Northamptonshire County Council

Northamptonshire Archaeology

Geophysical Survey at

Hill House, Old Warden

Bedfordshire

December 2007

Adrian Butler

March 2008

Report 08/50

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NORTHAMPTONSHIRE ARCHAEOLOGY

NORTHAMPTONSHIRE COUNTY COUNCIL

MARCH 2008

GEOPHYSICAL SURVEY

AT HILL HOUSE, OLD WARDEN

BEDFORDSHIRE

DECEMBER 2007

Report 08/50

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QUALITY CONTROL

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***OASIS* REPORT FORM**

PROJECT DETAILS		
Project name	Geophysical Survey at Hill House, Old Warden, Bedfordshire, December 2007	
Short description (250 words maximum)	Northamptonshire Archaeology conducted a geophysical survey, on behalf of Andrew Josephs Ltd on a *c* 0.75ha moated site at Old Warden, Bedfordshire. Resistance anomalies revealed evidence of a formal parterre garden and possible structural remains. Gradiometer survey was more equivocal, partly due to a great deal of disturbance from ferrous debris.	
Project type	Geophysical Survey	
Site status (none, NT, SAM etc)	Scheduled Ancient Monument	
Previous work (SMR numbers etc)		
Current Land use	Gardens and orchard	
Future work	Unknown	
Monument type/ period	Unknown	
Significant finds (artefact type and period)	Formal parterre garden	
PROJECT LOCATION		
County	Bedfordshire	
Site address (including postcode)	Hill House, Old Warden, Bedfordshire	
Study area (sq.m or ha)	Approx 0.75ha	
OS Easting & Northing	TL 172, 445	
Height OD		
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology	
Project brief originator	Andrew Josephs Ltd	
Project Design originator	Andrew Josephs Ltd	
Director/Supervisor	Ian Fisher	
Project Manager	Andrew Josephs (AJltd), Adrian Butler (NA)	
Sponsor or funding body	ALSF	
PROJECT DATE		
Start date	December 2007	
End date	March 2008	
ARCHIVES	**Location (Accession no.)**	**Content (eg pottery, animal bone etc)**
Physical		
Paper	Northamptonshire Archaeology	Survey notes
Digital	Northamptonshire Archaeology	Geophysical data
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (NA report)	
Title	Geophysical Survey at Hill House, Old Warden, Bedfordshire, December 2007	
Serial title & volume	NA reports 08/50	
Author(s)	Adrian Butler	
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GEOPHYSICAL SURVEY AT HILL HOUSE, OLD WARDEN, BEDFORDSHIRE

DECEMBER 2007

ABSTRACT

Northamptonshire Archaeology conducted a geophysical survey, on behalf of Andrew Josephs Ltd on a c 0.75ha moated site at Old Warden, Bedfordshire. Resistance anomalies revealed evidence of a formal parterre garden and possible structural remains. Gradiometer survey was more equivocal, partly due to a great deal of disturbance from ferrous debris.

1 INTRODUCTION

Northamptonshire Archaeology conducted geophysical survey by earth resistance and gradiometry on behalf of Andrew Josephs Ltd, in December 2007 on a moated site at Hill House, Old Warden, Cambridgeshire (Centre: NGR TL 172, 445, Fig 1). Hill House is situated within the between Upper Caldecote and Broom Quarry, 2 km west of Biggleswade.

The work was undertaken with Stage 2 funding from the Aggregate Levy Sustainability Fund (ALSF) in order to inform and refine further proposals for the management of Hill House Scheduled Monument, Old Warden, Bedfordshire (Josephs 2007, 1).

2 ARCHAEOLOGICAL BACKGROUND

Hill House is in an area of great archaeological interest. The area is part of a wider landscape of prehistoric and Roman archaeology. The area of interest is a moated site that is believed to have contained a house, outbuildings and chapel. The origins of the site may lie in the 12th century, tied to the abbey of Warden (Josephs 2007, 9).

3 TOPOGRAPHY AND GEOLOGY

The study area is in the form of two overlapping squares north-east and south-west of Moat Cottage, dimensions approximately 70m x 70m. Surveys were carried out over two areas (1 and 2) to the north and south of the Moat Cottage. Deep moats bounded each side of both areas, other than the east and south of Area 1 which were fenced. The primary target of survey was the northern Area 1, covered by an orchard on the west side and grass on the north and east. Area 2 contained the Moat Cottage - an 18th century house, and second smaller cottage and barn-cum-garage to the

north. The cottages are linked by a gravel driveway which exits the moated area to the west. Area 2 is otherwise composed mainly of turf although trees occupy the western and southern edges of the gardens.

