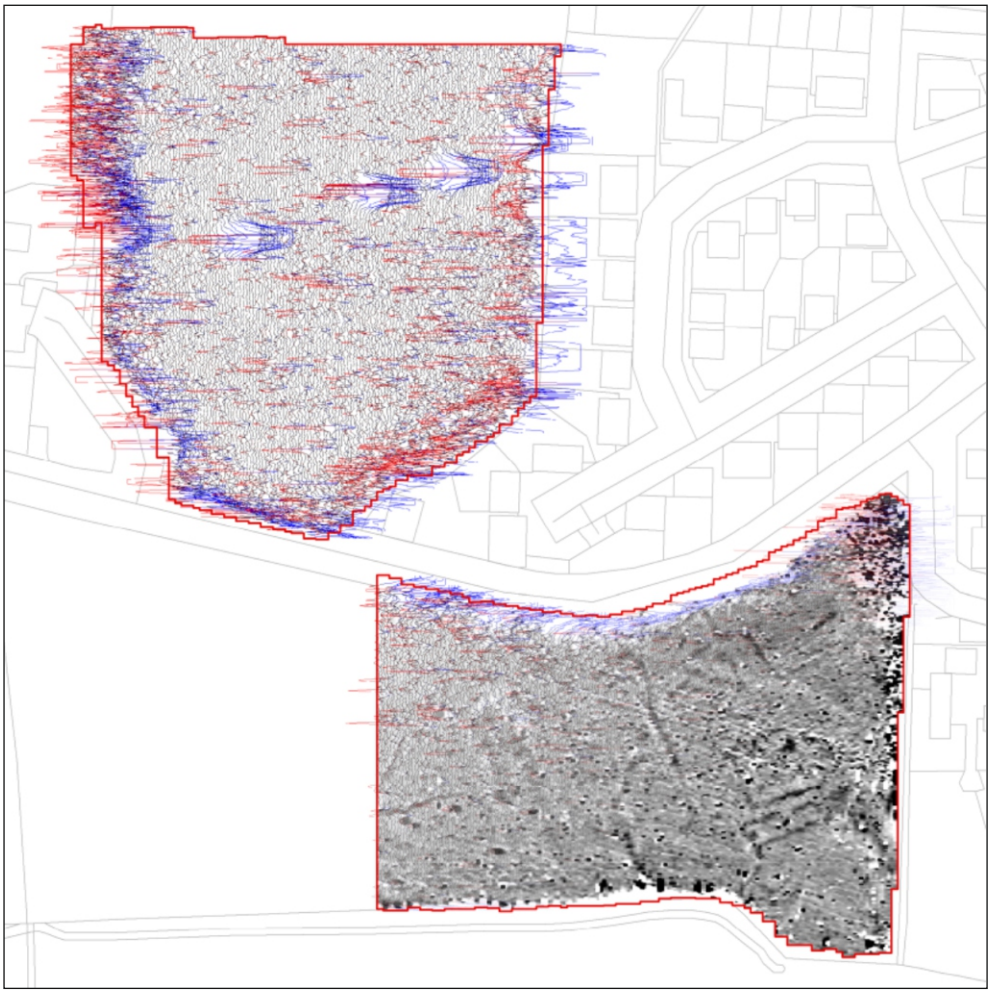
making sense of heritage

Land South of Canterbury Road West and adjacent to Cottington Road, Ramsgate, Kent

Detailed Gradiometer Survey Report



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geoservices

Land South of Canterbury Road West and Adjacent to Cottington Road Ramsgate, Kent

Detailed Gradiometer Survey Report

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Summary

A detailed gradiometer survey was conducted over land south of Canterbury Road West and adjacent to Cottington Road Ramsgate, Kent (centred on NGR A- 634372, 164063; B- 634259, 164223; C- 634457, 165021). The project was commissioned by Courtley Consultants Ltd with the aim of establishing the presence, or otherwise, and nature of detectable archaeological features in support of the development of the site for housing within Thanet District Council's Draft Local Plan.

The site comprises three arable fields located to the west of the town of Cliffs End, covering an area of 7 ha. The geophysical survey was undertaken from the 24th - 28th August 2015.

The detailed gradiometer survey has demonstrated the presence of a number of anomalies of archaeological interest predominantly in Fields A and B which are to the north and south of Cottington Road. The key features identified as being of archaeological interest are primarily ditch-like features. The features identified in Field A show a multiphase enclosure with possible associated land divisions. Features in Field B are also ditch-like anomalies which appear to form smaller unclassified circular and curvilinear features. Areas of increased magnetic response may relate to the enclosures and may represent areas of debris or burnt materials relating to settlement activity. Field C south of Canterbury Road West displays a single pit-type response of potential archaeological interest.

