

**Traprain Law Environs Project,  
East Lothian, Scotland**

**Phase 1: preliminary geophysical survey  
report**

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**ASUD Preliminary Report 700  
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# **Traprain Law Environs Project, East Lothian, Scotland**

## ***Phase 1: preliminary geophysical survey report***

***March 2001***

***Department of Archaeology, University of Durham***

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## **Summary**

Geophysical surveys have so far been undertaken over eleven cropmark sites around Traprain Law, East Lothian, as part of the Traprain Law Environs Project. The sample of sites surveyed includes multi-vallate, rectilinear and curvilinear enclosures as well as one possible building cropmark. This programme of geophysical survey will continue once it is possible to gain access following the current epidemic of Foot and Mouth Disease.

All the surveys have confirmed the presence and locations of archaeological sites, despite the complex geological environment around the Law. In addition, several of the surveys have demonstrated the presence of features either internal or external to the main enclosure ditches, which are not generally visible on the existing aerial photographs, and some have indicated the possible presence of wall-footings.

## 1. Introduction

### 1.1 The project

This report presents the results of geophysical surveys which have been carried out over a sample of cropmark sites near Traprain Law, East Lothian, forming Phase 1 of the Traprain Law Environs Project (TLEP).

The project is co-directed by Professor Colin Haselgrove of the Department of Archaeology, University of Durham, and Professor Leon Fitts of Dickinson College, Pennsylvania, USA, and has involved field investigations by Archaeological Services, University of Durham (ASUD). The overarching aim of the project is to investigate aspects of the archaeological landscape around Traprain Law in order to permit the analysis of economy and society during the 1<sup>st</sup> millennia BC and AD.

The fortified hilltop site at Traprain Law, which dominates the East Lothian coastal plain, comprises one of the best known and most complex archaeological sites in Scotland, though it is currently little understood. Excavations in 1914-1923 demonstrated that the site was in use from the Neolithic period to the Roman Iron Age, during which time Traprain Law was clearly a major political and religious focal point for the region and probably the capital of the Votadini. Although a two-year programme of archaeological investigation on the summit of the Law has just finished (see Armit *et al.* 2000), the Traprain Law Environs Project is the first to start to investigate the dates and functions of some of the many neighbouring cropmark enclosures. Since the 1950s, aerial survey by various bodies including the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) has revealed that Traprain Law lies in a densely settled landscape: 98 cropmark enclosures are recorded in the vicinity, as well as several pit alignments and over 100 sites of less certain character. The cropmark enclosures include examples of curvilinear and rectilinear form, some of which have multiple ditches.

Following analysis of the cropmark evidence at the National Monuments Record of Scotland (NMRS), a study area of 150 km<sup>2</sup> has been adopted. The area comprises a block of landscape measuring 15km east-west by 10km north-south, approximately centred on Traprain Law. This covers the whole of the NT 57 1:10,000 map squares as well as NT 67 NW and SW.

Since excavation of enclosed Iron Age sites elsewhere in southern Scotland has shown that such sites often had earlier or later unenclosed phases of occupation, or formed part of more extensive complexes that do not show as cropmarks, it was necessary to begin this project with a programme of surface survey designed to establish whether this is also true of sites around Traprain Law. The principal aim of Phase 1 of the project was therefore to determine the nature, extent and potential degree of preservation of a representative sample of enclosures, initially within 5km of Traprain, by means of geophysical survey.

A sample of one multi-vallate enclosure, four rectilinear and five curvilinear enclosures has been selected, based broadly upon the proportions in which these enclosure types appear in the AP record. A survey has also been undertaken over a cropmark of a possible large building.

Each of the ten enclosure sites is a Scheduled Ancient Monument (SAM) and consequently each survey was undertaken with Scheduled Monument Consent, granted by the Scottish Ministers under Section 2 of the Ancient Monuments and Archaeological Areas Act 1979 (Historic Scotland ref. MFA14416), and conducted in accordance with Research & Professional Services Guideline No.1: *Geophysical survey in archaeological field evaluation* (English Heritage 1995).

### 1.2 Site locations, topography and landuse

This preliminary phase of investigation has comprised the survey of ten cropmark enclosure sites near Traprain Law, and the site of a possible building:

SAM no.	NMRS no.	Site name	Site type	NGR
4169	NT 57 NE 017	East Linton	Multi-vallate	5851 7655
5927 R	NT 57 SW 046	Stevenson Mains	Rectilinear	5465 7385
6022	NT 57 SW 095	West Bearford	Rectilinear	5448 7346
8776	NT 57 SE 104	Nunraw Barns	Rectilinear	5888 7021
5928	NT 57 SE 016	East Bearford	Rectilinear	5545 7410
6021	NT 57 SW 050	Mitchell Hall 1	Curvilinear	5308 7262
6023	NT 57 SE 027	Chesters Quarry	Curvilinear	5714 7108
6067	NT 67 SW 015	Whittinghame Castle	Curvilinear	6004 7300
6050	NT 57 SE 045	Standingstone	Curvilinear	5659 7325
5927 C	NT 57 SW 047	Stevenson Mains	Curvilinear	5459 7375
-	NT 57 SE 103	Sled Hill	Building	5770 7005

#### SAM 4169 East Linton

The site occupies a relatively level spur of land at an elevation of 65-70m AOD, c.1 km south-west of East Linton village. Immediately to the south of the site is a narrow gorge containing the River Tyne. Immediately north of the site the ground falls away less steeply to the present A1(T) road. At the time of survey the field contained cereal stubble.

#### SAM 5927 R and C Stevenson Mains

The extent of this scheduled area encompasses two cropmark enclosures, one rectilinear and one curvilinear, which, for the purposes of this report, are referred to as SAM 5927 R and SAM 5927 C respectively. Both sites occupy predominantly level ground at c.60m AOD, c.2 km due east of Haddington. In each case the enclosure is located on a terrace with the land falling away gently to the north. SAM 5927 R comprised cereal stubble while 5927 C comprised recently ploughed-in oilseed rape stubble.