The geology of Hill House is composed primarily of drift deposits of sand and gravel over Oxford Clay.

4 METHODOLOGY

All fieldwork was carried out in accordance with English Heritage and the Institute of Field Archaeologists Guidelines (EH 1995 & Gaffney, Gater and Ovendon 2002).

Earth Resistance Survey

Prospection by earth resistance was carried out utilising Geoscan Research RM15 resistance meters in a 0.5m spaced 'Twin Probe' electrode array.

Gradiometer Survey

The magnetometer survey was undertaken using Bartington Grad601-2 fluxgate gradiometers. The Grad601-2 is constructed as a dual-sensor instrument with two vertical gradiometers separated on a yoke to enable two lines of survey to be recorded in tandem.

A total area of *c*0.75ha was surveyed in detail, divided into contiguous 20m x 20m grid squares set out manually using tape and optical square. Data for both techniques was collected along zigzag traverses spaced at 1m intervals. The data was recorded along these every 1m for resistance and 0.25m for gradiometer, the latter collected at a rapid walking pace.

Processing

All data was analysed using Geoplot 3.00u software. Electrical resistance data grids were matched to provide a constant background level. The 'De-spike' function applied in order to remove extreme outlying data values. No further processing was deemed necessary.

Gradiometer data was treated with the 'Zero Mean Traverse' function in order to bring the average level of each line of data into a balanced zero and thus the entire dataset onto a constant background level against which anomalies are highlighted. No other processing was necessary.

The processed data is presented here in the form of greyscale images, georectified onto scale Ordnance Survey mapping. Low (negative) data is shown as white and high (positive) data as black in the resultant greyscale plots, for both resistance and magnetic readings (resistance 4.0 ~ 45.0 Ω: Fig 2; gradiometer -10.0 ~ +10.0nT: Fig 4). Interpretive plots have been constructed from the results and are referred to directly in the following Survey Results section (Figs 3 & 5).

5 SURVEY RESULTS

Resistance Survey

The most striking result of the survey was the detection of a grid of linear high resistance anomalies, describing the paths of a parterre garden feature, measuring approximately 46m x 30m with a circuit path and cross paths leading to a central bed. The parterre covers the south-east quarter of Area 1 and extends into Area 2. A number of high resistance anomalies were detected in the western half of Area 1. These would appear to describe structural elements such as paths or wall foundations on a generally similar north-south / east-west alignment to the parterre. A wider, subrectangular high anomaly, orientated to the north-east coincides exactly with a reported find of foundations, indicating possible building remains.

A high resistance linear anomaly, very similar to the parterre paths, passes south from the 'building' into Area 2. Survey of the garden to the east of Moat Cottage revealed a pattern of resistive anomalies that, although possibly indicating structural features, were not coherent enough for full interpretation. However, the broader, subrectangular response closer to the cottage could indicate the cellars attested to in 1766 (Josephs 2007, 9).

Gradiometer Survey

Unfortunately the data from the entire western half of Area 1 was masked by intense responses from steel wire cages surrounding trees in the orchard. Magnetic disturbance also emanated from ferrous debris in the overgrown area central to Area 1, and football goal and wire fence in the north-east. The buildings of Area 2 also disturbed the local magnetic field.

Unlike the resistance survey, gradiometry mainly served to highlight the large amount of ferrous debris covering the site, especially in Area 2. The north-east of Area 1, apparently landscaped for a football pitch shows magnetically bland data suggesting it had been topsoil stripped. A slight east-west scarp rising up to the area of the parterre, currently used as a helipad, can be identified in the data as an intermittent linear positive anomaly. Four intense dipolar, ferrous, anomalies were

identified approximately central to the helipad, but not the centre of the parterre. Another larger ferrous anomaly was located further to the south-east. These anomalies most likely indicate iron debris in the topsoil. A chain of weakly dipolar anomalies orientated to the south-east of the Moat Cottage may reflect buried brickwork, aligned similarly to high resistance anomalies in Area 2.

6 CONCLUSION

Earth resistance survey of the south-eastern quadrant of moated Area 1 at Hill House has succeeded in identifying the paths of a formal parterre garden. Stylistically the garden would appear to date to the late 17th or early 18th century (Joe Prentice *pers comm.*). Further resistance anomalies indicated putative building remains beneath the orchard in the west of Area 1 and also possible structural elements such as walls and cellars east of Moat Cottage in Area 2.

