


**An Archaeological fieldwalking survey at  
Ashton Green, Beaumont Leys, Leicester**

**NGR: SK 573 086 centre**

**Tim Higgins**

**For: Leicester City Council**

Checked by

**Signed:**  **Date:** ...25.03.2009.

**Name:** .Vicki Score.....

Approved by

**Signed:**  **Date:** ...26.03.2009.

**Name:** Patrick Clay.....

**University of Leicester**

Archaeological Services

University Rd., Leicester, LE1 7RH

Tel: (0116) 2522848 Fax: (0116) 2522614

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## **An Archaeological Fieldwalking Survey at Ashton Green Beaumont Leys, Leicester (SK 573 086 centre).**

**Tim Higgins**

### **1. Summary**

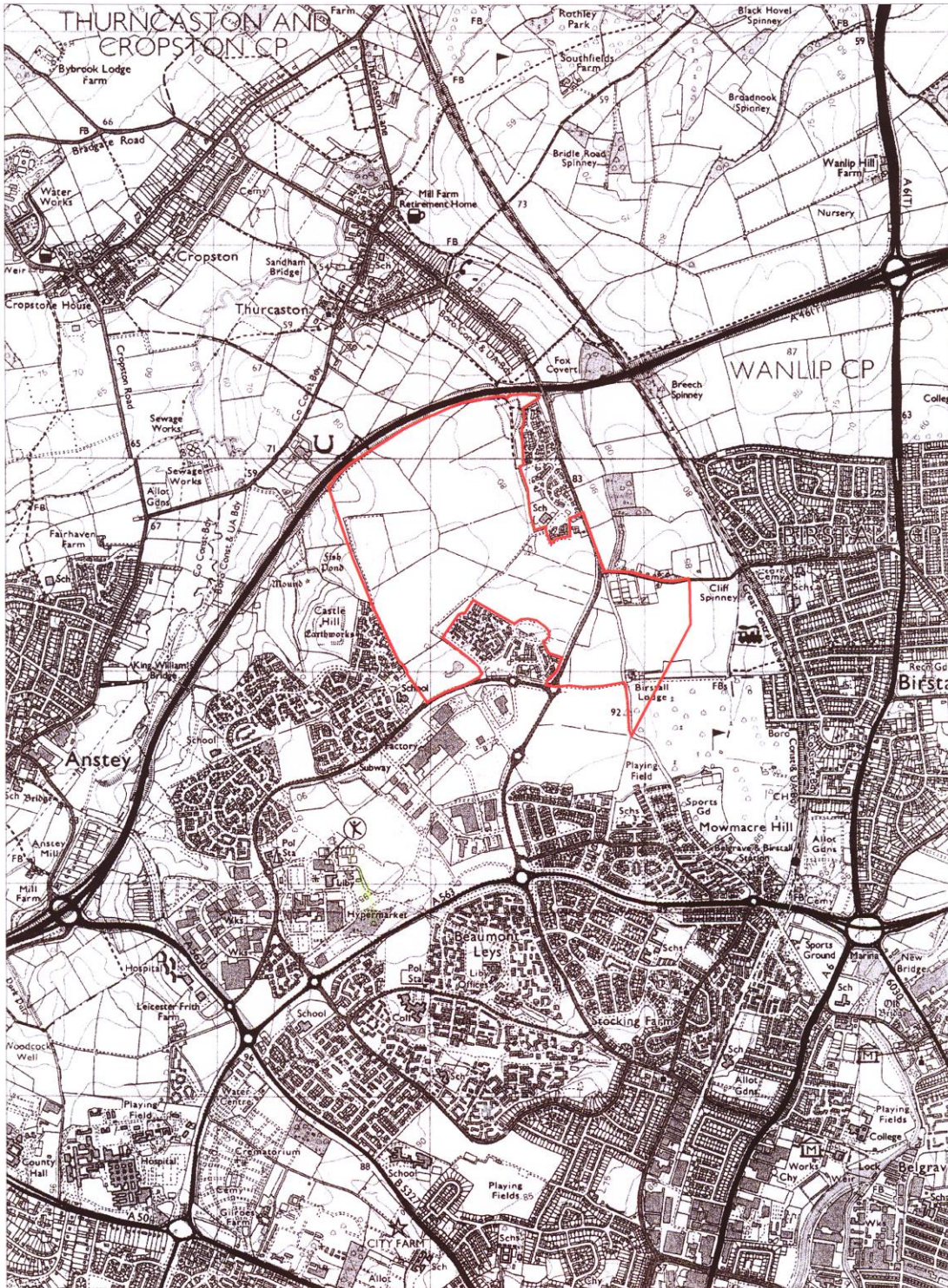
*University of Leicester Archaeological Services (ULAS) was commissioned by White Young Green/Leicester City Council to carry out a fieldwalking survey on land at Ashton Green, Beaumont Leys, Leicester (SK 573 086 centre). The work was undertaken as part of an archaeological impact assessment in advance of proposed development, and was commissioned following recommendations from the City Archaeologist at Leicester City Council as advisor to the planning authority. All work followed the Project Design for Fieldwalking and Geophysical Survey (Appendix 2)*

*Following an aerial photographic search the fields were walked at 20m intervals and finds recorded by hand held GPS. Dispersed scatters of worked flint material of Neolithic - Bronze Age date were present in the north-western and south-eastern fields. Hand-made pottery of Iron Age and Anglo Saxon date was present in the south-east of the area. Although in small quantities, these may be indicators of settlement also suggested by the results from the geophysical survey.*

*The finds and records will be deposited with Leicester City Museums.*

### **2. Introduction**

The proposed development area is located in Beaumont Leys ward, in north Leicester (centred on grid. Ref. SK 573 086 Fig. 1). It covers an area of c.104 ha currently used as agricultural land. A walkover survey has established that 82 ha were currently arable farmland while c.22 ha were pasture. The Ordnance Survey Geological Survey of Great Britain Sheet Loughborough 141 indicates that the underlying geology of the site is likely to consist of drift Lacustrine deposits. The land is generally flat at a height of c.90m OD. The Historic Environment Records (HER) for Leicester and Leicestershire and Rutland shows that there are known archaeological sites close to application area. To the west is the scheduled monument of a medieval preceptory at Castle Hill while to the north and the east are known prehistoric sites.



fpcr Lockington Hall, Lockington,  
Derby, DE74 2RH. Tel: 01509 872772  
Fax: 01509 874565, fpcr@compuserve.com  
File: S / 2000 / 2073 / Fig 1. Location Plan. Cdr. 2073 / P / 01

Leicester City Council  
Ashton Green  
**SITE LOCATION AND  
CONTEXT**  
Figure 2.1  
Scale 1:25000 @ A4. August 2002

**Figure 1: Site location**

### **3. Archaeological and Historical background**

An archaeological desk-based assessment undertaken for a previous application by John Samuels Archaeological Consultants in 2002 (JSAC 2002) had concluded that there was considerable evidence for prehistoric activity in the vicinity. The assessment included an examination of the Historic Environment Records (HER) for Leicester and Leicestershire and Rutland which showed that fieldwalking in areas to the north, west and east of the site had revealed lithic scatters indicating early activity from the Mesolithic through to the Late Bronze Age (Leicester HER: MLC212 and MLC457 MLC636). Evidence for Roman occupation and industrial activity has been found north-west of the proposed development site (Leicester HER: MLC212) and small quantities of Roman pottery have been found west of Castle Hill earthworks figure 1 (HER: LC213).

The JSAC desk-assessment concluded that the potential for significant medieval remains other than those relating to agricultural activities was low as the core of the medieval settlements were some distance from the proposed development site (JSAC 2002). The site had evidence of ridge and furrow cultivation and was probably under pasture until the late 19th century. Sewage sludge is believed to have been spread on parts of the site associated with the neighbouring Beaumont Leys sewage farm.

Since the JSAC report was produced a substantial Iron Age occupation site has been located during excavations 500m to the south of the development site (Thomas 2008). The Iron Age site revealed boundary ditches, several fence lines, 'four post' structures and several roundhouses. The finds included pottery, fired clay, quern stones and metal working slag. In addition residual sherds of Neolithic and Bronze Age pottery hinted at earlier activities on the site (Thomas 2008).

### **4. Aerial photographic search.**

A search was made of aerial photographs held by Leicestershire County Council, the National Monuments Record and Cambridge University Aerial Photograph Collection. Medieval strip field systems were visible within the application area but no cropmarks or earthworks.

### **5. Aims and Objectives.**

The principal aims of the archaeological fieldwalking survey were:

- To identify possible areas of archaeological potential liable to be threatened by the proposed development.
- To establish the location, extent, date, and significance of any archaeological material located.
- To produce an archive and report of any results.

The objective is to gain an indication of the nature, extent, date and significance of any archaeological material in order that decisions on whether further evaluation or an appropriate mitigation strategy may be adopted for remains that may be affected by the development proposals.

## 6. Methodology.

The fields numbered 4 to 14 (Figure 2) were surveyed by fieldwalking between the 13th and 20th of February 2009. They were walked in transects 20 metres apart and the location of all finds marked in situ. All the fields had been recently sown but were well weathered and suitable for fieldwalking. Generally the visibility was good with only two of the days overcast and cloudy and throughout the period of the survey all surface material was visible and recordable. Finds were recorded using a Garmin Global Positional System (GPS) 12 parallel channel receiver. The GPS accuracy was generally 95% although variations can occur within a range of between two and 10 metres. This methodology is appropriate to this type of survey bearing in mind the dispersion and drag factor which occurs in clayland plough zone areas such as this (Yorston et al 1990; Clark and Schofield 1991). Each find was recorded with the GPS, given a unique find number, bagged and removed from the find spot. All finds were recorded, apart from obvious modern material. For modern pottery, brick, slate and tile the location was recorded but the fragments were not collected. The finds collected were later processed and examined by appropriate specialists (Appendix 2). All archaeological work adhered to Institute for Archaeologist's (IfA) *Code of Conduct and Standard and Guidance for Archaeological Evaluations*.

Artefact	Collected	Recorded
Modern pottery	N	N
Modern Glass	N	N
Brick/Slate	N	Y
Slag/Nails	N	Y
Post Medieval Pottery	Y	Y
Medieval Pottery	Y	Y
Anglo Saxon Pottery	Y	Y
Roman Pottery	Y	Y
Pre- Historic Pottery	Y	Y
Flint	Y	Y

Table 1 Collection and Recording Policies

## 7. Results.

A total of 621 finds was recorded, consisting of 399 pieces (64%) of coarse building material, slate or brick, which were examined on site and discarded, and 207 sherds of ceramic material which were collected. Clearly modern (e.g 20th century) ceramics were not recorded.

The distribution of surface material is shown in Figures 3-10. Dispersed scatters of worked flint were present in the north and south-east of the area. Flint cores and tools which are sometimes indicators of settlement were present in small numbers (Figure 4). Although few in number Iron Age pottery and one sherd of Anglo-Saxon pottery was present in field 4 which may indicate settlement during these periods (Figures 5 and 7). Medieval pottery and

post-medieval pottery (Figures 8-9) appear to have been the result of manuring scatters on to the open fields.

### ***Lithics***

A total of 43 worked flints (6.9% of the total finds recorded) was recovered of which nine are thought to be possible tools and two are cores (Figure 4). There were two areas of dispersed worked flints generally located in the north-west (Fields 5, 6, 7, 8, 10) and south-east (Fields 4 and 13). The six flint tools were found in fields 5, 6, 7, 8 10 in the north-west and another three were located in field 4 and 13 in the south-eastern scatter (Figure 4). The two flint cores were found in fields 8 and 5 which along with the tools sometimes indicate the presence of possible settlements, however in this case the numbers are small and may be the result of transient activity. The material is consistent with a date from the Late Neolithic to the Early Bronze Age (*c.* 2800BC-1500BC).

### ***Ceramic/Pottery***

A total of 207 pottery sherds (33% of the total) was recovered including two sherds, identified as Iron Age, located in field 4 (Figure 5). Although they are few in number they were in a relatively unabraded condition which may indicate that they are from a recently disturbed deposit of this period. A more abraded single sherd of Roman Grey ware pottery was found in Field 5 (Figure 6) which may derive from manuring cultivated fields during that period.