Potential interpretations for anomalies of archaeological interest include a ring ditch which may relate to a round barrow, at least two enclosures, one oval and another rectilinear which demonstrates different phases within the site, and areas of human activity (indicated by a localised mass of increased magnetic response).

Additionally, this archaeological investigation has detected further areas of increased magnetic response and evidence for historic cultivation as well as modern service routes.

Land South of Canterbury Road West and adjacent to Cottington Road, Ramsgate, Kent

Detailed Gradiometer Survey Report

Acknowledgements

Wessex Archaeology would like to thank Courtley Consultants Ltd for commissioning the geophysical survey. The assistance of Howard Courtley is gratefully acknowledged in this regard.

The fieldwork was undertaken by Laura Andrews and Diana Chard. Genevieve Shaw and Garreth Davey processed and interpreted the geophysical data then wrote the report. The geophysical work was quality controlled by Lizzie Richley, and Lucy Learmonth. Illustrations were prepared by Richard Milwain. The project was managed on behalf of Wessex Archaeology by Marie Kelleher.

Land South of Canterbury Road West and adjacent to Cottington Road, Ramsgate, Kent

Detailed Gradiometer Survey Report

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commissioned by Courtley Consultants Ltd to carry out a geophysical survey at Land South of Canterbury Road West and adjacent to Cottington Road, Ramsgate (hereafter "the Site", centred on NGR 634259, 164223 (Field B)) (**Figure 1**). The survey forms part of an ongoing programme of archaeological works being undertaken in support of a planned housing development of the Site, under Thanet District Council's Local Draft Plan.

1.1.2 The aim of the geophysical survey was to establish the presence/absence, extent and character of detectable archaeological remains within the survey area.

1.1.3 This report presents a brief description of the methodology followed, the detailed survey results and the archaeological interpretation of the geophysical data.

1.2 Site location and topography

1.2.1 The Site is located immediately west of the town of Cliffs End, approximately 4km west of Ramsgate and 20.11km north-east of Canterbury within the county of Kent.

1.2.2 The Site is currently utilised for agricultural purposes and comprises three fields labelled A-C (**Figure 1**) within a 1km radius of one another. These fields relate to the following areas respectively: "Land south of Cottington Road", "Land north of Cottington Road" and "Land south of Canterbury Road West". The total survey area required across these three fields is 7ha.

1.2.3 Field A is bounded by Cottington Road to the north, residential dwellings to the east and St Augustine's Golf Course to the south and west. Field B is 60m north of Field A, bounded by Cottington Road to the south, a residential estate to the east and a rail track to the north and west. Field C is around 1km north of Field A, bounded by Canterbury Road West to the north, Cliff View Road to the East, Hengist Way to the south and a further agricultural field to the west.

1.2.4 The Site as a whole inclines sharply from the southern to the northern areas. Field 'A' lies at approximately 7 to 9m aOD and 'B' inclines gently from 10 to 12m aOD. Field 'C' displays the greatest topographical change and slopes from 28 to 38m aOD.

1.3 Soils and geology

1.3.1 The solid geology in Fields A and B comprise sand, silt and clay of the Thanet Formation. In Field C to the north, the solid geology comprises chalk of the Margate Chalk Formation, with overlying superficial deposits of silt and clay (British Geological Survey 2015).

1.3.2 The soils underlying the Site in Fields A and B are likely to consist of Siltic Luvisol soils of the 571y (Hamble) association, and Calcaric Cambisol soilds of the 511f (Coombe) association in Field C (SSEW SE Sheet 6 1983), however excavations prior to the construction of the A299 Richborough Way revealed substantial deposits of colluvium overlying the archaeological horizon.

1.3.3 Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

1.4 Archaeological background

Introduction

1.4.1 A Historic Landscape Assessment (HLA) was undertaken by Wessex Archaeology in 2015 and an archaeological Desk-Based Assessment (DBA) in 2014. These assessments examined the potential for the survival of buried archaeological remains and the effects of the proposed development, primarily utilising information provided by the Kent Historic Environment Record (KHER) and the National Heritage List for England (NHLE).

1.4.2 The following background is summarised from the HLA and DBA. The information provided here is by no means exhaustive due to the extensive evidence for archaeological activity within the vicinity of the Site; rather it provides a concise summary of the known heritage resource. Only those archaeological features and sites considered to be pertinent to the interpretation of the geophysical survey results have been discussed in detail.

1.4.3 No designated heritage assets lie within the overall Site boundary. St Augustine's Cross, erected in 1884, is a Grade II listed monument located 175m to the west of Field B. One Scheduled Monument was noted within the DBA's Study Area, an Anglo-Saxon cemetery located 900m to the east of the Site (WA60/ NHLE List Entry 1004228).

