

LAND TO THE WEST OF BROOMFALLEN ROAD, SCOTBY, CARLISLE, CUMBRIA

Archaeological Desk-Based Assessment and Geophysical Survey



Client: Simtor Ltd

NGR: NY 4410 5425 (centre)

© Greenlane Archaeology Ltd
September 2012



Greenlane Archaeology Ltd,
2 Albrights Yard, Theatre Street,
Ulverston, Cumbria, LA12 7AQ

Tel: 01229 588 500
Email: info@greenlanearchaeology.co.uk
Web: www.greenlanearchaeology.co.uk

Contents

| | |
|---|----|
| Illustrations and Tables..... | 2 |
| List of Figures..... | 2 |
| List of Plates..... | 2 |
| List of Tables..... | 2 |
| Non-Technical Summary..... | 3 |
| Acknowledgements..... | 3 |
| 1. Introduction..... | 4 |
| 1.1 Circumstances of the Project..... | 4 |
| 1.2 Location, Geology, and Topography..... | 4 |
| 2. Methodology..... | 6 |
| 2.1 Desk-Based Assessment..... | 6 |
| 2.2 Site Visit..... | 6 |
| 2.3 Geophysical Survey..... | 6 |
| 2.4 Archive..... | 6 |
| 3. Results..... | 7 |
| 3.1 Introduction..... | 7 |
| 3.2 Desk-Based Assessment..... | 7 |
| 3.3 Map Regression..... | 9 |
| 3.4 Site Visit..... | 10 |
| 3.5 Geophysical Survey..... | 11 |
| 3.6 Conclusion..... | 12 |
| 4. Site History..... | 13 |
| 4.1 Introduction..... | 13 |
| 4.2 Prehistoric Period (c11,000BC – 1 st century AD)..... | 13 |
| 4.3 Romano-British to Early Medieval Period (1 st century AD – 11 th century AD)..... | 13 |
| 4.4 Medieval Period (11 th century AD – 16 th century AD)..... | 14 |
| 4.5 Post-Medieval (16 th century AD – present)..... | 15 |
| 4.6 Previous Archaeological Work..... | 15 |
| 5. Discussion..... | 16 |
| 5.1 Introduction..... | 16 |
| 5.2 Significance..... | 16 |
| 5.3 Potential for Unknown Archaeological Remains..... | 16 |
| 5.4 Disturbance..... | 17 |
| 5.5 Impact..... | 17 |
| 5.6 Recommendations..... | 17 |
| 6. Bibliography..... | 18 |
| 6.1 Primary and Cartographic Sources..... | 18 |

| | | |
|--|--------------------------|----|
| 6.2 | Secondary Sources | 18 |
| 6.3 | Aerial Photographs | 19 |
| Appendix 1: Site Gazetteer | | 20 |
| Appendix 2: Significance Criteria | | 24 |
| Appendix 3: Geophysical Survey Results | | 25 |

Illustrations and Tables

List of Figures

| | |
|--------------------------------|---|
| Figure 1: Site location | 5 |
| Figure 2: Site gazetteer | 8 |

List of Plates

| | |
|--|----|
| Plate 1: Extract from the tithe map for Scotby township (CAC(C) DRC/8/171 1842)..... | 9 |
| Plate 2: Extract from the Ordnance Survey map of 1868..... | 9 |
| Plate 3: Extract from the Ordnance Survey map of 1897..... | 10 |
| Plate 4: Extract from the Ordnance Survey map of 1901..... | 10 |
| Plate 5: Extract from the Ordnance Survey map of 1926..... | 10 |
| Plate 6 (left): General view of the site from the south-west..... | 11 |
| Plate 7 (right): The possible bank or mound on the west part of the site | 11 |
| Plate 8 (left): General view of the west side of the site showing the vegetation | 11 |
| Plate 9 (right): Overhead electricity line viewed from the south | 11 |

List of Tables

| | |
|--|----|
| Table 1: Summary of sites of archaeological interest within the study area | 7 |
| Table 2: Significance by site | 16 |
| Table 3: Degree of potential for unknown archaeological remains by period | 17 |

Non-Technical Summary

As part of pre-planning consultation for a proposed residential development on land to the west of Broomfallen Road, Scotby, Carlisle, Cumbria Greenlane Archaeology was commissioned to carry out a desk-based assessment and geophysical survey of the site. This is intended to identify whether there are any known archaeological remains within the site, and what the potential is for as yet unknown archaeological remains to be present. The project was carried out in September 2012; the desk-based assessment, including site visit, was undertaken by Greenlane Archaeology and the geophysical survey by Phase Site Investigations, working as sub-contractors on behalf of Greenlane Archaeology.

The site is situated on the south side of the village of Scotby, which is historically connected to the nearby medieval priory at Wetheral, but is in an area of extensive prehistoric remains and close to the Roman city of Carlisle and Hadrian's Wall. In addition, a significant early medieval silver hoard was found in the field immediately to the north of the site. The Historic Environment Record for the area has records of sites of most periods within the study area, but in particular those of prehistoric and post-medieval date, with prehistoric monuments and burials known to the west and north-west. The village is first recorded in the early 12th century, but the place name and the silver hoard suggests a possible Norse origin. It was closely connected to Wetheral Priory, which is known to have been established c1100, but probably has earlier origins. Roman finds from the immediate area around the site are not known, but a group of Roman inscriptions near Wetheral indicate a Roman, probably military, presence in the area, and there are earthworks of possible Roman date in the wider area. It is likely that the village saw relatively little development until the post-medieval period, following the Dissolution and after the coming of the Newcastle-Carlisle railway.

The site visit identified few constraints to further archaeological work, although it was not possible to access the western part of the site, within which was an earthwork bank or mound of uncertain origins. The geophysical survey revealed large areas of magnetic disturbance, probably resulting from modern activity, particularly across the centre of the site, and two semi-circular groupings of dipolar anomalies may represent structures of some form. There were also numerous smaller responses across the site of potential interest, although the origins of these are also unknown.

In view of the archaeological evidence from the wider area, there is some potential for similar remains, particularly prehistoric, to be present within the site area. However, the geophysical survey identified only small areas of potential interest and little of obvious importance. It is therefore recommended that archaeological evaluation of the two semi-circular anomalies and the mound or bank be carried out. The investigation of some of the other anomalies revealed by the geophysical survey could also then be carried out as part of this work.

Acknowledgements

Greenlane Archaeology would like to thank Simtor Ltd for commissioning the project, and their agent, Taylor and Hardy, in particular Margaret Hardy, for their information about the site. Additional thanks are due to Jeremy Parsons, Historic Environment Officer at Cumbria County Council, for issuing the brief, the staff of Cumbria Archive Centre in Carlisle (CAC(C)) for help with accessing their archives and Jo Mackintosh, Historic Environment Records Officer at Cumbria County Council, for help with accessing the HER.

The project was managed by Dan Elsworth, who also carried out the desk-based assessment and site visit, and wrote the report with Tom Mace, who also produced the illustrations. The geophysical survey was carried out and the associated report produced by Phase Site Investigations, and the final report was edited by Jo Dawson.

1. Introduction

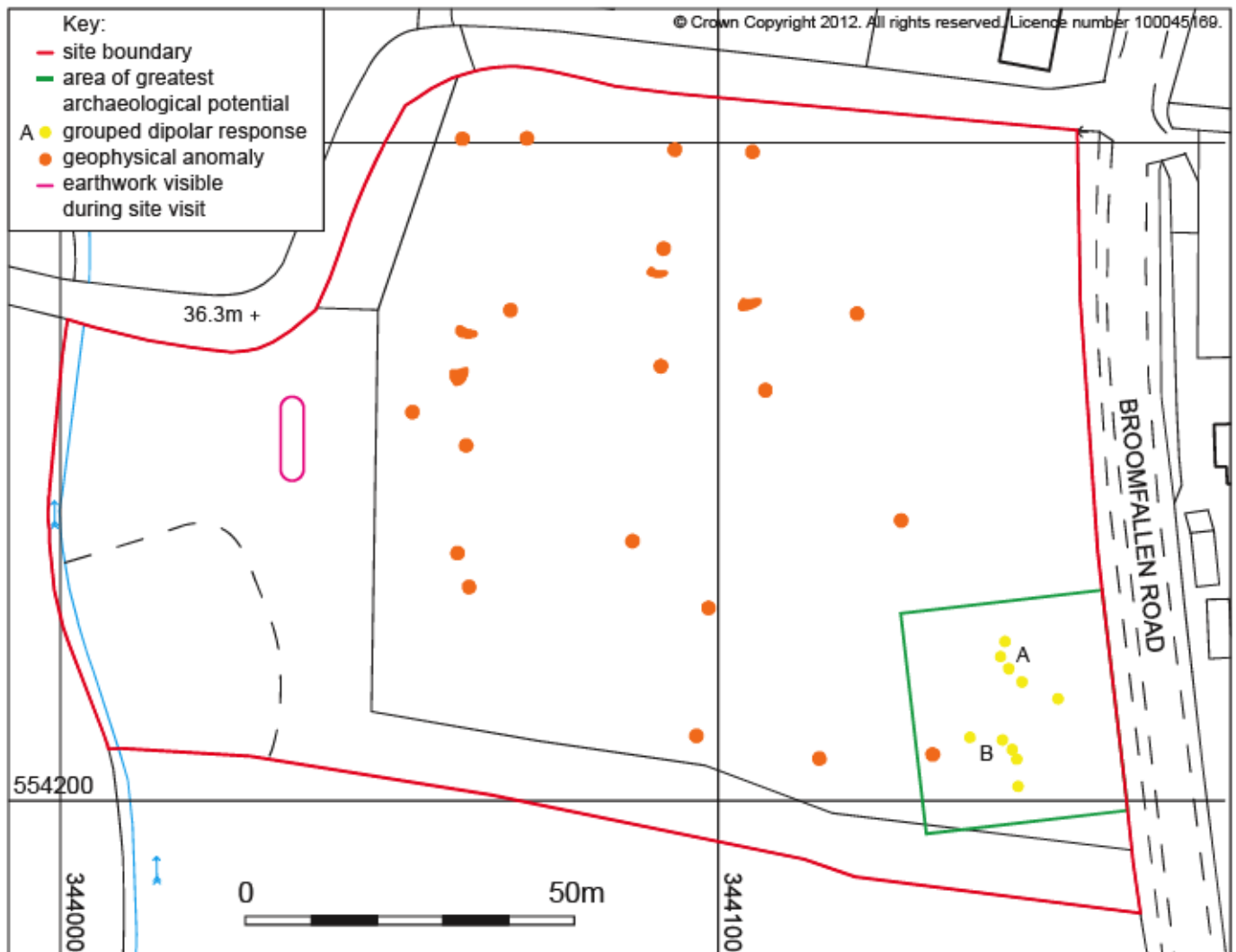
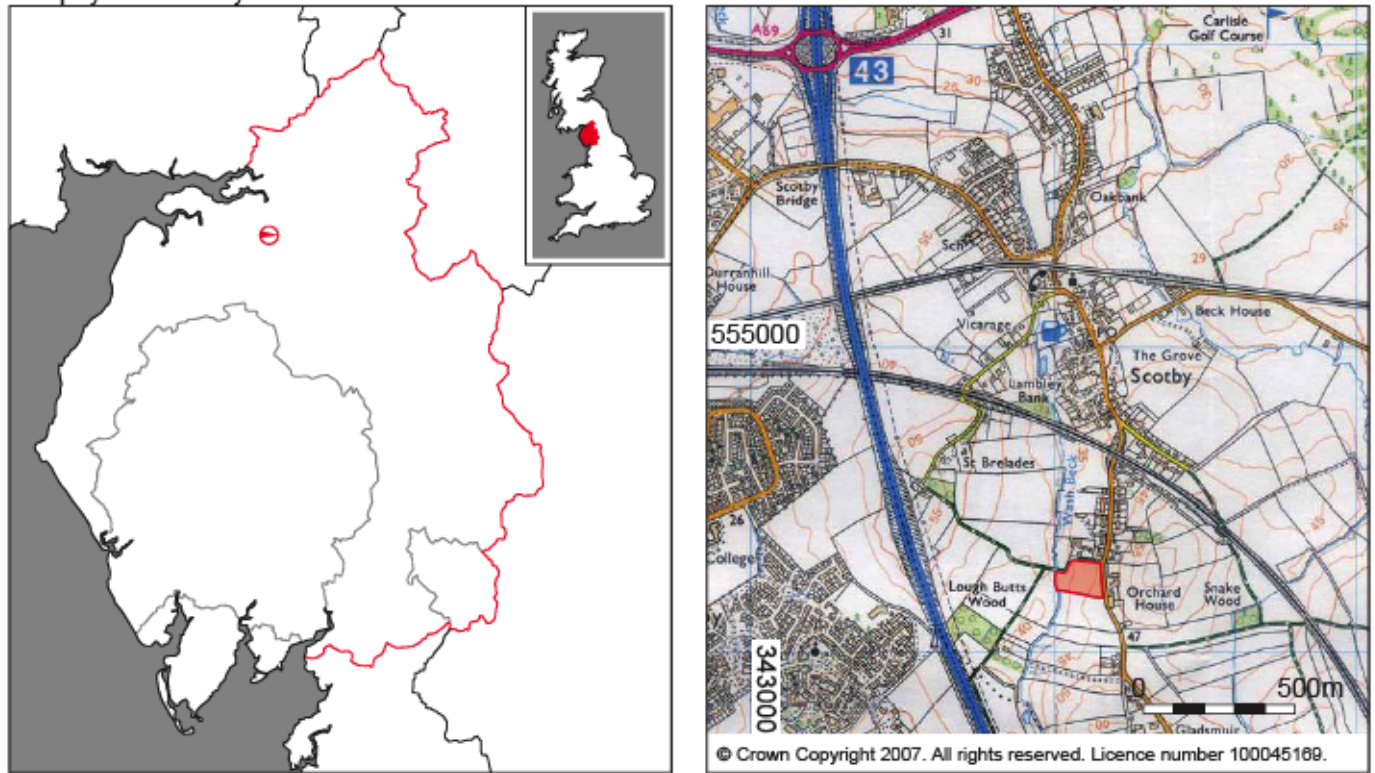
1.1 Circumstances of the Project

