NPA GEOPHYSICAL SURVEYS

Geophysical Survey Report CP392/07 November 2007

GEOPHYSICAL SURVEYS OF THE DRUIDICAL JUDGEMENT SEAT, BRACKENBER MOOR, APPLEBY-IN-WESTMORLAND, CUMBRIA

in collaboration with

APPLEBY ARCHAEOLOGY GROUP

NGR NY 719 189

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SUMMARY

In July 2007, North Pennines Archaeology Ltd., with the help of Appleby Archaeology Group, undertook geophysical surveys of land at Brackenber Moor, near Appleby-in-Westmorland, Cumbria. 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. The geophysical survey was undertaken to target an earthwork known as The Druidical Judgement Seat. This earthwork is the site of a possible prehistoric or Romano-British farmstead, about which nothing was known.

Brackenber Moor has been occupied since at least the Bronze Age, and a number of burial monuments survive from this period. 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. Similar sites in Cumbria are usually interpreted as Iron Age or Romano-British farmsteads. However, no archaeological features were visible within the enclosure, and no archaeological evidence was available with which to date the site.

The objective of the geophysical surveys was to determine the presence/absence, nature and extent of any archaeological anomalies within the survey area, and the presence/absence of any known modern anomalies within the survey area, which may affect the results. In particular, it was hoped that the surveys might reveal evidence for archaeological features within the enclosure. Two geophysical techniques, geomagnetic survey and earth resistance survey, were undertaken at the site covering the majority of the earthwork interior, banks, ditch, and a strip of land to the northwest.

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. Only excavation will determine whether this is the case. A modern service pipe was also detected to the north of the enclosure

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.

Given the results of the geophysical survey, further evaluation work is recommended, in order to test the results of the geophysical surveys, and to determine the presence/absence, nature and extent of any archaeological features within the enclosure. This could provide valuable information regarding the nature and past use of the site, and provide much needed dating evidence for the earthwork enclosure.

1 INTRODUCTION *(Figure 1)*

1.1 In July 2007, North Pennines Archaeology Ltd, with the help of Appleby Archaeology Group, undertook geophysical surveys of land at Brackenber Moor, near Appleby-in-Westmorland, Cumbria. 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. The survey also formed part of a community archaeology project, with the aim of investigating the history and archaeology of Brackenber Moor.

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 (Figure 1). 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.

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 The geophysical survey area comprised *c*.0.5ha of land and was located in the southeast corner of Brackenber Moor, close to Espland Farm. The geophysical survey was undertaken to target an earthwork known as The Druidical Judgement Seat, which occupies a natural headland, with steep banks on the north, east and south sides. It is centred on Ordnance Survey grid reference NY 719 189. This earthwork is the site of a possible prehistoric or Romano-British settlement, about which nothing was known. The work was conducted in accordance an English Heritage Licence (Appendix III), as the site is a Scheduled Ancient Monument, protected by law.

1.5 The objective of the geophysical surveys was to determine the presence/absence, nature and extent of any archaeological anomalies within the survey area, and the presence/absence of any known modern anomalies within the survey area, which may affect the results. In particular, it was hoped that the surveys might reveal evidence for archaeological features within the enclosure, since apart from the encircling ditch and banks, no features were visible at the surface. The results of the geophysical survey were also to be used to inform the need for any further archaeological work at the site.

1.6 The geophysical surveys were conducted by Martin Railton, NPA Senior project Officer and Angus Clarke, NPA Project Archaeologist, between 18th and 20th July 2007, with the assistance of Marjory Campion, Stanley Darke, Harry Hawkins, Liz Hawkins, Martin Joyce, Ted Relph, Phyllis Rouston, Richard Stevens, and Ray Wager of Appleby Archaeology Group. This report was prepared and illustrated by Martin Railton..

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).

2.1.2 An English Heritage licence was obtained to carry out the geophysical survey and is included in Appendix III. This was necessary due to the fact that the Druidical Judgement Seat is a Scheduled Ancient Monument, and is protected by law under the Ancient Monuments and Archaeological Areas Act 1979 (as amended), Section 42.

2.2 Technique Selection

2.2.1 Geomagnetic survey was selected as an appropriate technique, given the non-igneous environment, and the expected presence of cut archaeological features at depths of no more than 1.5m. This technique involved the use of hand-held gradiometers, which measure variations in the vertical component of the earth's magnetic field. These variations can be due to the presence of sub-surface archaeological features. Data was recorded by the instruments and downloaded into a laptop computer for initial data processing in the field using specialist software.

2.2.2 Earth resistance survey was also chosen as it was thought this technique might provide additional detail, and/or prove more effective in detecting archaeological features at the site. 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 is recorded and processed in a similar way to the gradiometer.

2.2.3 The presence of earth hummocks over much of the survey area provided an additional obstacle to the geophysical survey. Earth hummock are small round or ovoid mounds, which vary in size up to 2m in diameter and 0.5m high. These are the result of frost action, and most are believed to have developed in historic times (Pemberton 1980). The hummocks covered most of the interior of the Druidical judgement Seat. It was not known for certain what effect (if any) these features would have on the results of the geophysical survey.

2.3 Field Methods

2.3.1 The geophysical study area measured *c.*0.5ha and was located to incorporate the majority of the Druidical Judgement Seat earthwork. A 20m grid was established over this area, 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 Druidical Judgement Seat was also undertaken by members of Appleby Archaeology Group, using a Trimble 3605DR Geodimeter total station with datalogger. This is shown in Figure 2.

2.3.3 Geomagnetic measurements were determined using a Bartington Grad601-2 dual gradiometer system, with twin probes set 1m apart. It was expected that significant archaeological features at a depth of up to 1.5m would be detected using this arrangement. The survey was undertaken using a zig-zag traverse scheme, with data

being logged in 20m grid units. A sample interval of 0.25m was used, with a traverse interval of 1m, providing 3600 sample measurements per grid unit. The data was downloaded on site into a laptop computer for processing and storage.

2.3.4 Measurements of Earth resistance were determined using a Geoscan RM15 Resistance Meter, with twin probes set 0.75m apart. Again, the survey was undertaken using a zig-zag traverse scheme, with data being logged in 20m grid units. A sample interval of 1m was used, with a traverse interval of 1m, providing 400 sample measurements per grid unit. This data was also 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 For the gradiometer data positive magnetic anomalies are displayed as dark grey, and negative magnetic anomalies are displayed as light grey. A palette bar shows the relationship between the grey shades and geomagnetic values in nT.

2.4.3 For the resistance data, areas of anomalously high resistance are displayted 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.

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

Despike: to locate and suppress random iron spikes in the gradiometer data

Clip: to clip data to specified maximum and minimum values, in order to limit large noise spikes in the geophysical data

Destagger: to reduce the effect of staggered gradiometer data, sometimes caused by difficult working conditions, topography, or operator error

2.5 Interpretation

2.5.1 Three types of geophysical anomaly were detected in the gradiometer data:

positive magnetic: regions of anomalously high or positive magnetic gradient, which may be associated with the presence of high magnetic susceptibility soil-filled features, such as pits or ditches.

negative magnetic: regions of anomalously low or negative magnetic gradient, which may be associated with features of low magnetic susceptibility, such as stone-built features, geological features, land-drains or sub-surface voids.

dipolar magnetic: regions of paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials, including fired/ferrous debris in the topsoil, modern services, metallic structures, or fired structures, such as kilns or hearths.