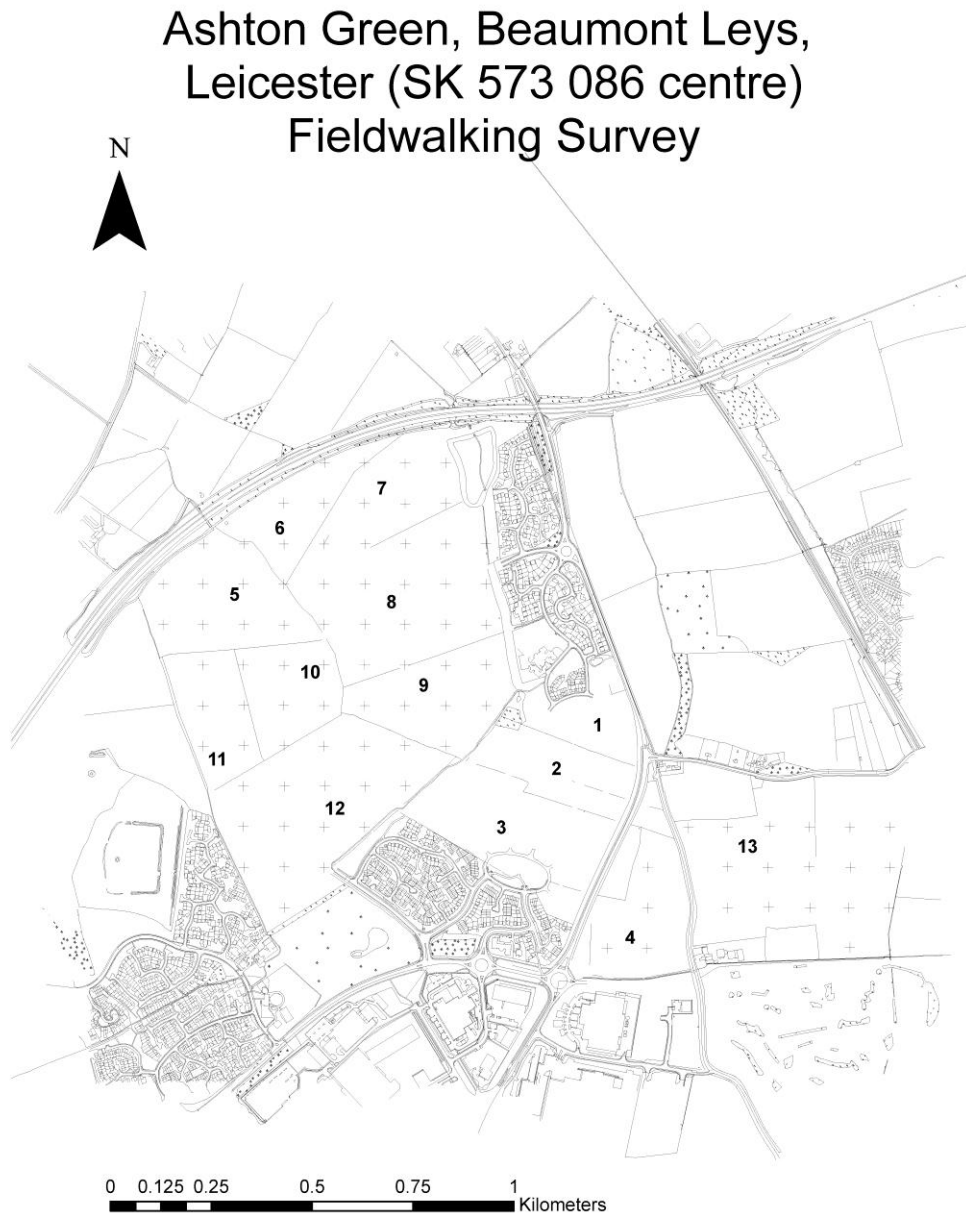
A single sherd of Anglo-Saxon pottery was also found in Field 4 (Figure 7) and like the Iron Age sherds found in the same field was in a relatively unabraded condition which may indicate disturbance of a primary deposit rather than it having been introduced by manuring.

A total of 18 medieval sherds was found as a general scatter across most of the fields and probable represents manuring scatters across the open fields (Figure 8). The refuse including pottery sherds to be used as manure was probable collected from the nearby medieval villages of Thurstaston and Cropston. The pottery sherds comprised Potters Marston, Medieval Sandy, Cistercian and Midland Purple wares of 12th to 15th century date.

The vast majority of pottery sherds, 157 in total, were early post-medieval in date (*c.* 1550 to 1750) and again like the medieval sherds probably represent manuring scatters on the open fields and were sourced from the local villages (Figure 9).

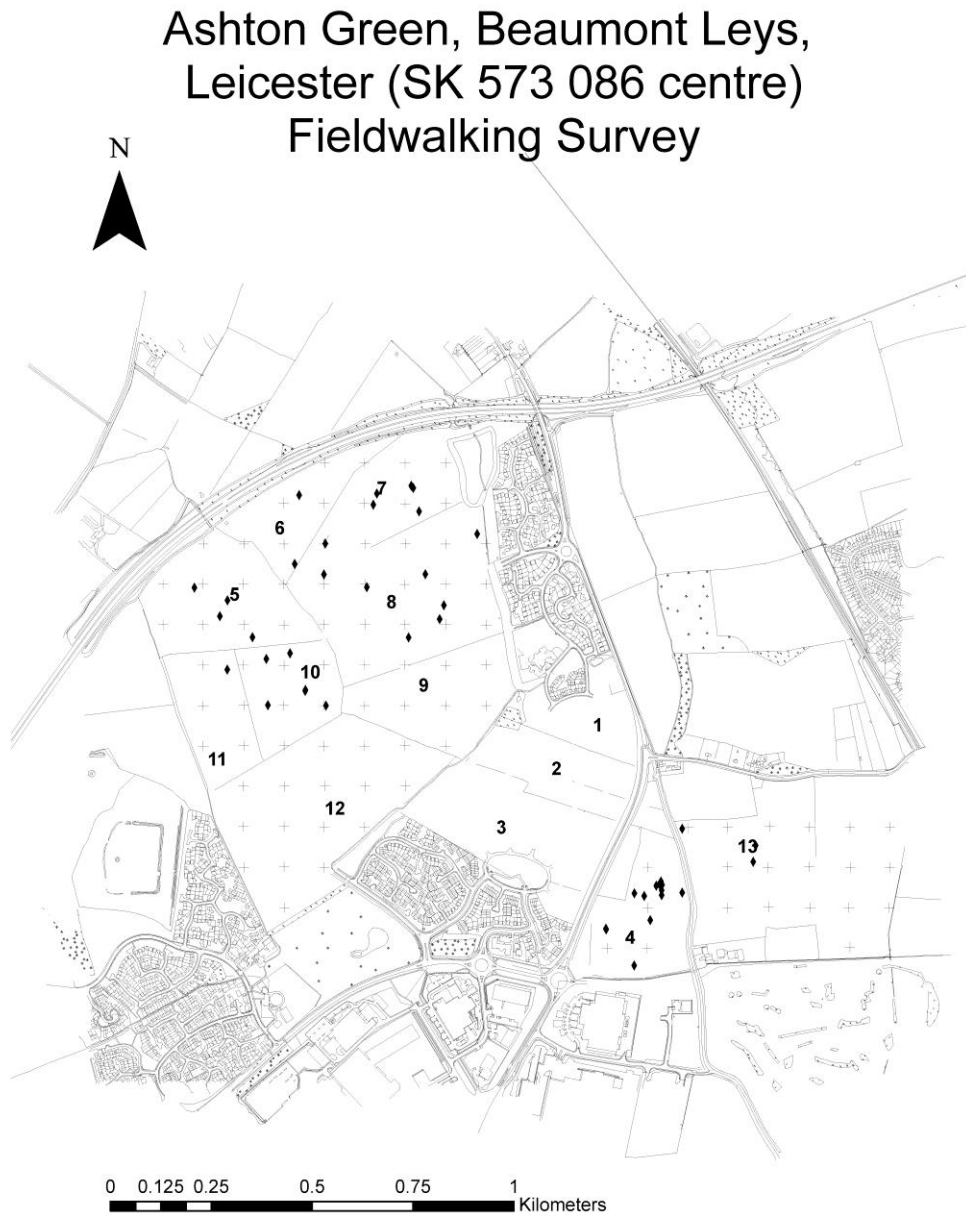
### ***Building and Industrial Material***

There was a general scatter of building material including brick, tile, slate and industrial slag, which may again have been the result of general manuring of the open fields (Figure 10). Other deposits of brick and slate may be associated with several sewage pipelines found in most of the fields. The pipelines were used to pump effluent onto the fields from the former Beaumont Leys Sewage works that was once located at the south-west corner of the proposed development area (JSAC 2002). The now redundant pipelines had brick access chambers which, in some cases, had been demolished and the rubble had been spread by the drag of the plough.