1.1.1 As part of pre-planning consultation for a proposed residential development on land to the west of Broomfallen Road, Scotby, Carlisle, Cumbria (NGR NY 4410 5425 (centre)) Jeremy Parsons, Historic Environment Officer at Cumbria County Council, recommended that a programme of archaeological desk-based assessment and geophysical survey be carried out. This was intended to establish at an early stage whether the area was likely to have any known sites of archaeological interest within it or whether there was any potential for as yet unknown sites to be present. A brief was prepared by Jeremy Parsons (Parsons 2012) in response to which Greenlane Archaeology produced a project design. Following its acceptance by Simtor Ltd (hereafter 'the client') and approval by Jeremy Parsons the work was carried out by Greenlane Archaeology in September 2012.

1.1.2 The proposed development site comprises an area of 1.5 hectares and is in an area known for prehistoric remains, as well as a 10th century silver hoard found in 1855 (Parsons 2012).

1.2 Location, Geology, and Topography

1.2.1 The site occupies an area of approximately 1.5 hectares to the south of the centre of Scotby on sloping ground ranging from c30m above sea level to the west and 50m to the east (Ordnance Survey 2007) (Figure 1). A lower part of the site is adjacent to Wash Beck, a small water course running approximately north/south, and is bounded by a track to the north and the main north/south road through Scotby to the east. The solid geology comprises red Permian sandstone of the Penrith group (Moseley 1978, plate 1), with overlying glacial deposits concealing much of the bedrock (Countryside Commission 1998, 40), although it is revealed along the length of the deep gorge containing the River Eden.



Client: Simtor Ltd

© Greenlane Archaeology Ltd, September 2012

Figure 1: Site location

2. Methodology

2.1 Desk-Based Assessment

2.1.1 A desk-based assessment was carried out in accordance with the guidelines of the Institute for Archaeologists (IfA 2008). This principally comprised an examination of early maps of the site and published secondary sources. A number of sources of information were used during the desk-based assessment:

- **Cumbria Historic Environment Record (HER):** this is a list of all the known sites of archaeological interest within the county, which is maintained by Cumbria County Council and is the primary source of information for an investigation of this kind. All of the known sites of archaeological interest within 1km of the centre of the proposed development area were examined; each identified site comes with a grid reference, description and source and any additional information which was referenced was also examined as necessary. In addition, unpublished reports of archaeological investigations in the vicinity of the site were examined;
- **Cumbria Archive Centre, Carlisle (CAC(C)):** this was visited principally in order to examine early maps and plans of the site, but other documentary sources and published records were also consulted in order to gather information about the historical development of the site and its environs, and also information about the archaeology of its immediate environs;
- **Greenlane Archaeology library:** additional secondary sources were examined to provide information for the site background.

2.2 Site Visit

2.2.1 A brief site visit was carried out, primarily with the intension of identifying any areas that might prove constraining to any subsequent archaeological work and whether the site had been affected by any modern activity that might have impacted upon archaeological remains. In addition, the presence of any features, finds, or deposits of possible archaeological interest was noted. Brief written notes were made during the site visit and areas of interest noted on a plan of the site. Colour digital photographs showing the general arrangement of the site and any features of interest were also taken.

2.3 Geophysical Survey

2.3.1 Full details of the methodology used during the geophysical survey are presented in *Appendix 3*. A detailed magnetic survey was carried out using a Bartington Grad601-2 magnetic gradiometer with data logger. The data was recorded over 30m by 30m grids with readings taken on the 100nT range (0.1nT sensitivity) at 0.25m intervals on profiles spaced 1m apart.

2.4 Archive

2.4.1 A comprehensive archive of the project has been produced in accordance with the project design, and current IfA and English Heritage guidelines (Brown 2007; English Heritage 1991). The paper and digital archive and a copy of this report will be deposited in the Cumbria Archive Centre in Carlisle following the completion of the project. A copy of this report will be provided for the client, a digital copy for the client's agent, and a copy will be retained by Greenlane Archaeology. In addition, at a suitable time a digital copy will be provided to the Historic Environment Record Officer at Cumbria County Council, and a record of the project will be made on the OASIS scheme.

3. Results

3.1 Introduction

3.1.1 A total of 16 sites of archaeological interest were identified within the study area during the desk-based assessment and walk-over survey (Figure 1; summarised in Table 1 below) ranging from Bronze Age to post-medieval in date. All of these sites, apart from one (**Site 10**), were previously recorded in the HER and none are situated within the proposed development area. Of the sites recorded **Sites 11, 14, and 15** all record multiple objects at the same location. None of the sites are thought to be situated within the proposed development area. However, at least one of the sites (**Site 15**) is not accurately located, and so its significance to the study area is uncertain. Sites included in the gazetteer that relate to periods of the study area's history are individually mentioned in the site history (see *Section 4* below). The possible trackways (**Site 9** and **Site 16**) and 'cursus-like' feature (**Site 5**) are of unknown date but the latter is potentially Neolithic. The unclassified earthworks (**Site 6**) and excavated feature (**Site 12**) are also undated.

| Site No. | Type | Period | Site No. | Type | Period |
|----------|--------------|---------------|----------|-------------|----------------|
| 1 | Ring-ditch | Bronze Age | 9 | Trackway | Uncertain |
| 2 | Tannery | Post-medieval | 10 | Sepulchre | Uncertain |
| 3 | Gasworks | Post-medieval | 11 | Findspot | Early medieval |
| 4 | Railway line | Post-medieval | 12 | Ditch | Uncertain |
| 5 | Cursus? | Prehistoric | 13 | Burnt mound | Bronze Age |
| 6 | Earthworks | Uncertain | 14 | Findspot | Bronze Age |
| 7 | Railway line | Post-medieval | 15 | Findspot | Bronze Age |
| 8 | Farmstead | Post-medieval | 16 | Trackway | Uncertain |

Table 1: Summary of sites of archaeological interest within the study area

3.2 Desk-Based Assessment

3.2.1 The results of the desk-based assessment have been used to produce two separate elements. Firstly all sites of archaeological interest recorded within the study area were compiled into a gazetteer (*Appendix 1*). The gazetteer is used to assess the general type of historic landscape that makes up the study area, contribute to the compilation of the general history of the site (see *Section 4*) and, more importantly, identify sites that are likely to be affected by the proposed development. The significance of each of these sites and the degree to which they are likely to be affected is considered in *Section 5* and from this recommendations for further work are produced.

3.2.2 The second purpose of the desk-based assessment is to produce a background history of the site. This is intended to cover all periods, in part to provide information that can be used to assess the potential of the site (particularly for the presence of remains that are otherwise not recorded in the study area), but more importantly to present the documented details of any sites that are known (see *Section 4*).