#### SAM 6022 West Bearford

This area lies c.300m south of SAM 5927, 2 km east of Haddington. The site occupies a level terrace at a height of c.70m AOD, with the land again falling away gently to the north. The ground conditions comprised recently ploughed-in oilseed rape stubble.

#### SAM 8776 Nunraw Barns

This site lies some 600m south of Garvald village, occupying a terrace at c.185m AOD. The land is currently used for silage.

### **SAM 5928 East Bearford**

This site occupies the top of a terrace at *c.*55m AOD, 100m east of Bearford Burn, 500m south-south-west of East Bearford farm and 2 km west of Traprain Law. At the time of survey the field carried a young cereal crop.

### **SAM 6021 Mitchell Hall 1**

The site occupies relatively level ground at *c.*80m AOD, 1.5 km south-east of Haddington. At the time of survey the field contained cereal stubble.

### **SAM 6023 Chesters Quarry**

This area lies *c.*1.5 km west of Garvald village, on level ground at *c.*145m AOD, to the south of Ninewells Burn. The land is currently set-aside.

### **SAM 6067 Whittinghame Castle**

The site occupies land at *c.*115m AOD, immediately north of a steep-sided ravine housing Whittinghame Water, 200m south-west of Whittinghame Tower and 2.5 km south-east of Traprain Law. The area of the site covers three different types of landuse: cereal, set-aside and pasture.

### **SAM 6050 Standingstone**

This area occupies a gentle west-facing slope at *c.*110m AOD, 2 km south-west of Traprain Law. The land is currently set-aside.

### **NMR no. NT 57 SE 103 Sled Hill**

This unscheduled cropmark is situated near the summit of Sled Hill at *c.*175m AOD, 100m south-west of a scheduled cropmark enclosure site, SAM 6026. The land is currently set-aside.

## **1.3 Solid geology**

The solid geology of the study area is complex. Traprain Law itself is a phonolite laccolith, a mass of igneous rock that has risen in a molten condition and bulged up the overlying strata to form a dome (McAdam and Tulloch 1985). Radiometric age-determination of the pear-shaped intrusion has provided a minimum age of  $322 \pm 2$  Ma (de Souza 1974). Erosion has subsequently revealed the original form of the laccolith by stripping away the soft sedimentary cover. Until relatively recently, the north-eastern part of the intrusion was quarried for roadstone.

SAM 4169 is situated on Carboniferous extrusive basalts and tuffs, which form part of the Garleton Hills Volcanic Rocks. SAMs 5927 (R+C), 6021 and 6022 all lie on Calciferous Sandstone Measures of the Carboniferous era. SAMs 5928 and 6050 are situated on Carboniferous extrusive trachyte, which forms part of the Garleton Hills Volcanic Rocks. SAM 6023 lies just south of the Dunbar-Gifford Fault, on intrusive igneous rock of the Carboniferous era. SAMs 6067, 8776 and SE 103 all lie between the Dunbar-Gifford Fault and the Lammermuir Fault, on Devonian-Carboniferous Upper Old Red Sandstone (McAdam and Tulloch 1985, Davies *et al.* 1986).

## **2. Geophysical survey**

## **2.1 Technique selection**

In order to assess the suitability of a geomagnetic survey technique in this complex and part-igneous geological environment, a small sample area was initially surveyed by fluxgate gradiometry. The survey demonstrated that significant magnetic susceptibility contrasts could be recorded over both the igneous and sedimentary strata and that the resulting anomalies in the vertical component (i.e. gradient) of the Earth's magnetic field almost certainly reflected archaeological features.

## **2.2 Field methods**

A 20m grid was established across each survey area and tied-in to known, mapped Ordnance Survey points using a Wild T1000 total station survey instrument and SDR33 datalogger.

Measurements of geomagnetic field gradient were determined using a Geoscan FM36 fluxgate gradiometer fitted with an ST1 sample trigger to enable automatic logging of the data. A zig-zag traverse scheme was employed and data logged in 20m grid units. The instrument sensitivity was set to 0.1nT, the sample interval to 0.5m and the traverse interval to 1.0m, thus providing 800 sample measurements per 20m grid unit.

Data were downloaded on-site into a RM NoteBook computer for processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

## **2.3 Data processing**

InSite v.3 software was used to process the geophysical data and to produce both continuous tone greyscale of the raw data. The results are shown in Figures 2-12. For the greyscale images, a convention is employed that displays positive magnetic anomalies as dark grey and negative magnetic anomalies as light grey. A palette bar relates the greyscale intensities to anomaly values in nanoTesla.

The following basic processing steps have been applied to the data:

DeSpike	replaces isolated spikes in the data with the mean of near-neighbours. Such spikes typically arise due to the presence of near-surface ferrous litter.
DeDrift	corrects for a linear drift in instrument calibration with time.
DeStripe	reduces apparent striping artefact in magnetometer data collected along zig-zag traverses.
DeShear	corrects for apparent shear in geomagnetic anomalies surveyed by zig-zag traversing.
Match	adjusts for differences in mean data level between adjacent grids.
Merge	interpolates and combines grid data, using a bilinear function, to form one array of regularly-spaced data at 0.25 x 0.25m intervals.