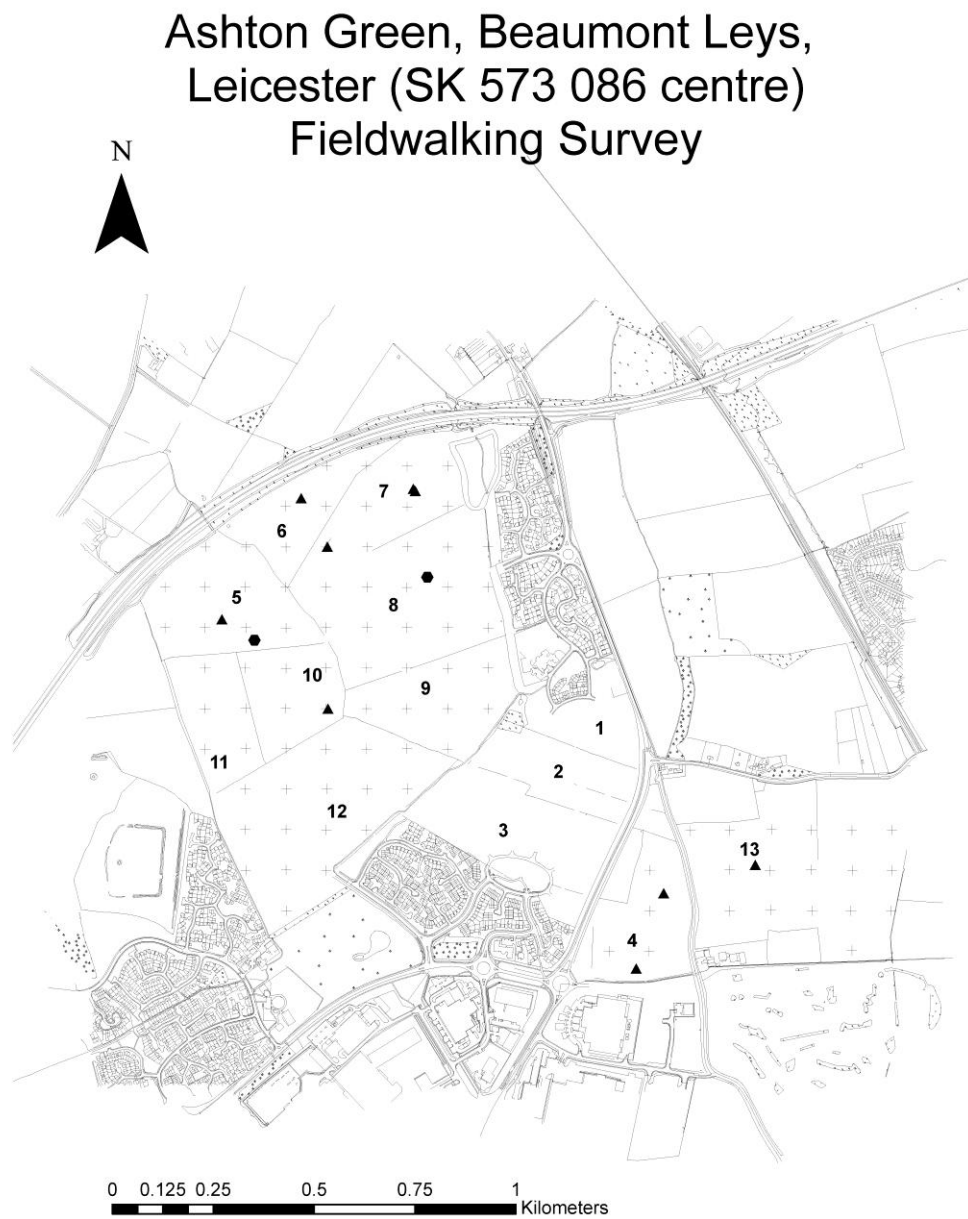


**Figure 3: Plan showing Field numbers 4 to 13 surveyed by fieldwalking. Fields 1-3 were pasture.**

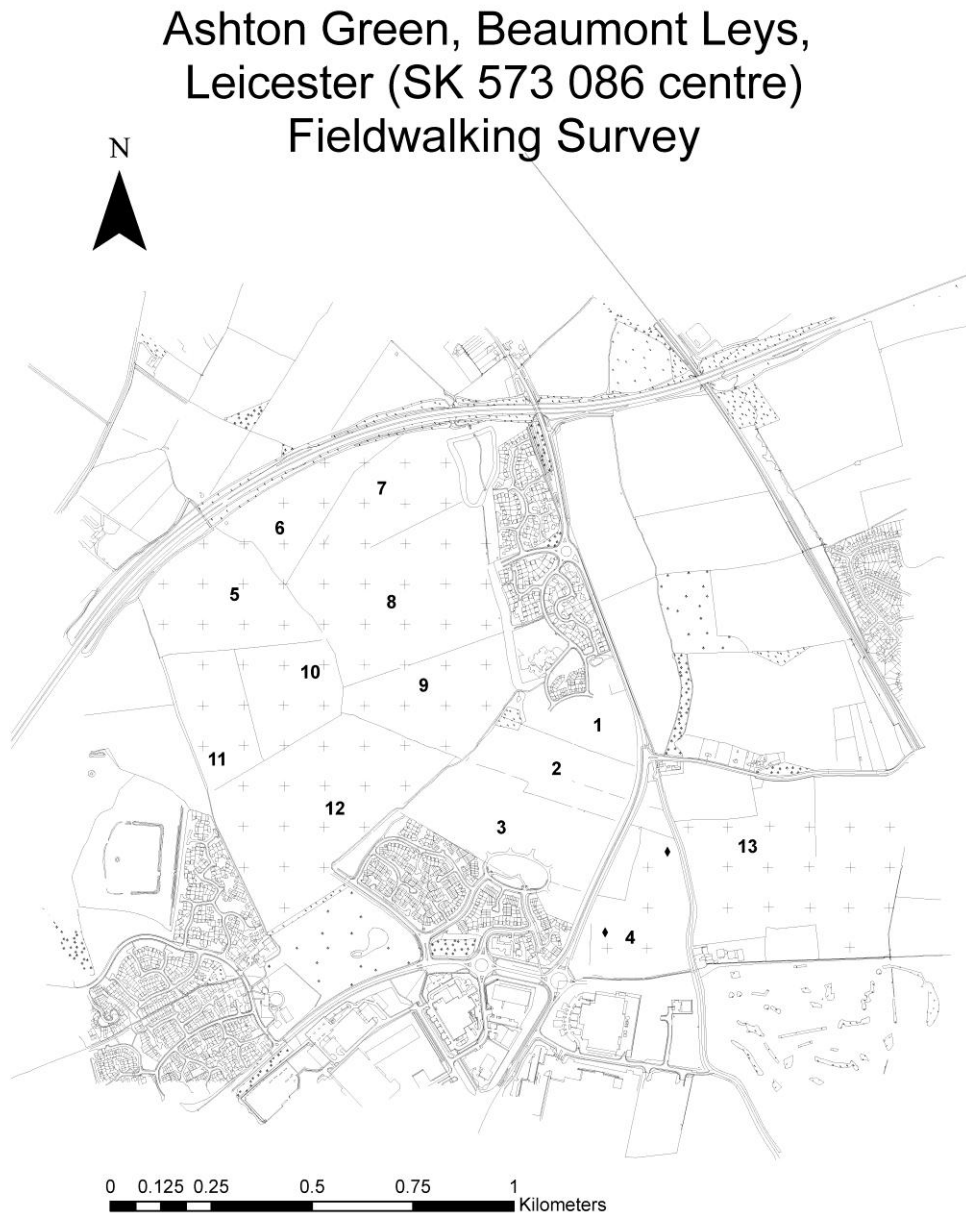




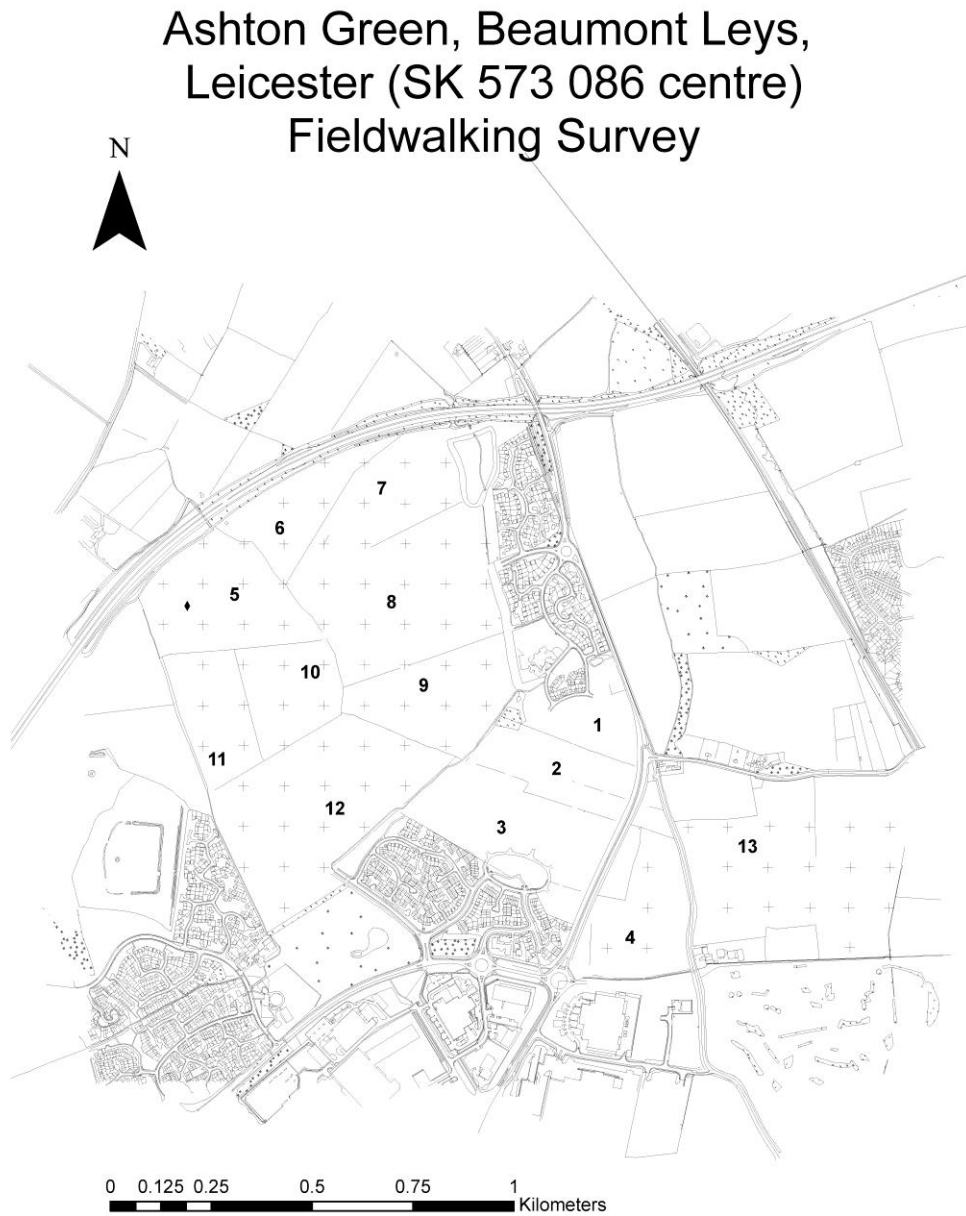
**Figure 3: Distribution of all lithics**



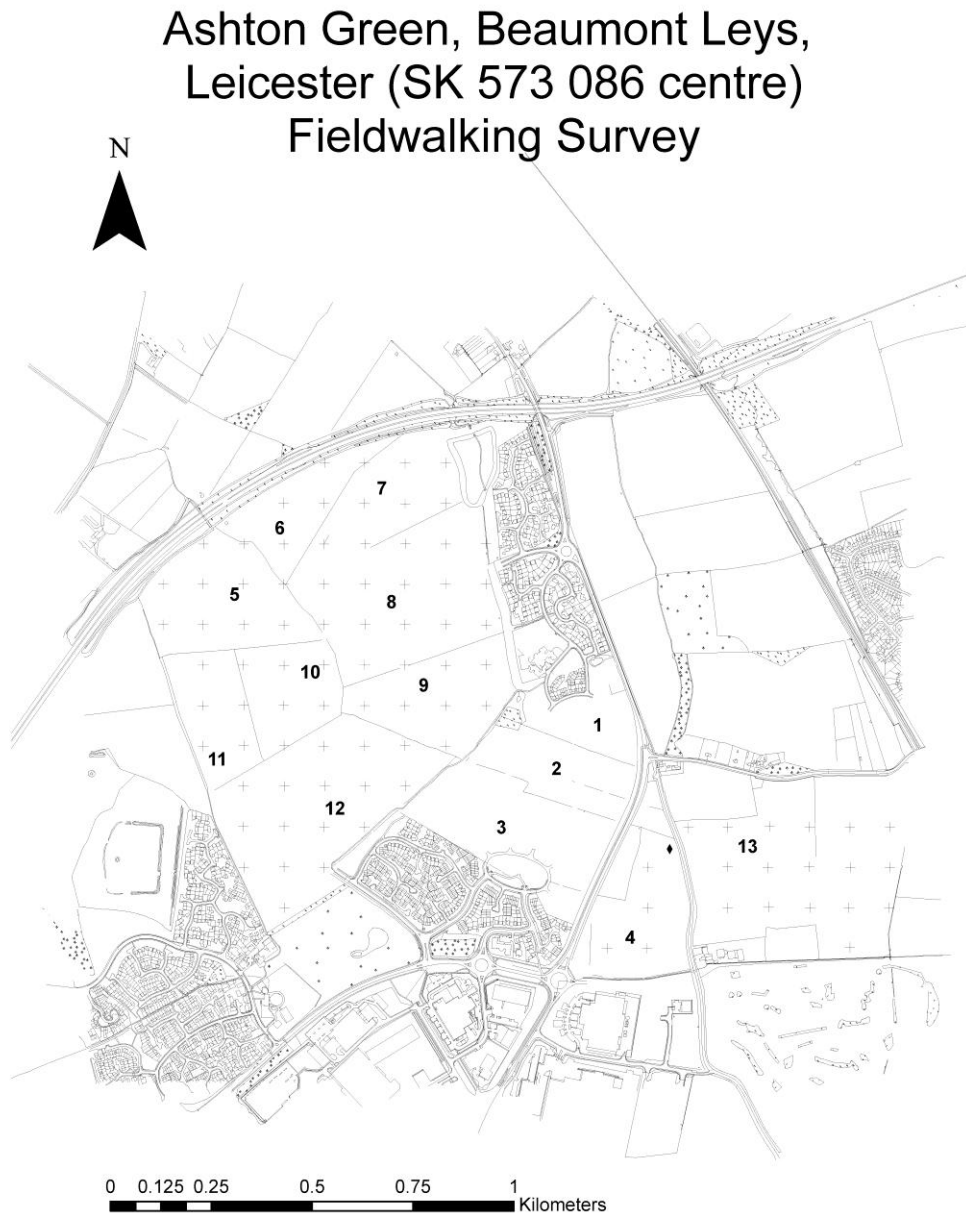
**Figure 4: The flint tools (triangle) and core (hexagon) distribution.**