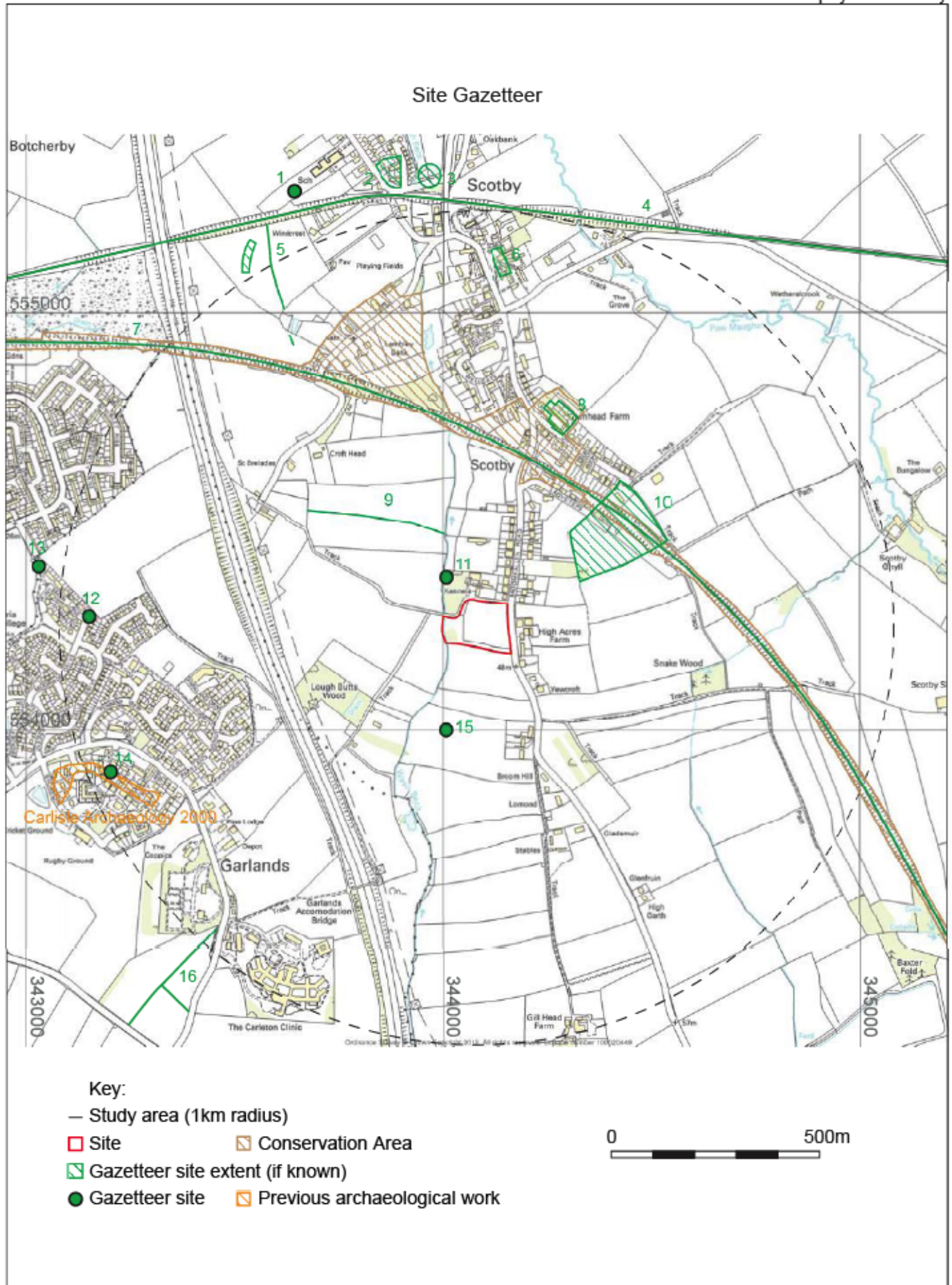


Figure 2: Site gazetteer

Client: Simtor Ltd

© Greenlane Archaeology Ltd, September 2012

3.3 Map Regression

3.3.1 **Tithe map for Scotby Township (CAC(C) DRC/8/171 1842)**: this is the earliest detailed map of the area, and it shows the site occupying a field bounded by roads to the north and east side and a stream to the west, at this time called 'Collier Beck', and there is a group of buildings to the south-east (Plate 1). The plot comprising the site is numbered 385, which is described in the apportionment as arable and named 'Barras Brow', as are plot 374 (immediately to the north) and 396 (immediately to the south). Plot 385 belongs to David Hodgson and is occupied by James Creighton. The element 'barras' is of interest as it is likely to derive from the Old French for 'barrier' (Armstrong *et al* 1952, 460). A study of a boundary known as Bishop's Dyke and Barras Gate near Dalston, to the west of the study area, described a large earthwork comprising an area of level ground with a mound on either side with a corresponding ditch (Richardson 1884, 272). Richardson was unable to conclude what date this feature was, although he was dismissive of the generally held view that they were to keep out Scottish forces in the 16th and 17th century or that it was a deer park boundary, suggesting that it was much earlier and potentially Early medieval (*op cit*, 274). It is interesting to note that these three fields overlook a crop mark feature apparently comprising two ditches to the west (**Site 9**). Of additional interest are plots 377 and 377a, to the north-east of the site, both of which are named 'Sepulchre', which is suggestive of there having been a burial or burials found there (**Site 10**).

3.3.2 **Ordnance Survey 1868**: the buildings to the south-east are labelled 'Lane End' but the field is still undeveloped (Plate 2). The stream to the west by this date has its present name of 'Wash Beck'.



Plate 1: Extract from the tithe map for Scotby township (CAC(C) DRC/8/171 1842)

Plate 2: Extract from the Ordnance Survey map of 1868

3.3.3 **Ordnance Survey 1897**: the north/south beck along the west side of the site is shown but the area is still undeveloped (Plate 3).

3.3.4 **Ordnance Survey 1901**: a small semi-circular kink is shown just north of centre in the eastern field boundary, but the field remains undeveloped (Plate 4). 'Lane End' has expanded and become known as 'Orchard House'. This is also the first Ordnance Survey plan to mark the position of 'Coins found (A.D. 1855)' a short distance to the north of the site (**Site 11**).



Plate 3: Extract from the Ordnance Survey map of 1897

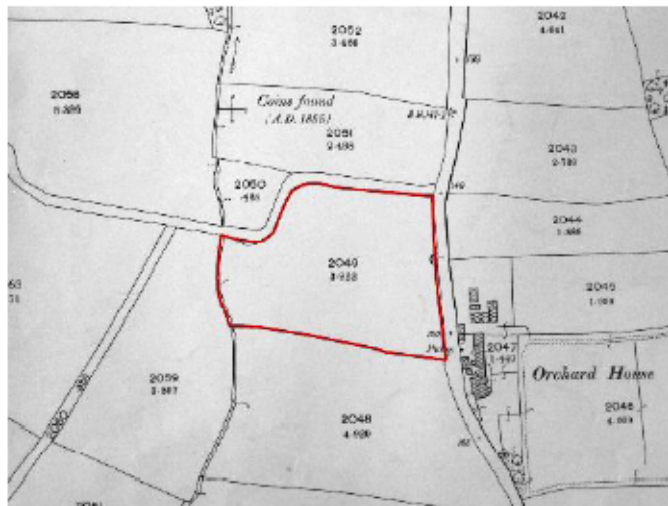


Plate 4: Extract from the Ordnance Survey map of 1901

3.3.5 **Ordnance Survey 1926:** the site is unchanged (Plate 5).

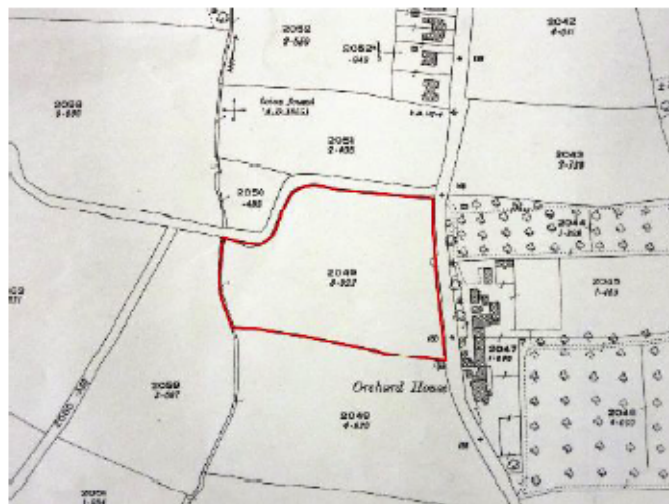


Plate 5: Extract from the Ordnance Survey map of 1926

3.4 Site Visit

3.4.1 **Site Arrangement and Character:** the site comprises a single large field of freshly cut grass on the east side, bounded by the road to the east and a track to the north and a hedge to the south (Plate 6). This sloped down to the west toward Wash Beck where the west end of the site comprised a smaller area separated by a post and wire fence. This area was heavily overgrown and not fully accessible. The majority of the area was unremarkable and devoid of obvious features. However, within the smaller western section there was what appeared to be a grass-covered mound or bank approximately orientated north/south c1m tall and c10m long (Plate 7; its approximate position is marked on Figure 1).



Plate 6 (left): General view of the site from the south-west



Plate 7 (right): The possible bank or mound on the west part of the site

3.4.2 **Constraints:** there were few constraints to any further archaeological work across most of the site. However, the western part was very overgrown and largely inaccessible as a result (Plate 8) and is likely to be boggy on account of its proximity to the beck and so it would be difficult to carry out any further investigative archaeological work in this area. In addition, an overhead electricity line orientated approximately north-west/south-east passed over the centre of the site (Plate 9).



Plate 8 (left): General view of the west side of the site showing the vegetation



Plate 9 (right): Overhead electricity line viewed from the south

3.5 Geophysical Survey

3.5.1 The full geophysical report is presented in *Appendix 3*. In summary, the main part of the site had a large area of magnetic disturbance across its centre, most probably the result of relatively recent ground disturbance such as the dumping of material on the site and further similar areas were present around the site boundary. Amongst the more isolated dipolar responses were two curving groups in the

south-east corner; although it is possible that this grouping is random, it may represent some sub-surface features of interest. In addition, isolated positive responses were present across much of the site but none of these formed any distinct pattern and it was not possible to be certain of their origins. The overgrown nature of the west part of the site meant that it could not be subject to geophysical survey.

3.6 Conclusion

3.6.1 The map regression shows that the site has comprised a single field from at least 1842 by which time the roads to the north and east of the site were already established. The field name 'Barras Brow' suggests that it was near, perhaps overlooking, a barrier of some form, although the date and nature of this is unknown.

3.6.2 The site visit revealed relatively little disturbance to the area which suggests that any archaeological features are likely to have survived. However, it is apparent that it has been sub-divided more recently and that the western part has become very overgrown. An apparent earthwork within this area may be of some interest, but this was difficult to ascertain due to the limited access. Some constraints are likely on the site as the west side is likely to be wet due to its proximity to Wash Beck and there is an overhead electricity line running across it.

3.6.3 The geophysical survey did not record any features of apparent significance, indeed the main part of the site appears to have been heavily disturbed and the west side could not be investigated due to the dense vegetation. Sporadic features were present across much of the site, but the origin of these could not be determined with any certainty through geophysical survey techniques alone. Two areas of grouped dipolar anomalies are of interest, however, as they appear to form semi-circular or circular shapes but it is not possible to determine from the survey alone whether they therefore represent structural remains.

4. Site History

4.1 Introduction

4.1.1 The history of the local landscape is arguably dominated by three significant elements: the medieval village of Wetheral, the extensive Roman remains associated with the city of Carlisle and Hadrian's Wall to the north and west, and the extensive prehistoric remains discovered largely to the west of the site. In addition, an important coin and bullion hoard of early 10th century date was discovered in the field immediately adjoining the site to the north. Information relating to specific sites recorded during the desk-based assessment (see *Section 3* above) is included where relevant.

4.2 Prehistoric Period (c11,000BC – 1st century AD)

4.2.1 While there is limited evidence for human activity in the county in the period immediately following the last Ice Age, this is typically found in the southernmost part on the north side of Morecambe Bay. Excavations of a small number of cave sites have found the remains of animal species common at the time but now extinct in this country and artefacts of Late Upper Palaeolithic type (Young 2002). No remains of this date are known from the immediate area of the site, although a pair of barbed spear heads made from antler were found at Crosby-on-Eden (Hodgson 1895), which, although undated, may belong to the end of the Palaeolithic or early Mesolithic. The county was clearly more densely inhabited during the following period, the Mesolithic (c8,000 – 4,000 BC), as large numbers of artefacts of this date have been discovered during field walking and eroding from sand dunes along the coast, but these are typically concentrated in the west coast area and on the uplands around the Eden Valley (Cherry and Cherry 2002). More recently a particularly large assemblage has been recovered during excavations, directly on the edge of the River Eden, outside Carlisle (Clark 2010) and field walking has found additional scatters of some significance also in the Eden valley near Penrith (Clarke *et al* 2008). Coastal areas and river valleys are notably places where such material is frequently found in the wider region (Middleton *et al* 1995, 202; Hodgkinson *et al* 2000, 151-152; Hodgson and Brennand 2006, 26).