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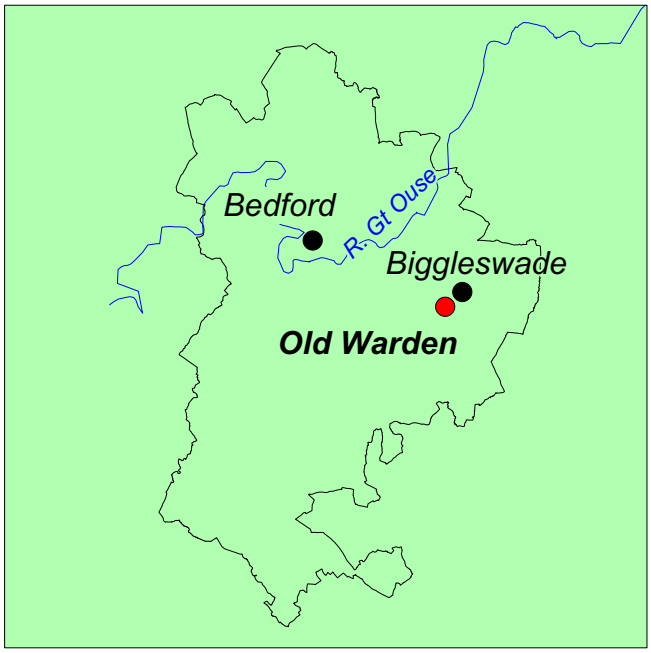
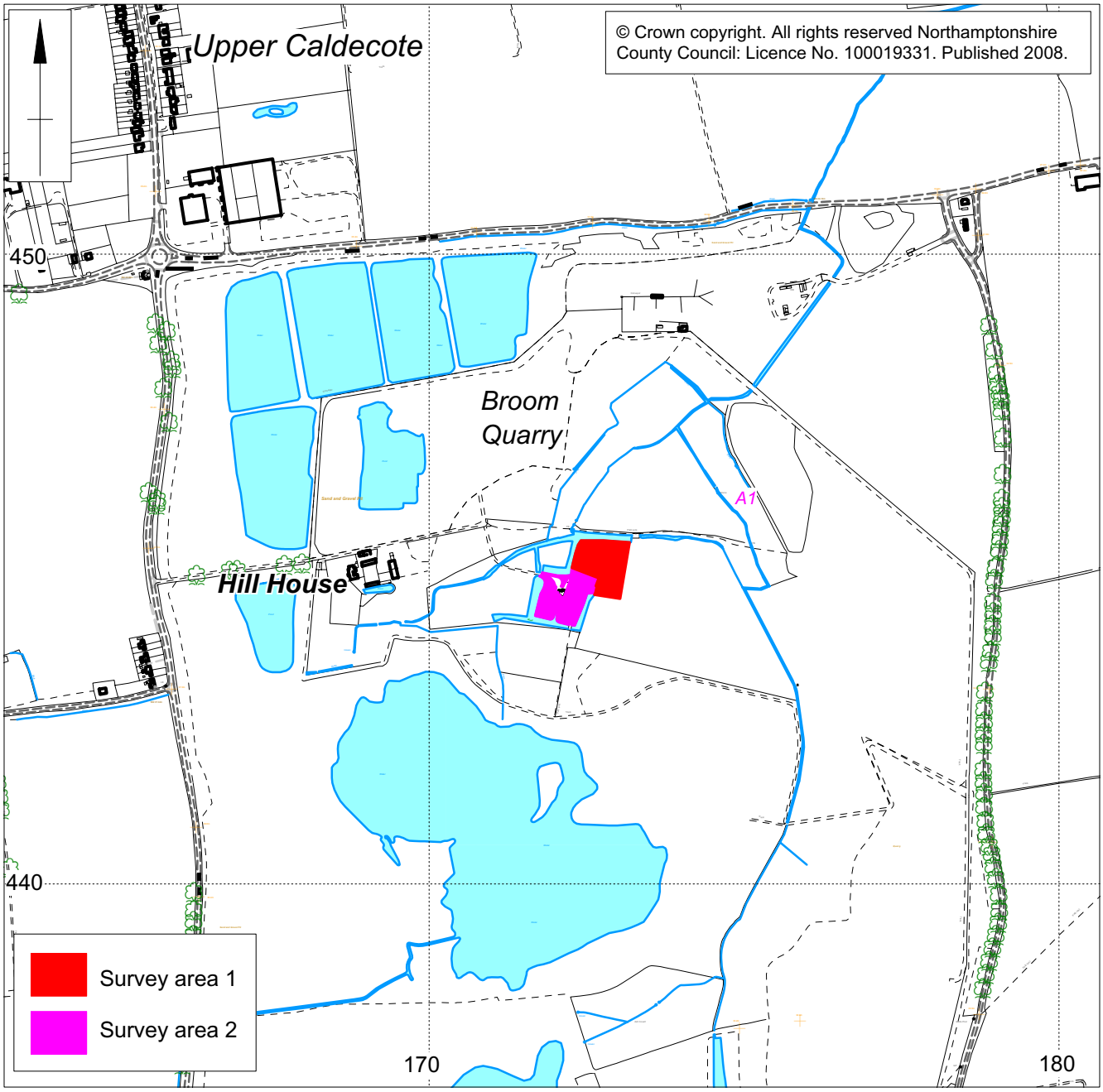