## **2.4 Interpretation: anomaly types**

Three types of geomagnetic anomaly have been distinguished in the data:

- |                   |  |
|-------------------|--|
| Positive magnetic | regions of anomalously high or positive magnetic field gradient, which may be associated with high magnetic susceptibility soil-filled structures (such as pits and ditches) in areas of sedimentary geology, or concentrations of high magnetic susceptibility rock in areas of igneous geology |
| Negative magnetic | regions of anomalously low or negative magnetic field gradient, which may be associated with low magnetic susceptibility sedimentary stone structures, or soil-filled structures in areas of igneous geology   |
| Dipolar magnetic  | paired positive-negative magnetic anomalies, which typically reflect ferrous debris and/or fired structures such as kilns or hearths   |

## ***2.5 Interpretation: features***

### ***2.5.1 SAM 4169 East Linton***

The survey has confirmed the presence and location of the multi-vallate enclosure known as East Linton fort, as previously identified on aerial photographs. Indeed the geomagnetic survey has provided a much clearer image of the fort than is recorded on the APs. The underlying presence of extrusive basalts and tuffs has not had an adverse affect on the magnetic survey. The maximum extent of the enclosure is approximately 185m by 100m.

The most apparent anomalies in the data comprise three curvilinear bands of high magnetic susceptibility material, which reflect the soil-filled ditches of the enclosure. The innermost ditch appears to be the most substantial, measuring up to 4m in width. The two outer ditches measure up to 3m in width. Although not clear on the AP, there are causewayed entrances at two locations on the western side of the enclosure. No causeways have been detected across other parts of the main ditches.

Another high susceptibility, positive magnetic lineation has been detected aligned north-south within the eastern half of the enclosure. This almost certainly reflects another soil-filled ditch, of maximum width 2m, which is also crossed via a causeway. The ditch, which turns eastward at its northern end but is then obscured by more intense anomalies, effectively distinguishes this part of the site from the rest of the fort interior and, like the main enclosure ditches, has a west-facing entrance. There are hints of a possible continuation of this ditch outside the main enclosure, which if confirmed, would indicate that the ditch belongs to a different phase of the site.

Within the interior of the multi-vallate enclosure there are indications of intense archaeological activity, including several possible circular structures, particularly towards the west end of the site.

Two hemispherical concentrations of intense dipolar magnetic anomalies have been detected in the eastern part of the site, the more northerly of the two obscuring the ditch described above. These areas broadly correspond to slightly darker patches on



the AP. The anomalies almost certainly reflect concentrations of either near-surface ferrous materials or highly magnetic, igneous rocks. Each spreads across the area of the three outer ditches and so is unlikely to represent material contemporary with the fort. It is apparent that this material was deposited some time after the ditches had been infilled. Further along the ramparts to the west, there are indications of a circular building, *c.* 10m in diameter on the line of the outermost ditch, set within a possible enclosure. These features also suggest that several phases of activity may be represented by the geophysical anomalies.

Some 20m north-west of the main enclosure, at the edge of the survey area, there is another concentration of intense, dipolar magnetic anomalies. These anomalies could reflect archaeological debris associated with some industrial activity, but could equally reflect more recent ferrous debris or igneous rock.

A scatter of small dipolar magnetic anomalies has been detected across the whole of the survey area. These anomalies similarly reflect near-surface ferrous litter or igneous rocks.

A weak magnetic 'texture' is evident across parts of the survey area, aligned north-south. This texture reflects the current plough regime.

#### **2.5.2 SAM 5927 (R) Stevenson Mains**

The survey has confirmed the presence and location of a rectilinear enclosure, of maximum dimensions 50m x 50m. The magnetic anomalies which reflect the enclosure are, however, very weak and it has not been possible to identify any entrances. Possible internal, ditched features may be present, as indicated by further very weak positive magnetic anomalies.

#### **2.5.3 SAM 6022 West Bearford**

This survey has confirmed the presence and location of a relatively small rectilinear enclosure, measuring approximately 35m by 35m. The enclosure is evident as a negative magnetic anomaly, reflecting materials of low magnetic susceptibility, which, given its location on Sandstone Measures, could indicate that stone wall-footings are present adjacent to the ditch, or that the ditch is filled with rubble as opposed to a soil-filled ditch. Although the anomaly is rather weak it appears that there may be an entrance on the eastern side of the enclosure, as indicated by the AP evidence. There is no definite geomagnetic or AP evidence for internal features; a possible linear feature passes the enclosure on an east-west alignment, some 60m to the north.

#### **2.5.4 SAM 8776 Nunraw Barns**

This survey was undertaken over the site of a possible sub-rectangular, double-palisaded enclosure noted on an AP from 1977 and recently scheduled. The geophysical survey has shown the area to be magnetically noisy, but parts of two parallel ditch features were tentatively identified, evident as very weak positive magnetic anomalies. These ditches could represent part of the eastern side of the enclosure.

Other more intense geomagnetic lineations have been detected near the enclosure site. These anomalies appear to correspond to land drains evident on the AP.

#### **2.5.5 SAM 5928 East Bearford**

Despite the extrusive trachyte geology of this area, the survey has confirmed the presence and location of a very regular, rectilinear enclosure. The magnetic susceptibility contrasts between the materials of the enclosure and the surrounding soils are sufficiently high that a very clear image of the enclosure has been produced by the survey.

The enclosure is evident as a strong positive magnetic anomaly, measuring some 75m by 65m. The anomaly reflects high magnetic susceptibility materials, such as organic-rich sediments or igneous rocks within a ditchfill. The ditch appears to vary in width, being only *c.*2m across on the western side of the enclosure and up to 4m across on the eastern side. A causewayed entrance is clearly visible in the eastern side of the enclosure. The negative magnetic anomalies evident either side of the main positive anomaly could either be a shadow effect associated with the strength of the positive anomaly, or could reflect the remnants of a bank and outerscarp.