4.2.2 In the following period, the Neolithic (c4,000 – 2,500 BC), large scale monuments such as burial mounds and stone circles begin to appear in the region, represented within the study area by the possible cursus to the north (**Site 5**), and one of the most recognisable tool types of this period, the polished stone axe, is found in large numbers across the county, having been manufactured at Langdale in the central Lake District (Hodgson and Brennand 2006, 45). During the Bronze Age (c2,500 – 600 BC) monuments, particularly those thought to be ceremonial in nature, become more common still, again represented in the study area by the apparent ring ditch feature to the north of the site (**Site 1**), and other features such as a burnt mound to the west (**Site 13**) and various stray finds (**Sites 14 and 15**) also belong to this period. It is likely that settlement sites thought to belong to the Iron Age have their origins in this period. Sites of this type, while not present in the study area, are recorded, typically as crop marks revealed in aerial photographs, in the wider area (some recent discoveries are described by Webster and Newman (2007)) although they are often undated and not understood in detail. In addition, there is likely to have been a considerable overlap between the end of the Iron Age and the beginning of the Romano-British period; it is evident that in this part of the country, initially at least, the Roman invasion had a minimal impact on the native population in rural areas (Philpott 2006, 73-74).

4.2.3 Various late prehistoric sites are recorded within the study area, largely to the north and west of the site. In addition the fields named 'Sepulchre' (**Site 10**) to the north-east of the site may also relate to the discovery of a prehistoric burial or burials, although this cannot be certain.

4.3 Romano-British to Early Medieval Period (1st century AD – 11th century AD)

4.3.1 While the area immediately around Scotby has relatively little evidence for activity of Roman date, the environs of the site are within a few kilometres of Hadrian's Wall, to the north, and the Roman city of Carlisle, to the west. The fort at Carlisle was first established in the autumn or winter of AD 72-73 (Zant 2011, 35) but was soon altered, in AD 83-84 (*op cit*, 36-37). It was abandoned for a time, before

being rebuilt in the early 2nd century, cAD 105, but its character changed by the AD 120s, probably on account of the construction of Hadrian's Wall, which began in AD 122-123 (*op cit*, 42-43). This in turn led to the construction of a new fort at Stanwix, but the fort at Carlisle continued and in the early 3rd century AD it was rebuilt in stone (*op cit*, 48). Both Carlisle and Stanwix continued to be occupied into the 4th century and beyond, along with an extensive civilian settlement at the former. Evidence for post-Roman habitation is limited and inconclusive (*op cit*, 50-51) but it is apparent that Carlisle remained an important place into the early medieval period, with an historical account of the 7th century famously describing the extant walls of the Roman town and a working fountain (Zant 2009, 15). In more rural areas such as that around Scotby the impact of the Romans, in what would have been a heavily militarised zone, is less clear. The size of the 'military market' to the local area must have been of great importance, but it is clear that many 'natives' initially continued to live in much the way they had before the arrival of the Romans, perhaps supplying them with goods and, as a result, at first benefiting from their arrival (Higham 1986, 216-225). The extensively military nature of the area is represented by a crop mark to the west of the study area, which has been interpreted as a Roman temporary camp (Small 2008, 29 and 33). In addition, a pair of Roman inscriptions formerly situated in the cliff face south of Wetheral, to the east of the site, but now loose and stored in Tullie House Museum (Perriam and Ramshaw 2008, 4), have been taken as evidence for the military quarrying the local stone (Collingwood and Wright 1965, 335-336).

4.3.2 Physical and archaeological evidence from the post-Roman early medieval period is considerably less common in rural areas. Place-name evidence shows that the name Scotby derives from the Norse and means 'farm of the Scots' (Armstrong *et al* 1950, 163). This is potentially of interest as the term *Scottas*, from which this derives, is thought to have been first used in English historical sources in AD 918, in an entry in the *Anglo-Saxon Chronicle* (Woolf 2010, 146). This might therefore have implications for the dating of any settlement at Scotby. The form of any settlement at Scotby during the early medieval period is, however, unknown. The general area was clearly inhabited, however, with Carlisle remaining an important urban centre (see *Section 4.3.1* above) and nearby Wetheral to the east, having evidence for a perhaps monastic, certainly religious, community before the 8th or 9th century (Phythian-Adams 1996, 67). Direct evidence for activity during this period at Scotby is only really found in the hoard of approximately 100 Anglo-Saxon coins and 10 to 12 silver ingots, which was found in June 1855 during the cutting of a field drain immediately to the north of the site (**Site 11**). The hoard included coins of Edward the Elder (AD 901-925) and Athelston (AD 925-941) and an iron billhook and a small horseshoe were found nearby (Anon 1855; Blunt 1974; Kruse 1986). Its historical significance remains uncertain, however, although the likely deposition date of the hoard, AD 935-940 (Blunt 1974, 156), places it in a period of particularly intense conflict potentially sandwiched between the treaty of Eamont Bridge in 927 and the battle of *Brunanburh* in 937 (Kruse 1986, 82).

4.3.3 Apart from the sites mentioned above there is only one other site of potential early medieval date. The double-ditched trackway west of Scotby (**Site 9**), although of uncertain date, appears to pre-date the surviving medieval and post-medieval field system. It is possible that this feature is what is being referred to by the nearby place-names 'Barras Brow' (see *Section 3.3.1*), which might suggest, based on a similarly-named example near Dalston, to the west, that it was pre-medieval (Ferguson 1884).

4.4 Medieval Period (11th century AD – 16th century AD)

4.4.1 The village of Scotby is first recorded in AD 1130 (Armstrong *et al* 1950, 163) in connection with nearby Wetheral Priory. The priory was founded as a Benedictine house and cell of the Abbey of St Mary in York by Ranulph Meschin (*op cit*, 239) and subsequently received gifts from Henry I, Henry II, Henry III and Richard I, and also the future David I of Scotland (*op cit*, 240). The monastic church had at least two altars, one dedicated to the Blessed Virgin Mary the other to the Holy Trinity, but early references are also made to dedications to St Mary and St Constantine (*op cit*, 251). The priory also had fishing rights in the River Eden which later passed to Corby Castle (Railton and Davies 2007, 97). Few remains of the priory now survive, with the exception of the gatehouse, which is early 16th century (Hyde and Pevsner 2010, 669). The priory was surrendered on 20th October 1538 during the Dissolution (Martindale 1922b, 241). The origins of the village of Scotby are less clear; its early history, such as is known, seems also to have been bound to Wetheral Priory as rent from the mill at Scotby was apparently granted to the

abbey of St Mary in York and the priory anciently had the right to the tithes of Scotby (Graham 1922, 113). This right was later removed, but by the late 13th century the chief tenant of the manor was King Alexander II of Scotland (*op cit*, 114). In 1293 it was described as a hamlet but it apparently had a brewery as well as a mill by this date (*ibid*).

4.4.2 There are no recorded sites of medieval date within the study area, although this includes the village of Scotby and earthworks situated within it may be medieval (**Site 6**). Similarly, other earthworks recorded within the study area (**Sites 9 and 16**) may also be medieval, but these are, at present undated.

4.5 Post-Medieval (16th century AD – present)

4.5.1 The map evidence (see *Section 3.3*) demonstrates that the site had reached approximately its present state by the beginning of the 19th century, with all the fields enclosed, and it is likely that relatively little changed in the area following the end of the medieval period. Following the Dissolution the lands and properties formerly held by Wetheral Priory passed into the hands of local families, the Tullie family acquiring the lease of Wetheral Manor from the Dean and Chapter of Carlisle (Perriam and Ramshaw 2008, 16). The manor of Scotby seems to have reverted to the crown by the 14th century along with a series of other royal estates, and remained as such until after the 15th century (Graham 1920, 20-24). It subsequently came to the Devonshire family via the Earl of Portland (Lysons and Lysons 1816, 167). The area in general remained very rural in character and probably saw little substantial change until the coming of the Newcastle-Carlisle railway (**Site 4**), which opened in 1838, and the Settle-Carlisle Railway (**Site 7**), constructed by the Midland Railway company based on a act passed in 1866, but only completed in 1876 (Robinson 2011, 175-176 and 183-184). This heralded a new period of industrialisation seen at a national and local level, with nearby Carlisle developing a substantial range of industries, particularly those relating to textiles (Newman 2011). There is considerably less evidence for industrialisation in rural areas such as Scotby, although the tannery (**Site 2**) and gas works (**Site 3**) give some indication of the impact of this period on the area.

4.5.2 Apart from those sites already recorded, a former farmstead (**Site 8**) situated within the study area is also of post-medieval date.

4.6 Previous Archaeological Work

4.6.1 Previous archaeological work in the study area is restricted to several phases of activity in the vicinity of Garlands Hospital, to the west of the site. This comprised a programme of evaluation trenching carried out in advance of a residential development to the north of the hospital, which revealed an undated ditch (**Site 12**) and a burnt mound (**Site 13**) (LUAU 1996). The latter was subject to full excavation (CFA 1997) and subsequently published (Neighbour and Johnson 2005). In addition, further evaluation trenching was carried out in advance of new building at the hospital, in the area where the cremations had previously been found in the 19th century (**Site 14**), but this did not reveal any features of archaeological significance (Carlisle Archaeology 2000).

5. Discussion

5.1 Introduction

5.1.1 The discussion of the results of the desk-based assessment, site visit and geophysical survey is intended to determine the archaeological significance and potential of any known remains (above or below ground) and the potential for any as yet unidentified remains being present. The system used to judge the significance of the remains identified within the development area, or those thought to have the potential to be present within the development area, is based on the criteria used to define Scheduled Monuments (DoE 1990, Annex 4; *Appendix 3*). Of the 16 sites identified within the study area, none are situated within the proposed development area (although the exact location of **Site 15** is uncertain) and they are therefore unlikely to be affected by any subsequent groundworks.

5.2 Significance

5.2.1 No previously recorded sites of archaeological interest are recorded within the proposed development area. However, a several features including scattered positive responses across the site and two grouped dipolar anomalies forming approximately semi-circular shapes were revealed during the geophysical survey (Figure 1; *Appendix 3*). None of these features obviously relate to any known or previously recorded structure, and the grouped dipolar anomalies are of particular interest as they potentially represent circular structures, which is important in an area known for its late prehistoric remains where round-houses or circular burial monuments might be expected. In addition, the earthwork mound or bank in the western part of the site (see Figure 1) is also of some interest; it too is not recorded on any early maps of the site but its origin and date remain uncertain.

5.2.2 The level of significance of the features within the proposed development area is categorised, according to each criterion, as high, medium, or low, and an average of this has been used to produce an overall level of significance for each site (see Table 2 below: H=high, M=medium, L=low). As can be seen in Table 2 all of these features are considered to be of low significance.

| Site | <i>Grouped dipolar responses</i> | <i>Isolated positive responses</i> | <i>Earthwork mound/bank</i> |
|--------------------------------|----------------------------------|------------------------------------|-----------------------------|
| <i>Period</i> | - | - | - |
| <i>Rarity</i> | - | - | M |
| <i>Documentation</i> | - | - | L |
| <i>Group value</i> | M | L | L |
| <i>Survival/condition</i> | L | L | H |
| <i>Fragility/Vulnerability</i> | M | L | M |
| <i>Diversity</i> | M | L | L |
| <i>Potential</i> | M | M | M |
| Significance | M | L | M |

Table 2: Significance by site

5.3 Potential for Unknown Archaeological Remains

5.3.1 The details of those archaeological remains present within the proposed development area is presented in the results of the desk-based assessment (*Section 3*; Figure 2; *Appendix 1*) and the importance of these sites is discussed above (*Section 5.2*). The potential for as yet unidentified archaeological remains to be present, however, is based on the known occurrence of such remains elsewhere in the study area and local environs (see *Section 4*). Where there are no remains known within the study area the potential is based on the known occurrence within the wider local area. The degree of potential is examined by period and the results are presented in Table 3 below; in each case the level of potential is expressed as low, medium, or high:

| Period | Present in study area? | Potential |
|-------------------------|------------------------|-----------|
| Late Upper Palaeolithic | N | L |
| Mesolithic | N | M |
| Neolithic | Y | L |
| Bronze Age | Y | M |
| Iron Age | N | L |
| Roman | N | L |
| Early Medieval | Y | L |
| Medieval | N | L |
| Post-medieval | Y | M |

Table 3: Degree of potential for unknown archaeological remains by period

5.3.2 In consideration of Table 3 it is worth noting that the possibility of finding Mesolithic remains could perhaps be assessed as medium because they are often associated with sites adjacent to watercourses (Middleton *et al* 1995, 202; Hodgkinson *et al* 2000, 151-152). Areas along the River Eden in particular have also recently been the site of significant and large-scale discoveries of finds and sites of Mesolithic date (Clark 2010; Clarke *et al* 2008). Sites of Iron Age date are extremely rare from the general area, and none are present within the study area so these are unlikely to be present, and while Neolithic and Bronze Age sites are present in the study area these are still relatively rare, although Bronze Age perhaps less so in this case.