2.5.2 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. Colour-coded geophysical interpretation diagrams are provided, showing the locations and extent of positive, negative, dipolar, geomagnetic anomalies, and areas of anomalously high or low resistance.

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

2.6.3 Trace plots of the unprocessed geophysical data are included in Appendix II.

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 **northpen3-33389**.

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Historical Background

3.1.1 There are 20 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 survey, 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 or Romano-British 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.

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:*** 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 1890). William Whellen recorded the presence of a Roman encampment at Coupland Beck (Whellen 1960). The site of a camp is 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. The same map illustrates a 'Roman Fortress' to the northwest of Coupland Beck, on the north side of the road to Appleby (HER 1816). This has been interpreted as the site of a possible Roman signal station, which survives as a circular earthwork in the corner of the field. An earthwork enclosure on the east side of Brackenber Moor has also been interpreted as the site of a possible Roman signal station (HER 3473). A third possible 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 was visible on the ground.

3.1.8 ***Medieval and Post-medieval:*** No medieval features are known on Brackenber Moor, but 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).

3.1.9 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.

3.1.10 ***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'.

3.1.11 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.

3.1.12 Air photographs of the site indicate that a rectangular area within the interior of the Druidical Judgement Seat may have been fenced off in recent times as part of the golf course (Plate 1). This area is no longer visible on the ground (Plate 2).

3.1.13 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 Gold Club clubhouse.

Plate 1: Air photograph of the Druidical Judgement Seat earthwork showing modern features within the enclosure (copyright Manchester University, date unknown)

Plate 2: The Druidical Judgement Seat in 2007, with the Pennines beyond (looking north)

4 SURVEY RESULTS *(Figures 2-9)*

4.1 The Druidical Judgement Seat (Figure 2)

4.1.1 The Druidical Judgement Seat is a D-shaped enclosure, comprising an outer bank and inner ditch, with a single entrance on the northwest side. The earthwork occupies a defensible position on a natural headland, with steep banks on the north, east and south sides. The interior measures *c*.0.3ha, is moderately level, and is covered with natural earth hummocks. No internal archaeological features were visible at the time of the survey, although two mounds of earth were visible on the southwest side, which had been created in recent years by the Appleby Golf Club.

4.1.2 The ditch and bank of the earthwork have suffered from soil erosion on the northwest and southeast sides. A section of outer bank has been lost on the northeast side, where the track to Espland Farm passes the earthwork. This was caused in recent years by the loss of turf, and disturbance by sheep, but has since been repaired. On the southwest side much of the outer bank and ditch have been lost, and burrowing rabbits continue cause erosion in this area. The outer bank is also interrupted in several places.

4.2 Geomagnetic Survey (Figures 3-5)

4.2.1 The geomagnetic survey was undertaken over an area measuring 0.58ha, which included the majority of the earthwork interior, banks, ditch, and a strip of land to the northwest.

4.2.2 Small dipolar magnetic anomalies were detected across the whole of the survey area. These were probably caused by fired/ferrous litter in the topsoil, although some could have been caused by the presence of granite rocks, which were noted across the site. Three larger dipolar magnetic anomalies were also detected towards the centre of the survey area. These could also be caused by fired/ferrous material, or possibly areas of burning.

4.2.3 A chain of intense dipolar magnetic anomalies was detected along the north side of the survey area, aligned northwest-southeast. These were almost certainly due to the presence of a service pipe or modern drain.

4.2.4 A weak negative linear dipolar anomaly was detected in the vicinity of the enclosure ditch on the north, east and south sides. However, the ditch was not detected where it had been eroded to the west, and east. A weak positive linear magnetic anomaly was detected in the vicinity of the inner bank of the ditch on the northeast and southwest sides.

4.2.5 A number of small weak positive linear magnetic anomalies were detected, which could tentatively be interpreted as possible soil-filled features.

4.2.6 A weak negative rectangular magnetic anomaly was detected within the enclosure. It is possible that this relates to a feature seen on modern air photographs (Plate 1), and may be associated with the former use of this area by the Appleby Golf Course. The feature could be an arrangement of land drains or ditches defining the area of a former golf green.

4.3 Earth Resistance Survey (Figures 6-8)

4.3.1 Earth resistance survey was undertaken over an area measuring 0.44ha, covering the majority of the earthwork interior, banks and ditch. Small variations in resistance were detected across the majority of the survey area producing mottled effect, which may be due to the presence of the earth hummocks.

4.3.2 Two discrete areas of anomalously low resistance were detected on the north side of the survey area, within the earthwork enclosure, and corresponded to the locations of two spoil heaps, left by the Appleby Golf Club. An area of low resistance was also detected at the extreme northern corner of the survey area, and was probably due to the proximity of the track to Espland Farm.

4.3.3 The ditch of the enclosure produced an anomalously low resistance response over most of its length, indicating that it was more moisture retentive than the surrounding material. On the east and southwest sides, where the bank and ditch had been eroded, diffuse areas low resistance were detected, probably due to the presence of collapsed bank material. The interior of the earthwork also exhibited broad variations in earth resistance, but these did not constitute distinct anomalies.

4.3.4 An area of anomalously high resistance was detected in the vicinity of the outer bank on the north side of the enclosure. Several discrete areas of anomalously high resistance were also detected within the enclosure ditch. Two of these were located either side of the enclosure entrance, and were interpreted as deposits, deliberately laid in the ditch terminals to widen the entrance. It was not clear when this happened in antiquity, or in more recent times. It is possible that this occurred during groundworks by the Appleby Golf Club. Another similar anomaly was detected within the ditch on the east side of the survey area, where there is an opening through the outer bank.

4.3.5 On the northwest side of the enclosure, close to the two modern spoil heaps, a number of distinct areas of high resistance were detected. The nature of these anomalies is uncertain, and it is possible that these also relate to use of the enclosure by the Appleby Golf Club. A number of smaller linear areas of high resistance were also detected within the enclosure, which could tentatively be interpreted as possible structural remains.

4.3.6 Two linear areas of low resistance were detected within the enclosure, defining a rectangular area. These features were interpreted as possible land drains, or gullies, which again could be associated with the operations of the Appleby Golf Club.

4.4 Discussion (Figure 9)

4.4.1 Both geophysical survey techniques have detected the earth-filled enclosure ditch, and parts of the earthwork banks. In addition, the earth resistance survey has detected deposits within the ditch, which suggest that the entrance has been widened. The combined interpreted results of the geophysical surveys are illustrated in Figure 9.

4.4.2 A number of small linear anomalies have been detected, which could tentatively be interpreted as possible structural remains. However, no definite archaeological features were revealed within the interior of the earthwork. The most distinct anomalies detected within the enclosure were detected during the resistance survey, but may be associated with the former use of the earthwork by the Appleby Golf Club.

5 CONCLUSIONS

5.1 Geomagnetic surveys, measuring just over 1ha in total, have been conducted at the site of the Druidical Judgement Seat earthwork enclosure, at Brackenber Moor. Both geomagnetic survey and earth resistance survey have been undertaken, and have targeted the earthwork interior, ditch and banks. The Druidical Judgement Seat is the site of a possible Iron Age or Romano-British farmstead, about which nothing is known.

5.2 A number of features were detected which could be associated with the former use of the earthwork by the Appleby Golf Club, as shown 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. Only excavation will determine whether this is the case. A modern service pipe was also detected to the north of the enclosure.

