NPA GEOPHYSICAL SURVEYS

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GEOPHYSICAL SURVEYS AT BRACKENBER MOOR, APPLEBY-IN-WESTMORLAND, CUMBRIA

with

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SUMMARY

In March 2009, Appleby Archaeology Group undertook geophysical surveys of two potential archaeological sites at Brackenber Moor, near Appleby-in-Westmorland, Cumbria, with the help of staff from North Pennines Archaeology Ltd. The surveys formed part of a community archaeology project, with the aim of investigating the history and archaeology of Brackenber Moor. This project includes the archaeological evaluation of an earthwork known as The Druidical Judgment Seat, which was the subject of a previous geophysical survey by members of the group (Railton 2007). The present surveys were supported by a grant from the Cumberland and Westmorland Archaeological and Antiquarian Society (CWAAS).

The first site (Site 1) was the location of a possible enclosure at Coupland Beck (HER 1815), which was recorded on the 1st edition Ordnance Survey map of 1861 as the site of a Roman camp (known as Coupland Camp or Coupland Fort), situated immediately behind the former Dun Cow Public House. Site 2 was a circular earthwork, which is visible at the northeast corner of Brackenber Moor, and is believed to be the site of a possible Roman signal station, known as Brackenber Moor Signal Station (HER 3473). A visual site inspection was also undertaken at Coupland Beck Earthwork (HER 1816), although this site was not considered suitable for geophysical survey (Site 3).

The geophysical surveys confirmed the former existence of Coupland Camp (Site 1), which originally occupied a natural headland overlooking Coupland Beck. The survey identified the subsurface remains of a sub-rectangular ditched enclosure, with possible outer bank. The survey also indicated that this earthwork was ploughed out in antiquity, removing nearly all visible evidence of the former enclosure. The site has traditionally been dated to the Roman period, due to the close proximity of the A66 Roman road. It is possible that this site formed an element of a wider system of defence and signalling, between the Roman forts at Brough and Kirkby Thore.

The survey of Brackenber Moor Signal Station (Site 2) provided evidence in support of the interpretation that this is the site of a Roman signal station. The site comprised a central mound, containing a sub-square sunken area, surrounded by a ditch and outer stone bank. The east side of the earthwork appeared to have been disturbed by the construction of a later track and WWII fox holes, but was otherwise in good condition. The form of this earthwork was very similar to the Roman signal station at Augill Bridge, which is the only known excavated example in the Eden Valley. If this interpretation is correct then the Brackenber Moor Signal Station is a site of National importance.

Coupland Beck Earthwork (Site 3) comprised a sub-square mound, adjacent to the presumed course of High Street Roman Road, which was identified as a holloway crossing the field. The nature of the earthwork was uncertain, as it does not correspond to historical descriptions of the site. However, the possibility exists that this is a Roman or later feature, given the archaeological context of Coupland Beck.

Given the results of the geophysical surveys and visual site inspection, further evaluation work is recommended in order to provide further information regarding the nature, extent and survival of archaeological features, and to provide much-needed dating evidence for the sites.

1 INTRODUCTION *(Figures 1&2)*

1.1 In March 2009, Appleby Archaeology Group undertook geophysical surveys of a number of potential archaeological sites at Brackenber Moor, near Appleby-in-Westmorland, Cumbria, with the help of staff from North Pennines Archaeology Ltd. The surveys formed part of a community archaeology project, with the aim of investigating the history and archaeology of Brackenber Moor. This project includes the archaeological evaluation of an earthwork known as The Druidical Judgment Seat, which was the subject of a previous geophysical survey by members of the group (Railton 2007). The present surveys were supported by a grant from the Cumberland and Westmorland Archaeological and Antiquarian Society (CWAAS).

1.2 Brackenber Moor is situated *c*.3km to the east of Appleby-in-Westmorland, between the settlements of Hilton and Coupland Beck. It comprises 11ha of unenclosed moorland, bounded by the Hilton Beck to the north, enclosed fields to the east and west, and the A66 road to the south. Brackenber Moor is an open common, with a number of local farmers exercising grazing rights. Parts of the moor are used as a golf course, and is managed by Appleby Golf Club. The Brackenber Moor study area also includes a number of fields on the southwest side of Brackenber Moor, incorporating Coupland Beck and a section of the High Street Roman Road (Figure 1).

1.3 The solid geology of the area comprises New Red Sandstone, overlain by glacial deposits of boulder clay (BGS 2001). George Gill, on the south side of Brackenber Moor is a Site of Special scientific Interest (SSSI), and is well known because of the a series of rocky crags, exhibiting rock formations which were laid down in the Permian Period. A number of wind-blown caves are also known in George Gill. The topography of the area is of undulating character with elevations ranging between *c*.500m and *c*.600m OD. A prominent hill, known as Ketland occupies the southeast corner of Brackenber Moor, with a peak of 629m OD. Flodders Tarn is situated toward the centre of the moor.

1.4 Geophysical surveys were undertaken at two locations, targeting known archaeological sites. The first (Site 1) was the location of a possible enclosure at Coupland Beck (HER 1815), which was recorded on the 1st edition Ordnance Survey map of 1861 as the site of a Roman camp (known as Coupland Camp or Coupland Fort), situated immediately behind the former Dun Cow Public House (Figure 2). Site 2 is a circular earthwork, which is visible at the northeast corner of Brackenber Moor, and is believed to be the site of a possible Roman signal station, known as Brackenber Moor Signal Station (HER 3473). A visual site inspection was also undertaken at Coupland Beck Earthwork (HER 1816), which was not suitable for geophysical survey (Site 3).

1.5 The objective of the geophysical surveys was to determine the presence/absence, nature and extent of any archaeological features at the chosen locations. In particular, it was hoped that the surveys might reveal evidence for the nature, extent and state of preservation of archaeological features at the site of the possible enclosure at Coupland Beck (Site 1), as no features were visible at the surface. It was also hoped that the survey of the site of the possible Roman signal station (Site 2), might provide further evidence regarding the nature of this earthwork. The results of the geophysical surveys were also to be used to inform the need for any further archaeological work at these sites.

2 METHODOLOGY

2.1 Standards

2.1.1 The geophysical survey and reporting were conducted in accordance with English Heritage guidelines (English Heritage 1995), and the recommendations of the Institute of Field Archaeologists (IFA 2002).

2.2 Technique Selection

2.2.1 Earth resistance survey was chosen, as this had previously proven to be the most effective technique for detecting archaeological features at the nearby Druidical Judgement Seat earthwork (Railton 2007).

2.2.2 When a small electric current is injected into the ground it encounters sub-surface resistance, which is measured. This resistance relates to the ability of the soil to retain moisture and can correspond to the location of cut archaeological features or buried stonewalls etc. Data was recorded by the instruments and downloaded into a laptop computer for initial data processing in the field using specialist software.

2.3 Field Methods

2.3.1 A 20m grid was established over each area (Site 1 and Site 2), and tied-in to known Ordnance Survey points using a Trimble 3605DR Geodimeter total station with datalogger.

2.3.2 An outline metric survey of the Brackenber Moor Signal Station (Site 2) was also undertaken by members of Appleby Archaeology Group, using a Trimble 3605DR Geodimeter total station with datalogger.

2.3.3 Measurements of Earth resistance were determined using a Geoscan RM15 Resistance Meter, with parallel twin probes set 0.5m apart. The surveys were undertaken using a zig-zag traverse scheme, with data being logged in 20m grid units. A sample interval of 0.5m was used, with a traverse interval of 1m, providing 800 sample measurements per grid unit. The data was downloaded on site into a laptop computer for processing and storage.