1.4.4 The fact that more KHER data is recorded for Field C (see below) may well be due to more archaeological investigations having been undertaken here that at Fields A and B. As such, the recorded heritage resource may not be a true reflection of the actual potential for buried archaeological remains.

1.4.5 The archaeological potential for early and late prehistoric, Romano-British and post-medieval/modern remains is considered to be high for the Site, although the potential for World War II remains in particular is likely to be moderate. There is considered to be moderate potential for Saxon and medieval remains to be present within the Site. In addition to the multiple phases of settlement recorded on site, evidence for varied activities has been identified, including ritual and mortuary (cremation/ inhumation burials), occupation, agricultural, quarrying and feasting. Cartographic sources show that the Site remained as agricultural land throughout the 19th century through to present day.

1.4.6 A variety of features have been revealed during the numerous previous archaeological investigations in the vicinity of the Site including, but not limited to, structural post holes, rectilinear enclosures, ring ditches, round barrows and a possible henge monument. Archaeological remains have been demonstrated to be present through numerous excavations, and have generally survived well, although plough damage and degradation has been noted. No intrusive archaeological investigations appear to have been undertaken within the survey boundaries.

1.4.7 Due to the complexity of the recorded archaeological resource, the known features and archaeological potential as relates to each of the three fields of the Site has been summarised individually below.

Field A: Land south of Cottington Road

1.4.8 An excavation carried out in 1998 adjacent to Field A revealed evidence for occupation during the late Neolithic/early Bronze Age, whilst residual late Bronze Age and Iron Age finds recovered from later features suggest continued and/or later occupation. This excavation also revealed Anglo-Saxon activity including a number of pits and possible post holes. A ditch of the same period contained building materials. The remains of a medieval boarded groin were also excavated, thought to relate to a sea defence built in 1365. World War II defences comprising a slit trench and gun pit enclosed with barbed wire are recorded partially inside the south-west corner of the field.

1.4.9 No archaeological investigations have been undertaken, nor archaeological features recorded in the KHER within the field itself prior to the current survey.

Field B: Land north of Cottington Road

1.4.10 An archaeological evaluation undertaken c. 600m east of Field B revealed features dating from the Neolithic to Early Bronze Age, suggesting a settlement in the vicinity. Approximately 400m east of Field B, six Beaker or Early Bronze Age round barrows were revealed during excavations at Cliffs End Farm in 2004 to 2005. Post holes centrally within three of these barrows indicated four post structures. These graves were surrounded by a later Anglo-Saxon cemetery.

1.4.11 Evidence for Romano-British occupation was also revealed west of Area B. interpreted as a possible villa. Further investigation nearby revealed drainage ditches, pits, a hearth and two inhumations. A quarry was identified dating to the Romano-British period, in addition to a medieval ditch and pit.

1.4.12 No archaeological investigations have been undertaken, nor archaeological features recorded in the KHER within the field itself prior to the current survey.

Field C: Land south of Canterbury Road West

1.4.13 Field C is located on the south-facing slope of a chalk ridge. Excavations prior to the construction of the East Kent Access Road (EKA) from 2009 to 2010 (which ran between Field B and C) have proven substantial archaeological remains to exist within this area. During these investigations, evidence comprising six cremation burials, several ditches, gullies and pits were interpreted as representing an agricultural settlement spanning the Middle to Late Bronze Age periods. Evidence suggesting Iron Age activity was represented by 13 inhumation burials, a series of enclosures (spanning at least four phases), trackways and related ditches, and a hollow-way. Iron Age settlement evidence was however limited to a single four-post structure and post holes with no coherent pattern.

1.4.14 Aerial photographs identify a prehistoric site located 100m to the south-east of the DBA extents for Field C where crop marks indicating barrows, enclosures (including a possible henge) and a field system have been recorded.

1.4.15 A late prehistoric chalk quarry was observed in 1996 760m to the north-east of Area C, which was likely in use into the Romano-British period. Nearby cropmarks indicative of a large circular enclosure, superimposed on a rectilinear enclosure, were excavated in 1944 and interpreted as early Bronze Age in date, along with two related burials.

1.4.16 An Iron Age settlement was recorded during the construction of the Monkton Gas Pipeline in 1984 recorded 80m west of Field C which included an occupation layer approximately 20m in length and a number of pits. To the east another Iron Age settlement was identified from post holes interpreted as relating to buildings and fences, during an evaluation undertaken in 2002.

1.4.17 Approximately 140m west of the DBA extents for Field C, remains including two cemeteries, numerous ditches, pits and postholes plus a sunken featured building indicating Romano-British occupation were excavated. Approximately 1km north-west, an early Romano-British occupation or possible industrial site was identified.

1.4.18 Three Anglo-Saxon graves were discovered 875m north-west of the DBA extents for Area C, one of which contained a section of a boat along with various high quality grave goods. This discovery was interpreted to be representative of an affluent community.