5.3 The earth resistance survey has 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 have detected the earth-filled enclosure ditch, and parts of the earthwork banks. In addition, the earth resistance survey has detected deposits within the ditch, which suggest that the entrance has been widened. These features could potentially seal earlier prehistoric deposits within the enclosure ditch terminals.

5.4 Given the results of the geophysical survey, further evaluation work is recommended, in order to test the results of the geophysical surveys, and to determine the presence/absence, nature and extent of any archaeological features within the enclosure. A small number of targeted trial trenches could provide valuable information regarding the nature and past use of the site, and provide much needed dating evidence for the earthwork enclosure.

6 ACKNOWLEDGEMENTS

North Pennines Archaeology is grateful to the Charles Haywood Foundation for funding the project, and to Malcolm Doig, Appleby Golf Club, for granting permission to carry out the survey. Thanks are due to Andrew Davidson, English Heritage, for granting Scheduled Ancient Monument consent for the geophysical survey. We would also like to thank the residents of Espland Farm: Margaret, Tom and Christopher Brass for their kind cooperation during the fieldwork. 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 survey.

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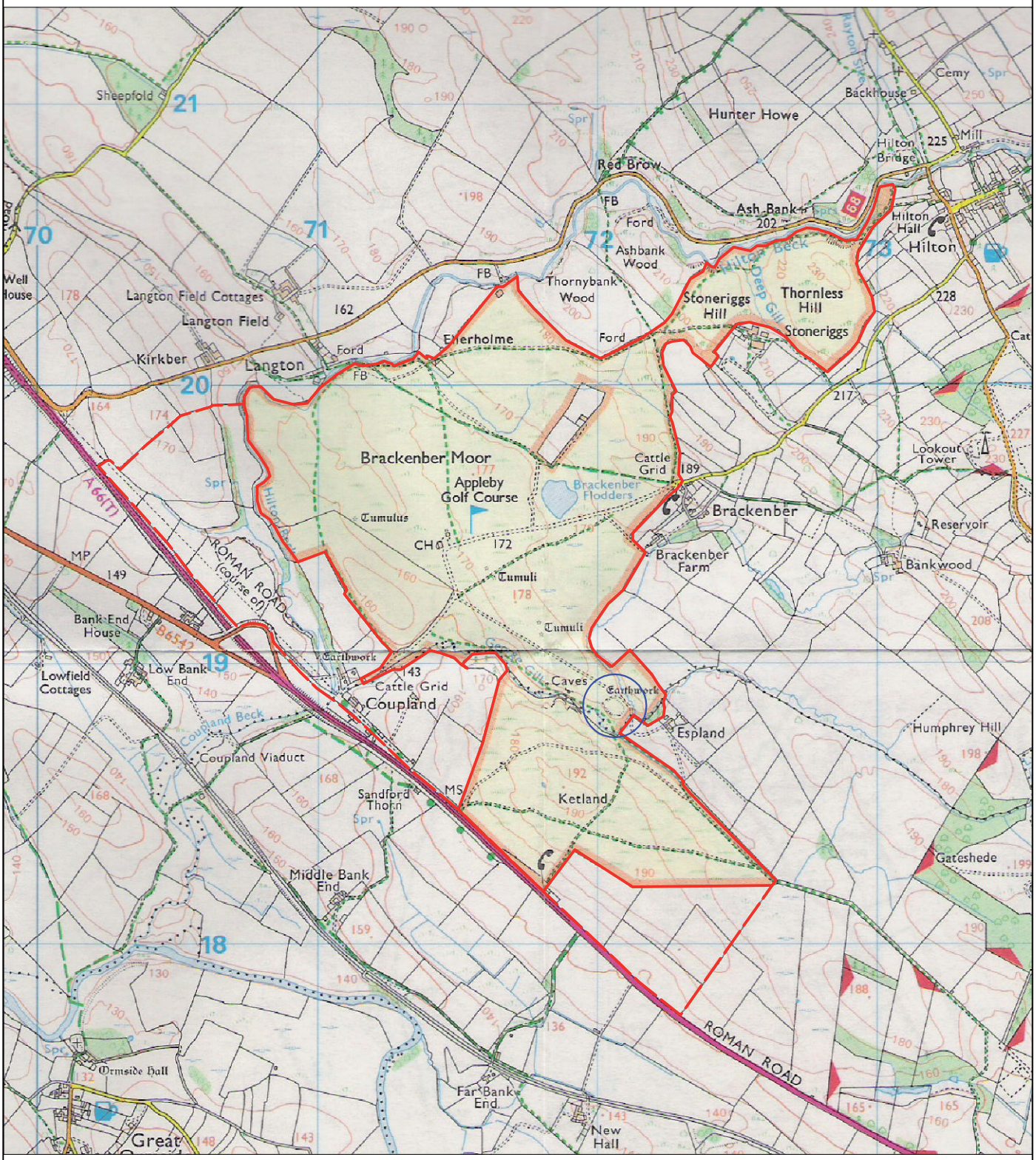
APPENDIX I – ILLUSTRATIONS



NORTH PENNINES ARCHAEOLOGY LIMITED NPA Geophysical Survey 2007	PROJECT: The Druidical Judgement Seat SCALE: 1:20,000 at A4 REPORT No: CP 392/07 WITH: Appleby Archaeology Group DRAWN BY: MDR DATE: November 2007 FIGURE No: 1	outline of Brackenber Moor location of The Druidical Judgement Seat	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 1 : Location map