2.4 Data Processing

2.4.1 Geophysical survey data was processed using ArchaeoSurveyor II software, which was used to produce 'grey-scale' images of the raw data.

2.4.2 Areas of anomalously high resistance are displayed as dark grey, and areas of anomalously low resistance as light grey. The palette bar shows the relationship between the grey shades and earth resistance values in ohms.

2.4.3 Raw data was processed in order to further define and highlight the archaeological features detected. The following basic data processing functions were used:

Clip: to clip data to specified maximum and minimum values

Interpolate: to match the traverse and sample intervals in the resistance data

2.5 Interpretation

2.5.1 Two types of geophysical anomaly were detected in the earth resistance data:

high resistance: regions of anomalously high resistance, which may be associated with the presence of stone-built features, geological features or sub-surface voids.

low resistance: regions of anomalously low resistance, which may be associated with cut features which contain a higher moisture content than the surrounding material, such as pits or ditches

2.6 Presentation

2.6.1 The grey-scale images were combined with site survey data and Ordnance Survey data to produce the geophysical survey plans.

2.6.2 Archaeological interpretation diagrams are also provided, which are based on the interpretation of the geophysical survey results, in light of the archaeological and historical background of the site.

2.7 Project Archive

2.7.1 The data archive for this project has been created in accordance with the recommendations of the Archaeology Data Service (ADS 2001). The archive is currently held at the company offices at Nenthead, Cumbria.

2.7.2 One copy of the survey report will be deposited with the County Historic Environment Record, where viewing will be available on request. A copy will also be deposited with English Heritage, and the survey recorded on the English Heritage database of geophysical surveys. The project is also registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** (**OASIS**). The OASIS reference for this project is **northpen3-59621**.

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Historical Background

3.1.1 There are several known archaeological sites in the immediate vicinity of Brackenber Moor. This information is recorded in the Cumbria County Historic Environment Record (HER), and references to these are given where known. A visual survey of a number of these sites was undertaken by members of Appleby Archaeology Group, prior to the commencement of the geophysical surveys, and the results of this are included below.

3.1.2 ***Bronze Age:*** Brackenber Moor has been occupied since at least the Bronze Age, and a number of burial monuments survive from this period. Four burial cairns are recorded on a ridge between the Appleby Golf Club House, and the Druidical Judgement Seat (HER 1820-1823). Three of these are Scheduled Ancient Monuments, but have been disturbed both in antiquity, and in more recent times by illicit metal detecting. Another burial cairn is located to the west of the club house, near Hilton Beck (HER 15896), and has been disturbed by the creation of a bunker and green for the golf course.

3.1.3 A similar monument near Sandford, located *c.*1km to the southeast of Brackenber Moor, was the subject of an antiquarian excavation in the 18th century (Nicholson & Burn 1777). It contained evidence for Bronze Age cist and cremation burials, with rich grave goods. It is possible that further monuments, associated with the Bronze Age occupation of the area may survive on Brackenber Moor.

3.1.4 ***Iron Age***: a number of possible prehistoric settlement sites exist in the area, which could potentially date to the Iron Age or Romano-British periods. The Druidical Judgement Seat is a D-shaped enclosure, comprising an outer bank and inner ditch, with a single entrance on the northwest side (HER 1817). The earthwork occupies a defensible position on a natural headland, with steep banks on the north, east and south sides, and could potentially be Iron Age in date. The earthwork is close to Espland Farm, where finds of a prehistoric saddle quern, and two Iron Age or Romano-British rotary querns have recently been made by the farmer, Tom Brass. This earthwork is the subject on an on-going archaeological evaluation by members of Appleby Archaeology Group (Railton 2007 & 2008).

3.1.5 Another possible Iron Age or Romano-British settlement site has recently been identified on Ketland, on the south side of Brackenber Moor. This comprises a rectilinear ditched enclosure covering *c.*0.2ha.

3.1.6 ***Roman Period:*** there are a number of archaeological features of possible Roman date in the vicinity of Coupland Beck, at the southwest corner of Brackenber Moor (Figure 2). The present route of the A66, to the east of Coupland Beck, is known to follow the course of the High Street Roman Road (HER 1809). William Whellan recorded the presence of a Roman encampment at Coupland Beck (Whellan 1860). The site of a camp is also illustrated on the 1st edition Ordnance Survey map of 1861, immediately to the east of Coupland Beck (HER 1815). However, no visible evidence for this survives (Site 1). The same map illustrates a 'Roman Fortress' to the northwest of Coupland Beck Bridge (Site 3), on the north side of the road to Appleby (HER 1816). This has also been interpreted as the site of a possible Roman signal station or motte, which survives as an earthwork in the corner of the field.

3.1.7 An earthwork enclosure on the east side of Brackenber Moor (Site 2) has also been interpreted as the site of a possible Roman signal station (HER 3473), known as Brackenber Moor Signal Station (NY 7083 1982). It has been suggested that the site was used to signal direct through a natural line of sight between Castrigg near Crackenthorpe and Brough, and is comparable to the signal stations at North Stainmoor and Augill Bridge, near Brough (HER 5681). A third possible signal station site is recorded in the Cumbria County Historic Environment Record, situated to the southeast of the Appleby Golf Club clubhouse (HER 1819), however no evidence for this is visible on the ground.

3.1.8 Roman signal stations were rectangular towers of stone or wood, situated within ditched, embanked, palisaded or walled enclosures. They were constructed by the Roman army for military observation and signalling by means of fire or smoke, and normally formed an element of a wider system of defence and signalling between military sites such as forts, camps and towns. In Northern England signal stations were used to augment the Hadrian's Wall frontier, bur were used elsewhere generally as part of a chain of stations covering long distances. The earliest examples were built between AD 50 and AD117 for use during the earliest military campaigns in the conquest period, and generally took the form of a wooden tower surrounded by a ditch and bank, and possibly a slight timber palisade. After AD 117 towers were usually built of stone, on the same site as earlier timber towers. In the mid-4th century a chain of more substantial stone signal stations was constructed along the Yorkshire coast (English Heritage 2001).

3.1.9 ***Medieval and Post-medieval:*** no medieval features are known on Brackenber Moor. However, the probable site of a medieval hospital known variously as Coupland, Coupmanbeck or Sandford Hospital (founded by the Veteriponte family before 1265) is recorded at Coupland Beck (HER 4126). Nicolson and Burn mention a 'square which seems to have been the site of the hospital between the earthwork (?) and Coupland Beck Bridge' (Nicolson & Burn 1777, 610). It is believed to have been located close to the confluence of 'Coupmanbeck' and 'Creskeldbeck' although the exact location is uncertain.

3.1.10 A number of post-medieval agricultural features have been identified on the 1st Edition Ordnance Survey map of 1861. Some of these survive as earthworks including possible stack stands (HER 3088), sand pits (HER 15875), gravel pits (HER 15876), quarries (HER 18574 & HER 25689), and a lime kiln (HER15877). Coupland Woolen Mill (HER 15897) was situated close to Hilton Beck to the north of Coupland Beck. An associated weir and mill races are still visible, although no buildings now survive.

3.1.11 A number of distinct ridge and furrow earthworks survive on land immediately to the north of the Druidical Judgement Seat. These are believed to be remnants of Napoleonic period cultivation (1799-1815), which is known to have existed over much of Brackenber Moor.

3.1.12 ***Modern:*** the majority of Brackenber Moor has survived as unenclosed agricultural land into the modern period. The golf course was founded in 1902, and the greens, bunkers and fairways of the present golf course occupy a large part of Brackenber Moor, between Coupland Beck and Brackenber. The Appleby Golf Club now manages the moor, and holds the title of 'Lord of the Manor'.