5.3.3 There are no certain sites of Roman or Medieval date from the study area, and although the general area is rich in remains of these periods there is no particular reason to expect them to be present within the site. There is a single site of early medieval date within the study area, and very close to the site, but the nature of this means that the likelihood of further sites of this period being present within the site is still probably low.

5.4 Disturbance

5.4.1 The area appears to have seen relatively little disturbance apart perhaps from that associated with agriculture. However, the presence of areas of high magnetic disturbance are suggestive of some modern disturbance across parts of the site, particular the centre and edges.

5.5 Impact

5.5.1 Although no detailed plans were available regarding proposed developments the nature of the ground cover and local topography, which would presumably require considerable landscaping, would suggest that any building on site would substantially impact on any archaeological remains that might be present.

5.6 Recommendations

5.6.1 It is clear from the preceding sections that there is some potential for archaeological remains to be present within the site. The geophysical survey identified several isolated responses across the site, the nature and origin of which is uncertain. In addition, the two grouped dipolar responses may indicate some form of sub-surface structure, although this is again not certain. The earthwork feature identified but not examined in detail in the west part of the site is also of interest, although again its origins are unknown and it could represent modern activity, such as the clearance of material from the beck to the west.

5.6.2 As a minimum it is therefore recommended that the area of greatest archaeological potential (see Figure 1) be subject to archaeological evaluation trenching. It would also be worthwhile, at the same, time, evaluating a small amount of the rest of the field in order to ascertain the nature of the responses here. In addition, the earthwork mound to the west should be cleared of vegetation, surveyed and also subject to archaeological evaluation in order to determine its date and form.

6. Bibliography

6.1 Primary and Cartographic Sources

CAC(C) DRC/8/1716, 1842 *Scotby Township in the Parish of Wetheral and County of Cumberland*

Ordnance Survey, 1868 *Cumberland Sheet 24*, 1:10,560, surveyed 1861

Ordnance Survey, 1897 *Cumberland Sheet 24.5*, 1:2,500, surveyed 1860-1861 and 1864

Ordnance Survey, 1901 *Cumberland Sheet 24.5*, 1:2,500, revised 1899

Ordnance Survey, 1926 *Cumberland Sheet 24.5*, 1:2,500, revised 1923-1924

Ordnance Survey, 2007 *Carlisle: Brampton, Longtown and Gretna Green*, **315**, 1: 25,000

6.2 Secondary Sources

Anon, 1855 Proceedings of the Association, *J British Archaeol Soc*, **11**, 344-356

Armstrong, AM, Mawer, A, Stenton, FM, and Dickins, B, 1950 *The Place-Names of Cumberland: Part I – Eskdale, Cumberland and Leath Wards*, English Place-Name Soc, **20**, Cambridge

Armstrong, AM, Mawer, A, Stenton, FM, and Dickins, B, 1952 *The Place-Names of Cumberland: Part III – Introduction, etc*, English Place-Name Soc, **22**, Cambridge

Blunt, CE, 1974 The Coinage of Athelstan, King of England 924-939, *British Numismatic J*, **42**, 35-158

Brown, DH, 2007 *Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer, and Curation*, IfA, Reading

Carlisle Archaeology, 2000 *Report on an Archaeological Evaluation at Garlands Hospital, Carlisle, Cumbria*, unpubl rep

CFA, 1997 *Archaeological Investigations in the Vicinity of a Plough-Spread Burnt Mound at Garlands Hospital, Carlisle: Geophysical Survey, Topographical Survey and Excavation*, unpubl rep

Countryside Commission, 1998 *Countryside Character, Volume 2: North West*, Cheltenham

Department of the Environment (DoE), 1990 *Planning Policy Guidance: Archaeology and Planning*, **PPG16**

English Heritage, 1991 *The Management of Archaeological Projects*, 2nd edn, London

Ferguson, RS, 1884 The Bishop's Dyke, Dalston; Barras Gate, Dalston; the Bishop's Dyke, Crosby, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 1st ser, **7**, 271-278

Graham, THB, 1920 Carlutton, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **20**, 19-27

Graham, THB, 1922 Salkeld Regis, Scotby and Sowerby, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **22**, 108-121

Hodgson, KS, 1956 Three Unpublished Collections of Bronze Age Pottery: Netherall, Garlands and Algonby, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **56**, 1-17

Institute for Archaeologists (IfA), 2008 *Standard and Guidance for Archaeological Desk-Based Assessment*, revised edn, Reading

Kruse, SE, 1986 The Viking-Age Silver Hoard from Scotby: the Non-numismatic Element, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **86**, 79-83

LUAU, 1996 *Garlands Hospital, Carlisle, Cumbria: Archaeological Report*, unpubl rep

Lysons, D, and Lysons, S, 1816 *Magna Britannia Vol IV: Cumberland*, London

Middleton, R, Wells, CE, and Huckerby, E, 1995 *The Wetlands of North Lancashire*, North West Wetlands Survey **3**, Lancaster Imprints **4**, Lancaster

- Moseley, F (ed), 1978 *The Geology of the Lake District*, Yorkshire Geological Society, occ publ **3**, Leeds
- Neighbour, T, and Johnson, M, 2005 A Bronze Age Burnt Mound in Lowland Cumbria: Excavations at Garlands Hospital, Carlisle, 1997, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3rd ser, **5**, 11-24
- Newman, C, 2011 The Industrial and Manufacturing City, in M Brennand and K Stringer (ed), *The Making of Carlisle: From Romans to Railways*, CWAAS extra ser, **35**, Kendal, 153-172
- Parsons, J, 2012 *Brief for a Desk-Based Assessment & Geophysical Survey on Land to the West of Broomfallen Road, Scotby, Cumbria*, unpubl
- Richardson, C, 1990 A Catalogue of Recent Acquisitions to Carlisle Museum and Reported Finds from the Cumbrian Area, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **90**, 1-98
- Robinson, P, 2011 The Railway City, in M Brennand and K Stringer (ed), *The Making of Carlisle: From Romans to Railways*, CWAAS extra ser, **35**, Kendal, 173-188
- Spence, JE, 1940 Report of the Committee for Prehistoric Studies, 1937-1939, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 2nd ser, **40**, 99-117
- Webster, A, and Newman, R, 2007 Earthworks, Parchmarks and Cropmarks: Results of Cumbria County Council's 2006 Aerial Photographic Survey, *Trans Cumberland Westmorland Antiq Archaeol Soc*, 3rd ser, **7**, 1-14
- Wolf, A, 2010 *From Pictland to Alba 789-1070*, Edinburgh
- Young, R, 2002 The Palaeolithic and Mesolithic Periods in Northern England: An Overview, in Brooks, C, Daniels, R, and Harding, A, (ed), *Past, Present and Future: The Archaeology of Northern England*, Architect Archaeol Soc Durham Northumberland, res rep **5**, 19-36

6.3 Aerial Photographs

CCC, 1984 **NY4455/A**

Gates, T, 2006 **NY4354/A-C, NY4355/A-O**

Appendix 1: Site Gazetteer

Site Number: 1

NGR: 343638 555286

HER No: 41122

Sources: Webster and Newman 2007, 8; Gates 2006, **NY4354/A-C**

Designation: None

Description: A ring-ditch is located in the school playing field and is possibly associated with faint rectilinear features nearby. If the '*cursus*-like' parchmark is showing the ditches of a *cursus* (**Site 4**) it could be of Neolithic date. The ring-ditch is likely to be of Bronze Age origin and indicative of the former existence of a round barrow on the site.

Period: Bronze Age

Site Number: 2

NGR: 343880 555320

HER No: 10116

Sources: Ordnance Survey 1868

Designation: None

Description: Site of a tannery shown on the first edition Ordnance Survey map, now levelled and tarmacked over and used as a depot.

Period: Post-medieval

Site Number: 3

NGR: 343940 555320

HER No: 10115

Sources: Ordnance Survey 1868

Designation: None

Description: Gasworks marked on first edition Ordnance Survey map, now gone.

Period: Post-medieval

Site Number: 4

NGR: -

HER No: 41002

Sources: HER; Robinson 2011, 175-176

Designation: None

Description: The Newcastle-Carlisle railway opened at the Carlisle end in 1836. The whole line opened in 1838. It became part of the North Eastern Railway (NER) in 1865.

Period: Post-medieval

Site Number: 5

NGR: 343525 555130

HER No: 41121

Sources: Webster and Newman 2007, 8; Gates 2006, **NY4355/A-O**

Designation: None

Description: A parchmark forming a long narrow 'cursus-like' feature in the same field as a linear parchmark.

Period: Prehistoric

Site Number: 6

NGR: 344130 555110

HER No: 13780

Sources: CCC 1984, NY4455/A

Designation: None

Description: Unclassified earthworks now partly open space and partly residential.

Period: Uncertain

Site Number: 7

NGR: -

HER No: 42542

Sources: HER; Robinson 2011, 183-184

Designation: Conservation Area

Description: Midland Railway obtained an Act to build a railway from Settle to Carlisle in 1866. Difficulty in building it meant it did not open until 1875-6.

Period: Post-medieval

Site Number: 8

NGR: 344280 554746

HER No: 40552

Sources: Ordnance Survey 1868

Designation: None

Description: Farmstead shown on the first edition Ordnance Survey map of 1868.

Period: Post-medieval

Site Number: 9

NGR: 343838 554509

HER No: 41120

Sources: Gates 2006, NY4354/A-C

Designation: None

Description: Trackway west of Scotby; a double-ditched trackway aligned east/west and 2 to 3m wide appears to pre-date the surviving medieval and post-medieval field system and road system. It is possible that this feature is what is being referred to by the nearby place-names 'Barras Brow', which would suggest that it was medieval or earlier in date (Ferguson 1884).

Period: Uncertain

Site Number: 10

NGR: 344413 554485 (centre)

HER No: -

Sources: CAC(C) DRC/8/171 1842

Designation: None

Description: Two fields named 'Sepulchre' are marked in this location on the tithe map of 1842. The name suggests some form of burial was found here or otherwise known or thought to be here.

Period:

Site Number: 11

NGR: 344010 554360

HER No: 541

Sources: Carlisle Journal 29th June 1855; Anon 1855; Blunt 1974; Kruse 1986

Designation: None

Description: Scotby coin hoard; about 100 Anglo-Saxon coins and 10 to 12 silver ingots were found in June 1855 while cutting a drain near Scotby, including coins of Edward the Elder (AD901-925) and Athelston (AD925-941) minted at Shrewsbury, Chester and London. An iron billhook and a small horseshoe were found nearby.