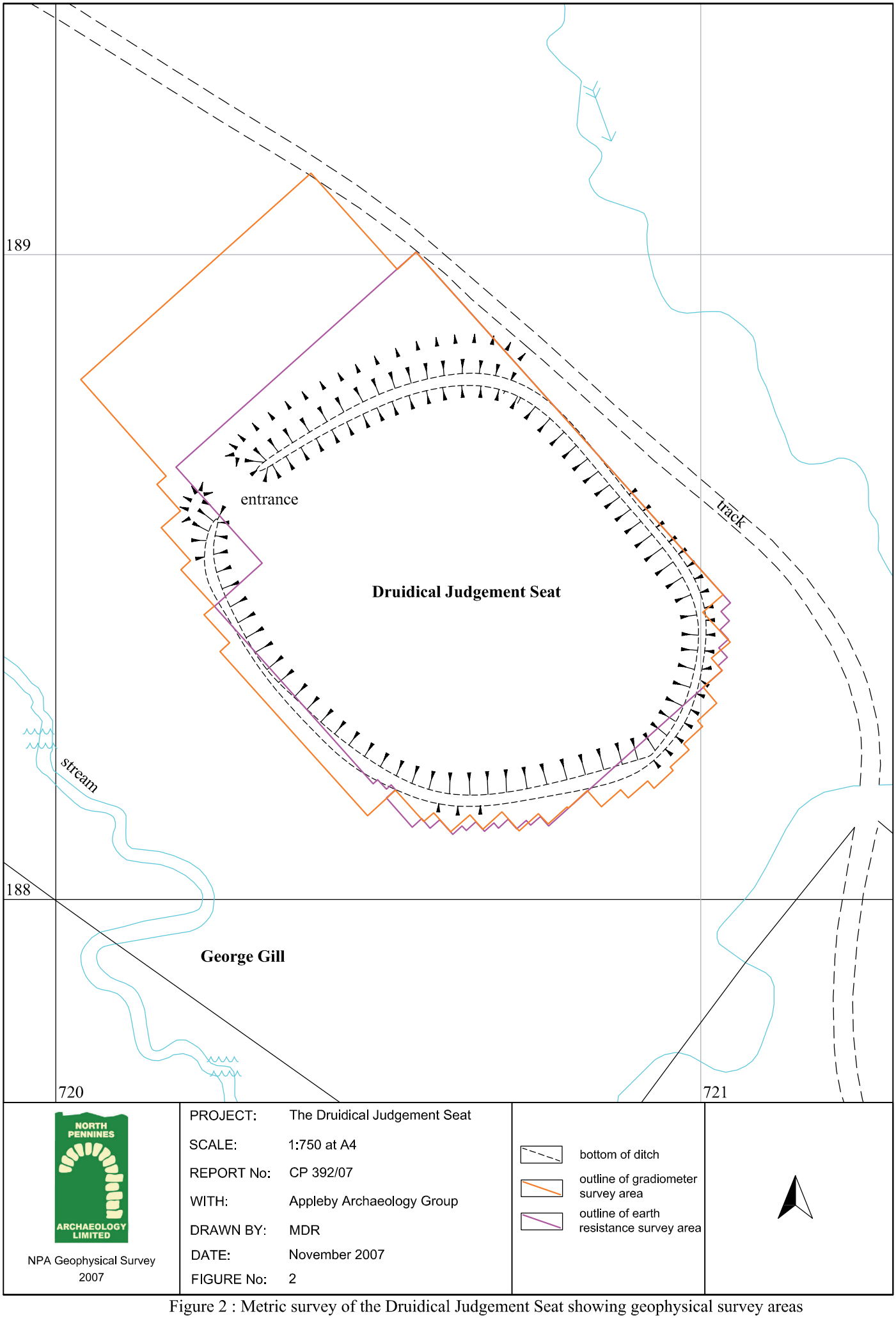


Figure 2 : Metric survey of the Druidical Judgement Seat showing geophysical survey areas