3.1.13 The 1st Edition Ordnance Survey map shows the Druidical Judgement Seat, and two standing stones to the northwest of the monument, which may be prehistoric. These also appear on the 2nd and 3rd and 4th Edition Ordnance Survey maps of 1882, 1899 and 1920. These stones do not survive in their original positions. However, two large stones were identified close to these locations, at the top of the bank north of George Gill. It is possible that these were moved at the beginning of the 20th century.

3.1.14 During the Second World War, parts of Brackenber Moor were used as a temporary army training camp. The concrete foundations of buildings from this period can still be seen near Flodders Tarn, to the northeast of the Appleby Golf Club clubhouse. Brackenber Moor is also believed to have been a practice ground during the First World War.

3.2 Previous Archaeological Work

3.2.1 In July 2007, North Pennines Archaeology Ltd., with the help of Appleby Archaeology Group, undertook geophysical surveys of land at the Druidical Judgement Seat earthwork. This was supported by a grant from Charles Haywood Foundation, which provided the opportunity for members of the group to learn geophysical survey techniques, with the support of North Pennines Archaeology staff. Both earth resistance and geomagnetic survey were undertaken (Railton 2007). The work was conducted in accordance an English Heritage Licence (Ref. AA/011404/5), as the site is a Scheduled Ancient Monument, protected by law.

3.2.2 A number of features were detected which could be associated with the former use of the earthwork by the Appleby Golf Club, as indicated on a modern air photograph of the site. These include possible land drains or gullies, and sub-surface deposits, as well as two visible spoil heaps. A modern service pipe was also detected to the north of the enclosure.

3.2.3 The earth resistance survey proved to be the most effective technique for detecting archaeological features at the site, although the presence of earth hummocks over the interior of the earthwork may have masked insubstantial archaeological features. No definite archaeological features were revealed within the interior of the earthwork. Both geophysical survey techniques detected the earth-filled enclosure ditch, and parts of the earthwork banks. In addition, the earth resistance survey detected deposits within the ditch terminals, which suggests that the entrance has been widened at some time.

3.2.4 In addition to the geophysical survey, members of Appleby Archaeology Group identified a number of previously unrecorded earthworks on Brackenber Moor, comprising an earthwork enclosure on the Ketland, and a series of banks and ditches of unknown date. It is possible that these features are associated with a former field system of prehistoric, Romano-British or medieval date. A number of post-medieval agricultural features were also investigated, including areas of former ridge and furrow cultivation, and possible stack stands.

3.2.5 In July 2008 a trial trench evaluation of The Druidical Judgement Seat (Phase I) was undertaken (Railton 2008). The Phase I evaluation saw the excavation of three out of the four trenches originally planned for the site in the project design, and examined the remains of the earthwork enclosure banks and ditch, and investigated two possible geophysical anomalies identified within the enclosure on a previous earth resistance

survey. It was evident from the Phase I evaluation that the earthwork enclosure originally comprised an inner bank and outer ditch occupying a natural headland, with an outer bank on the northwest side to further isolate the headland from the ridge of land to the west. The banks were constructed with material excavated from the enclosure ditch, and the inner bank at least was originally reinforced with cobbles from the nearby stream. These may have also served to support a palisade or fence, evidence for which consists of a single posthole. The banks appear to have been flattened by later ploughing, which has undoubtedly also disturbed features within the enclosure. The previous geophysical surveys also suggested that the preservation of features within the enclosure was relatively poor, and this has been supported by the limited evidence. The most notable feature detected during the earth resistance survey corresponded to the location of a random spread of stone, which was believed to be disturbed material from the bank. No suitable deposits were recovered with which to date the enclosure ditch and banks. Dating the earthwork therefore remains a priority for the Phase II evaluation, which is scheduled for July 2009.

3.2.6 The majority of the finds from the Phase I evaluation were recovered from the interior, including the only pottery from the site. An assemblage of flint tools and flakes were recovered, which are typologically dated to the late Neolithic/Early Bronze Age. The majority of the flint finds were residual and are likely relate to earlier activity at the site, possibly associated with the nearby Bronze Age burial monuments. The only internal feature revealed at the site comprised a stone-lined pit. Interpretation of this feature was difficult given the small size of the trench, but an Early Bronze Age date is considered likely given the recovery of a button/thumbnail scraper from its fill. This feature provided further evidence for early activity on the headland, which may predate the enclosure.

4 SURVEY RESULTS *(Figures 3-7)*

4.1 Site 1: Coupland Camp (Figures 3-5)

4.1.1 Site 1 was the site of the possible enclosure at Coupland Beck (HER 1815), which was recorded on the 1st edition Ordnance Survey map of 1861 as the site of a Roman camp (known as Coupland Camp or Coupland Fort), situated immediately to the east of the High Street Roman Road (HER 1809). This site is indicated on the 1st Edition Ordnance Survey map as an oval enclosure, situated behind the former Dun Cow Public House (now a farmhouse). The site is centred on National Grid Reference NY 7117 1888 (Figure 3).

4.1.2 The survey area was within a single field of pasture, occupying a natural headland, to the east of Coupland Beck bridge. The survey area measured 0.3ha in total, bounded by a post and wire fence to the southeast, and steep banks to the north and west. The survey area was centred on the location of the camp, as illustrated on the 1st Edition Ordnance Survey map. A relatively level oval platform was visible in this area which measured *c.*40m across. It is likely that this was the feature referred to on the 1st Edition Ordnance Survey map, although no enclosure bank or ditch was visible at the time of the survey. The area appeared to have been ploughed in the past, as slight ridges were visible crossing the site, aligned northwest to southeast (Plate 1).

Plate 1: Coupland Camp (Site 1), looking southeast

4.1.3 A metal feeding trough was present at the centre of the survey area, which had to be excluded from the survey area. A modern water pipe was seen emerging from the bank close to George Gill. The trench for this crossed the northern part of the survey area, and was detected during the geophysical survey as a linear low resistance anomaly, aligned northeast to southwest. A similar parallel anomaly was detected on the southern part of the survey area. Two possible land drains or plough furrows were also detected on the north side of the survey area aligned east to west.

4.1.4 A sub-rectangular area of low resistance was detected, defining an area *c.*45m long and *c.*36m wide. This feature varied in width, being c.8.4m wide on the northwest side, and *c.*4m wide to the southwest. The anomaly extended outside of the northeast and southeast sides of the survey area. This was interpreted as the remains of a soil-filled ditch, which is undoubtedly the original enclosure ditch of Coupland Camp. This appeared wider on the down-slope northwest side, where it may have been eroded by ploughing (Figures 4 & 5).

4.1.5 To the northwest of this feature was an area of anomalously high resistance, which may indicate the presence of an outer enclosure bank. This anomaly extended outside of the survey area, making interpretation difficult. It is also possible that this anomaly was an artefact of the topography of the site, and was due to the underlying sandstone geology.

4.1.6 A discrete area of anomalously high resistance was detected within the enclosure on the west side of the survey area. This may indicate the presence of a stone bank or be an effect of the underlying geology in this area.

4.1.7 A roughly circular area of anomalously low resistance was detected at the centre of the survey area, measuring *c.*30m in diameter, which was interpreted as the soil-filled interior of the camp. This area apparently had a greater depth of soil than the surrounding enclosure, leading to a lower resistance at the centre. This may be due to the site having been ploughed out in antiquity.