1.4.19 The northern boundary for Field C has been used as a trackway named '*Dunstrete*' since at least the medieval period. Two medieval rectangular enclosures with causewayed entrances were revealed during trenching 990m north-east of Field C, one of which contained probable sunken featured buildings as well as a number of pits. A number of post-medieval chalk pits are recorded in the vicinity of Field C.

1.4.20 No archaeological investigations have been undertaken, nor archaeological features recorded in the KHER within the field itself prior to the current survey.

2 METHODOLOGY

2.1 Introduction

2.1.1 The geophysical survey was undertaken by Wessex Archaeology's in-house geophysics team between the 24th and 28th August 2015. Field conditions at the time of the survey were mixed with heavy rain for a large proportion of the survey. An overall coverage of 7ha was achieved.

2.2 Method

2.2.1 Individual survey grid nodes were established at 30m x 30m intervals using a Leica Viva RTK GNSS instrument, which is precise to approximately 0.02m and therefore exceeds Historic England recommendations (2008).

2.2.2 The detailed gradiometer survey was conducted using a Bartington Grad601-2 fluxgate gradiometer instrument, which has a vertical separation of 1m between sensors. Data were collected at 0.25m intervals along transects spaced 1m apart with an effective sensitivity of 0.03nT, in accordance with Historic England guidelines (English Heritage 2008). Data were collected in the zigzag method.

2.2.3 Data from the survey was subject to minimal data correction processes. These comprise a zero mean traverse function (±5nT thresholds) applied to correct for any variation between the two Bartington sensors used, and a de-step function to account for variations in traverse position due to varying ground cover and topography. These two steps were applied throughout the survey area, with no interpolation applied.

2.2.4 Further details of the geophysical and survey equipment, methods and processing are described in **Appendix 1**.

3 GEOPHYSICAL SURVEY RESULTS AND INTERPRETATION

3.1 Introduction

3.1.1 The detailed gradiometer survey has identified magnetic anomalies of archaeological interest through all Fields (A-C), along with evidence for historic cultivation, areas of increased magnetic response and a large amount of ferrous. Results are presented as a series of greyscale plots, XY plots and archaeological interpretations at a scale of 1:1500 (**Figures 2** to **7**). The data are displayed at -2nT (white) to +3nT (black) for the greyscale image and ±25nT at 25nT per cm for the XY trace plots.

3.1.2 The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous/burnt or fired objects, and magnetic trends (**Figure 4** and **7**). Full definitions of the interpretation terms used in this report are provided in **Appendix 2**.

3.1.3 Numerous ferrous anomalies are visible throughout the dataset. These are presumed to be modern in provenance and are not referred to unless considered relevant to the archaeological interpretation.

3.1.4 It should be noted that small, weakly magnetised features may produce responses that are below the detection threshold of magnetometers. It may therefore be the case that more archaeological features may be present than have been identified through geophysical survey.

3.1.5 Gradiometer survey may not detect all services present on Site. This report and accompanying illustrations should not be used as the sole source for service locations and appropriate equipment (e.g. CAT and Genny) should be used to confirm the location of buried services before any trenches are opened on Site.

3.2 Gradiometer survey results and interpretation

Field A: Land south of Cottington Road

3.2.1 The most prominent archaeology of the Site is located in Field A (**Figure 4**). Within this field an oval shaped enclosure can be identified as well as responses representing earlier field divisions, possible pits, further linear ditch-type features and discrete areas of increased magnetic response

3.2.2 Curvilinear ditch-like features at **4000** form an oval enclosure area of approximately 55m x 45m. and are *c.*3-3.5 m wide. Breaks in the enclosure appear intermittently with a linear ditch extending into the enclosure from the north and to the south the probable extent of the enclosure ditch is likely to be masked within an area of stronger ferrous response.

3.2.3 Between **4001** and **4002** are several linear and rectilinear ditch-like features oriented parallel within their locations. Their similar alignment suggests that they may be associated and possibly form an overall larger enclosure or field system. There is a further ditch on a similar alignment at **4003** which may be an extension of this overall feature.

3.2.4 Although the phasing for these features cannot be ascertained by gradiometer data alone, it is postulated that the possible enclosure/field system (**4001** to **4003**) is superimposed over the oval enclosure identified at **4000**.The southeast-northwest linear feature first visible to the west of at **4001** appears to continue through the northern extent of the oval enclosure (**4000**). This feature is approximately 60m long, although a partial segment to the south has been interpreted with a lower confidence level of Possible Archaeology,

simply due to a weaker response. This continuation of the feature is however clear in the XY plot (**Figure 3**). It is possible that this feature may continue beyond the extents of the survey area to both the north and the south.