Period: Early medieval

Site Number: 12

NGR: 343150 554270

HER No: 17005

Sources: LUAU 1996

Designation: None

Description: Trial trenching at Garlands Hospital revealed a shallow east/west ditch 1.1m wide and 0.23m deep but no dating evidence was recovered. The sides sloped at about 30 degrees and it was filled with smallish sub-rounded pebbles in the base with fine pale grey silt above.

Period: Uncertain

Site Number: 13

NGR: 343030 554010

HER No: 17004

Sources: LUAU 1996; Neighbour and Johnson 2005

Designation: None

Description: Trial trenching at Garlands Hospital revealed traces of a burnt mound comprising small burnt stone fragments in a black silty matrix. This site was subsequently excavated and dated to the Bronze Age.

Period: Bronze Age

Site Number: 14

NGR: 343200 553900

HER No: 484

Sources: Carlisle Archaeology 2000; Hodgson 1956, 6-12; Spence 1940, 101-4

Designation: None

Description: A considerable amount of Bronze Age pottery was found in 1861 either under the bowling green, in pit sand, or on sites now occupied by buildings when erecting new hospital buildings. Finds

from the site include collared urns with burials, incense cups and a beaker which was found intact in 1893. A flint implement was also found in one of the urns. However, an archaeological evaluation by Carlisle Archaeology Ltd at Garlands Hospital in 2000 did not reveal any archaeological features and yielded only post-medieval finds (Carlisle Archaeology 2000).

Period: Bronze Age

Site Number: 15

NGR: 344000 554000

HER No: 542, 543

Sources: Spence 1940

Designation: None

Description: Her No. 542 refers to various Bronze age finds, including a 5 ½ inch long and 3 inch wide adze, a 5 1/10 inch long and 2 8/10 inch wide perforated stone hammer, and a 7 ¼ inch long pointed oval Cumbrian stone axe. Her No. 543 refers to a British urn found at Scotby and donated to Tullie House in 1844.

Period: Bronze Age

Site Number: 16

NGR: 343343 553408

HER No: 41119

Sources: Gates 2006, **NY4354/A-B**; Webster and Newman 2007, 7

Designation: None

Description: A double-ditched probable trackway south of the former Garlands Hospital showing as a parchmark aligned north-east/south-west with an enclosure boundary at right angles and attached to its southern side. It likely predates the late 19th century.

Period: Uncertain

Appendix 2: Significance Criteria

After DoE 1990, Annex 4: '*Secretary of State's Criteria for Scheduling Ancient Monuments*'

- i) *Period*: all types of monuments that characterise a category or period should be considered for preservation;
- ii) *Rarity*: there are some monument categories which in certain periods are so scarce that all surviving examples which retain some archaeological potential should be preserved. In general, however, a selection must be made which portrays the typical and commonplace as well as the rare. This process should take account of all aspects of the distribution of a particular class of monument, both in a national and regional context;
- iii) *Documentation*: the significance of a monument may be enhanced by the existence of record of previous investigation or, in the case of more recent monuments, by the supporting evidence of contemporary written records;
- iv) *Group Value*: the value of a single monument (such as a field system) may be greatly enhanced by its association with related contemporary monuments (such as a settlement and cemetery) or with monuments of different periods. In some cases, it is preferable to protect the complete group of monuments, including associated and adjacent land, rather than to protect isolated monuments within the group;
- v) *Survival/Condition*: the survival of a monument's archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features;
- vi) *Fragility/Vulnerability*: highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment; vulnerable monuments of this nature would particularly benefit from the statutory protection which scheduling confers. There are also existing standing structures of particular form or complexity whose value can again be severely reduced by neglect or careless treatment and which are similarly well suited by scheduled monument protection, even if these structures are already listed historic buildings;
- vii) *Diversity*: some monuments may be selected for scheduling because they possess a combination of high quality features, others because of a single important attribute;
- viii) *Potential*: on occasion, the nature of the evidence cannot be specified precisely but it may still be possible to document reasons anticipating its existence and importance and so to demonstrate the justification for scheduling. This is usually confined to sites rather than upstanding monuments.

Appendix 3: Geophysical Survey Results



PHASE
SITE INVESTIGATIONS

**Land to the west of Broomfallen Road
Scotby, Cumbria**

Archaeological Geophysical Survey

Project No. ARC/829/327

September 2012



Land to the west of Broomfallen Road, Scotby Cumbria

Archaeological Geophysical Survey

Project No. ARC/829/327

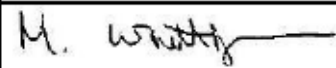
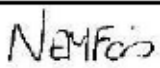
| Report prepared by | | Report checked by | |
|--------------------|---|-------------------|---|
| Name | Mark Whittingham BSc MA | Name | Nicola Fairs BSc MSc DIC CGeol FGS |
| Signature |  | Signature |  |
| Date | 11/09/12 | Date | 11/09/12 |

Table of Contents

| | |
|--|---|
| 1. SUMMARY | 1 |
| 2. INTRODUCTION | 2 |
| 2.1 OVERVIEW | 2 |
| 2.2 SITE DESCRIPTION | 2 |
| 2.3 ARCHAEOLOGICAL BACKGROUND | 2 |
| 2.4 SCOPE OF WORK | 2 |
| 3. SURVEY METHODOLOGY | 4 |
| 3.1 MAGNETIC SURVEY | 4 |
| 3.2 DATA PROCESSING AND PRESENTATION | 4 |
| 4. RESULTS | 6 |
| 4.1 GENERAL | 6 |
| 4.2 DIPOLAR RESPONSES | 6 |
| 4.3 POSITIVE / ENHANCED RESPONSES (ISOLATED) | 7 |
| 5. DISCUSSION AND CONCLUSIONS | 8 |
| DRAWINGS | |
| ARC_829_327_BRS_01 | Site location map |
| ARC_829_327_BRS_02 | Greyscale plot of magnetic gradient data |
| ARC_829_327_BRS_03 | Interpretation of magnetic gradient data |
| BIBLIOGRAPHY | 9 |
| APPENDIX 1 | Magnetic survey; technical information |
| | 10 |

DIGITAL COPY OF REPORT CAN BE FOUND ON CD ATTACHED TO BACK COVER

1. SUMMARY

Phase Site Investigations Ltd was commissioned to carry out a magnetic gradient survey at land to the west of Broomfallen Road, Scotby, Cumbria utilising magnetic gradiometers. The aim of the survey was to help establish the presence / absence, extent, character, relationships and date (as far as circumstances and the inherent limitations of the technique permit) of archaeological features within the survey area.

A Bartington Grad 601-2 gradiometer was utilised with data collected at 1 m by 0.25 m intervals over a series of 30 m grids.

The majority of the anomalies identified by this survey are thought to relate to modern material / objects or geological / pedological variations.

There are several areas where very strong responses or magnetic disturbance from modern features dominate the surrounding data. It should be recognised that the strength of the strong responses could mask anomalies from other sub-surface features in the area.

In the south-east of the site there are two groups of isolated dipolar responses that may have a sub-circular / curving distribution. These have been shown as Anomalies A and B. It is possible that these are just random arrangements of responses that appear to be sub-circular / curving. However, it is possible that these responses are associated with sub-surface features.

The central part of the survey area contains an unusual number and concentration of dipolar responses and so has been categorised as an area of disturbance. The strength of these responses is more suggestive of an accumulation of near-surface isolated objects / material rather than a single large feature / variation or significant extent of made ground.

The lack of an obvious pattern to the distribution of the isolated positive / enhanced responses and the fact that no other anomalies indicative of archaeological features have been identified suggests that the most probable cause for these responses are geological / pedological variations. However, it should be recognised that isolated archaeological features, such as infilled pits, will produce responses of this type and so an archaeological origin for some of these anomalies cannot be completely ruled out.

2. INTRODUCTION

2.1 Overview

Phase Site Investigations Ltd was commissioned by Mr Dan Elsworth of Greenlane Archaeology Ltd to carry out an archaeological geophysical survey at land to the west of Broomfallen Road, Scotby utilising magnetic gradiometers.

The aim of the survey was to help establish the presence / absence, extent, character, relationships and date (as far as circumstances and the inherent limitations of the technique permit) of archaeological features within the survey area.

The location of the site is shown in drawing ARC_829_327_BRS_01.

2.2 Site description

The site is situated at Scotby, approximately 3.5 km to the east of Carlisle (centred at NGR NY 441 542) and covers an area of approximately 1.5 ha. The survey area covers a single field and adjacent woodland to the south of the village and west of Broomfallen Road.

Ground cover at the time of the survey for the majority of the site was short grass. The field was being used for silage at the time of the survey and this had been cut, but not baled. The ground sloped downwards to the west and there was a boggy area in the south-east corner of the field. The southern and western parts of the site were wooded and could not be surveyed.

The survey area was bounded on all sides by metallic fencing with buildings to the north and a road to the east. A metallic tank and trailer were located at the eastern edge of the field causing a surface obstruction.

The underlying geology of the site is Kirklington Sandstone Formation overlain by Devensian – Diamicton till.

2.3 Archaeological background

The brief provided by Cumbria County Council (County Historic Environment Service 2012) states that the site lies in an area that was a focus for prehistoric activity. Numerous prehistoric finds have been recovered from Scotby over the years and the bronze age cemetery at Garland is located in the vicinity. A 10th century hoard was found very close to the site in 1885. It comprised over 100 coins from the reigns of Edward the Elder and Althelstan together with a number of silver ingots.

A desk-based assessment is currently being undertaken by Greenlane Archaeology Ltd and this geophysical survey is intended to assist in the assessment of archaeological potential of the site.

2.4 Scope of work

The survey area was specified by the client based on a proposed development boundary shown in the brief.

Due to the presence of dense vegetation and woodland the area accessible for survey was reduced to approximately 1.0 ha, the extent of which is shown in drawing ARC_829_327_BRS_02.



No other problems were encountered during the survey which was carried out on 06 September 2012.

3. SURVEY METHODOLOGY

3.1 Magnetic survey

A Bartington Grad601-02 magnetic gradiometer was used for the magnetic survey. The instrument was balanced and 'zeroed' on site in a magnetically uniform area at the start of each days survey. The instruments was regularly checked for instrument drift during the course of each day and rebalanced as required.

The data was collected over a series of 30 m by 30 m survey grids. All data was collected at 0.25 m intervals over profiles spaced 1 m apart and stored in the instrument for download at the end of the day.

Major grid points were established using a Sokkia GRX-1 RTK GPS Leica and were set-out relative to field boundaries, to an accuracy better than 0.03 m. Bamboo canes or tent pegs were used to mark the grid points. Intermediate grid points were established using tape measures and the position of each profile were established by stringing either a pre-marked rope or a 100 m tape measure between grid points. Bamboo canes were then used to mark profiles and the operator walked between these at a constant pace.

The location of the survey grid(s) was recorded directly to Ordnance Survey national grid co-ordinates using the UKO OSTN2 projection to an accuracy better than 0.03 m. Temporary survey stations (wooden stakes) were also set out and tied in to Ordnance Survey national grid co-ordinates to allow the relocation of the survey grids using a total station.

3.2 Data processing and presentation

The gradiometer data was downloaded and gridded in Archaeosurveyor 2.5.13 (DW Consulting). Where required, the data were minimally processed or improved to remove errors caused by instrument drift and/or collection errors (See Appendix 1.4).