Within the enclosure there is evidence for internal features, represented by both positive and dipolar magnetic anomalies. These anomalies may reflect both cut, soil-filled features such as pits and gullies, and hearths or ferrous/fired materials respectively. A probable roundhouse is situated in the north-eastern corner of the enclosure; other possible roundhouses are located in the southern half of the enclosure

Additional weak positive magnetic lineations have also been detected outside the main enclosure, which do not appear on the APs. These anomalies almost certainly reflect the remains of more ditches. The most apparent of these ditches is aligned parallel to, and 20m north of, the northern enclosure ditch, forming a possible annexe. Other ditch features are evident on both the southern and eastern sides of the enclosure, including possible structures outside the south-east corner. To the west of the main enclosure the land falls away fairly steeply to Bearford Burn. Without excavation it cannot be determined whether the external ditches are contemporary with the main enclosure, or if they represent the remains of earlier or later features.

The survey has also detected a series of very weak magnetic lineations, aligned broadly east-west. These lineations are interpreted as reflecting a former plough direction.

#### **2.5.6 SAM 6021 Mitchell Hall 1/East Lodge**

This survey was undertaken over the site of a probable curvilinear enclosure. AP evidence suggests the presence of two concentric ditches, the larger measuring some 75m in diameter and the inner one approximately 40m. Unfortunately the magnetic susceptibility contrasts in this area are very low and the survey has only detected the faintest hint of a circular feature measuring *c.*40m in diameter. This anomaly could reflect the inner ditch of the enclosure, however, this remains tentative and the survey has not detected any evidence for the outer enclosure ditch. In view of the regularity of the concentric features on the AP, there must be some possibility that the site has been incorrectly interpreted.

### **2.5.7 SAM 6023 Chesters Quarry**

The survey of this site has confirmed the presence and location of a curvilinear enclosure, verging on sub-rectangular in plan. The AP evidence indicates a clear enclosure as well as several linear features traversing the area. The soils at this location are underlain by intrusive igneous rock and are presumed to be highly magnetically susceptible. This is borne out by the survey data which exhibit very strong anomalies and show the material of the enclosure ditch to be less magnetically susceptible than the surrounding materials.

The enclosure ditch is evident as a clear negative magnetic anomaly, which, given the geology at this location, could indicate that the ditch is cut into the underlying igneous strata; the soil fill of the ditch being considerably less magnetic than the surrounding rock into which it is cut. The ditch measures up to 5m in width and an entrance measuring c. 12m in width is clearly located in the western part of the enclosure.

It has not been possible to identify internal archaeological features with the exception of one tentative ring-ditch. This curvilinear, weak positive magnetic anomaly has been detected in the northern part of the enclosure and would exhibit a positive magnetic response if cut through soil rather than the underlying rock. The anomaly has a diameter of c. 12m and could well reflect the remains of a drip-gulley around a roundhouse, for example, or other such shallow-cut feature.

The lineations on the AP have also been detected magnetically as strong negative magnetic anomalies. In this geological environment the anomalies could reflect soil-filled fissures in the underlying bedrock.

### **2.5.8 SAM 6067 Whittinghame Castle**

This survey has also confirmed the presence of a curvilinear enclosure, located on the edge of a steep ravine. AP evidence indicates that the western quadrant of the enclosure comprises two ditches, the inner ditch being considerably broader than the outer ditch. These features are evident to some extent in the geophysical survey as two concentric negative magnetic anomalies, the outer one being a weaker and more diffuse anomaly; the inner feature can now be confirmed as continuing into the adjacent pasture area to the east, where the cropmark evidence was not forthcoming.

Since this is an area of sedimentary, sandstone geology the low magnetic susceptibility values recorded over the enclosure would appear to indicate the presence of stone rubble or wall-footings, rather like SAM 6022 at West Bearford.

An arcuate, positive magnetic anomaly has been detected just to the west of the scheduled enclosure, which could indicate the presence of a soil-filled ditch intersecting with the main enclosure ditches. This may have formed part of an earlier enclosure at the site as it appears to be overlain in part by the negative magnetic anomaly of the scheduled enclosure.

To some extent the identification of features at this site has been hindered by the presence of many small, intense dipolar magnetic anomalies which obscure weaker anomalies of possible archaeological origin. The dipolar anomalies almost certainly

reflect near-surface ferrous litter. One possible internal feature is represented by a positive magnetic anomaly in the eastern part of the enclosure, which could reflect a substantial soil-filled pit.

### **2.5.9 SAM 6050 Standingstone**

The survey here has confirmed the presence and location of a curvilinear enclosure. The AP shows approximately three-quarters of an enclosure and this is confirmed by the geophysical data. Although the site is located over extrusive trachyte rock, the upper boundary of the bedrock appears to be at a greater depth than the enclosure ditch, since this appears as a positive magnetic anomaly which almost certainly reflects an earth-cut, soil-filled ditch as opposed to a rock-cut one. An alternative interpretation for the main anomaly here is that it reflects local, high magnetic susceptibility rock used as wall-footings. However, this is considered unlikely given the low intensity of the anomalies compared with the surrounding soil.

A very weak, circular positive magnetic anomaly has been detected in the centre of the enclosure ditch. This is also interpreted as a ditch feature, perhaps associated with a roundhouse. A weak negative curvilinear anomaly on the north-east side of the enclosure could indicate the presence of a second enclosure phase or annexe.

Several other relatively intense, diffuse geomagnetic anomalies have been detected outside the area of the enclosure and are interpreted as being geological in origin.

### **2.5.10 SAM 5927 (C) Stevenson Mains**

This survey was undertaken some 100m west of SAM 5927 R (para. 2.5.2, above), the other enclosure in this scheduled monument area. The geophysical survey confirmed the presence and location of a curvilinear enclosure measuring approximately 35m by 25m. The enclosure is evident as a positive magnetic anomaly, reflecting the high magnetic susceptibility soil of the ditchfill. The AP for the site provides evidence for an entrance on the eastern side of the enclosure and this is also confirmed by the magnetic data. The discontinuous remains of a ditch heading east from the entrance are represented as another positive magnetic anomaly.