3.2.5 The area identified as **4004** has several anomalies of potential archaeological interest, primarily discrete oval and irregular shaped pit-type anomalies. However there is evidence of extensive ploughing indicated by trends within the interpretation and therefore it is difficult to identify further features in this area, such as the linear and curvilinear ditches seen elsewhere within Field A. Therefore it might be that these have been truncated by ploughing leaving shorter sections or more irregular shaped anomalies.

3.2.6 There is a second area to the west at **4005** with at least three linear ditches evident on differing alignments to each other that are characterised as Archaeology. The relationship between this area and the other identified ditch features to the east around **4000** to **4004** and **4006** cannot be ascertained from the gradiometer data alone.

3.2.7 At **4007** a larger rectangular area measuring approximately 33m x 17m with a smaller, more irregular shaped area adjacent have been characterised as areas of increased magnetic response. A second area, similar in magnetic response, size and orientation, is also identified at **4008** and a possible association could exist between these areas due to their overall similarities. Areas of increased magnetic response provide possible further evidence for activity, as such responses are commonly caused by debris or disturbances related to occupation, similar to features observed in previous relevant excavations (see Paragraph 1.4.16).

3.2.8 Pronounced linear ploughing trends are visible across the field, such as at **4009**, predominantly oriented northwest to southeast. As previously discussed, these are particularly prominent in the area around **4004** where fewer anomalies of archaeological potential have been identified possibly due to truncation and masking of these features by the ploughing disturbance.

Field B: Land north of Cottington Road

3.2.9 This survey area exhibits a number of weaker anomalies that have been characterised as Possible Archaeology. Very weak positive curvilinear anomalies at **4009** form a small rounded feature. This is likely to be a small ditched feature approximately 10m x 20m and is in the vicinity of a large area of ferrous response.

3.2.10 A second smaller curvilinear feature can be seen at **4010** and is formed of fragmented positive anomalies. The diameter of the feature is approximately 10m and possibly represents a ditch or a section of a former ring ditch. There are a variety of archaeological features identified during previous investigations which this feature may represent, including round barrows.

3.2.11 Weak positive anomalies to the north form a linear feature **4011** approximately 80m in length. This is likely to be a ditch feature which appears to share it alignment with the existing field boundary and so is likely to represent drainage related to agricultural activity on the Site. This has been identified as Possible Archaeology as no dating evidence is available at this time and the field boundaries appear to have remained largely unchanged through OS mapping.

3.2.12 A wide linear positive anomaly at **4012** is interpreted as a ditch-like feature with two discrete sub-circular pit-type responses nearby. They are weakly positive and have been

identified as Possible Archaeology. Further to the south at **4013** are two weakly positive linear ditch-like anomalies in a perpendicular orientation to each other with a number of small discrete pit-like anomalies in the vicinity. They are all also characterised as Possible Archaeology.

3.2.13 A larger area of ferrous disturbance at **4015** is presumed to be modern and related to the housing development adjacent to the Site.

Field C: Land south of Canterbury Road West

3.2.14 The only feature of archaeological interest within Field C is at **4016** where a series of strong positive +4-5nT anomalies form a discrete and large circular pit-like feature approximately 5m in diameter. There are no further anomalies of archaeological potential in the vicinity and the only other identified features which are agricultural in origin are weakly positive linear ploughing trends.

3.2.15 There are three parallel, east-west aligned and weakly positive linear anomalies between **4017** and **4018** which have been interpreted as Agricultural. They only appear between the modern services at **4019** and **4021** and do not appear to extend beyond that. They are possibly related to the agricultural use of the Site.

3.2.16 Two small, discrete areas of increased magnetic response in the south-east corner of the Site, they are possibly associated with the construction of the modern service **4021** that is in close proximity.

3.3 Modern Services

3.3.1 Three modern services were identified in Field C. A northwest-southeast service can be seen at **4019,** a northeast-southwest service is evident at **4020**, and a north-south aligned feature is located at **4021**.

4 CONCLUSION

4.1.1 The detailed gradiometer survey has been successful in detecting anomalies of definite and possible archaeological interest. The anomalies of interest are primarily ditch-like and pit-like features with a number of the ditches forming enclosures. In addition to these, anomalies interpreted as areas of increased magnetic response have also been identified with archaeological potential as well as a number of agricultural related anomalies such as ploughing trends and possible landscaping or drainage features.

4.1.2 The geophysical data shows a number of potential features that may relate to the known archaeological background of the Site. Cemeteries from multiple periods as well as enclosures and cropmarks have been identified in adjacent fields. Alongside this Fields A and B are located close to known Neolithic occupation.

4.1.3 The variety of archaeological evidence within the vicinity demonstrates human activity and occupation over many historical periods, it is therefore difficult to assign a single reliable interpretation and associated date to features. It is clear that there is high archaeological potential throughout the Site, concentrated within Field A.