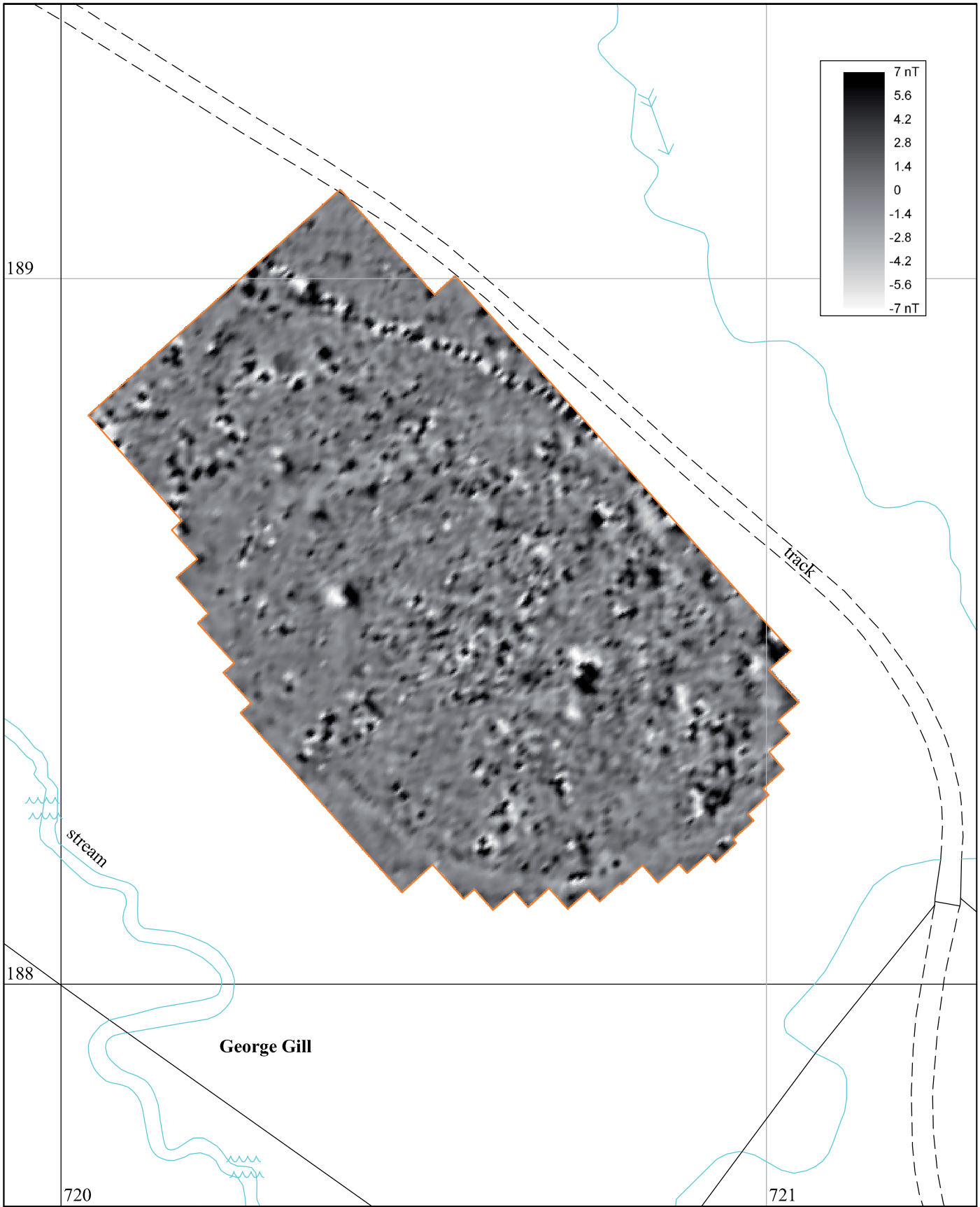


Figure 3 : Gradiomater survey

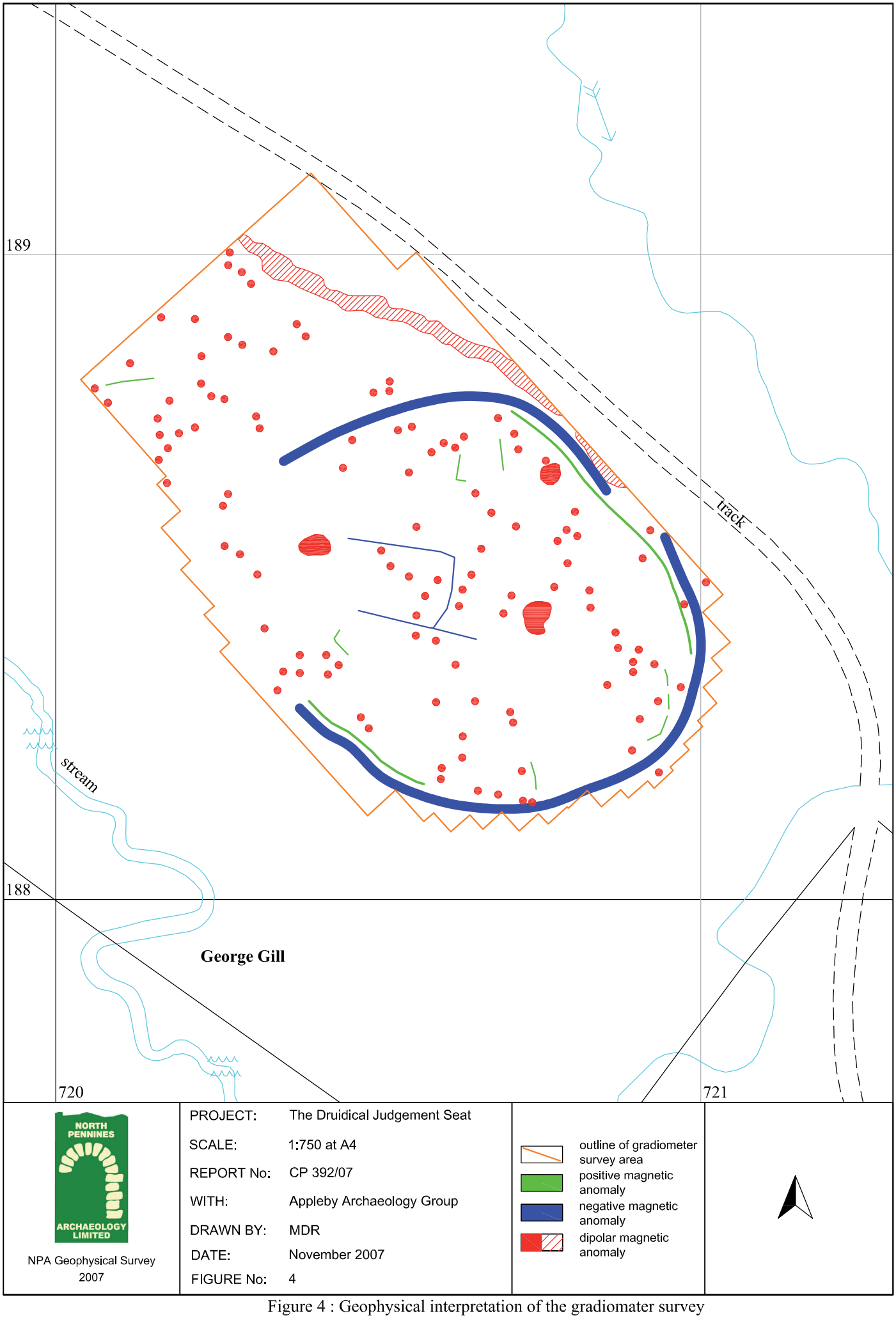


Figure 4 : Geophysical interpretation of the gradiomater survey

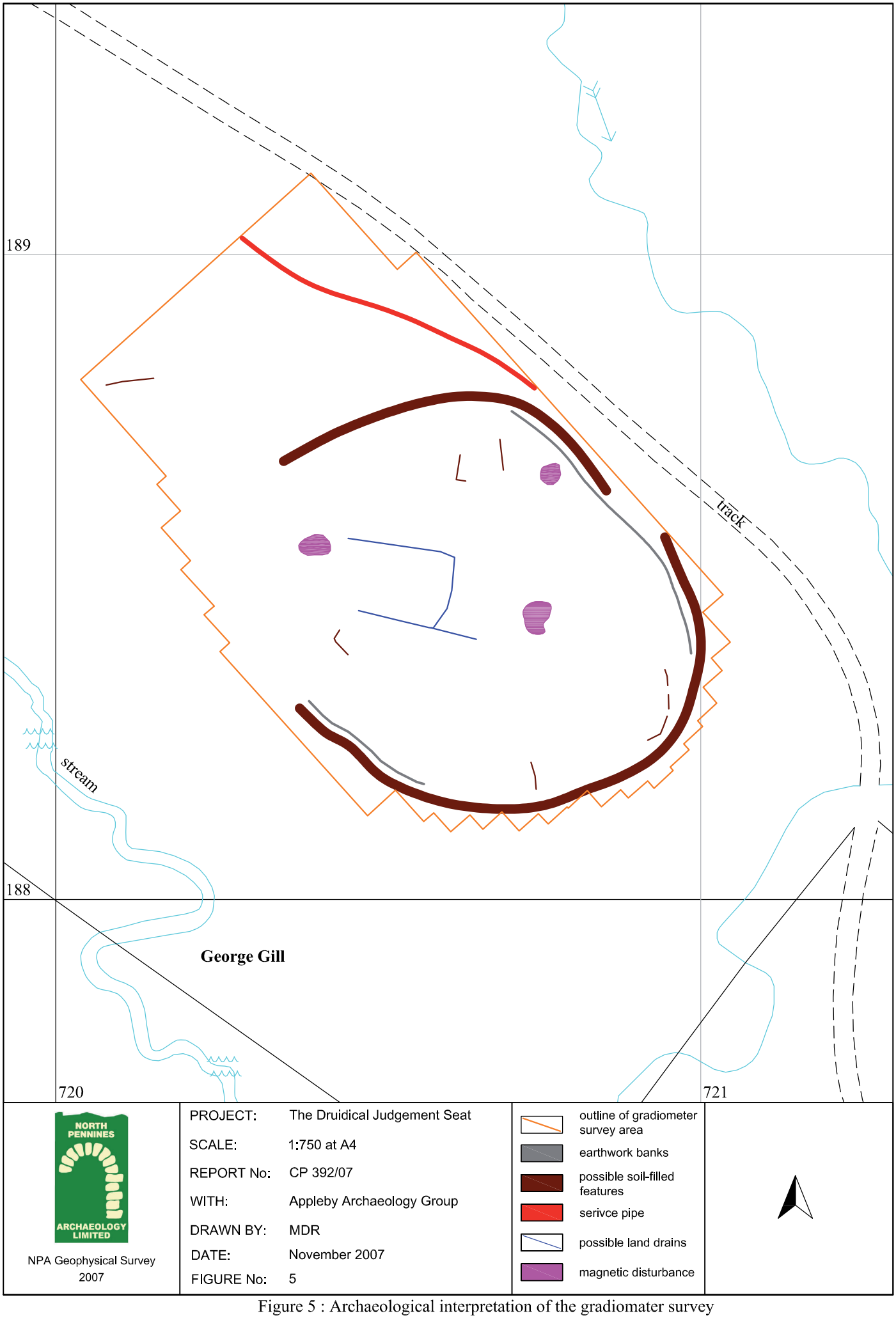