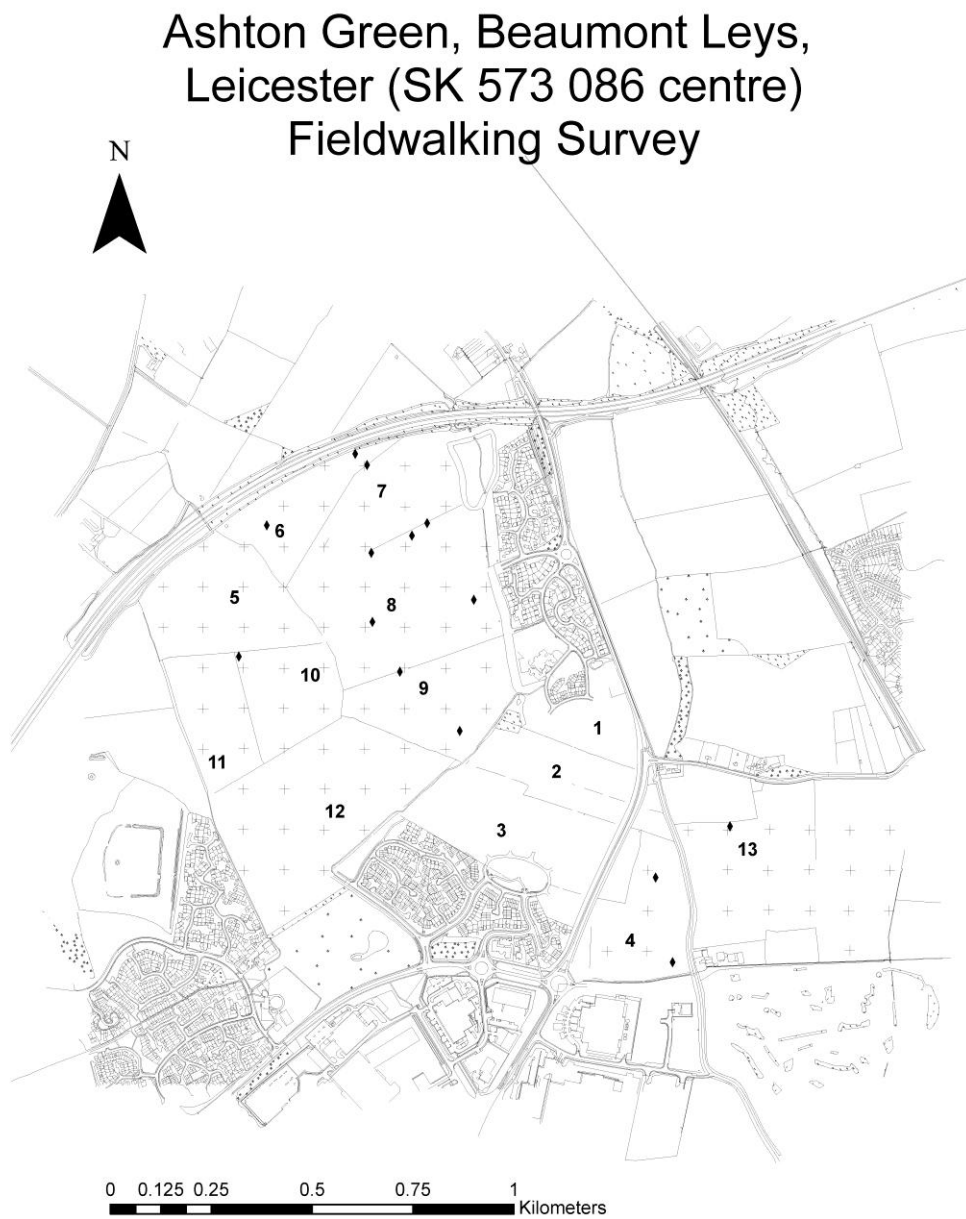
**Figure 5: Iron Age pottery distribution in Field 4**



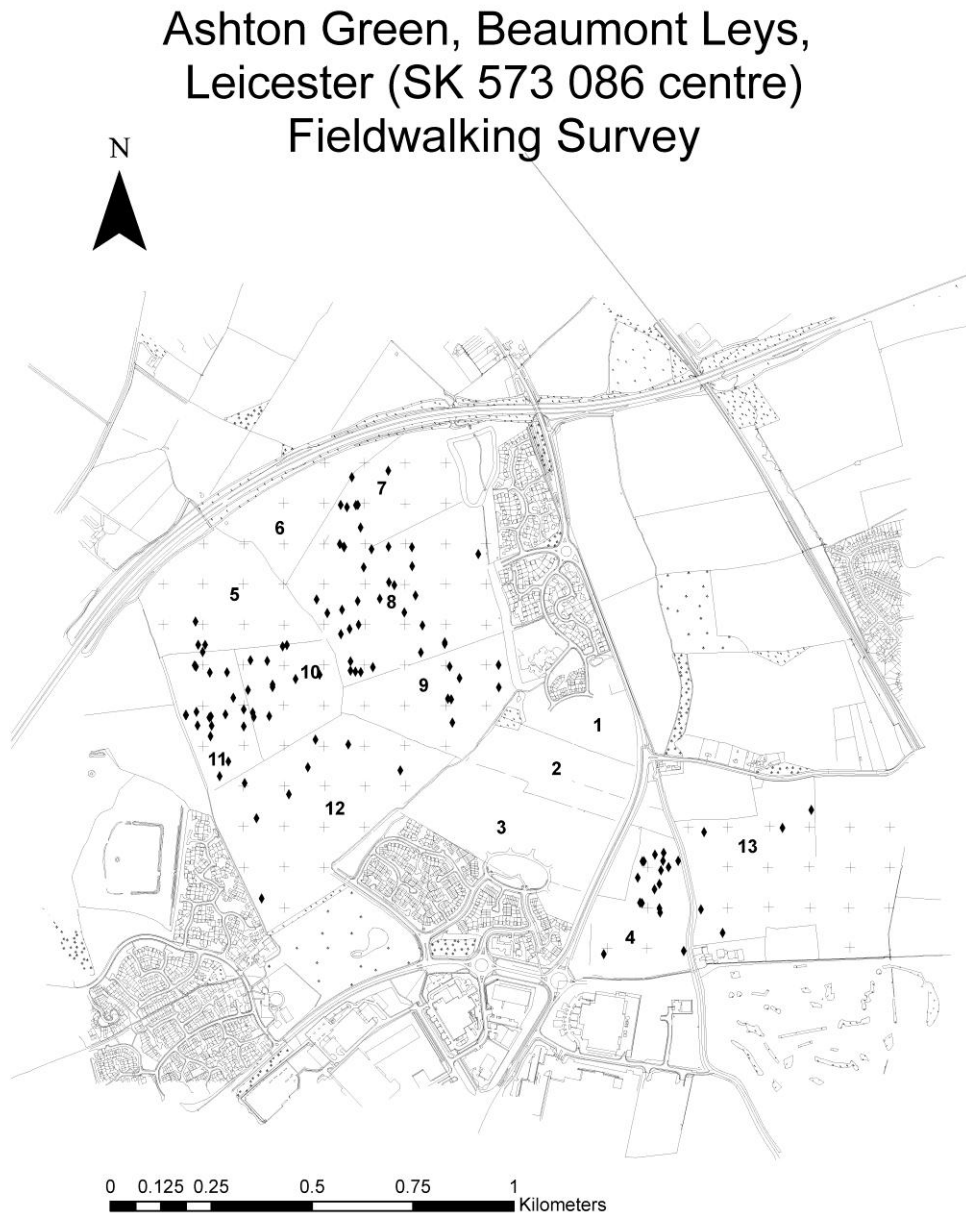
**Figure 6: Roman pottery sherd (diamond) in Field 5**



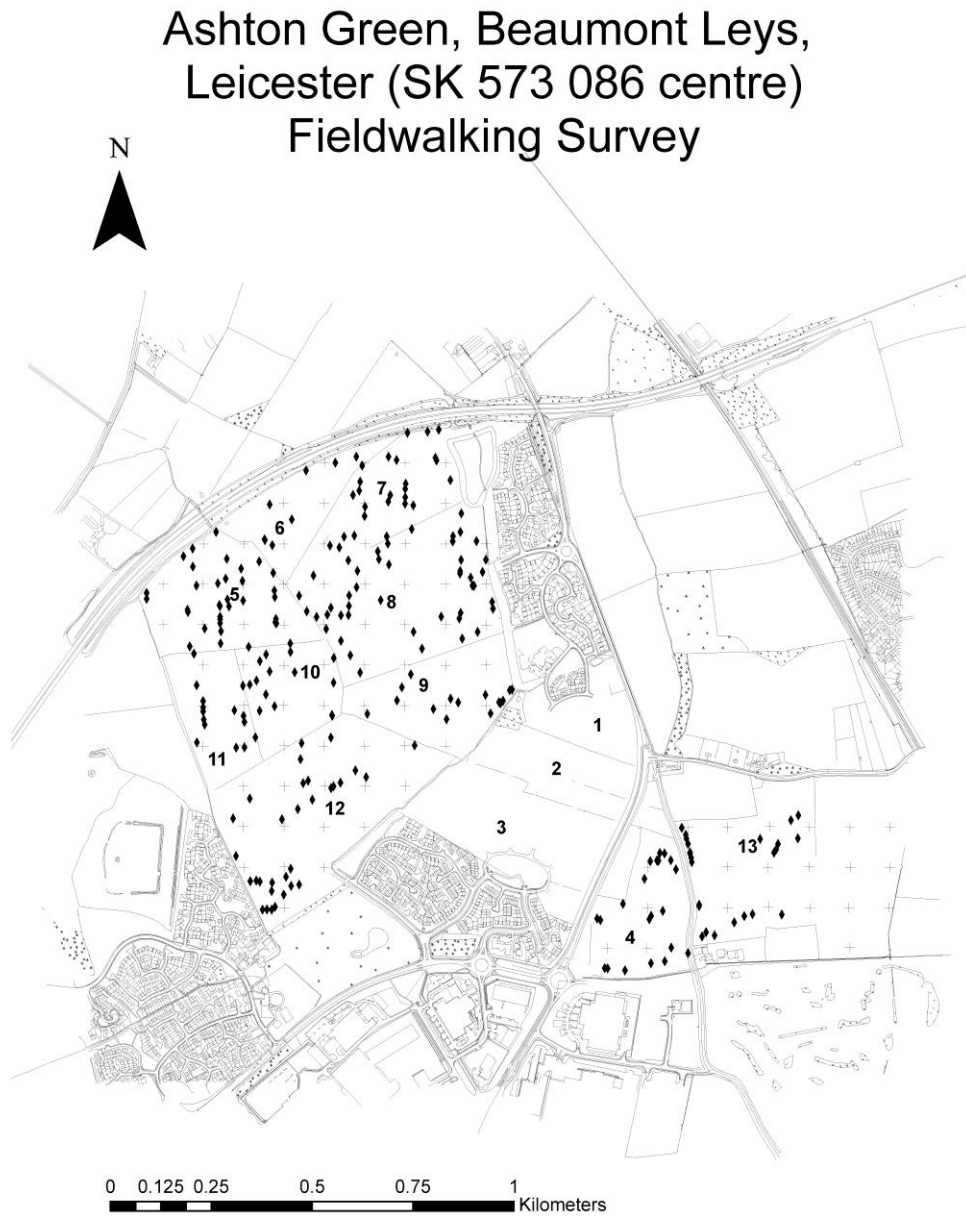
**Figure 7: Anglo-Saxon Pottery sherd (diamond) in Field 4**



**Figure 8: Medieval pottery distribution**



**Figure 9: Early post-medieval pottery distribution**



**Figure 11: Brick and tile distribution**



## 8. Conclusion.

The fieldwalking survey recovered relatively dispersed surface assemblages over the fields examined with the most significant items being Iron Age and Anglo-Saxon pottery sherds in Field 4 (Figure 6) and a light scatter of worked flint including a few tools and cores of late Neolithic/Early Bronze Age in Fields 4, 5, 6, 7, 8, 10 and 13 (Figures 4 and 5). Although the distribution of the flints was not dense, there are some areas of potential, based on the presence of cores and implements. A geophysical survey undertaken by Northampton Archaeology has located anomalies suggesting possible ditches and pits in Field 5 and other possible pits in Fields 6 and 7 (Butler 2009). Another flint scatter has been found previously 100m east of the south-east boundary of the development site south of Green Gate Lane, with an assemblage dating from the Mesolithic to Early Bronze Age (HER. MLC636).

The two Iron Age sherds found in Field 4 were relatively fresh and un-abraded, which suggests that they may have been recently unearthed by ploughing from potential underlying features. The geophysical survey has detected a sub-circular anomaly, 20m in diameter, in the north-east corner of Field 4 which was interpreted as a possible ditched enclosure (Butler 2009). One of the sherds of Iron Age pottery was found overlying this potential enclosure. Towards the south-west corner of Field 4 another Iron Age sherd was found close to where other geophysical anomalies were detected, which were interpreted as two possible pits and short lengths of ditch (Butler 2009).