4.1.4 The archaeological background demonstrates the high potential for inhumations and cremations from various periods. The location of burials is still an area under development and geophysical survey will usually only identify associated features such as ring ditches surrounding burial mounds, lined graves etc. Therefore the potential of discreet graves

and/or cemeteries to be present but not identified within the survey areas remains high based on previous investigations.

Field A: Land south of Cottington Road

4.1.5 Field A has presented clear evidence for archaeological features which take the form of a larger oval ditch enclosure at **4000** with a second rectilinear ditch enclosure between **4001** and **4002**. The longest section of ditch from **4001** and continuing south appears to run through the circular ditch of **4000** and it is tentatively suggested that the probable oval enclosure pre-dates the potential rectilinear enclosure.

4.1.6 Further isolated fragmented linear, curvilinear and pit-like features have been identified in the area round **4004** and elsewhere in Field A and these may be remnant features that have been damaged through prolonged agricultural activity on the Site. The strongest ploughing trends on the Site are in an area where fewer extended features of archaeological potential have been identified. The area of increased magnetic response around **4001** and **4003** could possibly suggest a larger area of occupation than the area covered by the ditches alone.

4.1.7 A further area of archaeological interest is the approximately rectangular areas of increased magnetic response at **4007** and **4008**. These are discrete areas of elevated magnetic values that within the context of this Site and the known archaeology in the vicinity should prove to be anthropogenic and not geological. They could indicate a spread of magnetically enhanced debris produced by settlement activity of unknown date. These areas are outside of the two larger enclosures and whether they share an association is unclear.

Field B: Land north of Cottington Road

4.1.8 This field overall shows a weaker contrast between the background matrix and the features of archaeological potential. Possible circular and ring ditch features at **4009** and **4010** show potential with further broad linear ditch-type features at **4012** and **4013**. These are distinct from the narrow linear ditch feature at **4011** which is possibly a former field boundary but it does not correspond to the location of any that are marked on available historic mapping and is therefore kept as Possible Archaeology.

Field C: Land south of Canterbury Road West

4.1.9 One large pit-type feature has been identified as of archaeological interest in this field with the rest of the area containing three modern services, a large number of dipole ferrous anomalies and frequent ploughing trends. The three weakly positive east-west linear features between **4017** and **4018** have been characterised as Agricultural and possibly represent some form of drainage, this would need to be confirmed however.

4.1.10 Frequent ploughing trends are visible across the Site on differing alignments. This is likely due to variable boundaries and different farming processes but these are likely to be medieval, post-medieval and modern in provenance.

5 REFERENCES

5.1 Bibliography

Wessex Archaeology 2014. *Land South of Canterbury Road West and Adjacent to Cottington Road, Ramsgate, Kent, Archaeological Desk-Based Assessment*. Unpublished report. Report Ref 106500.

Wessex Archaeology 2015. *Land South of Canterbury Road West and Adjacent to Cottington Road, Ramsgate, Kent, Historic Landscape Assessment and Settings Assessment.* Unpublished report. Report Ref 106501.01.

English Heritage, 2008.*Geophysical Survey in Archaeological Field Evaluation*. Research and Professional Service Guideline No 1, 2nd edition.

5.2 Online resources

LandIS Soils Guide- Associations, http://www.landis.org.uk [accessed August 2015]
British Geological Survey, http://www.bgs.ac.uk [accessed August 2015]

APPENDIX 1: SURVEY EQUIPMENT AND DATA PROCESSING

Survey methods and equipment
The magnetic data for this project was acquired using a Bartington 601-2 dual magnetic gradiometer system. This instrument has two sensor assemblies fixed horizontally 1m apart allowing two traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 1m separation, and measures the difference between the vertical components of the total magnetic field within each sensor array. This arrangement of magnetometers suppresses any diurnal or low frequency effects.

The gradiometers have an effective resolution of 0.03nT over a ±100nT range, and measurements from each sensor are logged at intervals of 0.25m. All of the data are stored on an integrated data logger for subsequent post-processing and analysis.

Wessex Archaeology undertakes two types of magnetic surveys: scanning and detail. Both types depend upon the establishment of an accurate 20m or 30m site grid, which is achieved using a Leica Viva RTK GNSS instrument and then extended using tapes. The Leica Viva system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02m in real-time and therefore exceed the level of accuracy recommended by Historic England (English Heritage 2008) for geophysical surveys.

Scanning surveys consist of recording data at 0.25m intervals along transects spaced 10m apart, acquiring a minimum of 80 data points per transect. Due to the relatively coarse transect interval, scanning surveys should only be expected to detect extended regions of archaeological anomalies, when there is a greater likelihood of distinguishing such responses from the background magnetic field.