4.2 Site 2: Brackenber Moor Signal Station (Figures 6-7)

4.2.1 Site 2 is a circular earthwork (HER 3473), which is visible at the northeast corner of Brackenber Moor, immediately to the east of one of the fairways of Appleby Golf Club, within a loop of the Hilton Beck (Plate 2). This is believed to be the site of a possible Roman signal station, known as Brackenber Moor Signal Station (NY 7083 1982). It has been suggested that the site was used to signal direct through a natural line of sight between Castrigg and Brough, and is comparable to the signal stations at North Stainmoor and Augill Bridge, near Brough.

Plate 2: Brackenber Moor Signal Station (Site 2), looking east

4.2.2 An area measuring 0.13ha was surveyed in total, which incorporated the entirety of the earthwork, and an area to the south and west. In addition to the geophysical survey, an outline metric survey of the earthwork was undertaken, in order to place the results of the earth resistance survey in context (see Figure 6).

4.2.3 The earthwork measured *c*.24m in diameter, comprising a circular mound measuring *c.*13m in diameter, with a central depression. The mound is surrounded by a ditch and outer bank, which has been interrupted on the south side, and largely removed on the east side. The east side of the central mound contained two circular depressions, which may be later fox-holes (Plate 3). These do not appear to be original, and may have been created when Brackenber Moor was used as a WWII temporary army training camp. Stone was clearly used in the construction of the outer bank and inner mound. A former track crosses the eastern side of the earthwork and is visible as a banked feature running north-south.

Plate 3: Possible fox hole on the east side of Site 2,
showing a track cutting the east side of the earthwork (looking east)

4.2.4 The geophysical survey detected high resistance anomalies over large parts of the outer bank (1) and inner mound, which was expected given the construction of the earthwork. The ditch was detected as an area of anomalously low resistance (2). Possible entrances were detected on the north and south sides, but this was uncertain. The east side of the earthwork appeared disturbed, which was expected given that the later track and fox-holes have disturbed the earthwork on this side (3). A sub-square area of anomalously low resistance was detected at the centre of the earthwork, (4) which measured *c.*6.5m across. This was interpreted as the possible foundation for a central timber platform. No post-holes were detected, however it is unlikely that these would be identified given the relatively course resolution of the geophysical survey.

4.2.5 A shallow ditched feature was identified during the geophysical survey, immediately to the west of the earthwork (Plate 4). This was 8.3m long and 3.3m wide, with straight sides and rounded ends. This appeared as a high resistance anomaly in the resistance data (5), but was not clearly defined given the relatively course resolution of the survey. It is possible that this was a WWII feature. Rows of circular ring ditches have

been identified elsewhere on Brackenber Moor, which were created by soldiers excavating drainage ditches for tents. It is possible that this was a similar feature, although the shape was unusual. Alternatively it may have been a stack stand.

4.2.6 Two linear high resistance anomalies were detected, which corresponded to the locations of two banks defining the later track (5). A linear low resistance anomaly was also detected to the north of these (6), which may be a related feature.

Plate 4: Ditched feature to the west of Brackenber Moor Signal Station, looking west

4.3 Site 3: Coupland Beck Earthwork

4.3.1 Coupland Beck Earthwork (HER 1816) was situated in the southern corner of a sloping field, to the north of Coupland Beck Bridge, bounded by the Appleby Road to the southwest, and the Hilton Beck to the east (Plate 5). The site was at the lowest point in the field, adjacent to the course of the Roman road (HER 1890), and is labelled as a 'Roman Fortress' on the 1st Edition Ordnance Survey map (NY70971898).

4.3.2 The earthwork comprised a roughly square mound, forming a level platform measuring *c.*15m across (Plate 6). The east and west sides of the mound were approximately 1.5m high, whilst on the north side there was a prominent *c.*1m-high ridge defining the edge of the platform. On the south side, a 9m-wide earthen ramp ran away from the platform in a southerly direction. A small number of stones were visible in the northern bank, including a single piece of red sandstone. No other stonework was visible.

4.3.3 Immediately to the east of the earthwork was a sunken holloway, measuring *c.*7m across, which is presumably the location of the Roman road. This ran north to south from the top of the hill to the north, as far as the southern field boundary. This was not visible to the south, however, as this area appears to be very disturbed ground, and all trace of the road here may have have been removed.

4.3.4 Given the upstanding nature of the earthwork, it was not selected for geophysical survey.

Plate 5: Coupland Beck Earthwork (Site 3) looking southwest, showing the presumed course of the High Street Roman Road in the foreground

Plate 6: Western bank of Coupland Beck Earthwork looking north

4.4 Discussion

4.4.1 The geophysical survey has confirmed the former existence of a sub-rectangular enclosure at the site of Coupland Camp (Site 1). The survey has indicated that this comprised an enclosure ditch, with possible outer bank on the northwest side. The site appears to have been eroded by ploughing in antiquity, which has removed all surface traces of the ditch and bank, and led to a build up of soil in the interior. This probably occurred before the production of the 1st edition Ordnance Survey map of 1861. No internal features were detected at the site, suggesting that the survival of sub-surface remains may be poor. The site is traditionally dated to the Roman period, due to the close proximity of the Roman road. However, a prehistoric date for the site is also

possible, given the close proximity of a remarkably similar earthwork at Espland Farm, which on existing evidence may be Bronze Age or Iron Age in date.

4.4.2 The earth resistance survey of the Brackenber Moor Signal Station (Site 2) has provided further evidence that this was indeed the site of a Roman signal station. The survey has indicated that the site comprises a central mound, containing a sub-square sunken area, surrounded by a ditch and outer stone bank (Plate 6). The east side of the earthwork appears to have been disturbed by the construction of a later track and WWII fox holes, but otherwise appears in good condition.

4.4.3 The earthwork is very similar to the Roman signal station at Augill Bridge (HER 5681). This earthwork measured *c*.25m in diameter, comprising a circular mound measuring *c.*8m in diameter, with a central depression. The mound was surrounded by a ditch, bank and outer ditch. The site is a Scheduled Ancient Monument (SAM 32897), as sites of this type are considered to be of National importance. Limited excavation of the earthwork by Barry Jones in October 1975 revealed a central mound made of yellow clay, and two postholes of different sizes. This was interpreted as evidence for a central wooden platform measuring *c*.3.5m square, that had subsequently been reconstructed (English Heritage 2001). It is possible that similar features survive at Brackenber Moor Signal Station. However, this could only be confirmed through excavation.

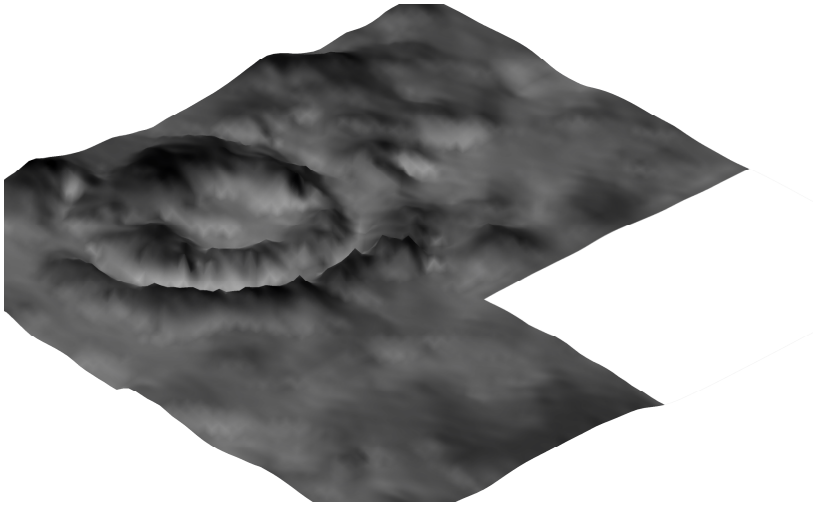

Plate 6: 3D representation of the earth resistance survey of Brackenber Moor Signal Station, looking southeast

4.4.4 Coupland Beck Earthwork was described by Nicolson and Burn as ‘a round fortification, internal diameter 40 paces, with walls 10 yds thick. The stones, red in colour, were strongly cemented with lime and sand’ (Nicholson & Burn 1777, 610). This does not correlate with the earthwork identified during the visual site inspection, which is on a much smaller scale, and appears to be a predominantly earthen feature. It is possible that this is part of a much larger ‘fortification’, however evidence for this is lacking on the ground. The earthwork has also been interpreted as a Roman signal station or a motte. Neither explanation is very satisfactory. The location is unsuitable for a signal station, as Coupland Beck lies in a hollow, and views from the earthwork in all directions are blocked by neighbouring hills. The location of the earthwork next to the Roman road may be significant, and it is possible that this is some other Roman or later feature. Excavation is required in order to provide further information on the nature of the site, and to provide dating evidence for the earthwork.