A large Iron Age settlement has been excavated 500m to the south of the development area (Thomas 2008) and an evaluation has revealed another area of Iron Age deposits located 150m to the south (Hunt 2005; HER LC1464). It is possible that the potential Iron Age evidence from the application area was situated in a wider area of surrounding Iron Age settlement (Thomas 2008). A single sherd of abraded Roman pottery found in Field 5 may represent a manuring scatter, although the geophysical anomalies detected field 5 suggests a possible ditch and pits of some antiquity (Butler 2009). Previous systematic fieldwalking close to Castle Hill, west of the development area, has also located evidence of Roman occupation (HER LC212, 214). Another Roman pottery scatter of low density has been found during a fieldwalking survey to the north of the development area (HER LC213; JSAC 2002). A single sherd of Anglo-Saxon Pottery in field 4 that was again relatively unabraded, may have been derived from plough action disturbing an underlying Anglo-Saxon feature.

A general scatter of abraded medieval and early post-medieval pottery was located in all areas walked and probably represents manuring practices using domestic refuse sourced from either the medieval settlements of Castle Hill (moated site) and Anstey located to the west, or Thurcaston and Cropston located to the north of the development site (Figure 1).

There was a general spread of modern pottery, brick and industrial material on all fields and was probably from 19th and 20th century manuring practices using household and industrial refuse. Other scatters of building materials were probably associated with the construction and demolition of sewer pipes that pumped effluent on to the fields from Beaumont Leys Sewage Farm that was once located directly to the south-west of the development site (JSAC 2002).

To summarise the fieldwalking and geophysical surveys have shown there to be high potential for archaeological deposits of Iron Age date and moderate potential for Anglo-Saxon deposits to be present within the application area. While there is some potential for

deposits of Neolithic-Bronze Age and Roman date there is lower potential for any deposits of medieval and post-medieval date to be present, other than field systems.

## 9. Acknowledgements.

The fieldwork was carried out by the author, assisted by Greg Jones, Martin Shore, Steve Baker, Dave Parker, Keith Johnson and Dan Stone. Dr. Patrick Clay managed the project. I would like to thank Leicester City Council and White Young Green for arranging access to the fields for the fieldwalking.

## 10. Archive.

A full copy of the archive as defined in The Guidelines For the Preparation Of Excavation Archives For Long Term Storage (UKIC 1990), and the Standards In The Museum: Care Of Archaeological Collections (MGC 1992) and Guidelines for the Preparation of Site Archives and Assessments for all finds (RFG/FRG) will usually be presented to within six months of the completion of fieldwork. This archive will include all records directly relating to the investigation undertaken.

The archive consists of: 1 copy of this report, eleven fieldwalking record sheets, 1 copy of site location plans, 1 copy brief for archaeological work 1 photo index form, 2 colour digital photo contact sheet, 1 CD containing 2 digital photos. Fieldwalking Data (GPS points on CD rom). Subject to confirmation it will be deposited with Leicester City Council Museum Service under accession number A3.2009.

## 11. Bibliography

Butler, A., 2009 *Archaeological Geophysical Survey on land at Ashton Green, Beaumont Leys, Leicester Y.A4.2009* Northamptonshire Archaeology 09/30

Clark, R.H., and Schofield, A.J., 1991 By experiment and calibration: an integrated approach to archaeology of the ploughsoil. In A.J.Schofield (ed), *Interpreting Artefact Scatters: Contributions to ploughzone archaeology*: 93-106. Oxford: Oxbow Books

Hunt, L., 2005 *An Archaeological Evaluation At Bursom Business Park Extension (Northeast) Mowmacre, Leicester (SK 576 088)* ULAS Report no.2005 028

John Samuels Archaeological Consultants 2002, *An Archaeological Desk-Based Assessment of land at Ashton Green, Leicestershire* JSAC 980/02/02

MAP 2: *The management of archaeological projects* 2nd edition English Heritage 1991

MGC 1992 *Standards in the Museum Care of Archaeological Collections* 1992 (Museums and Galleries Commission)

RFG/FRG 1993 *Guidelines for the preparation of site archives* (Roman Finds Group and Finds Research Group AD 700-1700 1993)

SMA 1993 *Selection, retention and Dispersal of Archaeological Collections. Guidelines for use in England, Wales and Northern Ireland* 1993 (Society of Museum Archaeologists)

Thomas, J., 2008 *Excavation of an Iron Age Settlement adjacent to Beaumont Leys Lane, Beaumont Leys, Leicester SK 6172 0590* ULAS Report no.2008 114

Yorston, R.M., Gaffney, V.L., and Reynolds, P.J., 1990 Simulation of Artefact Movement due to cultivation. *Journal of Archaeological Science* **17**: 67-83.

Tim Higgins  
Field Officer  
University of Leicester Archaeological Services  
University of Leicester  
University Road  
Leicester LE1 7RH

[th31@le.ac.uk](mailto:th31@le.ac.uk);

T: 0116 252 2848

F: 0116 252 2614

24.03.2009

## Appendix 1 Oasis Summary

INFORMATION REQUIRED	EXAMPLE
Project Name	An archaeological Fieldwalking Survey Ashton Green, Beaumont Leys, Leicester SK 573 086 centre.
Project Type	Archaeological Fieldwalking Survey
Project Manager	Patrick Clay
Project Supervisor	Tim Higgins
Previous/Future work	Desk assessment JSAC 2002; Geophysical survey (Butler 2009)
Current Land Use	Recreation Park
Development Type	Proposed housing development
Reason for Investigation	PPG16
Position in the Planning Process	Pre-planning enquiry
Site Co ordinates	NGR : SK 573 086
Start/end dates of field work	13/02/09 to 20/02/09
Archive Recipient	Leicester City Council
<b>Study Area *</b>	Approx c. 104 ha

## Appendix 2 Catalogue of Finds

Lithics Table 2

*Identified by Lynden Cooper*

Survey No	Find ID	Zn	East	North	Object
26	373F	SK	09135.7	57767.51	Flint 3ry flake
28	374F	SK	09129	57791.84	Flint 2ry flake
32	376F	SK	09154.5	57821.53	Flint 2ry flake
34	377F	SK	09158.2	57829.33	Flint 2ry flake
36	379F	SK	09156.4	57836.26	Flint 3ry flake
37	380F	SK	09157.8	57834.54	Flint 3ry flake
38	381F	SK	09143.5	57835.15	Flint Scraper with point
39	382F	SK	09164.9	57833.52	Flint 2ry flake
40	383F	SK	09137.1	57885.69	Flint 2ry flake
43	387F	SK	309131	57834.84	Flint 2ry flake
47	391F	SK	09047.6	57696.9	Flint 2ry flake
49	393F	SK	09046.4	57697.72	Flint 3ry flake
51	395F	SK	308957	57766.54	Flint retouched flake
57	399F	SK	09069.4	57806.56	Flint 2ry flake
60	402F	SK	09295.5	57885.77	Flint 2ry flake
65	407F	SK	09253.9	58068.01	Flint scraper
66	408F	SK	09213.4	58061.73	Flint retouched flake
69	411F	SK	10080.2	57234.55	Flint 2ry flake
51	113F	SK	09924.9	57250.38	Flint core
52	114F	SK	09848.2	57295.8	Flint 2ry flake
58	120F	SK	09813.7	57285.25	Flint 2ry flake
83	145F	SK	09893.2	57105.58	Flint 2ry flake
97	159F	SK	09768.9	57208.68	Flint 3ry flake
113	175F	SK	10024.6	57378.65	Flint 2ry flake
145	207F	SK	09924.3	56998.66	Flint 2ry flake
149	211F	SK	10000.9	57002.28	Flint scraper
170	228F	SK	10138.5	57220.03	Flint scraper
172	229F	SK	10144	57215.18	Flint spurred piece
183	239F	SK	10097	57121.43	Flint 2ry flake
192	248F	SK	10120.5	56937.58	Flint piercer
198	255F	SK	09950.7	56926.26	Flint 2ry flake
213	271F	SK	09821.3	56741.39	Flint denticulate
214	272F	SK	09860.6	56759.95	Flint 1ry flake
236	284F	SK	09892.2	56678.17	Flint 3ry flake
251	292F	SK	09769.4	56821.88	Flint core
259	296F	SK	9729.5	56915.04	Flint 3ry flake
266	301F	SK	09715.8	56856.55	Flint 2ry flake
272	307F	SK	09599.9	57003.89	Flint scraper

273	308F	SK	09636.4	56952.53	Flint 3ry flake
274	309F	SK	09638.7	56952.92	Flint 2ry flake
278	313F	SK	09601.3	56860.34	Flint 1ry flake
285	320F	SK	09689.2	56759.36	Flint 2ry flake
304	338F	SK	10124.6	57130.06	Flint 2ry flake

**Iron Age Ceramics** Table 3

*Identified by Nicholas Cooper*

Survey No	Find ID	Zn	East	North	Object
42	385P	SK	09238.7	57849.28	Iron Age
48	392P	SK	09038.8	57695.33	Iron Age

**Roman Ceramic** Table 4

*Identified by Nicholas Cooper*

Survey No	Find No	Zn	East	North	Object
243	288P	SK	09846.4	56660.5	Roman Grey Ware

**Anglo-Saxon Ceramic** Table 5

*Identified by Nicholas Cooper*

Survey No	Find ID	Zn	East	North	Object
7	358P	SK	09245.1	57854.7	Anglo-Saxon

**Medieval Ceramics** Table 6

*Identified by Alice Forward and Deborah Sawday*

Survey No	Find ID	Zn	East	North	Object
44	106P	SK	10058.7	57254.8	Potters Marston 1100-1300
46	108P	SK	10027.8	57217.2	Medieval Sandy Ware 1200-1475
82	144P	SK	09814.6	57119.3	Potters Marston 1100-1300
86	148P	SK	09985.3	57116.6	Potters Marston 1100-1300
76	204P	SK	09864.3	57137.4	Potters Marston 1100-1300
77	205P	SK	09905.4	57160.2	Potters Marston 1100-1300
156	218P	SK	10202.6	57105.7	Cistertian ware 2 1475-1550
109	225P	SK	09870.2	57416	Potters Marston 1100-1300
187	243P	SK	10230	57076	Cistertian ware 2 1475-1550
194	251P	SK	10053.5	56857.6	Cistertian ware 2 1475-1550
269	304P	SK	09729.1	56788.5	Cistertian ware 2 1475-1550
306	339P	SK	09691.2	57187.1	Potters Marston 1100-1300

315	348P	SK	09544.5	57335	Potters Marston 1100-1300
281	355P	SK	09572.1	56825.3	Medieval Sandy Ware 1200-1475
5	356P	SK	09869.4	57370.3	Cistertian ware 2 1475-1550
22	371P	SK	09182.2	57820	Cistertian ware 2 1475-1550
53	396P	SK	08972.8	57861.8	Cistertian ware 2 1475-1550
67	409P	SK	09308.9	58004.3	Midland Purple 1375-1550

**Early Post-Medieval Ceramics**

Table 7

*Identified by Alice Forward and Deborah Sawday*

Survey No	Find ID	Zn	East	North	Object	Date
48	110P	SK	09992.1	57216.8	Earthenware 2	1600+
50	112P	SK	09944.8	57217.6	Earthenware 2	1600+
55	117P	SK	09752.5	57298.2	Earthenware 2	1600+
56	118P	SK	09756.5	57298.4	Earthenware 2	1600+
60	122P	SK	09731.8	57238.9	Earthenware 2	1600+
63	125P	SK	09798.6	57243	Earthenware 2	1600+
65	127P	SK	09872.5	57225.6	Earthenware 2	1600+
68	130P	SK	309993	57158.7	Earthenware 2	1600+
72	134P	SK	09898.1	57173.1	Earthenware 2	1600+
74	136P	SK	09830.8	57198.1	Earthenware 2	1600+
76	138P	SK	09864.3	57137.4	Earthenware 2	1600+
77	139P	SK	09905.4	57160.2	Earthenware 2	1600+
81	143P	SK	09695	57120.5	Earthenware 2	1600+
85	147P	SK	09942.4	57097.5	Earthenware 2	1600+
87	149P	SK	09986.8	57116.9	Earthenware 2	1600+
93	155P	SK	09858.6	57082.6	Earthenware 2	1600+
94	156P	SK	09800	57084.6	Earthenware 2	1600+
98	160P	SK	09683	57090.1	Earthenware 2	1600+
99	161P	SK	09684.1	57077	Earthenware 6	1550+
100	162P	SK	09686.1	57064.7	Earthenware 2	1600+
102	164P	SK	09709.6	57064.5	Earthenware 6	1550+
140	202P	SK	09777	57041.1	Earthenware 2	1600+
141	203P	SK	09789.4	57062.6	Earthenware 2	1600+
142	204P	SK	09992.6	57049.2	Earthenware 2	1600+
143	205P	SK	09992.3	57048.2	Earthenware 2	1600+
144	206P	SK	09999.5	57037.9	Earthenware 2	1600+
146	208P	SK	09837.4	57043.5	Earthenware 1	1550-1750
147	209P	SK	09828.9	57007.1	Earthenware 2	1600+
148	210P	SK	09862.5	56980.4	Earthenware 2	1600+
150	212P	SK	10040.7	57089.6	Earthenware 2	1600+
151	213P	SK	10096.3	57083	Earthenware 2	1600+
152	214P	SK	10096	57077.8	Midland Black	1550-1750
153	215P	SK	10091	57055.9	Earthenware 1	1500-1750
154	216P	SK	10096.6	57040.5	Earthenware 2	1600+