There is a high concentration of small positive and dipolar magnetic anomalies in the interior of the enclosure. These anomalies probably reflect soil-filled pits and ferrous/fired materials respectively, and could indicate the presence of some small-scale industrial activity at the site. A curvilinear negative anomaly to the north and east of the enclosure may be the remains of another, larger enclosure.

### **2.5.11 NT 57 SE 103 Sled Hill**

This survey was undertaken over an unscheduled cropmark of a possible timber building, c.100m south-west of a scheduled enclosure SAM6026. The survey has detected two parallel, positive magnetic lineations, 10m apart and continuing for 28m, which probably reflect the beam slots or other foundations for the building. The spacing of the anomalies corresponds to the width of the building as recorded on aerial photographs. It has not been possible to discern definite internal features or subdivisions within the building, although some are apparent on the APs, but the main wall line does seem to step in slightly c.7m from the east end of the building, as with many early medieval timber hall plans. The survey of this site is characterised by the

presence of many small, intense dipolar anomalies, which have obscured the identification of weaker, quite possibly archaeological, features, at least one of them curvilinear.

### **3. Conclusions**

The eleven geomagnetic surveys undertaken so far have all revealed the presence of sub-surface features corresponding to archaeological sites, previously recorded as cropmarks on aerial photographs. Despite the complex and often igneous geology of the study area, several of the surveys have also indicated the presence of previously unrecorded internal and/or external features, such as probable roundhouses and annexes.

In some cases it has been possible to distinguish additional phases of occupation from the geophysical evidence. In other cases the contemporaneity of the features detected will only be demonstrated through excavation, Phase 2 of the project. The possibility of *in situ* stone footings at more than one site is significant, as such features are clearly at particular risk from continued ploughing.

### **4. Acknowledgements**

The project team would like to thank all the landowners and farmers who have kindly allowed access to their fields; Ms Olwyn Owen, Inspector of Ancient Monuments for East Lothian, Historic Scotland; and the staff of the National Monuments Record of Scotland, RCAHMS.

All personnel involved with the surveys are employed by Archaeological Services, University of Durham (ASUD). The geophysical surveys were carried out by Duncan Hale, Daniel Still, David Graham and Paul Dungey, and the report prepared by Duncan Hale and Colin Haselgrove with illustrations by Linda Bosveld.

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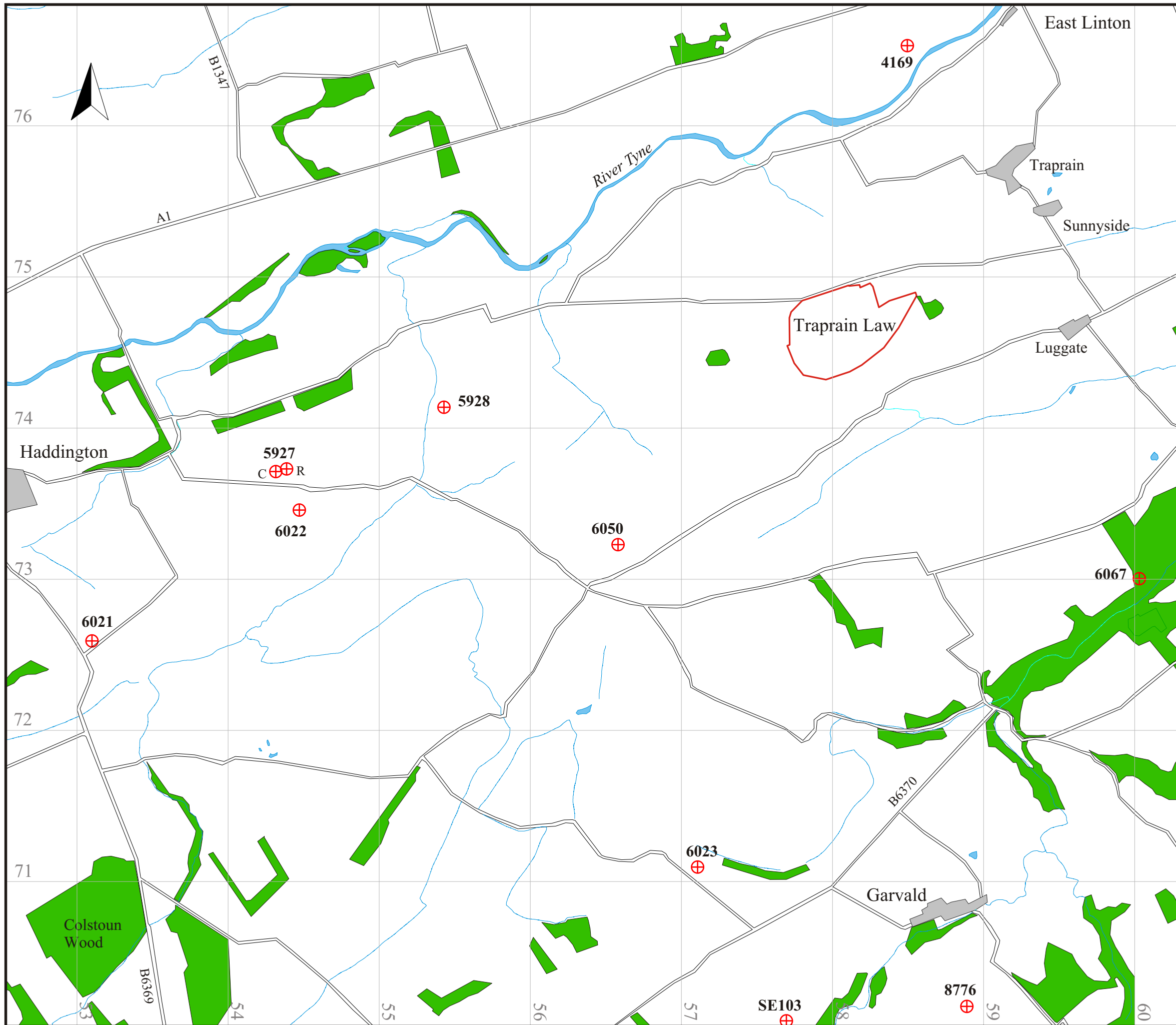