5 CONCLUSIONS

5.1 Earth resistance surveys have been conducted at two locations at Brackenber Moor, Appleby-in-Westmorland, targeting archaeological sites of possible Roman date. Archaeological remains were detected at both locations, indicating that Coupland Beck was a focus of military activity during the early Roman period. A visual site inspection was also undertaken of an earthwork of uncertain date at Coupland Beck.

5.2 The geophysical survey has confirmed the former existence of Coupland Camp (Site 1), which originally occupied a natural headland overlooking Coupland Beck. The survey has identified the subsurface remains of a sub-rectangular ditched enclosure, with possible outer bank. The survey has also indicated that this earthwork was ploughed out in antiquity, removing nearly all visible evidence of the former enclosure. The site has traditionally been dated to the Roman period, due to the close proximity of the A66 Roman road. It is possible that this site formed an element of a wider system of defence and signalling, between the Roman forts at Brough and Kirkby Thore.

5.3 The survey of Brackenber Moor Signal Station (Site 2) has provided evidence in support of the interpretation that this is the site of a Roman signal station. The site comprises a central mound, containing a sub-square sunken area, surrounded by a ditch and outer stone bank. The east side of the earthwork appears to have been disturbed by the construction of a later track and WWII fox holes, but is otherwise in good condition. The form of this earthwork is very similar to the Roman signal station at Augill Bridge, which is the only known excavated example in the Eden Valley. If this interpretation is correct then the Brackenber Moor Signal Station is a site of National importance.

5.4 Coupland Beck Earthwork comprised a sub-square mound, adjacent to the presumed course of High Street Roman Road, which was identified as a holloway crossing the field. The nature of the earthwork was uncertain, as it does not correspond to historical descriptions of the site. However, the possibility exists that this is a Roman or later feature, given the archaeological context of Coupland Beck.

5.5 Given the results of the geophysical surveys and visual site inspection, further evaluation work is recommended. A single trial trench could provide important information regarding the nature and construction of Brackenber Moor Signal Station (Site 2), and provide dating evidence for the site. Given the doubtful nature of the earthwork at Coupland Beck (Site 3), it is recommended that a single trench is excavated across the earthwork in order to ascertain its nature, date and function. The geophysical survey of Coupland Camp (Site 1) has suggested that subsurface archaeological remains may be plough-damaged, as was the case at the Druidical Judgement Seat earthwork on Brackenber Moor. Nevertheless, the excavation of a trial trench targeting the enclosure ditch could provide further information regarding the nature, extent and survival of archaeological features at the site.

6 ACKNOWLEDGEMENTS

North Pennines Archaeology and Appleby Archaeology Group are grateful to the Cumberland and Westmorland Archaeological and Antiquarian Society for funding the project. Thanks are also due to Malcolm Doig, Appleby Golf Club, and Claire Pattison, Coupland Beck Farm, for granting permission to carry out the surveys. North Pennines Archaeology would also like to extend thanks to the members of Appleby Archaeology Group for their enthusiasm and support in conducting the geophysical surveys.

The geophysical surveys were conducted by Margaret Albon, Richard Boothroyd, Jennifer Callis, Carol Dougherty, Phyllis Rouston, Richard Stevens and Mick Yates of Appleby Archaeology Group, and were facilitated by Martin Railton of North Pennines Archaeology. This report was prepared and illustrated by Martin Railton, North Pennines Archaeology.

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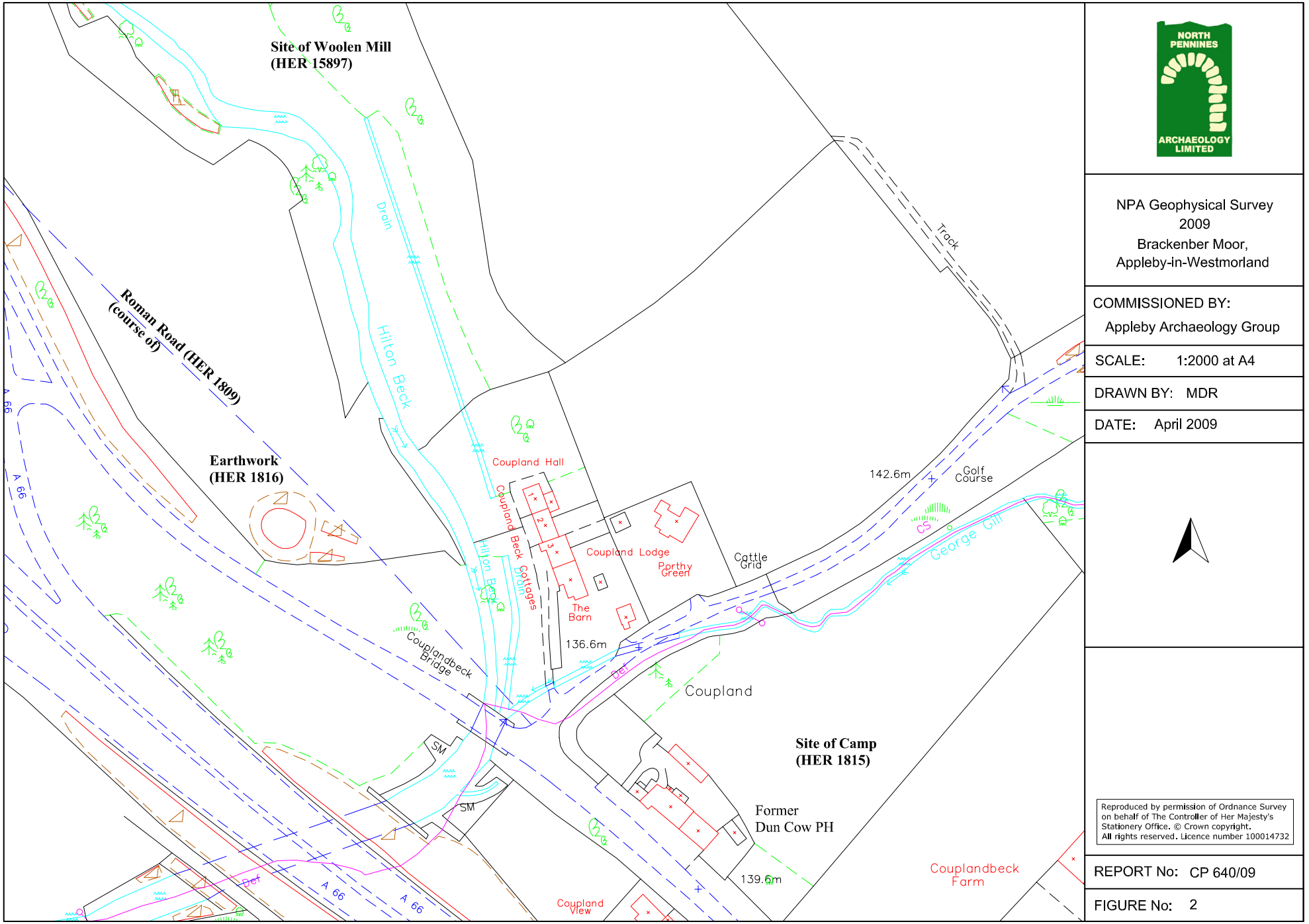
APPENDIX I – ILLUSTRATIONS