The data was exported from Archaeosurveyor as raster images (PNG files) and is presented in greyscale format at 1:1000 in drawings ARC_829_327_BRS_02 with an accompanying interpretation in drawing ARC_829_327_BRS_03. All greyscale plots were clipped at -3 nT to 3 nT. The data shown in the greyscale plots has been 'smoothed' using the Grad. Shade option for presentation purposes.

The data has been displayed relative to a digital Ordnance Survey base plan provided by the client as drawing '*Broomfallen Rd OS mapping.dwg*'. The base plan was in the National Grid co-ordinate system and as the survey grids were set-out directly to national grid co-ordinates the data could be simply superimposed onto the base plan in the correct position.

X-Y trace plots were examined for all of the data and overlain onto the greyscale plot to assist in the interpretation, primarily to help identify dipolar responses that will probably be associated with surface / near-surface iron objects. However, X-Y trace plots have not been presented here as they do not show any additional anomalies that are not visible in the greyscale data. A digital drawing showing the X-Y trace plot overlain on the greyscale plot is provided in the digital archive.

All isolated responses have been assessed using a combination of greyscale and X-Y trace plots. Only the stronger isolated responses, or those that could have archaeological potential have been shown on the interpretation.



The data was examined over several different ranges during the interpretation to ensure that the maximum information possible was obtained from the data.

The anomalies have been categorised based on the type of response that they exhibit and an interpretation as to the cause(s) or possible cause(s) of each anomaly type is also provided.

A general discussion of the anomalies is provided for the entire site.

The geophysical interpretation drawing must be used in conjunction with the relevant results section and appendices of this report.

4. RESULTS

4.1 General

The data quality across the majority of the survey area is very good allowing the data to be viewed at a narrow range of readings to better identify weak anomalies.

The categories of anomaly, and their possible causes, which have been identified by the survey are discussed in detail below.

Where an anomaly type can have a number of causes then it is assumed that a non-archaeological origin is the most likely cause unless otherwise stated or unless there is other supporting evidence.

4.2 Dipolar responses

Dipolar responses are those that have a sharp variation between strongly positive and negative components. In the majority of cases dipolar responses are usually caused by modern ferrous features / objects, although fired material (such as brick), some ferrous or industrial archaeological features and strongly magnetic gravel could also produce dipolar responses.

There are numerous isolated dipolar responses (iron spikes) across the survey area that are indicative of ferrous or fired material on or near to the surface. The isolated responses are often caused by small objects, such as spent shotgun cartridges, iron nails and horseshoes or pieces of modern brick or pot. Archaeological artefacts can also produce this type of response but unless there is strong supporting evidence to the contrary they are assumed not to be of archaeological significance. Only the stronger iron spike responses have been shown on the interpretation.

In the south-east of the site there are two groups of isolated dipolar responses that may have a sub-circular / curving distribution. These have been shown as Anomalies A and B. It is possible that these are just random arrangements of responses that appear to be sub-circular / curving. However, it is possible that these responses are associated with sub-surface features.

There are several areas containing strong or numerous dipolar responses (magnetic disturbance). This type of anomaly is usually caused by concentrations of ferrous or fired material and are often found adjacent to field boundaries where such material tends to accumulate. If an area of magnetic disturbance is located away from existing field boundaries then it could indicate a former field boundary, several large isolated objects in close proximity, an area where modern material has been tipped or an infilled cut feature, such as a quarry pit. Areas of dipolar response can occasionally be caused by features / material associated with archaeological industrial activity but they are usually caused by modern activity. Responses in areas of magnetic disturbance can sometimes be so strong that archaeological features located beneath them may not be detected.

Above ground metallic or strongly magnetic features, such as fences, gates, pylons and buildings can produce very strong dipolar responses. The strength of magnetic response from these features is such that any sub-surface features located in their vicinity may not be detected.



The central part of the survey area contains an unusual number and concentration of dipolar responses and so has been categorised as an area of disturbance. The strength of these responses is more suggestive of an accumulation of near-surface isolated objects / material rather than a single large feature / variation or significant extent of made ground.

4.3 Positive / enhanced responses (isolated)

Isolated positive or enhanced responses can occur if the magnetism of a feature, area or material has been enhanced or if a feature is naturally more magnetic than the surrounding material. It is often difficult to determine which of these factors causes any given responses and so the origin of this type of anomaly can be difficult to determine. They can have a variety of causes including geological variations, infilled archaeological features, areas of burning (including hearths), industrial archaeological features such as kilns or deeper buried ferrous material and modern fired material.

The large number of isolated responses and lack of an obvious pattern to their distribution suggests that these anomalies are probably associated with geological / pedological variations. Only the stronger isolated responses have been shown on the interpretation.



5. DISCUSSION AND CONCLUSIONS

The majority of the anomalies identified by this survey are thought to relate to agricultural practice / features (including ridge and furrow), modern material / objects or geological / pedological variations.

There are several areas where very strong responses or magnetic disturbance from modern features dominate the surrounding data. It should be recognised that the strength of the strong responses could mask anomalies from other sub-surface features in the area.

In the south-east of the site there are two groups of isolated dipolar responses that may have a sub-circular / curving distribution. These have been shown as Anomalies A and B. It is possible that these are just random arrangements of responses that appear to be sub-circular / curving. However, it is possible that these responses are associated with sub-surface features.

The central part of the survey area contains an unusual number and concentration of dipolar responses and so has been categorised as an area of disturbance. The strength of these responses is more suggestive of an accumulation of near-surface isolated objects / material rather than a single large feature / variation or significant extent of made ground.

The lack of an obvious pattern to the distribution of the isolated positive / enhanced responses and the fact that no other anomalies indicative of archaeological features have been identified suggests that the most probable cause for these responses are geological / pedological variations. However, it should be recognised that isolated archaeological features, such as infilled pits, will produce responses of this type and so an archaeological origin for some of these anomalies cannot be completely ruled out.

It should be noted that a geophysical survey does not directly locate sub-surface features - it identifies variations or anomalies in the background response caused by features. The interpretation of geophysical anomalies is often subjective and it is rarely possible to identify the cause of all such anomalies. Not all features will produce a measurable anomaly and the effectiveness of a geophysical survey is also dependant on the site-specific conditions. The main factors that may limit whether a feature can be detected are the composition of a feature, its depth and size and the surrounding material. It is not possible to guarantee that a geophysical survey will identify all sub-surface features. Confirmation on the identification of anomalies and the presence or absence of sub-surface features can only be achieved by intrusive investigation.



BIBLIOGRAPHY

Cumbria County Council County Historic Environment Service, 2012, Brief for a desk-based assessment & geophysical survey on land to the west of Broomfallen Road, Scotby, Carlisle, Cumbria

Greenlane Archaeology Ltd, 2012, Land to the west of Broomfallen Road, Scotby, Carlisle, Cumbria, Archaeological desk-based assessment and geophysical survey project design

APPENDIX 1

Magnetic survey: technical information

1.1 Theoretical background

- 1.1.1 Magnetic instruments measure the value of the Earth's magnetic field; the units of which are nanoTeslas (nT). The presence of surface and sub-surface features can cause variations or anomalies in this magnetic field. The strength of the anomaly is dependent on the magnetic properties of a feature and the material that surrounds it. The two magnetic properties that are of most interest are magnetic susceptibility and thermoremanent magnetism.
- 1.1.2 Magnetic susceptibility indicates the amount of ferrous (iron) minerals that are present. These can be redistributed or changed (enhanced) by human activity. If enhanced material subsequently fills in features such as pits or ditches then these can produce localised increases in magnetic responses (anomalies) which can be detected by a magnetic gradiometer even when the features are buried under additional soil cover.
- 1.1.3 In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of topsoils, subsoils and rocks into which these features have been cut which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected. Less magnetic material such as masonry or plastic service pipes which intrude into the topsoil may give a negative magnetic response relative to the background level. The strength of magnetic responses that a feature will produce will depend on the background magnetic susceptibility, how rapidly the feature has been infilled, the level and type of human activity in the area and the size and depth of a feature. Not all infilled features can be detected and natural variations can also produce localised positive and negative anomalies.
- 1.1.4 Thermoremanent magnetism indicates the amount of magnetism inherent in an object as a result of heating. Material that has been heated to a high temperature (fired), such as brick, can acquire strong magnetic properties and so although they may not appear to have a high iron content they can produce strong magnetic anomalies
- 1.1.5 The magnetic survey method is highly sensitive to interference from surface and near-surface magnetic 'contaminants'. Surface features such as metallic fencing, reinforced concrete, buildings or walls all have very strong magnetic signatures that can dominate readings collected adjacent to them. Identification of anomalies caused by sub-surface features is therefore more difficult, or even impossible, in the vicinity of surface magnetic features. The presence of made ground also has a detrimental effect on the magnetic data quality as this usually contains magnetic material in the form of metallic scrap and brick. Identification of features beneath made ground is still possible if the target feature is reasonably large and has a strong magnetic response but smaller features or magnetically weak features are unlikely to be identified.
- 1.1.6 The interpretation of magnetic anomalies is often subjective and it is rarely possible to identify the cause of all magnetic anomalies. Not all features will produce a measurable magnetic response and the effectiveness of a magnetic survey is also dependant on the site-specific conditions. The main factors that may limit whether a feature can be detected are the

composition of a feature, its depth and size and the surrounding material. It is not possible to guarantee that a magnetic survey will identify all sub-surface features.

- 1.1.7 Most high resolution, near surface magnetic surveys utilise a magnetic gradiometer. A gradiometer is a hand-held instrument that consists of two magnetic sensors, one positioned directly above the other, which allows measurement of the magnetic gradient component of the magnetic field. A gradiometer configuration eliminates the need for applying corrections due to natural variations in the overall field strength that occur during the course of a day but it only measures relative variations in the local magnetic field and so comparison of absolute values between sites is not possible.
- 1.1.8 Features that are commonly located using magnetic surveys include archaeological ditches and pits, buried structures or foundations, mineshafts, unexploded ordnance, metallic pipes and cables, buried piles and pile caps. The technique can also be used for geological mapping; particularly the location of igneous intrusions.

1.2 Instrumentation

A Bartington Grad601-2 magnetic gradiometer was used for the magnetic survey. The Bartington Grad601-2 is a dual sensor instrument, incorporating two Grad-01-1000 gradiometers set at a distance of 1 m apart.

1.3 Survey methodology

- 1.3.1 The magnetic survey was carried out on a series of regular 30 m grids. Data was collected on zig-zag profiles (walking along a profile and then returning up the adjacent profile in the opposite direction) that were 2 m apart within a grid (the dual sensor array means that this equates to 1 m profile intervals). All data was collected at 0.25 m and stored in the instrument for download at the end of the survey.
- 1.3.2 Readings were taken on 100 nT range (0.1 nT sensitivity). The instrument was balanced and 'zeroed' at a base station that was established on site in a magnetically quiet and uniform location. The instrument was checked for electronic and mechanical drift at this base station at regular intervals during the course of the survey.
- 1.3.3 The survey grids were established using a Sokkia GRX-1 RTK GPS system. Grid points were set-out to an accuracy better than 0.03 m using bamboo canes.
- 1.3.4 The location of the survey grid(s) was tied-in using the GPS system and related to existing survey stations and to temporary survey stations (wooden stakes) established by Phase Site Investigations Ltd.