Figure 1:

*Map showing the location of the geophysical surveys in relation to Traprain Law*






On behalf of:

**Colin Haselgrove**  
**Department of Archaeology**  
**University of Durham**

Scale 1:25000



Key:

-  Location of geophysical survey
-  Modern settlement
-  Woodland

# SAM 4169 East Linton - Traprain Law Environs Project

## Geomagnetic survey

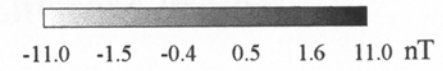
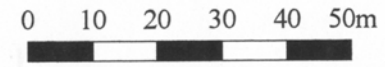
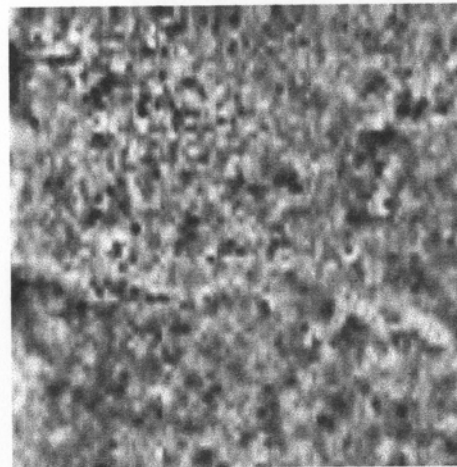