Figure 5 : Archaeological interpretation of the gradiomater survey

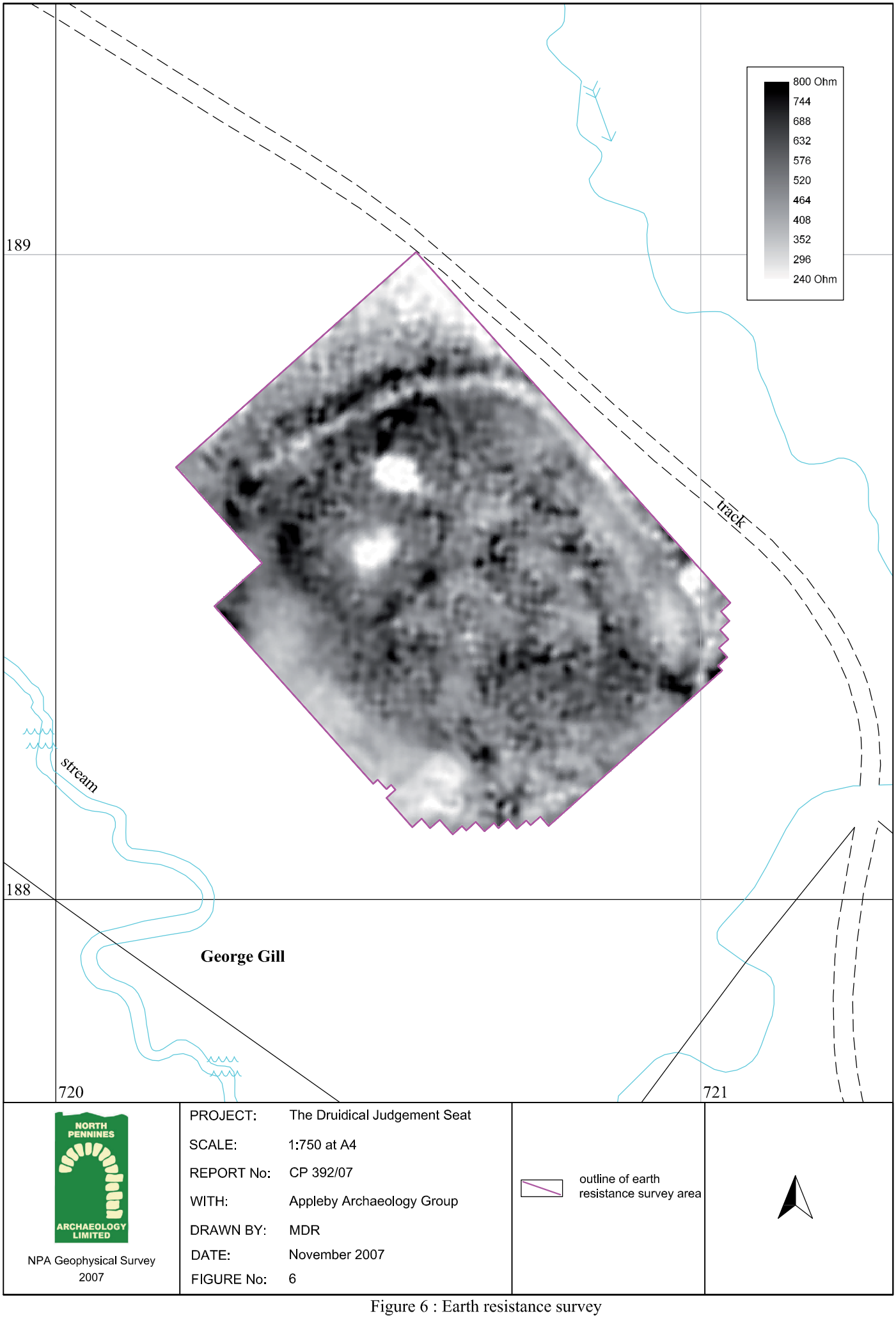


Figure 6 : Earth resistance survey

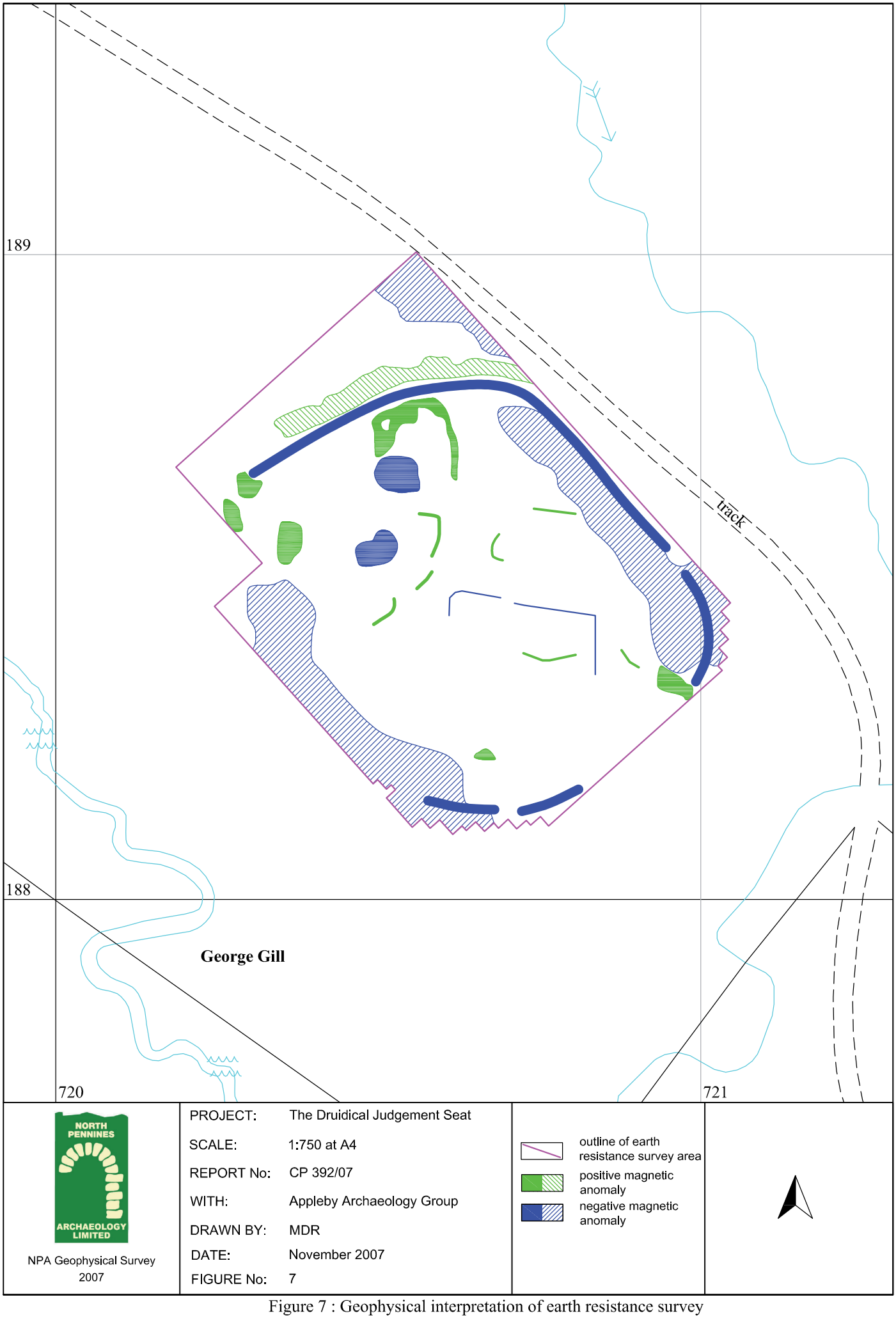


Figure 7 : Geophysical interpretation of earth resistance survey