NORTH PENNINES ARCHAEOLOGY LIMITED NPA Geophysical Survey 2009	PROJECT: Brackenber Moor SCALE: 1:20,000 at A4 REPORT No: CP 640/09 WITH: Appleby Archaeology Group DRAWN BY: MDR DATE: April 2009 FIGURE No: 1	outline of Brackenber Moor outline of Brackenber Moor study area location of survey site	

Figure 1 : Location map



NORTH PENNINES ARCHAEOLOGY LIMITED

NPA Geophysical Survey
2009
Brackenber Moor,
Appleby-in-Westmorland

COMMISSIONED BY:
Appleby Archaeology Group

SCALE: 1:2000 at A4

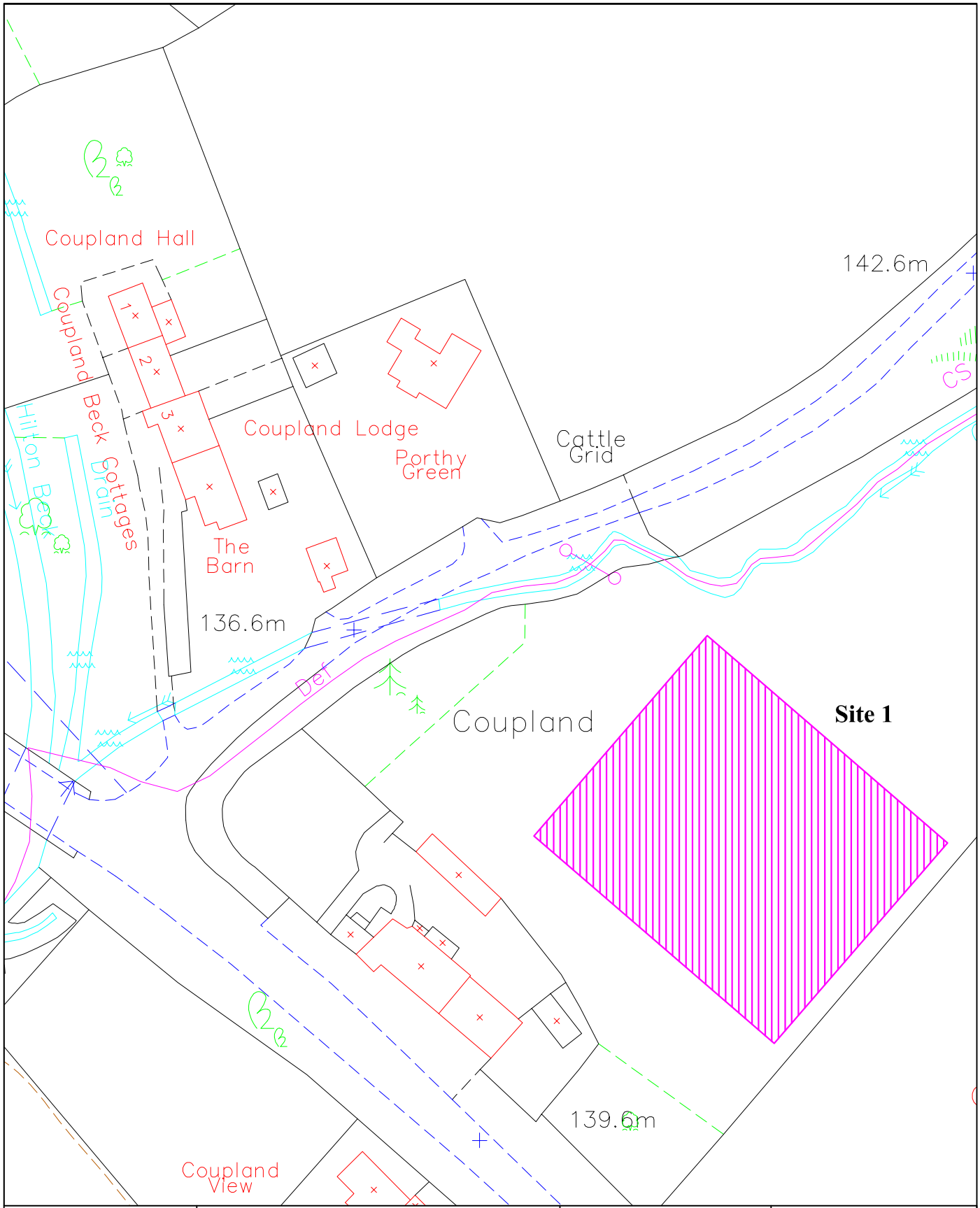
DRAWN BY: MDR

DATE: April 2009

REPORT No: CP 640/09

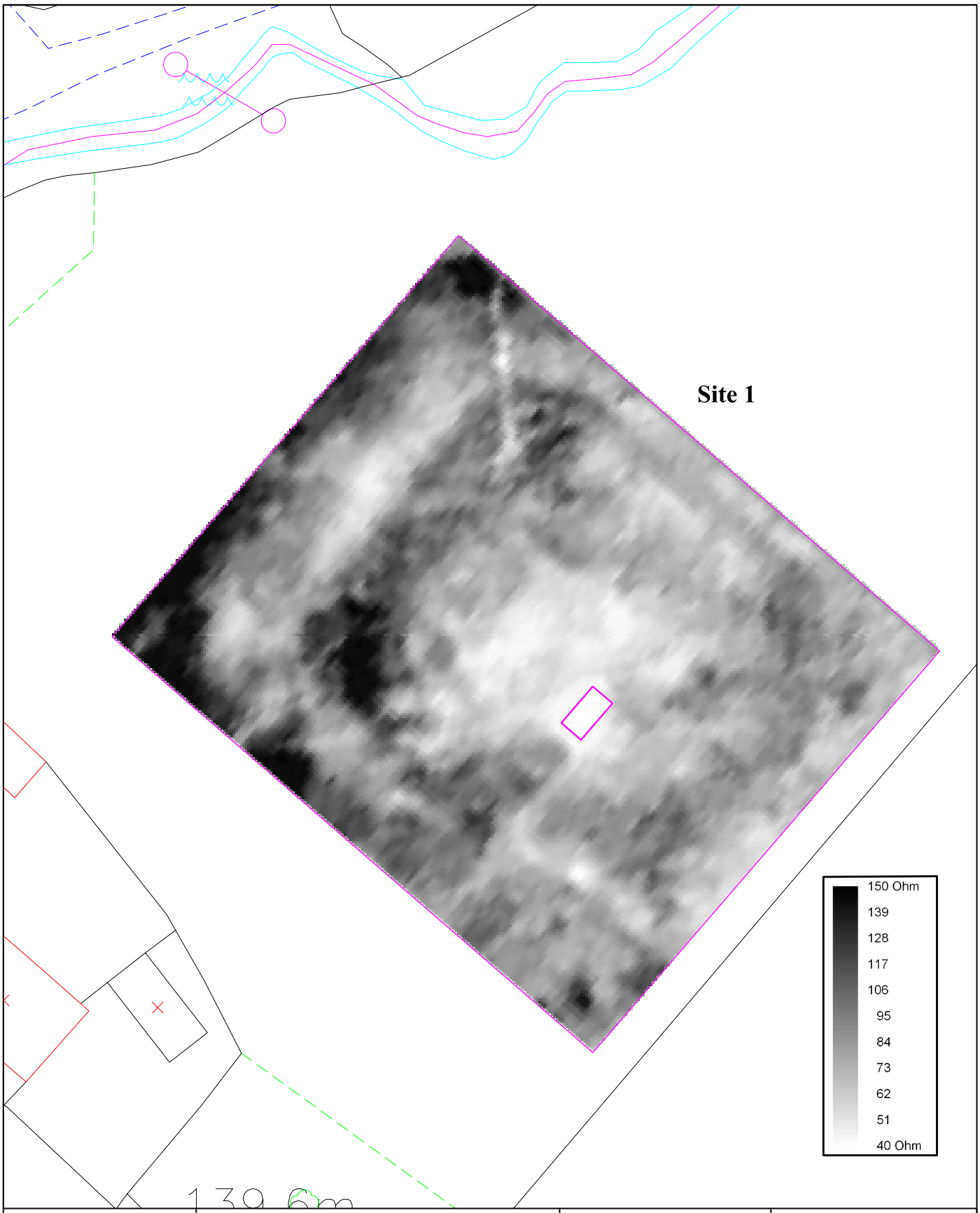
FIGURE No: 2

Figure 2 : Location of archaeological sites at Coupland Beck