155	217P	SK	10165.3	57067.7	Earthenware 1	1500-1750
157	219P	SK	10207.8	57117.3	Midland Blackware	1550-1750
158	220P	SK	10220.7	57133.4	Earthenware 2	1600+
159	221P	SK	10254	57201.7	Earthenware 2	1600+
160	222P	SK	10265.1	57293.4	Earthenware 1	1550-1750
161	223P	SK	10220.6	57274.8	Earthenware 2	1600+
162	224P	SK	10200	57239.9	Earthenware 2	1600+
164	225P	SK	10206.7	57257.4	Earthenware 2	1600+
166	226P	SK	10001.4	57281.6	Earthenware 2	1600+
174	230P	SK	10218.7	57203.8	Earthenware 2	1600+
176	231P	SK	10231.1	57218.7	Earthenware 2	1600+
178	232P	SK	10237.1	57204.2	Earthenware 2	1600+
179	233P	SK	10198.1	57176.9	Earthenware 2	1600+
180	234P	SK	10206.9	57168.9	Earthenware 2	1600+
181	236P	SK	10101.6	57141.2	Earthenware 2	1600+
182	237P	SK	10146.9	57138.8	Earthenware 2	1600+
184	240P	SK	10139.9	57099.3	Earthenware 2	1600+
185	241P	SK	310230	57090.9	Earthenware 2	1600+
186	242P	SK	10219.6	57092.4	Earthenware 2	1600+
188	244P	SK	10203.6	57021.6	Earthenware 1	1550-1750
189	245P	SK	10167.6	56977.6	Earthenware 2	1600+
190	246P	SK	10146.3	57006.3	Earthenware 1	1550-1750
191	247P	SK	10124.1	56966.6	Earthenware 2	1600+
193	250P	SK	10108.7	56861.6	Earthenware 2	1600+
196	253P	SK	10124.6	56890.4	Earthenware 2	1600+
197	254P	SK	10034.4	56957.3	Earthenware 2	1600+
199	256P	SK	10007.1	56930.7	Earthenware 2	1600+
200	257P	SK	10022.2	56911.4	Earthenware 2	1600+
201	258P	SK	10018.6	56876.6	Earthenware 2	1600+
202	259P	SK	10069	56836.7	Earthenware 2	1600+
204	261P	SK	09965.4	56842.4	Earthenware 2	1600+
205	262P	SK	09923	56876.5	Earthenware 2	1600+
206	263P	SK	09799.4	56879.6	Earthenware 2	1600+
208	265P	SK	09798.4	56939.5	Earthenware 2	1600+
209	266P	SK	09822	56920.8	Earthenware 2	1600+
210	267P	SK	09891.5	56835.3	Earthenware 2	1600+
211	268P	SK	09881.4	56797.1	Earthenware 2	1600+
212	270P	SK	09830.8	56836.3	Earthenware 2	1600+
215	273P	SK	09923	56755.2	Earthenware 2	1600+
216	274P	SK	09986.4	56757.9	Earthenware 2	1600+
217	275P	SK	09992.6	56772.2	Earthenware 2	1600+
219	276P	SK	10000.4	56692.4	Earthenware 2	1600+
222	277P	SK	09973.4	56675	Earthenware 2	1600+
224	278P	SK	09894.5	56696.6	Earthenware 2	1600+

226	279P	SK	09896.9	56703.7	Earthenware 2	1600+
228	280P	SK	09927.9	56738.1	Earthenware 2	1600+
230	281P	SK	09860.7	56704.4	Earthenware 2	1600+
234	283P	SK	09884	56680.9	Earthenware 2	1600+
238	285P	SK	09875.8	56606.5	Earthenware 2	1600+
240	286P	SK	09786.5	56623.1	Earthenware 2	1600+
245	289P	SK	09808.1	56681.1	Earthenware 2	1600+
247	290P	SK	09750.3	56687.4	Earthenware 2	1600+
249	291P	SK	09750.3	56705	Earthenware 2	1600+
255	294P	SK	09746.7	56896.6	Earthenware 2	1600+
257	295P	SK	09749.9	56907	Earthenware 2	1600+
261	297P	SK	09425.3	56740.9	Earthenware 2	1600+
263	298P	SK	09461.6	56762.5	Earthenware 2	1600+
267	302P	SK	09710.4	56858.2	Midland Blackware	1550-1750
268	303P	SK	09712.4	56817.1	Earthenware 2	1600+
270	305P	SK	09665.7	56928.6	Earthenware 2	1600+
271	306P	SK	09676.2	56988.2	Earthenware 2	1600+
275	310P	SK	09645.7	56871.9	Earthenware 2	1600+
276	311P	SK	09652.2	56871.8	Earthenware 2	1600+
277	312P	SK	09638.5	56811.2	Earthenware 2	1600+
279	314P	SK	09574.1	56863.7	Earthenware 2	1600+
280	315P	SK	09583.2	56822.6	Midland Blackware	1550-1750
281	316P	SK	09572.1	56825.3	Earthenware 2	1600+
282	317P	SK	09548.6	56800.3	Earthenware 2	1600+
283	318P	SK	09590.4	56800.4	Midland Blackware	1550-1750
286	321P	SK	09682.6	56758.9	Midland Blackware	1550-1750
288	323P	SK	09619.6	56774.5	Earthenware 2	1600+
289	324P	SK	09578.7	56755.2	Earthenware 2	1600+
290	325P	SK	09573.5	56718.9	Earthenware 2	1600+
291	326P	SK	09570.8	56715.2	Midland Blackware	1550-1750
292	327P	SK	09550.2	56720.7	Midland Blackware	1550-1750
295	330P	SK	09524.1	56718.2	Earthenware 2	1600+
296	331P	SK	09551	56685.9	Midland Blackware	1550-1750
297	332P	SK	09681.8	56716.6	Earthenware 2	1600+
298	333P	SK	09732.4	56699	Earthenware 2	1600+
299	334P	SK	09699.5	56678.8	Earthenware 2	1600+
300	335P	SK	10180.9	57158.5	Earthenware 2	1600+
301	335PP	SK	09696.2	56682.3	Earthenware 2	1600+
302	336P	SK	09584.7	56683.4	Midland Blackware	1550-1750
303	337P	SK	09577.1	56657.8	Earthenware 2	1600+
305	338P	SK	09576.6	56656.8	Earthenware 2	1600+
307	340P	SK	09439.8	57188.5	Earthenware 2	1600+
308	341P	SK	09122.9	56844.8	Earthenware 2	1600+
309	342P	SK	09408	56802.5	Earthenware 2	1600+



310	343P	SK	09380.5	56912	Midland Blackware	1550-1750
312	345P	SK	09447.4	56959.3	Earthenware 2	1600+
313	346P	SK	09516.1	56978	Earthenware 2	1600+
314	347P	SK	09504	57059.2	Earthenware 2	1600+
316	349P	SK	09558.2	57317.2	Midland Blackware	1550-1750
317	350P	SK	09617.1	57306	Earthenware 2	1600+
318	351P	SK	09615.6	57314.3	Earthenware 2	1600+
319	352P	SK	09645.5	57431.8	Earthenware 2	1600+
320	353P	SK	09668	57334.5	Earthenware 2	1600+
321	354P	SK	09696.9	57310.3	Earthenware 2	1600+
4	355P	SK	09700.9	57431.3	Earthenware 2	1600+
6	357P	SK	09974.6	57381	Earthenware 2	1600+
322	357P	SK	09321.5	56831.8	Earthenware 2	1600+
8	359P	SK	09235.8	57839.8	Earthenware 6	1550+
10	361P	SK	09231.4	57818.3	Earthenware 5	1650-1770
12	363P	SK	09214.9	57787.6	Earthenware 2	1600+
13	364P	SK	09214.9	57791.4	Earthenware 2	1600+
16	367P	SK	09216	57838.2	Earthenware 2	1600+
17	368P	SK	09215.9	57875.8	Earthenware 1	1500-1750
18	369P	SK	09200.2	57852.2	Earthenware 2	1600+
20	370P	SK	09192.9	57833.6	Earthenware 2	1600+
24	372P	SK	09174.4	57775.7	Earthenware 2	1600+
30	375P	SK	09145.7	57817.5	Earthenware 6	1550+
35	378P	SK	09158.8	57829.4	Earthenware 2	1600+
44	388P	SK	09098.8	57829.7	Earthenware 2	1600+
45	389P	SK	09111.2	57786.2	Earthenware 2	1600+
46	390P	SK	09112.5	57781.1	Earthenware 2	1600+
50	394P	SK	08985.6	57691.8	Earthenware 2	1600+
55	397P	SK	08992.8	57889.5	Earthenware 2	1600+
59	401P	SK	09088.3	57830.9	Earthenware 2	1600+
61	403P	SK	09096	57932.6	Earthenware 1	1500+1750
62	404P	SK	09037.6	57985.7	Earthenware 6	1550+
63	405P	SK	09341.8	58205.3	Earthenware 2	1600+
64	406P	SK	09297.5	58134.1	Earthenware 2	1600+
68	410P	SK	09287.1	57939.9	Earthenware 2	1600+

**Brick/Tile** Table 8*Identified by Alice Forward*

Survey No	Find ID	Zn	East	North	Object
38	100B	SK	09765.7	57341.3	Brick
39	101B	SK	09815.7	57334.3	Brick
40	102B	SK	09829.4	57337.7	Brick
41	103B	SK	09926.8	57336	Brick
42	104B	SK	09932.7	57336.3	Brick
45	107B	SK	10036.6	57216.4	Brick
59	121B	SK	09820.2	57289.4	Brick
61	123B	SK	09740.9	57242.1	Brick
62	124B	SK	09782.3	57220.7	Brick
67	129B	SK	10000.9	57157.1	Brick
70	132B	SK	09948.7	57159.8	Brick
75	137B	SK	09861	57139.4	Brick
78	140B	SK	09961.9	57135.1	Brick
79	141B	SK	09981.4	57132.5	Brick
91	153B	SK	09933.4	57081.8	Brick
92	154B	SK	09893	57079.6	Brick
103	165B	SK	09724.7	57064.3	Brick
105	167B	SK	09839.8	57417.7	Brick
107	169B	SK	09856.5	57415.6	Brick
114	176B	SK	10006.7	57377	Brick
117	179B	SK	09930.7	57391.5	Brick
120	182B	SK	09782.4	57379.8	Brick
124	186B	SK	09896.4	57370.4	Brick
125	187B	SK	09897	57366.8	Brick
126	188B	SK	09916.8	57362.2	Brick
127	189B	SK	09960.4	57338.3	Brick
130	192B	SK	10029.4	57337.2	Brick
132	194B	SK	10075.5	57339.1	Brick
134	196B	SK	10018.8	57318.6	Brick
135	197B	SK	10007	57317.8	Brick
136	198B	SK	10006.2	57318	Brick
323	A174	SK	09639.8	57464.8	Brick
324	B1-	SK	09681.9	57088.5	Brick
325	B10	SK	09823.2	57040.9	Brick
326	B100	SK	09745.3	56812.5	Brick
327	B101	SK	09682.6	56926.2	Brick
328	B102	SK	09576.6	57019.1	Brick
329	B103	SK	09575.3	57019.5	Brick
330	B104	SK	09684.6	56864.5	Brick
331	B105	SK	09661.9	56832.1	Brick