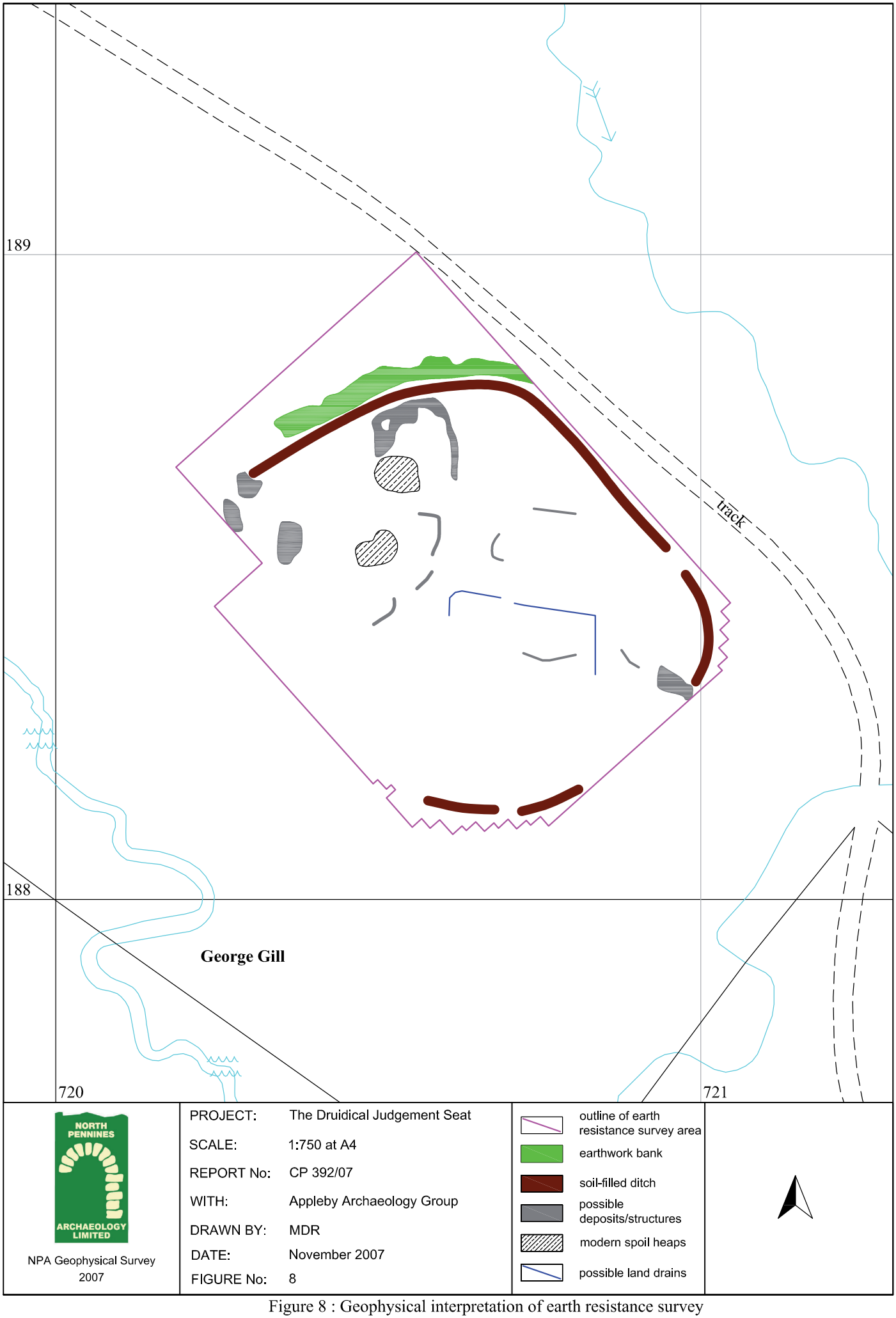


Figure 8 : Geophysical interpretation of earth resistance survey

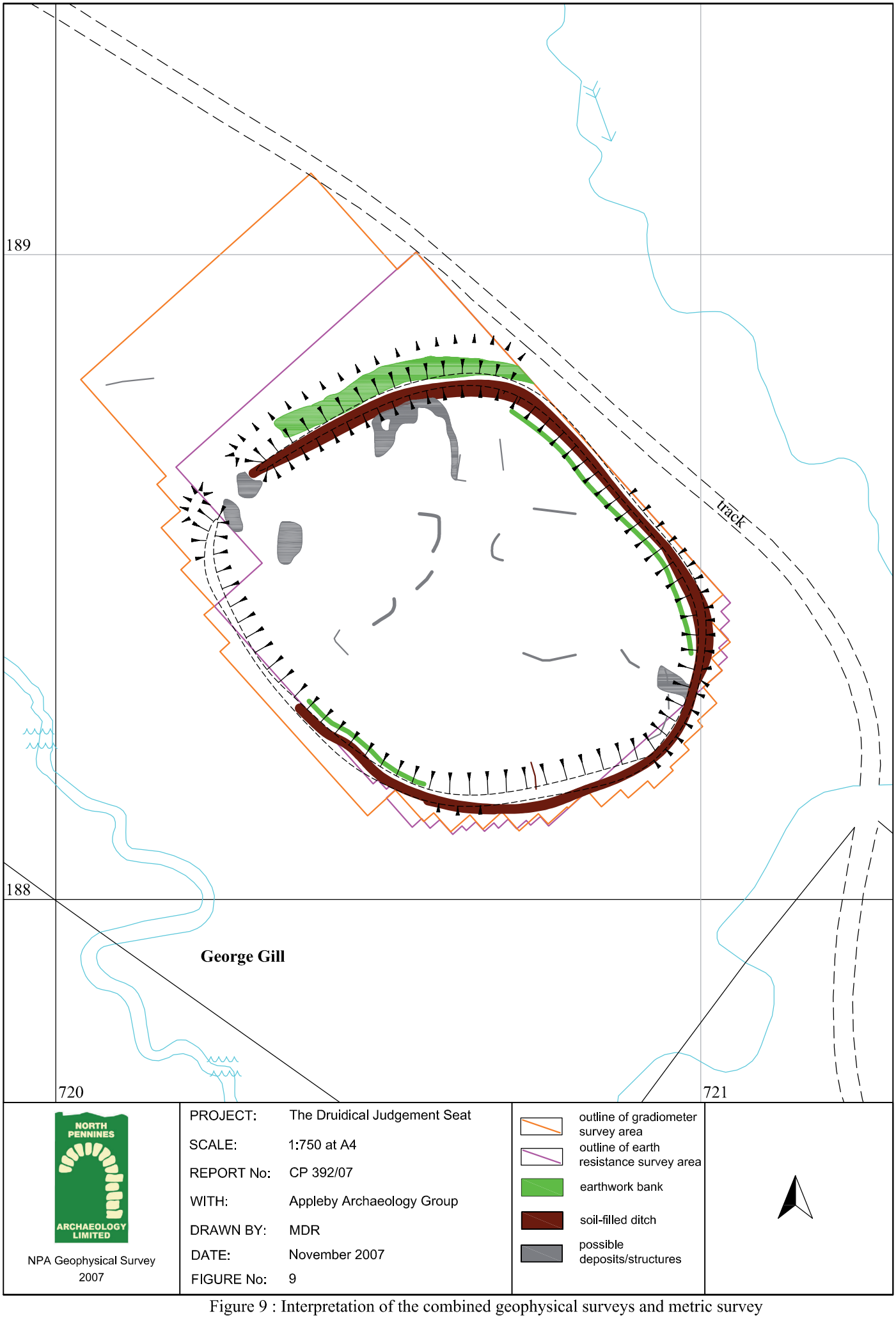
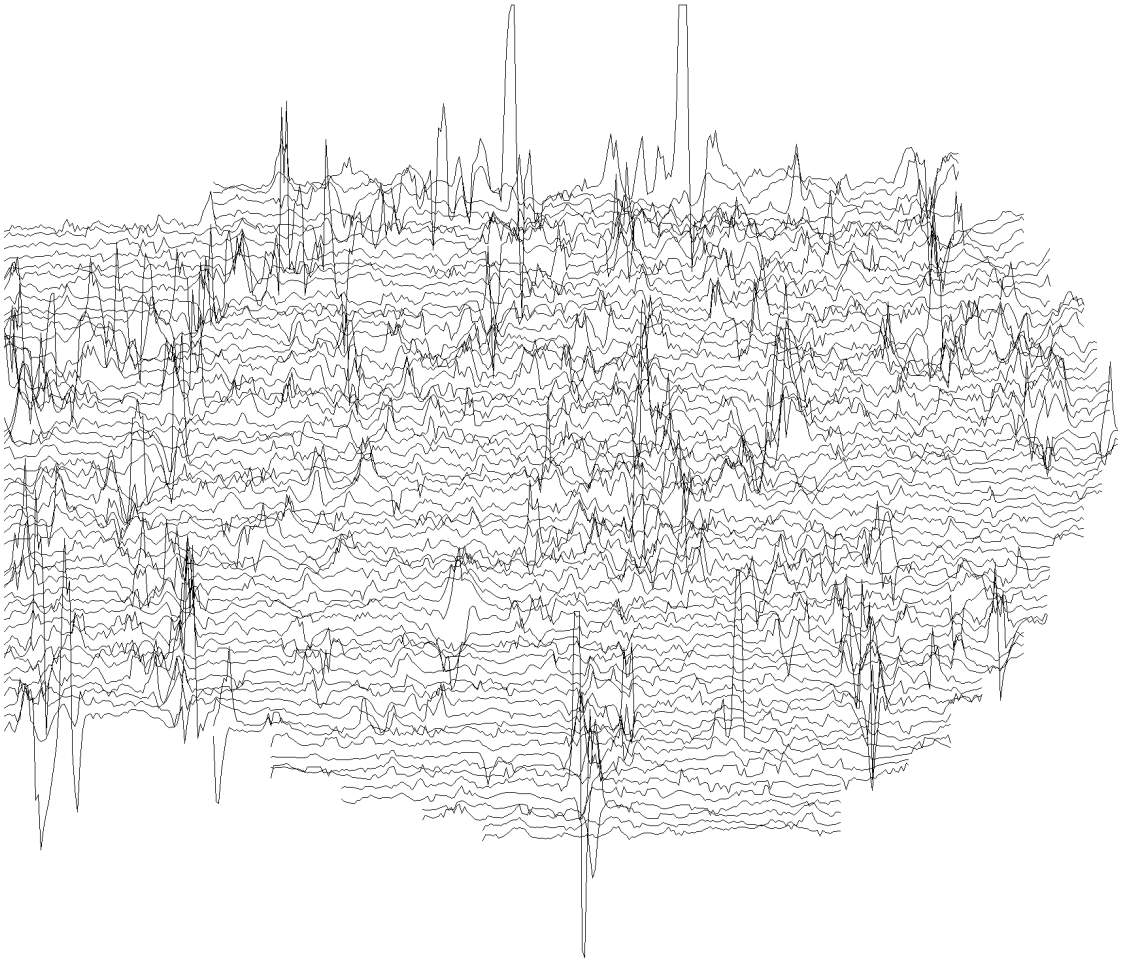