North Pennines Archaeology Ltd 2009	PROJECT: Brackenber Moor SCALE: 1:1000 at A4 REPORT No: CP 640/09 CLIENT Appleby Archaeology Group DRAWN BY: MDR DATE: April 2009 FIGURE No: 3	geophysical survey area	Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100014732

Figure 3 : Location of the geophysical survey area at Coupland Camp (Site 1)

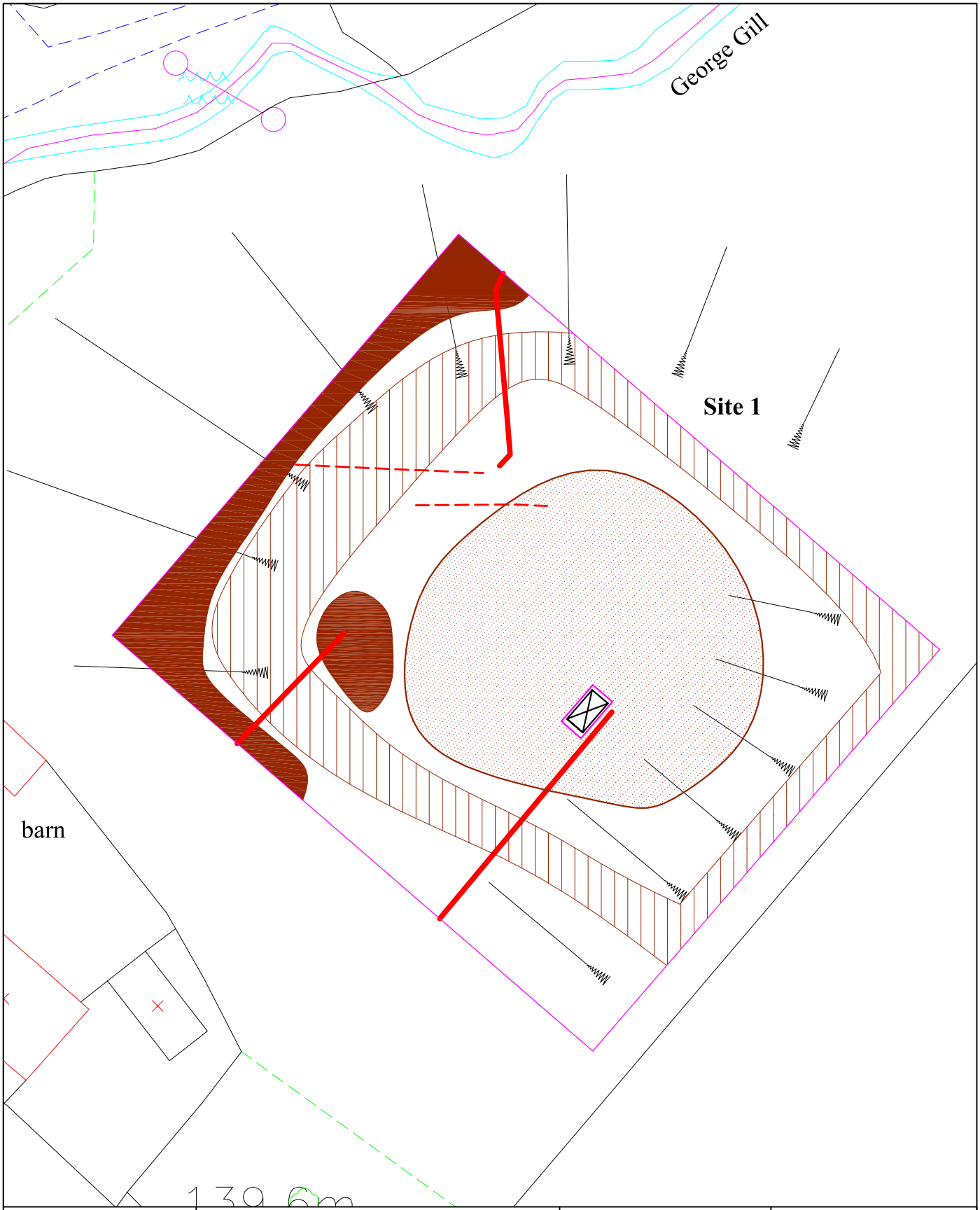


PROJECT:	Brackenber Moor
SCALE:	1:500 at A4
REPORT No:	CP 640/09
CLIENT	Appleby Archaeology Group
DRAWN BY:	MDR
DATE:	April 2009
FIGURE No:	4

outline of geophysical survey area

North Pennines Archaeology Ltd 2009

Figure 4 : Geophysical survey of Coupland Camp (Site 1)