Figure 2



# SAM 5927(R) Stevenson Mains - Traprain Law Environs Project

Geomagnetic survey, 1:1000



0 10 20 30 40 50m



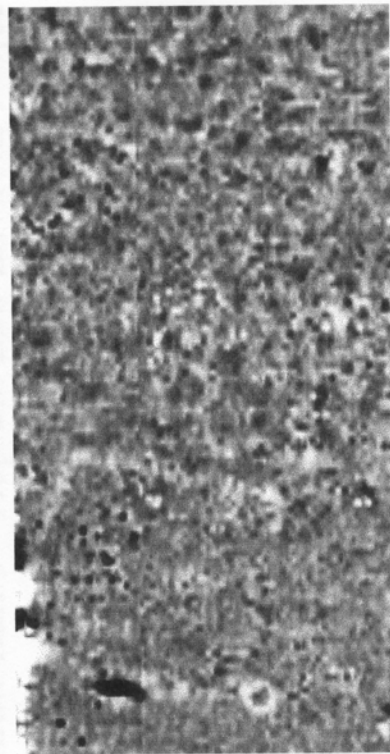
-9.9 -1.4 -0.4 0.4 1.4 9.9 nT



Figure 3

# SAM 6022 West Bearford - Traprain Law Environs Project

Geomagnetic survey, 1:1000



0 10 20 30 40 50m



-9.9 -1.4 -0.4 0.4 1.4 9.9 nT

Figure 4

# SAM 8776 Nunraw Barns - Traprain Law Environs Project

Geomagnetic survey, 1:1000



0 10 20 30 40 50m



-19.8 -2.8 -0.8 0.8 2.8 19.8 nT



Figure 5

# SAM 5928 East Bearford - Traprain Law Environs Project

Geomagnetic survey, 1:1000



0 10 20 30 40 50m



-12.4 -1.7 -0.5 0.5 1.8 12.4nT



Figure 6

# SAM 6021 Mitchell Hall 1/East Lodge - Traprain Law Environs Project

Geomagnetic survey, 1:1000

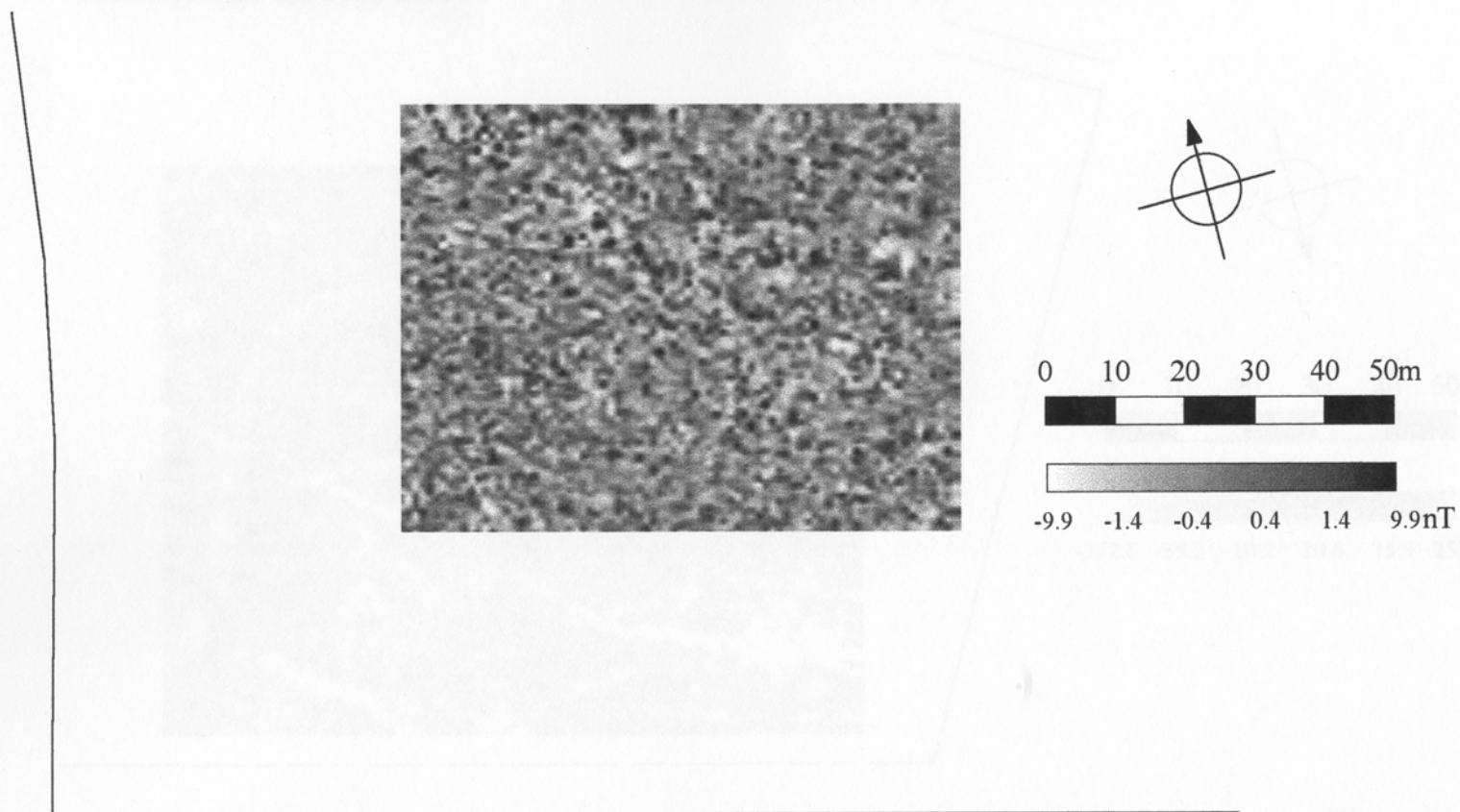


Figure 7

# SAM 6023 Chesters Quarry - Traprain Law Environs Project

Geomagnetic survey, 1:1000

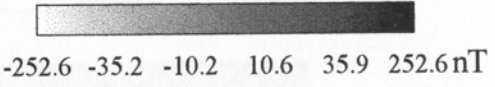
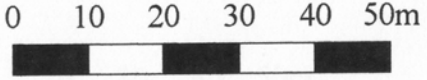
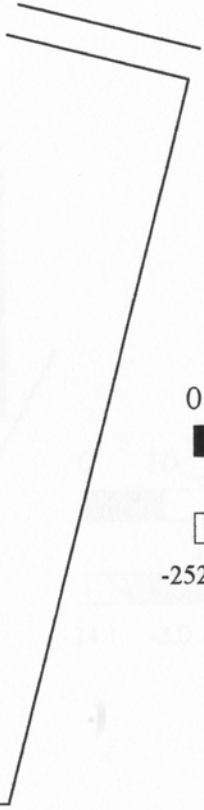
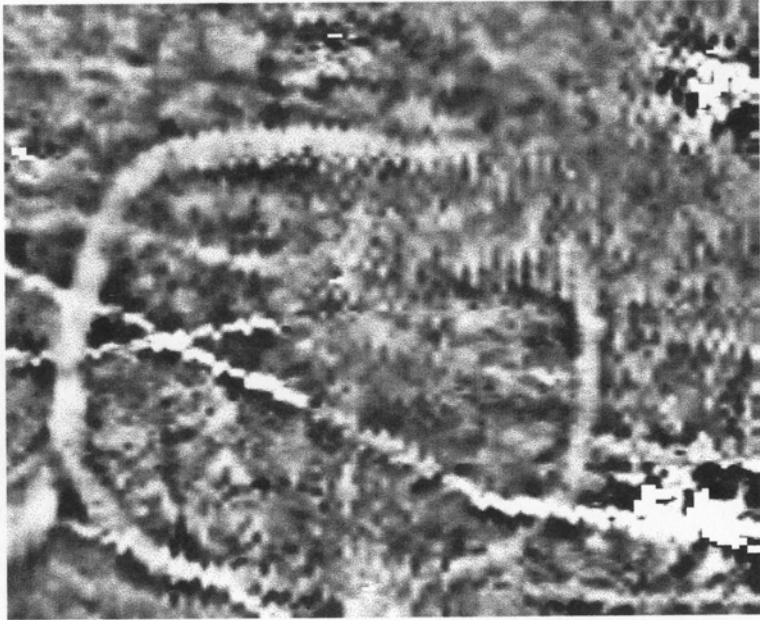