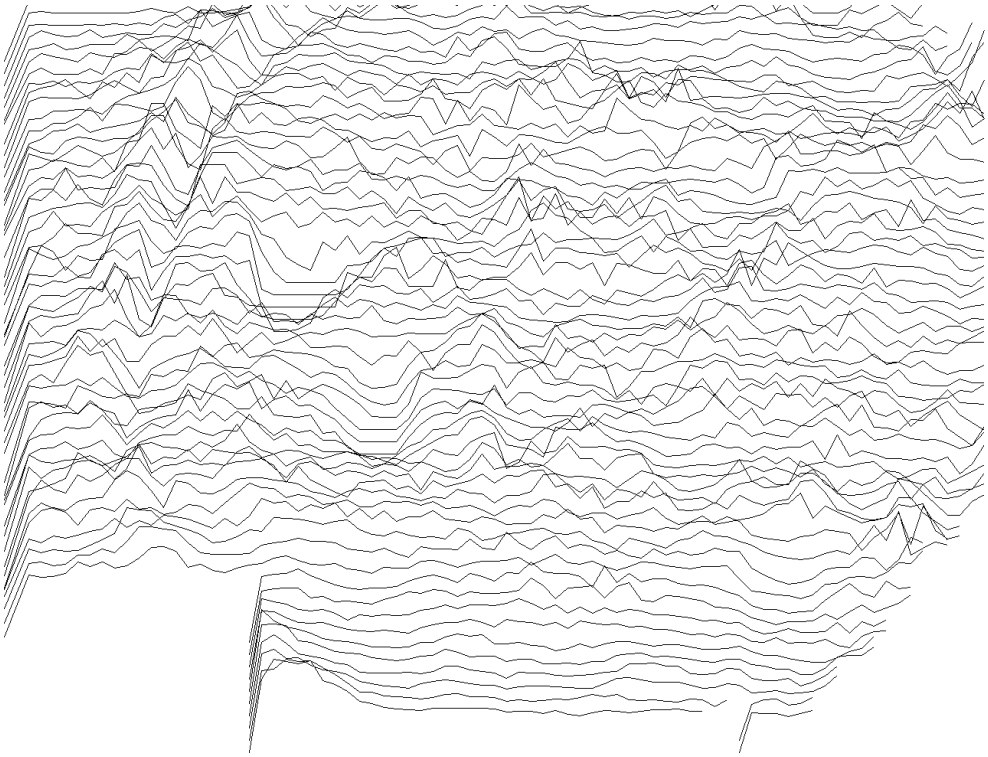
Figure 9 : Interpretation of the combined geophysical surveys and metric survey

APPENDIX II – TRACE PLOTS OF THE GEOPHYSICAL DATA

Gradiometer survey



Earth resistance survey



APPENDIX III – SECTION 42 LICENCE DETAILS

ENGLISH HERITAGE

NORTH WEST REGION

Mr Martin Railton
Pear Tree Cottage
Kirkland Road
Skirwith, Penrith
Cumbria
CA10 1RL

Direct Dial: 0161 242 1412
Direct Fax: 0161 242 1401

Our ref: AA/011404/5
4 June 2007

Dear Mr Railton

Ancient Monuments and Archaeological Areas Act 1979 (as amended) section 42 - licence to carry out a geophysical survey

DRUIDICAL JUDGEMENT SEAT, EDEN, CUMBRIA
Case No:SL00000192
Cumbria County Monument No.427

I refer to your application to carry out a geophysical survey at the above site, as made in your letter dated 22 May 2007.

English Heritage is empowered to grant licences for such activity and I can confirm that we are prepared to do so as set out below.

By virtue of powers contained in section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) English Heritage hereby grants permission for geophysical survey of DRUIDICAL JUDGEMENT SEAT, for the areas shown on the map that accompanied your application (copy attached). This permission is subject to the following conditions.

1. The permission shall only be exercised by Mr Martin Railton and by no other person. It is not transferable to another individual.

2. The permission shall commence on 16 June 2007 and shall cease to have effect on 19 August 2007.

3. A full report summarising the results of the survey and their interpretation shall be sent to Beverley Jackson and to Paul Linford of the English Heritage Geophysics Team at Fort Cumberland (Fort Cumberland Road, Eastney, Portsmouth, Hampshire, PO4 9LD), no later than 3 months after the completion of the survey.

   You are also asked to complete and return the enclosed questionnaire about the survey to the Geophysics Team, Fort Cumberland (address as above), in

SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW
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NORTH WEST REGION

order to assist with maintenance of our national database of geophysical surveys.

This letter does not carry any consent or approval required under any enactment, bye-law, order or regulation other than section 42 of the 1979 Act (as amended).

You are advised that the person nominated under this licence to carry out the activity should keep a copy of this licence in their possession in case they should be challenged whilst on site.

Yours sincerely

Beverley Jackson
Casework Assistant
E-mail: beverley.jackson@english-heritage.org.uk

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