332	B106	SK	09652.1	56815.1	Brick
333	B107	SK	09627.9	56855	Brick
334	B108	SK	09598.3	56876.5	Brick
335	B109	SK	09587.6	56839.5	Brick
336	B11	SK	09789.8	57004.3	Brick
337	B110	SK	09559.8	56802.3	Brick
338	B111	SK	09521.6	56829.1	Brick
339	B112	SK	09574.5	56799.9	Brick
340	B113	SK	09649.1	56798.3	Brick
341	B114	SK	09588.7	456777.5	Brick
342	B115	SK	09508.7	56684.1	Brick
343	B116	SK	09553.3	56703.8	Brick
344	B117	SK	09565.6	56701.3	Brick
345	B118	SK	09585.7	56700.1	Brick
346	B119	SK	09595.6	56699.7	Brick
347	B12	SK	09819.3	56980.5	Brick
348	B120	SK	09610.8	56700.1	Brick
349	B122	SK	09728.5	56677.4	Brick
350	B123	SK	09650.2	56683.9	Brick
351	B13	SK	09825.2	57007.4	Brick
352	B130	SK	09501.7	57223.5	Brick
353	B131	SK	09423.2	57103.4	Brick
354	B132	SK	09439.8	57077	Brick
355	B133	SK	09409.3	57039.8	Brick
356	B134	SK	09400.4	57022.8	Brick
357	B135	SK	09396.2	57016.3	Brick
358	B136	SK	09367.6	56970.4	Brick
359	B137	SK	09344.1	56934.4	Brick
360	B139	SK	09318.5	56894.7	Brick
361	B14	SK	09842.1	57016.1	Brick
362	B140	SK	09196.7	56916.6	Brick
363	B141	SK	09176.8	56904.9	Brick
364	B143	SK	09157	56937.6	Brick
365	B144	SK	09153.9	56917.5	Brick
366	B145	SK	09132.3	56899.2	Brick
367	B146	SK	09101.9	56878	Brick
368	B147	SK	09095.5	56869.3	Brick
369	B148	SK	09096	56858.2	Brick
370	B149	SK	09095.1	56846.6	Brick
371	B15	SK	09871.8	56937.3	Brick
372	B150	SK	09141.3	56869.7	Brick
373	B151	SK	09162.3	56870.7	Brick
374	B152	SK	09164.5	56840.5	Brick
375	B153	SK	09167.2	56831.1	Brick

376	B154	SK	09165.3	56816.4	Brick
377	B155	SK	09228.3	56780.9	Brick
378	B157	SK	309321	56773.7	Brick
379	B158	SK	09370.3	56815.3	Brick
380	B159	SK	09408	56947.8	Brick
381	B16	SK	09995.6	57013.8	Brick
382	B160	SK	09414.4	56959.4	Brick
383	B161	SK	09467.6	56940.8	Brick
384	B162	SK	09507.3	56943.6	Brick
385	B163	SK	09520.9	57016.3	Brick
386	B166	SK	09677.4	57214.1	Brick
387	B167	SK	09645.3	57192	Brick
388	B168	SK	09612.6	57180	Brick
389	B169	SK	09579.5	57106.6	Brick
390	B17	SK	10018	57048.9	Brick
391	B170	SK	09608.4	57432.4	Brick
392	B171	SK	09605.9	57436.6	Brick
393	B172	SK	09612.1	57442.5	Brick
394	B173	SK	09638.1	57459.2	Brick
395	B174	SK	09566.5	57302.9	Brick
396	B175	SK	09591.5	57269.9	Brick
397	B176	SK	09617.1	57312.8	Brick
398	B177	SK	09607.7	57331.3	Brick
399	B178	SK	09626.5	57398.6	Brick
400	B18	SK	10021	57074.1	Brick
401	B19	SK	10068.9	57099.5	Brick
402	B2-	SK	09760.6	57041.1	Brick
403	B20	SK	10092.1	57100.6	Brick
70	B201	SK	09580.5	57411.6	Brick
71	B202	SK	09961.1	57400.2	Brick
72	B203	SK	09233.9	57842.4	Brick
73	B204	SK	09235.2	57830.6	Brick
74	B205	SK	09215	57806.6	Brick
75	B206	SK	09216.2	57824.2	Brick
76	B207	SK	09216.2	57827.2	Brick
77	B208	SK	09216.8	57823.5	Brick
78	B209	SK	09217.4	57857.5	Brick
404	B21	SK	10120.6	57070.8	Brick
79	B210	SK	09171.6	57792.4	Brick
80	B215	SK	9109.5	57739.4	Brick
81	B216	SK	09073.2	57675	Brick
82	B217	SK	09069.5	5683.7	Brick
83	B218	SK	08950.3	57693.9	Brick
84	B219	SK	09071.6	57804.5	Brick

405	B22	SK	10131.7	57086.5	Brick
85	B220	SK	08949.7	57701.3	Brick
86	B221	SK	08945.2	57744.5	Brick
87	B223	SK	08962.8	57808.4	Brick
88	B224	SK	08967.6	57842.7	Brick
89	B225	SK	08987.5	57900	Brick
90	B226	SK	09001.5	57858.6	Brick
91	B227	SK	09079.7	57809.3	Brick
92	B228	SK	09092	57838	Brick
93	B229	SK	09194.6	57870.5	Brick
406	B23	SK	10153.9	57088.2	Brick
94	B230	SK	09297.8	57885	Brick
95	B231	SK	09280.5	57895	Brick
96	B233	SK	09271.3	57896.4	Brick
97	B234	SK	09257.9	57900.2	Brick
98	B235	SK	09236.9	57905.2	Brick
99	B236	SK	09233.9	57905.4	Brick
100	B237	SK	09224.2	57907.8	Brick
101	B238	SK	09213.1	57909.8	Brick
407	B24	SK	10193.5	57093.7	Brick
102	B240	SK	09107.5	57928	Brick
103	B241	SK	09104.1	57927.7	Brick
104	B242	SK	09028.9	57934.8	Brick
105	B243	SK	09039.2	57945	Brick
106	B244	SK	09031.6	57966.2	Brick
107	B246	SK	09063.8	58014.7	Brick
108	B248	SK	09079.1	58039.8	Brick
109	B250	SK	09084.1	58060.2	Brick
110	B251	SK	09083	58132.5	Brick
111	B252	SK	09271.8	58172.1	Brick
112	B253	SK	09328.6	58173.2	Brick
113	B254	SK	09316.7	58154.9	Brick
114	B258	SK	09258	58122.7	Brick
408	B26	SK	10275.1	57205.7	Brick
115	B260	SK	09244.5	58118.4	Brick
116	B261	SK	09236.2	58113	Brick
117	B262	SK	09270.2	58078.6	Brick
409	B27	SK	10278	57255.9	Brick
410	B28	SK	10282.9	57283.4	Brick
411	B29	SK	10213.2	57275.2	Brick
412	B30	SK	10206.4	57277.6	Brick
413	B31	SK	10157.6	57312.3	Brick
414	B32	SK	10095.5	57220.5	Brick
415	B33	SK	10099.5	57199.9	Brick

416	B34	SK	10115.2	57200.2	Brick
417	B35	SK	10136.4	57200.2	Brick
418	B36	SK	10148.9	57201.4	Brick
419	B37	SK	10207.4	57178.9	Brick
420	B38	SK	10215.6	57159.1	Brick
421	B39	SK	10120.9	57163.6	Brick
422	B4-	SK	09823.9	57059.8	Brick
423	B40	SK	10104.6	57158.6	Brick
424	B41	SK	10216.1	57079.3	Brick
425	B42	SK	10201.1	57027.2	Brick
426	B43	SK	10181.8	56954.6	Brick
427	B44	SK	10097.6	56864.4	Brick
428	B45	SK	10060.5	56919.6	Brick
429	B46	SK	10018.5	57154.6	Brick
430	B47	SK	10011.2	56851.8	Brick
431	B48	SK	10009.6	56852.9	Brick
432	B49	SK	09997.2	56871.1	Brick
433	B5-	SK	09846.6	57060.6	Brick
434	B50	SK	09956.5	56838.7	Brick
435	B51	SK	09928.5	56873.4	Brick
436	B52	SK	09884.5	56876.4	Brick
437	B53	SK	09868.5	56877.5	Brick
438	B54	SK	09814.4	56879.9	Brick
439	B55	SK	09806.4	56878.6	Brick
440	B56	SK	09803.5	56881.4	Brick
441	B57	SK	09833.4	56956.3	Brick
442	B58	SK	09939	56793.9	Brick
443	B59	SK	09908.7	56797.1	Brick
444	B6-	SK	09872.3	57061.4	Brick
445	B60	SK	09859.7	56798.6	Brick
446	B69	SK	09753.6	56742.9	Brick
447	B7-	SK	09959.4	57059	Brick
448	B70	SK	09784.2	56743.9	Brick
449	B71	SK	09803.8	56741.8	Brick
450	B72	SK	09813.5	56741.8	Brick
451	B73	SK	09819.9	56742.1	Brick
452	B74	SK	09845.6	56763.9	Brick
453	B75	SK	09862.6	56760.3	Brick
454	B76	SK	09913.9	56755.7	Brick
455	B77	SK	09963.2	56758.4	Brick
456	B78	SK	10029.7	56731.7	Brick
457	B79	SK	09988.5	56673.6	Brick
458	B8-	SK	09991.5	57036.8	Brick
459	B80	SK	09969.1	56651.3	Brick

460	B81	SK	09943.9	56674.3	Brick
461	B82	SK	09902.6	56736.4	Brick
462	B83	SK	09848.9	56740.1	Brick
463	B84	SK	09845.9	56741.5	Brick
464	B85	SK	09896.9	56683.2	Brick
465	B86	SK	09878.4	56560.1	Brick
466	B87	SK	09864	56560.1	Brick
467	B88	SK	09837	56661.1	Brick
468	B89	SK	09831.7	56662.4	Brick
469	B9-	SK	09921.6	56972.9	Brick
470	B90	SK	09790.6	56703.8	Brick
471	B91	SK	09746.4	56666.9	Brick
472	B92	SK	09753.5	56915.3	Brick
473	B93	SK	09732.8	56915.8	Brick
474	B94	SK	09496.2	56781.8	Brick
475	B95	SK	09496.9	56802.2	Brick
476	B96	SK	09657.1	57022.5	Brick
477	B97	SK	09717.8	57023.4	Brick
478	B98	SK	09726.8	56855.8	Brick
479	B99	SK	09709.9	56840.1	Brick

**Other Material**

Table 9

*Identified by Alice Forward*

Survey No	Find ID	Zn	East	Nort	Object
118	FC1	SK	309238.59	457854.05	fire crack pebble
120	FC3	SK	309043.10	457689.75	fire crack pebble
122	FC7	SK	309093.69	457840.05	fire crack pebble
123	N10	SK	309233.45	457808.59	nail
47	109T	SK	310008.59	457213.53	tile
57	119T	SK	309795.89	457281.93	tile
66	128T	SK	309978.77	457188.95	tile
73	135FC	SK	309873.88	457191.59	fire crack pebble
80	142T	SK	309818.00	457140.00	tile
89	151T	SK	309990.56	457095.82	tile
90	152T	SK	309944.76	457079.59	tile
133	195T	SK	310046.54	457319.13	tile
203	260S	SK	310020.55	456836.21	slag
221	277G	SK	309864.14	456659.29	glass
480	M1-	SK	309992.80	457057.68	metal
481	N1	SK	309938.53	457059.08	nail
482	N2-	SK	310192.21	457058.16	nail
483	N3-	SK	309979.93	456828.83	nail
484	N4-	SK	309925.92	456795.66	nail
485	R10	SK	310145.22	457149.70	modern building material
486	R11	SK	310149.77	457147.15	modern building material
487	R12	SK	310153.76	457145.40	modern building material

488	R13	SK	310161.19	457149.04	modern building material
489	R14	SK	310158.95	457158.45	modern building material
490	R15	SK	310159.07	457161.56	modern building material
491	R16	SK	310151.40	457162.66	modern building material
492	R17	SK	310148.80	457157.24	modern building material
493	S1-	SK	309741.78	457241.18	slate
494	S2-	SK	309741.63	457245.06	slate
495	S3-	SK	309738.65	457242.68	slate
496	S4-	SK	309738.42	457239.61	slate
497	S5-	SK	309727.15	457198.98	slate
498	S6-	SK	309722.29	457198.36	slate



## **Appendix 3                      Design Specification**

### **UNIVERSITY OF LEICESTER ARCHAEOLOGICAL SERVICES**

#### *Design Specification for archaeological work*

#### **Ashton Green, Beaumont Leys, Leicester (SK 573 086 centre)**

#### **Written scheme of investigation for Geophysical and Fieldwalking Surveys**

#### **For: White Young Green**

### **1. Introduction**

1.1 This document sets out a Written Scheme of Investigation (WSI) to evaluate potential archaeological deposits at Ashton Green, Beaumont Leys, Leicester in advance of proposed development.