Figure 8



# SAM 6067 Whittinghame Tower - Traprain Law Environs Project

Geomagnetic survey, 1:1000

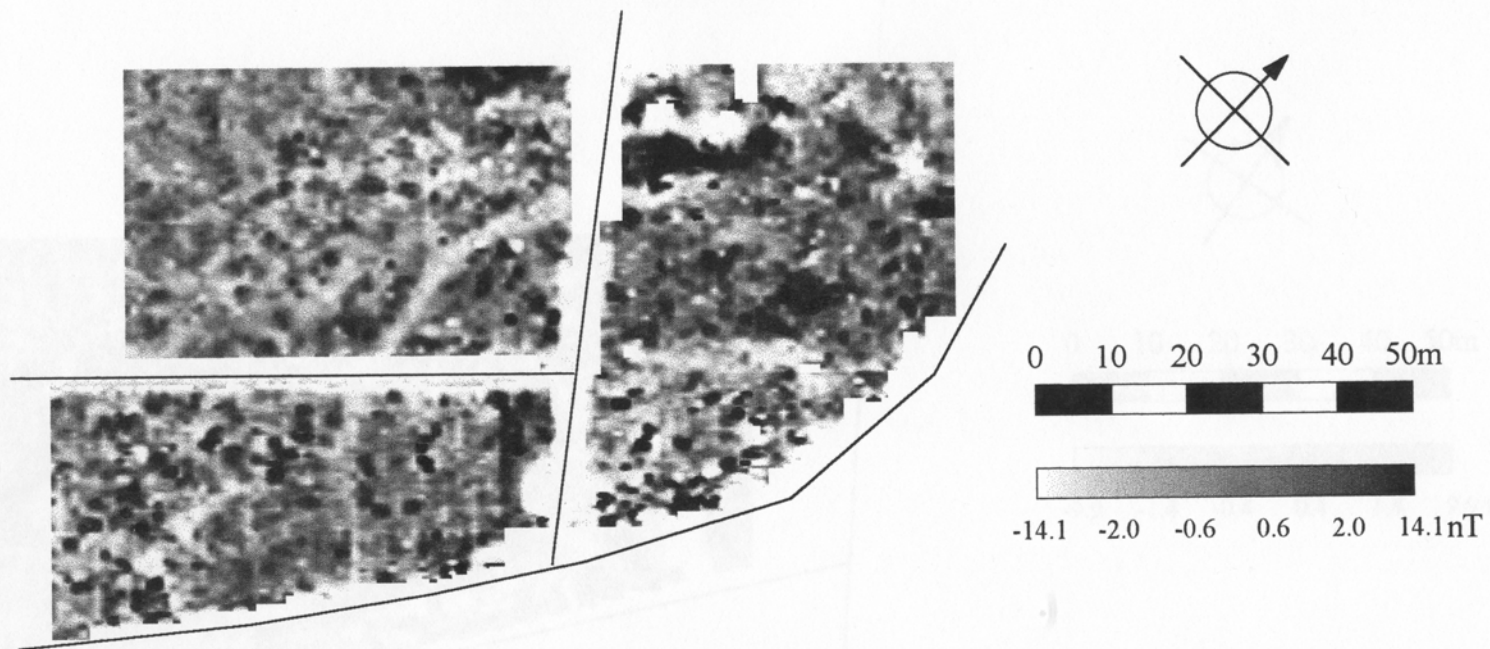
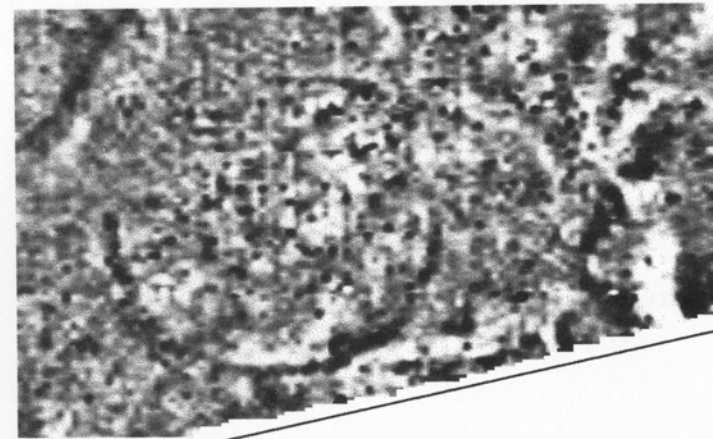


Figure 9

# SAM 6050 Standingstone - Traprain Law Environs Project

Geomagnetic survey, 1:1000



0 10 20 30 40 50m



-9.9 -1.4 -0.4 0.4 1.4 9.9 nT

Figure 10



# SAM 5927 (C) Stevenson Mains - Traprain Law Environs Project

Geomagnetic survey, 1:1000

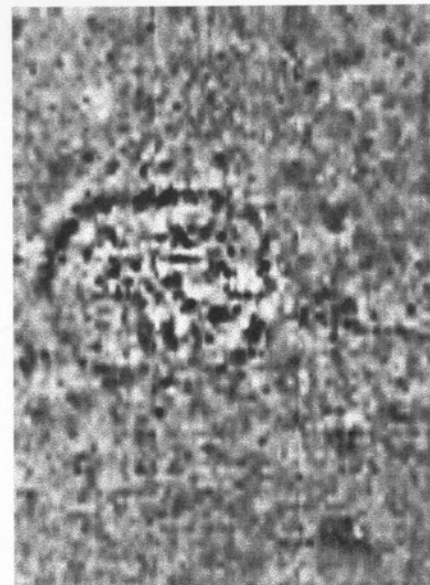
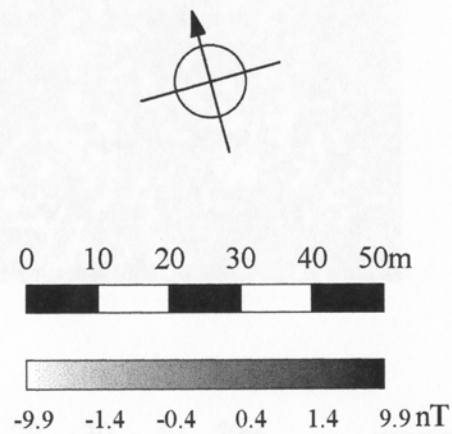


Figure 11

# SE 103 Sled Hill - Traprain Law Environs Project

Geomagnetic survey, 1:1000

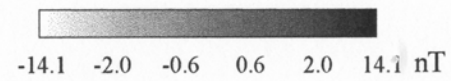
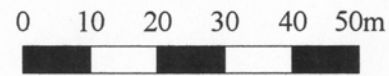
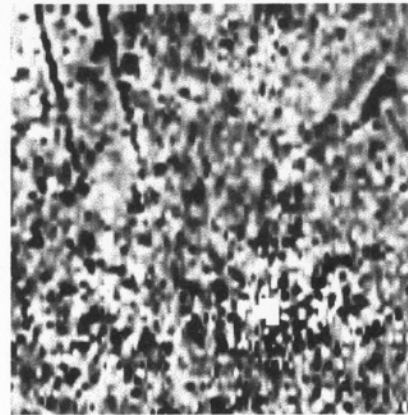


Figure 12