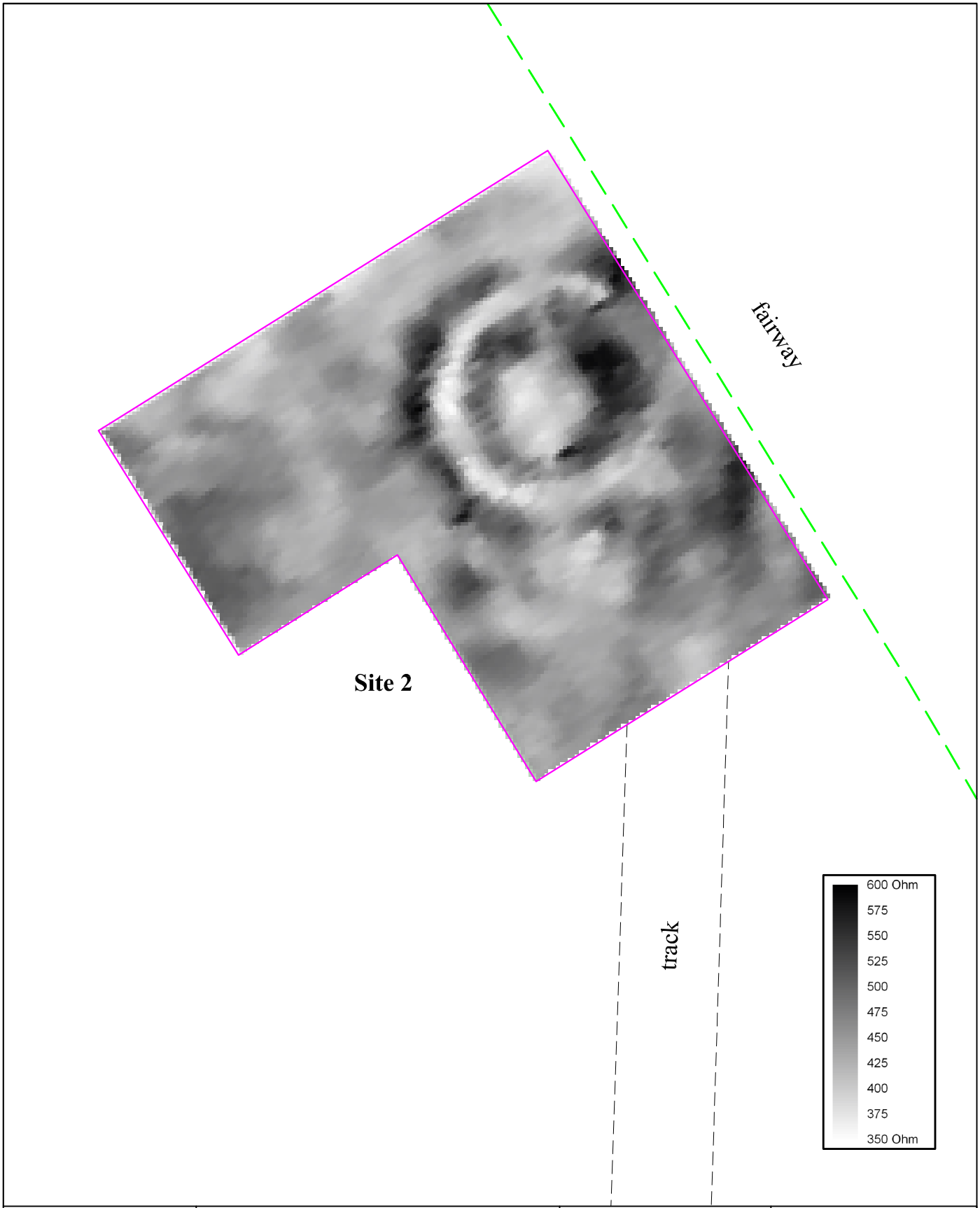
NORTH PENNINES ARCHAEOLOGY LIMITED

North Pennines Archaeology Ltd 2009

PROJECT:	Brackenber Moor
SCALE:	1:500 at A4
REPORT No:	CP 640/09
CLIENT	Appleby Archaeology Group
DRAWN BY:	MDR
DATE:	April 2009
FIGURE No:	5

- outline of geophysical survey area
- water pipe/land drain
- enclosure ditch
- interior platform
- possible bank/geology
- feeding trough

Figure 5 : Archaeological interpretation of Coupland Camp (Site 1)



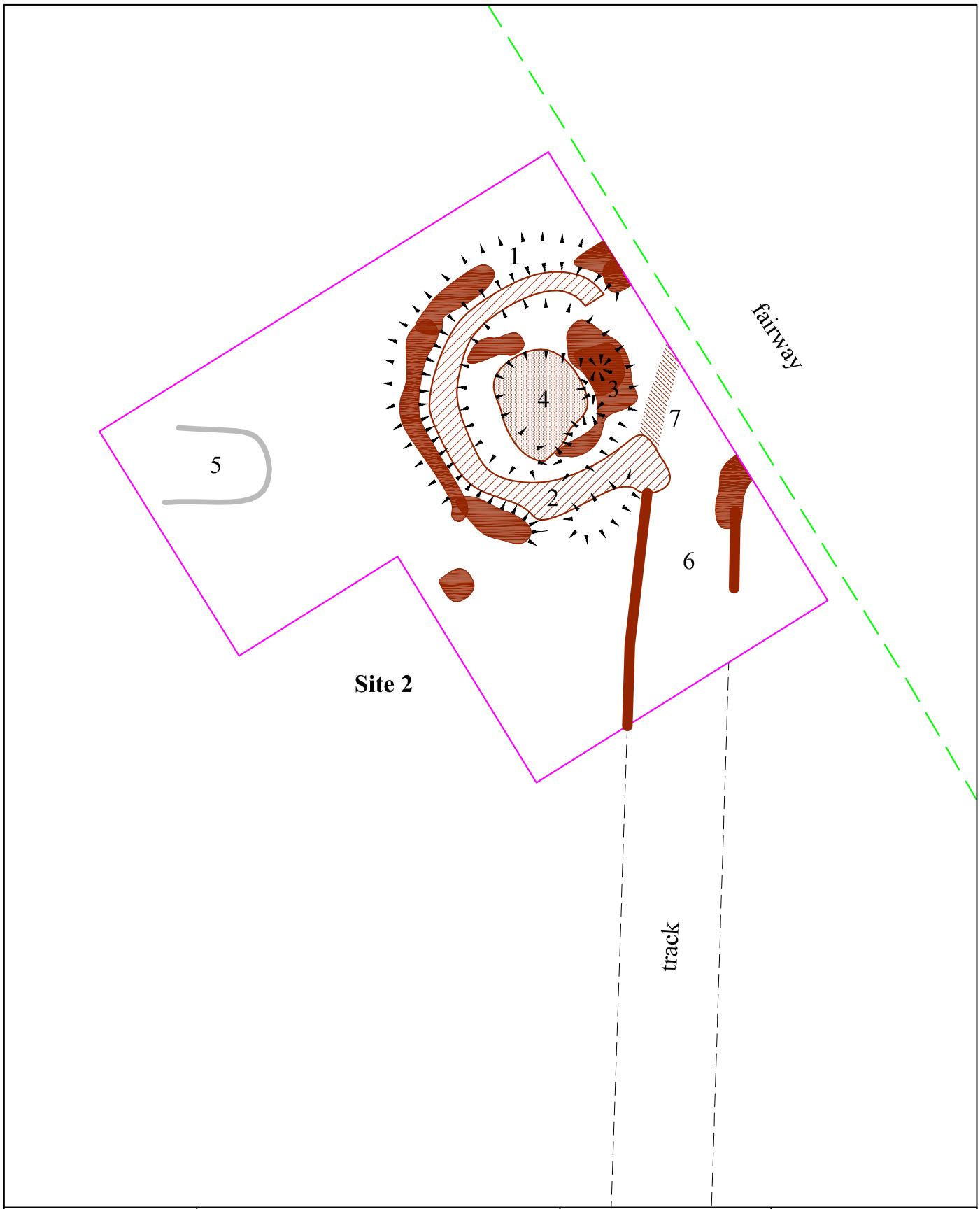
PROJECT:	Brackenber Moor
SCALE:	1:400 at A4
REPORT No:	CP 640/09
CLIENT	Appleby Archaeology Group
DRAWN BY:	MDR
DATE:	April 2009
FIGURE No:	6

NORTH PENNINES ARCHAEOLOGY LIMITED

North Pennines Archaeology Ltd 2009

outline of geophysical survey area

Figure 6 : Geophysical survey of Brackenber Moor Signal Station (Site 2)



NORTH PENNINES ARCHAEOLOGY LIMITED

North Pennines Archaeology Ltd 2009

PROJECT:	Brackenber Moor
SCALE:	1:400 at A4
REPORT No:	CP 640/09
CLIENT	Appleby Archaeology Group
DRAWN BY:	MDR
DATE:	April 2009
FIGURE No:	7

- outline of geophysical survey area
- stone/bank
- earthwork ditch
- sunken area
- ditch (uncertain)
- ditched feature

Figure 7 : Archaeological interpretation of Brackenber Moor Signal Station (Site 2)