The detailed surveys consist of 20m x 20m or 30m x 30m grids, and data are collected at 0.25m intervals along traverses spaced 1m apart. These strategies give 1600 or 3600 measurements per 20m or 30m grid respectively, and are the recommended methodologies for archaeological surveys of this type (EH, 2008).

Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and characterisation of small and ephemeral features. Data may be collected at up to 0.125m intervals along traverses spaced up to 0.25m apart, resulting in a maximum of 28800 readings per 30m grid, exceeding that recommended by Historic England (English Heritage 2008) for characterisation surveys.

Post-processing
The magnetic data collected during the detail survey are downloaded from the Bartington system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed in order to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

As the scanning data are not as closely distributed as with detailed survey, they are georeferenced using the GPS information and interpolated to highlight similar anomalies in adjacent transects. Directional trends may be removed before interpolation to produce more easily understood images.

Typical data and image processing steps may include:

- Destripe – Applying a zero mean traverse in order to remove differences caused by directional effects inherent in the magnetometer;
- Destagger – Shifting each traverse longitudinally by a number of readings. This corrects for operator errors and is used to enhance linear features;
- Despike – Filtering isolated data points that exceed the mean by a specified amount to reduce the appearance of dominant anomalous readings (generally only used for earth resistance data)

Typical displays of the data used during processing and analysis:

- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This type of image is useful as it shows the full range of individual anomalies.
- Greyscale – Presents the data in plan view using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.

APPENDIX 2: GEOPHYSICAL INTERPRETATION

The interpretation methodology used by Wessex Archaeology separates the anomalies into four main categories: archaeological, modern, agricultural and uncertain origin/geological.

The archaeological category is used for features when the form, nature and pattern of the anomaly are indicative of archaeological material. Further sources of information such as aerial photographs may also have been incorporated in providing the final interpretation. This category is further sub-divided into three groups, implying a decreasing level of confidence:

- Archaeology – used when there is a clear geophysical response and anthropogenic pattern.
- Probable archaeology – used for features which give a clear response but which form incomplete patterns.
- Possible archaeology – used for features which give a response but which form no discernible pattern or trend.

The modern category is used for anomalies that are presumed to be relatively modern in date:

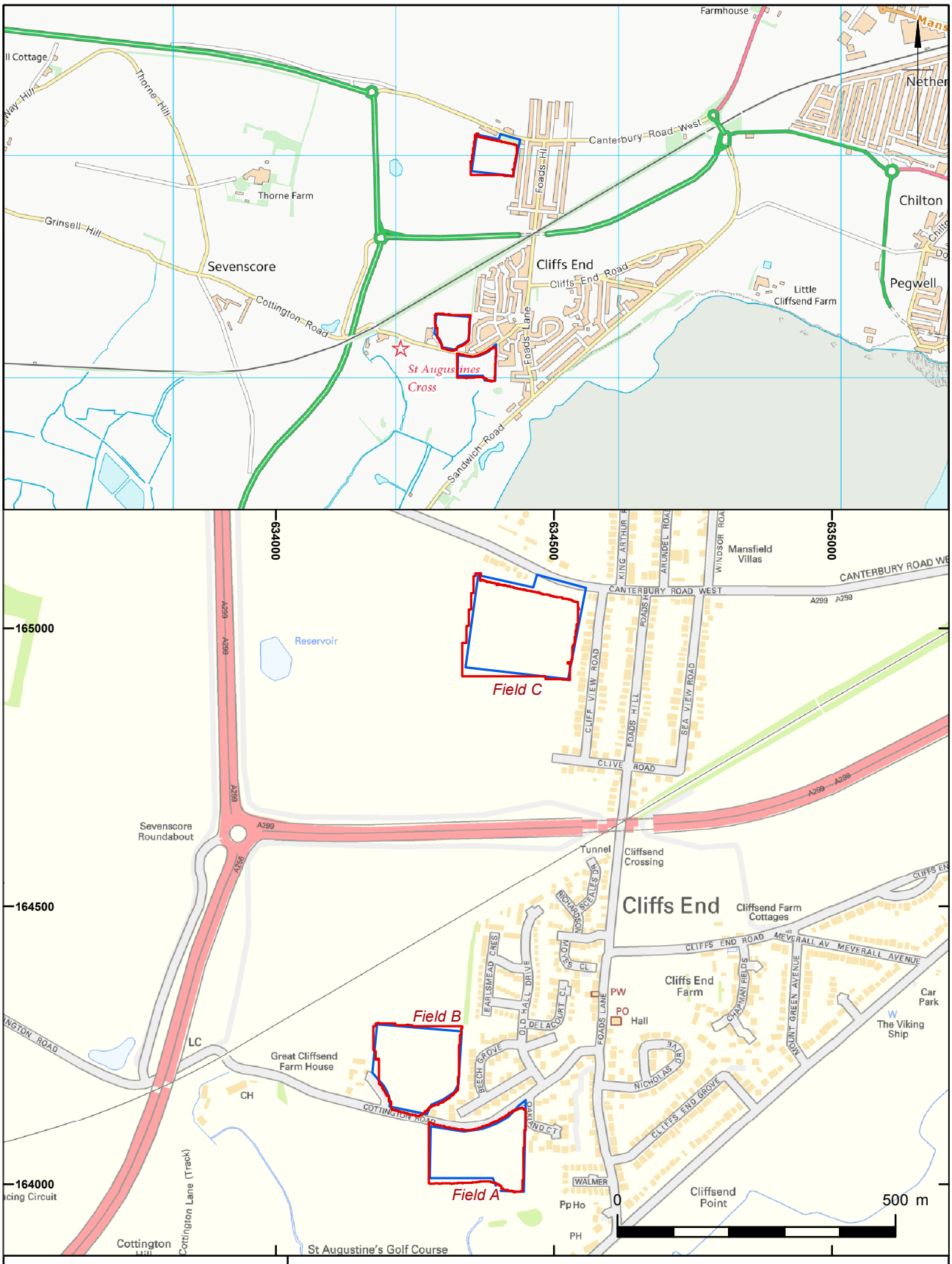
- Ferrous – used for responses caused by ferrous material. These anomalies are likely to be of modern origin.
- Modern service – used for responses considered relating to cables and pipes; most are composed of ferrous/ceramic material although services made from non-magnetic material can sometimes be observed.

