwork

A detailed fluxgate gradiometer survey is required over c. 3.3 Hectares, scheduled to be undertaken in early March 2018.

6.2 Instrument Type Justification

Britannia Archaeology Ltd will employ a Bartington Dual Grad 601-2 fluxgate gradiometer to undertake the survey, because of its high sensitivity and rapid ground coverage. The soils and underlying geology are receptive to magnetometer survey, but good results are heavily dependent on the contrast between the fills of a feature (with humic and charcoal rich deposits providing the best results) and the relative weakness of the local magnetic background field.

6.3 Instrument Calibration

The Magnetometer will be left on for a minimum of 20 minutes in the morning for the sensors to settle before any recorded survey takes place. Sensor heights will be measured and equalised at the start of the first day so that a consistent height above the ground is



maintained during the survey. Each sensor shall be positioned on the same side of the instrument throughout the survey. The instrument shall be zeroed after every ten grids to minimise the effect of sensor drift. An area shall be chosen with low magnetic susceptibility to calibrate the instruments sensors, this same point shall be used to zero the sensors throughout the survey providing a common zero point.

6.4 Sampling Interval and Grid Size

The sampling interval shall be 0.25m along 1m traverse intervals, within 30 x 30m grids.

6.5 Survey Grid Location

The survey grid shall be set out to the Ordnance Survey OSGB36 datum to an accuracy of ± 0.01 m employing a Leica Viva Glonnass Smart Rover GS08. Data will be converted to the National Grid Transformation OSTN02, and the instrument will be regularly tested using stations with known ETRS89 coordinates. The grid will be located parallel to the long axis of the proposed development to allow for ease of survey.

6.6 Data Capture

The grid order will be recorded on a BA pro-forma so that the composite plan can be inputted at the close of the day. Instrument readings will be recorded on an internal data logger, downloaded to a laptop at midday and in the evening. Data will be filed in job specific folders, broken up into daily data sets. All data will then be backed up onto an external storage device and finally a remote server. Raw data composites will be uploaded into an AutoCAD drawing and then printed out daily. This will allow BA to check data quality and to re-survey any grids if necessary.

6.7 Data Presentation and Processing

Only minimal processing of the datasets shall be undertaken, typically de-spike and zero mean traverse. Raw and processed greyscale plots shall be produced for comparison, this ensures that no anomalies are processed out of the original data set. An XY trace plot consisting of raw and processed data will be used in combination with raw and processed greyscale data. An interpretation plan characterising the anomalies shall be produced drawing on the evidence collated from the greyscale and XY trace plots. All figures will be tied into the National Grid and printed at an appropriate scale.

6.8 Software

The software used to process the data and produce the composites will be DW Consulting's Terrasurveyor v2.0. Datasets will be exported into AutoCAD and placed onto their corresponding grid positions. An interpretation plot will then be produced using AutoCAD.



7.0 PRESENTATION OF RESULTS

The prepared client/archive report will be commensurate with the results of the fieldwork, and will be consistent with the principles of the *Management of Research Projects in the Historic Environment (MoRPHE)*, English Heritage, Edmund Lee, 2006 (minor revisions 2009), *Geophysical Survey In Field Evaluation*, English Heritage, Andrew David *et al*, 2008, and the *Standard and Guidance for Archaeological Geophysical Survey*, Institute for Archaeologists, 2011, containing the following:

- Summary. A concise summary of the work undertaken and the results.
- *Introduction*. Introduction to the project including the reasons for work, funding, planning background.
- Background. The history, layout and development of the site.
- Aims and Objectives.
- *Methodology.* Survey strategy and techniques used.
- Results. Detailed description of findings outlining the nature, location and extent of the anomalies.
- *Discussion and Conclusions.* A synopsis interpreting the anomalies, impact assessment, site potential, possible locations of subsequent trial trenches.
- Bibliography.
- Appendices. Technical Details, Geo-referencing Information, Metadata Sheet, HER/OASIS Summary Sheet.
- *Illustrative Material.* Raw Data Plots, Processed Data Plots, XY Trace Plots, Interpretation Plots, Photographs.

Digital copies will be supplied to the client and the digital version of the final report will be submitted to the Suffolk Historic Environment Record in due course (including a vector plan and AutoCAD .dxf file) and the National Monuments Record (NMR). A .pdf version will be uploaded to the ADS website and an OASIS form will be completed online and sent to the HER.

8.0 PROJECT ARCHIVE AND DEPOSITION

A full archive will be prepared for all work undertaken in accordance with guidance from the *Selection, Retention and Dispersion of Archaeological Collections,* Archaeological Society for Museum Archaeologists, 1993. Arrangements will be made for the archive to be deposited with Colchester and Ipswich Museum.



9.0 HEALTH AND SAFETY

BA operates a comprehensive Health and Safety Policy in accordance with the Health and Safety Executive. BA operates under the Federation of Archaeological Managers and Employers (FAME) *Health and Safety Field Manual*, which is regularly updated by supplements.

BA are covered by employer's liability, public liability and professional indemnity insurance arranged through Towergate Insurance (see Appendix 2).

9.1 Code of Practice, Risk Assessment and Site Induction

BA's Code of Practice covers all aspects of survey work and ensures all risks are adequately controlled. A site visit will be undertaken and an assessment of the potential risks highlighted, a full site risk assessment will be produced based on this information. The assessment of risk is continually monitored and this document can be updated if any change in risk occurs. A copy of the Risk Assessment is kept on site, read and countersigned by all staff and visitors during the BA site induction.

BA will liaise with the contractor or client on arrival and will follow any additional Health and Safety instructions given.

A qualified First Aider will be present on every site.

10.0 RESOURCES

All archaeological projects are undertaken by a team of professional qualified archaeologists, a synopsis can be found at Appendix 3. Full CV's are available on request.

All site work will be undertaken by a Project Officer (with a field team if required) in close communication with a Project Manager. This project officer will also be responsible for post-survey publication.

11.0 TIMETABLE AND PROGRAMME OF WORK

The geophysical survey is scheduled to be undertaken early March 2018 and report production will commence thereafter. Preliminary greyscale and interpretation plots shall be issued at the end of the survey. It is understood that the client is aware of the working methods and provision has been made to allow access to undertake the survey as required.