1.2 The proposed development area is located in Beaumont Leys ward, in north Leicester (centred on Grid. Ref. SK 573 086; fig.1). It covers an area of *c.* 104 ha currently used as agricultural land. A walkover survey has established that 82 ha are currently arable farmland while *c.* 22 ha is pasture.

1.3 The Historic Environment Record (HER) for Leicester and Leicestershire and Rutland shows that there are known archaeological sites close to the application area. To the west is the scheduled monument of a medieval moated site at Castle Hill while to the north and east are known prehistoric sites.

### **2. Geology and topography**

2.1 The Ordnance Survey Geological Survey of Great Britain Sheet Loughborough 141 indicates that the underlying geology of the site is likely to consist of drift Lacustrine deposits. The land is generally flat at a height of *c.* 39m OD.

### **3.            Aim of the Survey**

3.1 The overall aim of the survey is to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any archaeological features and deposits within the area targeted for evaluation. Magnetic susceptibility survey is proposed to cover the area of pasture while a fieldwalking survey will be undertaken of the arable fields. Detailed gradiometry will be undertaken of areas identified by the magnetic susceptibility and fieldwalking surveys as having archaeological potential (Figure 2).

### **4.            Survey Methodology**

#### **4.1 General Methodology**

4.1.1 A geophysical and fieldwalking surveys are required over the areas identified above in order that an assessment can be made of the presence and extent of any archaeology and its influence within the new highway boundary. An aerial photographic search will also be undertaken through the English Heritage, National Monuments Record

4.1.2 The geophysical survey will be sub-contracted to Northamptonshire Archaeology, a registered organisation with the Institute for Archaeologists (IfA). Suitable equipment will be used by a qualified archaeologist specialising in geophysical survey to cover an area as indicated in Figures 1 and 2. The results will then be interpreted and reported in a way that will give as much clarity as possible to the surveyed results enabling an informed decision on the nature of the archaeology. The specifications of the equipment and detailed methodology are outlined in Appendix 1.

4.1.3 The land for evaluation is mostly farmland. Access has been agreed with the landowner prior to access.

4.1.4 All geophysical survey work will adhere to guidance set out in English Heritage Research and Professional Services Guideline No.1: Geophysical survey in archaeological field evaluation (2008) and Geophysical Data in Archaeology: A Guide to Good Practice (Archaeology Data Service).

4.1.5 The surveys will be committed to the standards and codes of conduct set out by the Institute for Archaeologists (IfA).

#### **4.2 *Setting out of survey grids***

4.2.1 The survey grids will be set out using a Global Positioning Satellite receiver. Partial grids shall be avoided wherever possible. Survey pegs will be set out in field boundaries and where possible be left in place. All survey grids will be plotted onto the OS digital base map with National Grid co-ordinates to enable the accurate location of trial trenches over anomalies.

#### **4.3 *Specific Methodology: Geophysical survey***

4.3.1 The equipment used for the Magnetic Susceptibility Survey will be an MS2 Magnetic Susceptibility meter manufactured by Bartlington Instruments Ltd. A field coil known as an MS2D will be used to take field readings assessing the top 200mm or so of topsoil. To overcome the problem of ground contact all readings will be taken 4 – 5 times and an average taken. All obvious localised ‘spikes’ were ignored.

4.3.2 The magnetic survey will be carried out using a dual sensor Grad601-2 Magnetic Gradiometer manufactured by Bartlington Instruments Ltd. The Grad601-2 consists of two high stability fluxgate gradiometers suspended on a single frame. Each sensor has a 1m separation between the sensing elements increasing the sensitivity to small changes in the Earth’s magnetic field.

4.3.3 The equipment will be zeroed and balanced at a ‘magnetically quiet’ location with the use of a non-magnetic tripod. The balancing point will be accurately laid out using a compass. The gradiometer will be switched on for a period of at least 30 minutes prior to balancing and placed outside to allow stabilisation of temperature. Metal objects and compasses will be removed to at least 50m from the balancing position. Balancing with the Grad601-2 is an automated process using electronic adjustments and is only required prior to the start of each survey session (usually 2 per day).

#### **4.4 *Specific Methodology: Fieldwalking***

4.4.1 A programme of fieldwalking will be undertaken over all the available areas within the southeastern section where field conditions are conducive. The fieldwalking is to take place after the fields are ploughed, rolled and weathered for at least 3 weeks.

4.4.2 Pre-modern artefacts will be collected and bagged along 20m transects. The location of the finds will be plotted using hand held GPS loggers.

#### **4.5 *Sampling Interval***

4.5.1 The magnetic susceptibility and fieldwalking surveys will be carried out on a 20m grid with readings for the MS being taken at the node points.

4.5.2 Magnetometry Readings will be taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a full 30x30m grid.

#### **4.6 *Depth of scan and resolution***

4.6.1 Magnetic Susceptibility - the MS2D coil assesses the average MS of the soil within a hemisphere of radius 200mm. This equates to a volume of some 0.016m<sup>3</sup> and maximum depth of 200mm. As readings are only at 20m centres this results in a coarse resolution but adequate to pick up trends in MS variations.

4.6.2 Magnetometry - The Grad601-2 has a typical depth penetration of 0.5 – 1.0m. This would be increased in the presence of buried, strongly magnetic objects. The collection of data at 0.5m centres provides an appropriate methodology for balancing cost and time with resolution.

#### **4.7 *Data Capture***

4.7.1 Magnetic Susceptibility and fieldwalking readings will be logged manually on site, and then transferred to the office where they will be entered into a computer and colour surfer plots produced.

4.7.2 Magnetometry Readings will be logged consecutively into the data logger which in turn is daily downloaded into a portable computer on site. At the end of each job, data will be transferred to the office for processing and presentation. An initial assessment of the data quality will be carried out by the survey team. After each survey session a site record sheet will be completed or updated as appropriate.

#### **4.8 Processing of data**

4.8.1 Magnetometry Processing is performed using specialist software (e.g. Geoplot 3). Details of the software used and processing techniques should be provided by the Geophysical Survey Contractor.

4.8.2 Pre-modern artefacts will be collected from the fieldwalking surveys. These will be washed marked and identified.

4.8.3 All survey results will be plotted at an appropriate scale on an OS digital base map.

#### **4.9 Timetabling**

4.9.1 It is proposed that the fieldwalking geophysical survey will be undertaken following the harvest of the crop in February 2009. The geophysical survey will be undertaken following the results of the fieldwalking in February-March 2009.

### **5. Liaison/Monitoring**

5.1 Unlimited access to monitor the project will be available to the Leicester City Planning Archaeologist, the Client and his representatives subject to the health and safety requirements of the site.

5.2 Internal monitoring procedures will be undertaken including visits to the site by the project manager. These will ensure that project targets are met and professional standards are maintained.

### **6. Report**

6.1 Reports on the fieldwork will be provided following analysis of the surveys. It will be distributed to

- The client
- Leicester City Council, Planning Archaeologist
- Leicester City Council, (HER)

6.2 The reports will contain sufficient detail to enable the results of the evaluation to be interpreted without recourse to the site archive.

6.3 The reports will include the following

- Non-technical summary
- Introduction (Site location and description, archaeological background, nature and location of the survey)
- Method statement detailing methods and equipment used, results and conclusions.
- Summary of results and significance
- Appendices of specialist reports

6.4 The reports will contain an accurate site plan showing the surveyed areas, raw data and interpretation of the principal features revealed. The data will be presented in map form on the OS digital map base, on A3 sheets at an appropriate scale; usually no scale smaller than 1:1000 is used. Maps will be constructed using AutoCAD and contain north arrows, scale-bar, scale, title, figure number, key and date. Adjacent areas must also be included on the plan to allow the site to be accurately located as well as the grid co-ordinates used.

### **7 Health and Safety**

7.1 ULAS is covered by and adheres to the University of Leicester Statement of Safety Policy and uses the ULAS Health and Safety Manual (revised 2007) with appropriate risks assessments for all archaeological work. A draft Health and Safety statement for this project is in the Appendix. The relevant Health and Safety Executive guidelines will be adhered to as appropriate.

## 8 Insurance

8.1 All ULAS work is covered by the University of Leicester's Public Liability and Professional Indemnity Insurance. The Public Liability Insurance is with St Pauls Travellers Policy No. UCPOP3651237 while the Professional Indemnity Insurance is with Lloyds Underwriters (50%) and Brit Insurances (50%) Policy No. FUNK3605.

## 9. Bibliography.

- ADS *Geophysical Data in Archaeology: A Guide to Good Practice* (Archaeology Data Service)
- EH, 2008 *Geophysical survey in archaeological field evaluation* (English Heritage 2008)
- IFA, 2006 *Code of Conduct*

Patrick Clay  
Director  
ULAS  
University of Leicester  
University Road  
Leicester LE1 7RH

Tel:0116 252 2848  
Fax: 0116 252 2614  
Email: pnc3@le.ac.uk

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## Appendix 1: Geophysics-Methodology and Equipment

A detailed magnetometer survey will be carried out along the line of the new road. This measures the changes in the magnetic field resulting from differing features in the soil. Although these are usually weak, changes as small as 0.2 nano Tesla(nT) in an overall field strength of 48,000nT can be accurately detected using an appropriate instrument.

The systematic mapping of these anomalies will allow an estimate of the types of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects such as kilns or hearths. More subtle features such as pits and ditches may be visible if they contain more humic material which is normally rich in magnetic iron oxides compared to the subsoil. For example the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material accumulating in the trench. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

### *Setting out of survey grids*

The survey grids will be set out using a Global Positioning Satellite receiver. Partial grids shall be avoided wherever possible.

### *Equipment*

The magnetic survey will be carried out using a dual sensor Grad601-2 Magnetic Gradiometer manufactured by Bartlington Instruments Ltd. The Grad601-2 consists of two high stability fluxgate gradiometers suspended on a single frame. Each sensor has a 1m separation between the sensing elements increasing the sensitivity to small changes in the Earth's magnetic field.

The equipment will be zeroed and balanced at a 'magnetically quiet' location with the use of a non-magnetic tripod. The balancing point will be accurately laid out using a compass. The gradiometer will be switched on for a period of at least 30 minutes prior to balancing and placed outside to allow stabilisation of temperature. Metal objects and compasses will be removed to at least 50m from the balancing position. Balancing with the Grad601-2 is an automated process using electronic adjustments and is only required prior to the start of each survey session (usually 2 per day).

### *Sampling Interval*

Readings will be taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a full 30x30m grid. Traverses would be surveyed in zig-zag mode.

### *Depth of scan and resolution*

The Grad601-2 has a typical depth penetration of 0.5 – 1.0m. This would be increased in the presence of buried, strongly magnetic objects.

### *Data Capture*

Readings are logged consecutively into the data logger which in turn is daily downloaded into a portable computer on site. At the end of each job, data is transferred to the office for processing and presentation. An initial assessment of the data quality will be carried out by the survey team. After each survey session a site record sheet will be completed or updated as appropriate.

Grid locations for the survey will be plotted onto the British Ordnance Survey Grid.

### *Processing of data*

Processing is performed using the specialist software *Geoplot 3*. This can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. 'Despiking' is also performed to remove the anomalies resulting from small iron objects often found on agricultural land. Once the basic processing has flattened the background it is then possible to carry out further processing which may include low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies. A basic processing sequence for magnetic survey includes despiking (useful for display and allows further processing functions to be carried out more effectively by removing extreme values), zero mean grid (sets the background mean for each grid to zero and is useful for removing grid edge discontinuities) and zero mean traverse (sets the background mean of each traverse within a grid to zero and is useful for removing striping effects).

The following schedule shows the basic processing carried out on all processed magnetometer data used in this report:

*Zero mean grid*    *Threshold = 0.25 std.dev.*  
*Zero mean traverse*    *Last mean square fit = off*  
*Despike*            *X radius = 1      Y radius = 1*  
                              *Threshold = 3 std. Dev.*  
                              *Spike replacement = mean*

*Presentation of data*

The presentation of the data for each site involves the print out of the raw data both as grey scale and trace plots together with a grey scale plot of the processed data. Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site.