1.4 Data processing, presentation and interpretation

- 1.4.1 The data was downloaded from the instrument at the end of the each days survey using bespoke software specific to the instrument. The gradiometer data was downloaded and gridded in Archaeosurveyor 2.5.13 (DW Consulting).
- 1.4.2 Where required the data was destriped and destaggered to remove errors caused by instrument drift and heading errors. This data has been classed as minimally processed data as no other processing steps were used.
- 1.4.3 The following processing schedule was applied to all data presented within the report.

- Zero median sensor
- The data presented in the greyscale plots has been 'smoothed' using the Grad. Shade option clipped at -3 nT to 3 nT.

- 1.4.4 The data has been displayed relative to a digital Ordnance Survey base plan provided by the client as drawing '*Broomfallen Rd OS mapping.dwg*'. The base plan was in the National Grid co-ordinate system and as the survey grids were set-out directly to national grid co-ordinates the data could be simply superimposed onto the base plan in the correct position.
- 1.4.5 The anomalies have been categorised based on the type of response that they have and an interpretation as to the cause(s) or possible cause(s) of each anomaly type is also provided.
- 1.4.6 Several different ranges of data were used in the interpretation to ensure that the maximum information possible is obtained from the data.
- 1.4.7 X-Y trace plots were examined for all of the data and overlain onto the greyscale plot to assist in the interpretation, primarily to help identify dipolar responses that will probably be associated with surface / near-surface iron objects. X-Y trace plots have not been used in the report as they do not show any additional anomalies that are not visible in the greyscale data. A digital drawing showing the X-Y trace plot overlain on the greyscale plot has been provided in the digital archive.
- 1.4.8 All isolated responses have been assessed using a combination of greyscale and X-Y trace plots. Only the stronger responses have been shown on the interpretation.
- 1.4.9 The greyscale plots and the accompanying interpretations of the anomalies identified in the magnetic data are presented as 2D AutoCAD drawings. The interpretation is made based on the type, size, strength and morphology of the anomalies, coupled with the available information on the site conditions. Each type of anomaly is displayed in separate, easily identifiable layers annotated as appropriate.

1.5 Limitations of magnetic surveys

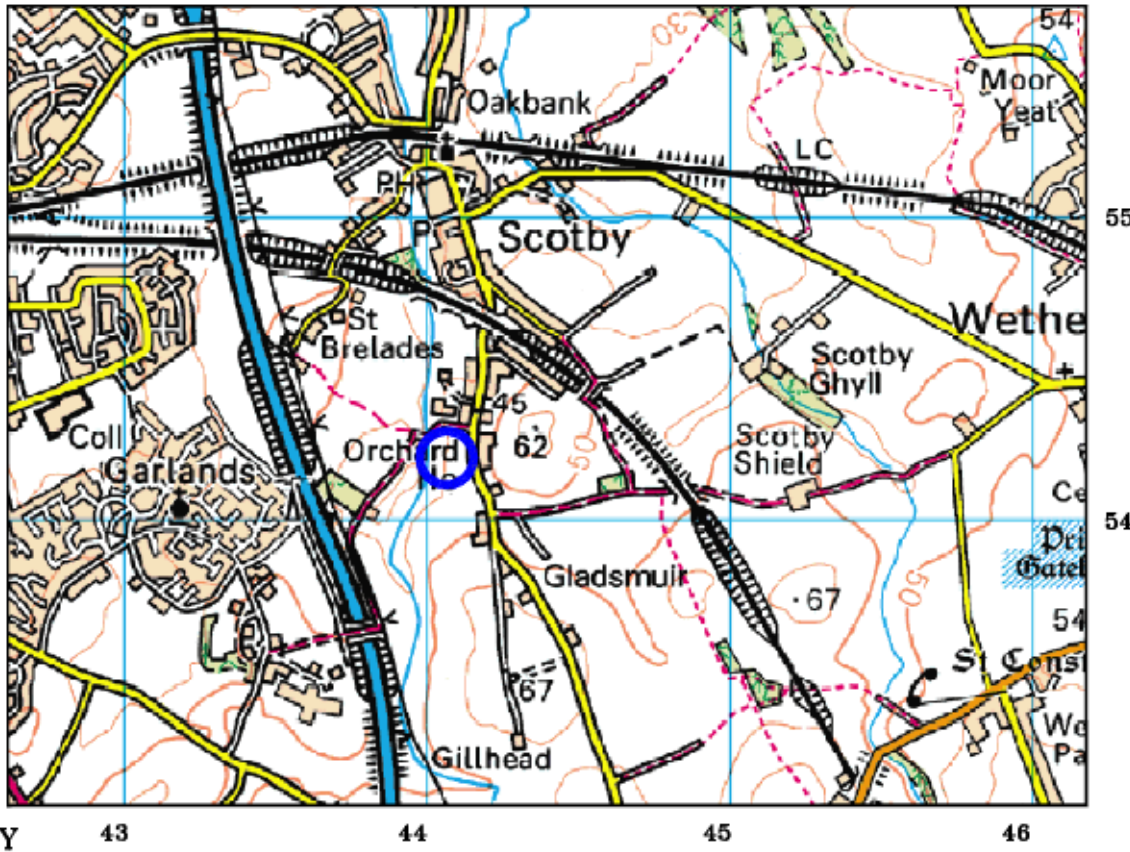
- 1.5.1 The magnetic survey method requires the operator to walk over the site at a constant walking pace whilst holding the instrument. The presence of an uneven ground surface, dense, high or mature vegetation or surface obstructions may mean that some areas cannot be surveyed.
- 1.5.2 The depth at which features can be detected will vary depending on their composition, size, the surrounding material and the type of magnetometer used for the survey. In good conditions large, magnetic targets, such as buried drums or tanks can be located at depths of more than 4 m. Smaller targets, such as buried foundations or archaeological features can be located at depths of between 1 m and 2 m.
- 1.5.3 A magnetic survey is highly sensitive to interference from surface and near-surface magnetic 'contaminants'. Surface features such as metallic fencing, reinforced concrete, buildings or walls all have very strong magnetic signatures that can dominate readings collected adjacent to them. Identification of anomalies caused by sub-surface features is therefore more difficult or even not possible in the vicinity of surface and near-surface magnetic features.
- 1.5.4 The presence of made ground also has a detrimental effect on the magnetic data quality as this usually contains magnetic material in the form of metallic scrap and brick. Identification of features beneath made ground is still possible if the target feature is reasonably large and has a strong magnetic response but smaller features or magnetically weak features are unlikely to be identified.



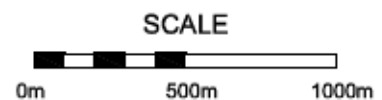
- 1.5.5 It should be noted that anomalies that are interpreted as modern in origin may be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.
- 1.5.6 A magnetic survey does not directly locate sub-surface features - it identifies variations or anomalies in the local magnetic field caused by features. It can be possible to interpret the cause of anomalies based on the size, shape and strength of response but it should be recognised that a magnetic survey produces a plan of magnetic variations and not a plan of all sub-surface features. Interpretation of the anomalies is often subjective and it is rarely possible to identify the cause of all magnetic anomalies. Geological or pedological (soil) variations or features can produce responses similar to those caused by man-made (anthropogenic) features.
- 1.5.7 Anomalies identified by a magnetic survey are located in plan. It is not usually possible to obtain reliable depth information on the features that cause the anomalies.
- 1.5.8 Not all features will produce a measurable magnetic response and the effectiveness of a magnetic survey is also dependant on the site-specific conditions. It is not possible to guarantee that a magnetic survey will identify all sub-surface features. A magnetic survey is often most-effective at identifying sub-surface features when used in conjunction with other complementary geophysical techniques.



REPRODUCED BY PERMISSION OF THE ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. ©CROWN COPYRIGHT. ALL RIGHTS RESERVED. LICENCE NUMBER 100047783.



 SITE LOCATION



NOTE

THIS DRAWING AND THE INFORMATION CONTAINED THEREIN IS ISSUED IN CONFIDENCE AND IS THE COPYRIGHT OF PHASE SITE INVESTIGATIONS LIMITED. DISCLOSURE OF THIS INFORMATION TO THIRD PARTIES AND UNAUTHORISED COPYING OR REPLICATION OF THIS DATA WITHOUT APPROVAL IS FORBIDDEN.



Phase Site Investigations, Unit F9, Morton Park Way,
Morton Park, Darlington, County Durham, DL1 4PQ

T: +44 [0] 01325 487 766
F: +44 [0] 01325 354 203
E: enquiries@PhaseSI.com
W: www.PhaseSI.com

| | | | |
|--|------------|--------------------|------------|
| Scale | [A4 Sheet] | Drawing | Status |
| AS SHOWN | | ARC_829_327_BRS_01 | FINAL |
| Client | | | |
| GREENLANE ARCHAEOLOGY LTD CUMBRIA | | | |
| Site | | | |
| LAND TO THE WEST OF BROOMFALLEN ROAD, SCOTBY, CUMBRIA | | | |
| Title | | | |
| SITE LOCATION MAP | | | |
| Job No | | | |
| ARC_829_327 | | | |
| Chk. | MW | Drawn | CW |
| | | Date | 10/09/2012 |



NOTES

1. THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE ACCOMPANYING REPORT (ARC_829_327_BRS_02.DOC) WHICH PROVIDES DETAILS OF THE TECHNIQUES EMPLOYED, THEIR INHERENT LIMITATIONS AND ANY SITE SPECIFIC ISSUES.
 2. THIS DRAWING IS BASED UPON DRAWING 'Broomfallen Rd OS map/shedway', PROVIDED BY THE CLIENT. THE ORDNANCE SURVEY COORDINATES OBTAINED FOR THIS SURVEY WERE MEASURED USING THE UKO OSTINDZ PROJECTION. THIS PROJECTION SHOULD BE TAKEN INTO ACCOUNT IF THE SURVEY GRID IS RELOCATED.
 3. PHASE SITE INVESTIGATIONS CANNOT ACCEPT RESPONSIBILITY FOR THE RELIABILITY OR ACCURACY OF ANY INFORMATION PROVIDED BY A THIRD PARTY.
 4. THIS DRAWING AND THE INFORMATION CONTAINED THEREIN IS ISSUED IN CONFIDENCE AND IS THE COPYRIGHT OF PHASE SITE INVESTIGATIONS LIMITED. DISCLOSURE OF THIS INFORMATION TO THIRD PARTIES AND UNAUTHORISED COPYING OR REPLICATION OF THIS DATA WITHOUT APPROVAL IS FORBIDDEN.
- ALWAYS EXERCISE CAUTION WHEN EXCAVATING**

KEY

- SITE BOUNDARY
- EXTENT OF MAGNETIC GRADIENT SURVEY
- TEMPORARY SURVEY STATION (WOODEN STAKE)



PHASE
SITE INVESTIGATIONS

Phase Site Investigations, Unit F9, Morton Park Way,
Morton Park, Darlington, County Durham, DL1 4PQ
T: +44 (0) 19325 487 786
F: +44 (0) 19325 354 203
E: enquiries@phasesi.com
W: www.phasesi.com

| | | | |
|--------|--------------------------------------|-------|--------|
| Scale | (As shown) | Drawn | Status |
| 1:1000 | ARC_829_327_BRS_02 | | FINAL |
| Client | GREENLANE ARCHAEOLOGY LTD CUMBRIA | | |

Site
LAND TO THE WEST OF BROOMFALLEN
ROAD, SCOTBY, CUMBRIA

THE
GREYSCALE PLOT OF MAGNETIC
GRADIENT DATA

| | | | |
|----------|-------------|-------|------------|
| Job # | ARC_829_327 | | |
| Surveyed | DP, JMD | Drawn | MMW |
| Chk. | NF | Date | 06/09/2012 |