The agricultural category is used for the following:

- Former field boundaries – used for ditch sections that correspond to the position of boundaries marked on earlier mapping.
- Agricultural ditches – used for ditch sections that are aligned parallel to existing boundaries and former field boundaries that are not considered to be of archaeological significance.
- Ridge and furrow – used for broad and diffuse linear anomalies that are considered to indicate areas of former ridge and furrow.
- Ploughing – used for well-defined narrow linear responses, usually aligned parallel to existing field boundaries.
- Drainage – used to define the course of ceramic field drains that are visible in the data as a series of repeating bipolar (black and white) responses.

The uncertain origin/geological category is used for features when the form, nature and pattern of the anomaly are not sufficient to warrant a classification as an archaeological feature. This category is further sub-divided into:

- Increased magnetic response – used for areas dominated by indistinct anomalies which may have some archaeological potential.
- Trend – used for low amplitude or indistinct linear anomalies.
- Superficial geology – used for diffuse edged spreads considered to relate to shallow geological deposits. They can be distinguished as areas of positive, negative or broad bipolar (positive and negative) anomalies.



Detailed Survey Extents

Site

Date:	25/09/15	Revision Number:	0
Scale:	1:25000 and 1:10000 at A4	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig01.mxd		

Site location and survey extents

Figure 1

634200
634300
634400
634500
164300
164200
164100
164000
163900
Field B
Field A
+3nT
-2nT
0
100 m
Detailed Survey Extents

Date:	25/09/15	Revision Number:	0
Scale:	1:1500 at A3	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig02.mxd		

Greyscale plot (south)

Figure 2

634200
634300
634400
634500
164300
164200
164100
164000
163900
Field B
Field A
+25nT
-25nT
0
100 m
Detailed Survey Extents

Date:	25/09/15	Revision Number:	0
Scale:	1:1500 at A3	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig03.mxd		

XY trace plot (south)

Figure 3

Date:	25/09/15	Revision Number:	0
Scale:	1:1500 at A3	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig04.mxd		

Archaeological Interpretation (south)

Figure 4

634300
634400
634500
634600
165200
165100
165000
164900
164800

Field C

+3nT
-2nT

0
100 m

Detailed Survey Extents

Date:	25/09/15	Revision Number:	0
Scale:	1:1500 at A3	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig05.mxd		

Greyscale plot (north)

Figure 5

634300
634400
634500
634600
165200
165100
165000
164900
164800

Field C

+25nT
-25nT

0
100 m

Detailed Survey Extents

Date:	25/09/15	Revision Number:	0
Scale:	1:1500 at A3	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig06.mxd		

XY trace plot (north)

Figure 6

634300
634400
634500
634600
165200
165100
165000
164900
164800
4020
4017
4019
4021
4018
4016
Field C

- Detailed Survey Extents
- Archaeology
- Probable Archaeology
- Possible Archaeology
- Modern Service
- Ploughing
- Agricultural
- Increased Magnetic Response
- Trend
- Ferrous
- Superficial Geology

0 100 m

Date:	25/09/15	Revision Number:	0
Scale:	1:1500 at A3	Illustrator:	RAM
Path:	R:\PROJECTS\106501\GIS\FigsMXD\2015_09_25\106501_Fig07.mxd		

Archaeological Interpretation (north)

Figure 7

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