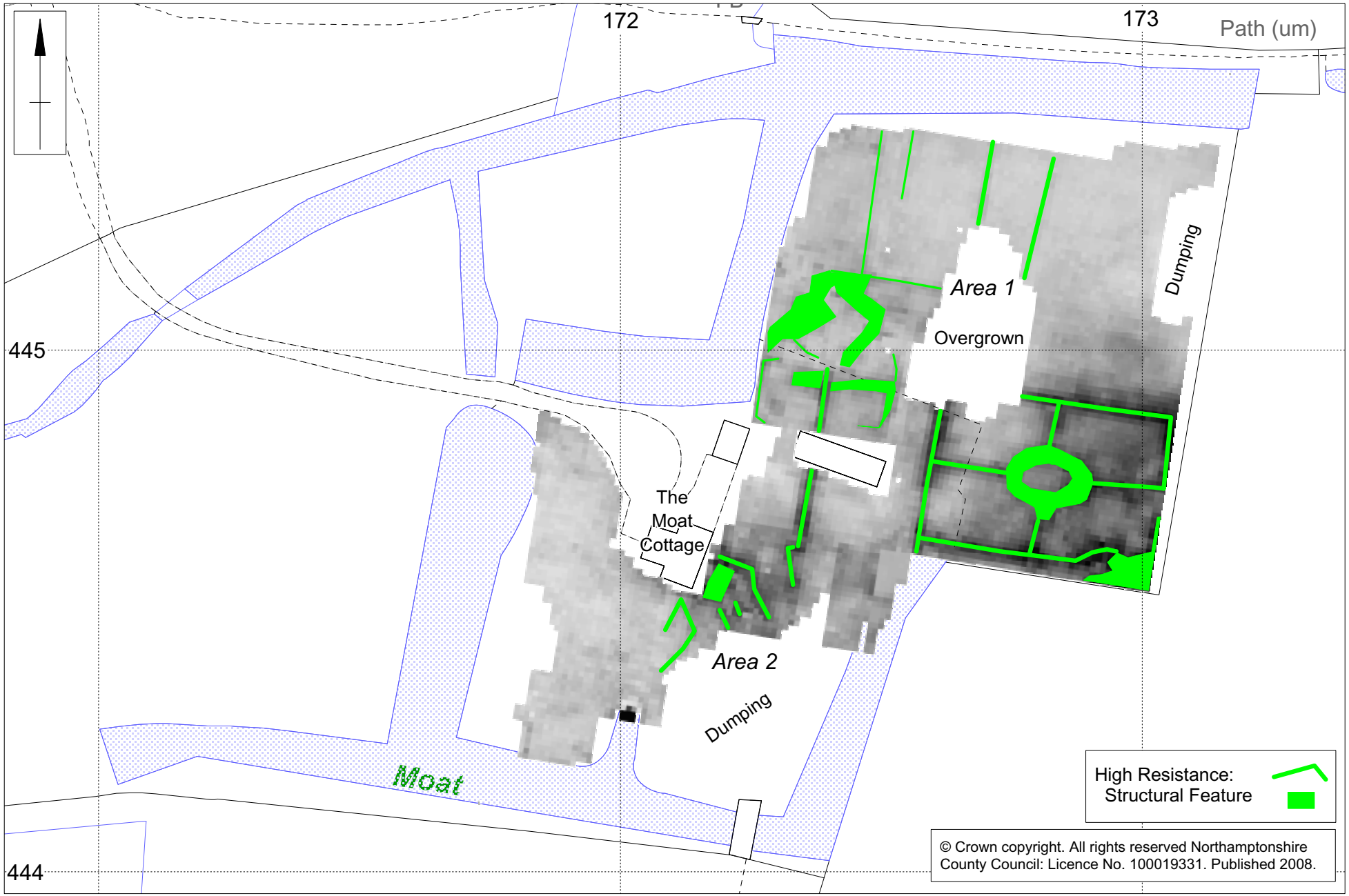


Scale 1:10,000

Site Location Fig 1

Scale 1:1000

Hill House Resistance Survey Results Fig 2

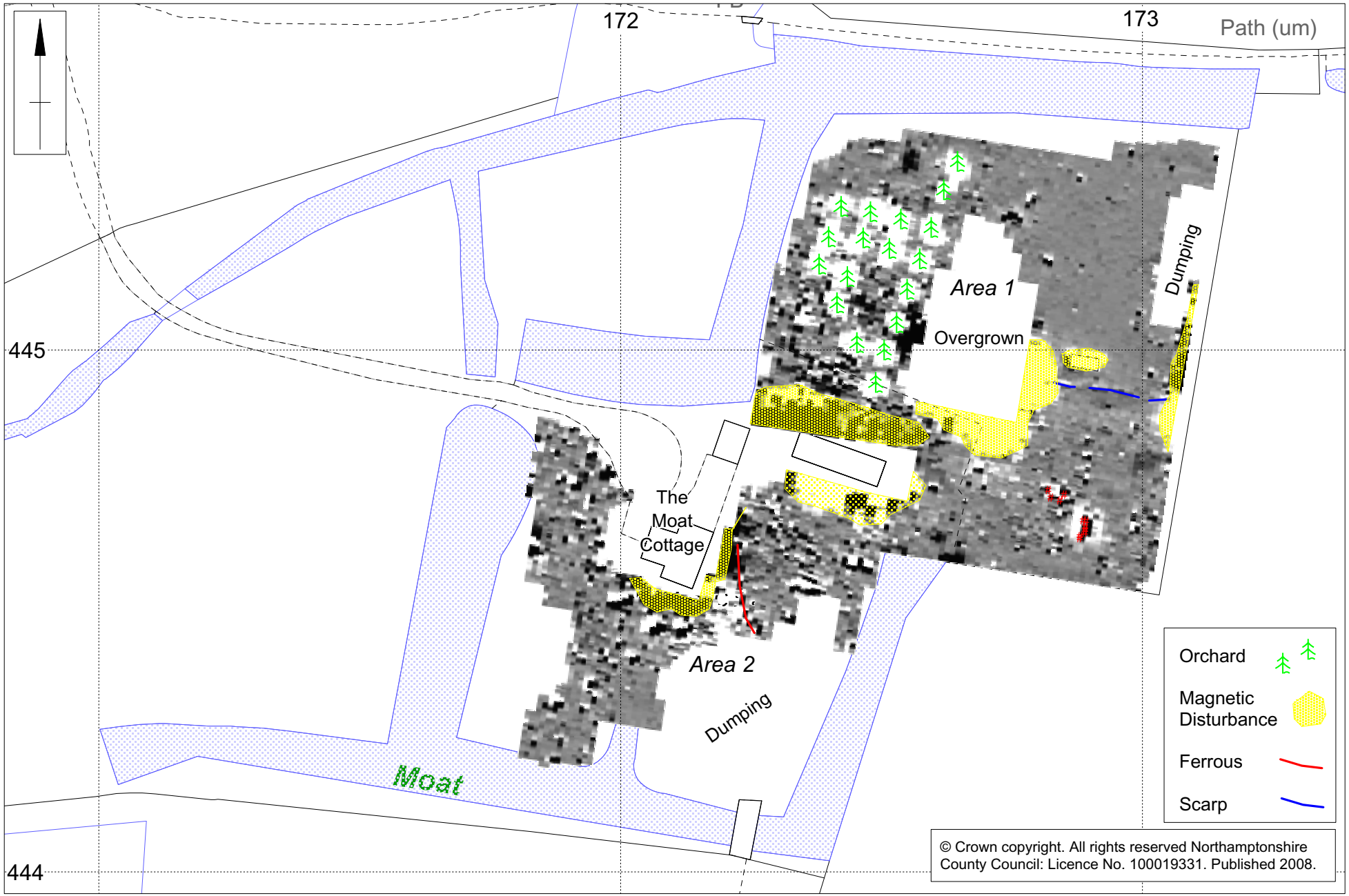


Scale 1:1000

Hill House Resistance Survey Interpretation Fig 3

Scale 1:1000

Hill House Gradiometer Survey Results Fig 4



Scale 1:1000

Hill House Gradiometer Survey Interpretation Fig 5