

**An Archaeological Evaluation on
Land off South Kilworth Road, North
Kilworth, LE17 6HE, Leicestershire.**

NGR: SP 61332 83208
By George Issitt



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For: Snowdon Homes Ltd

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An Archaeological Evaluation on Land off South Kilworth Road, North Kilworth, Leicestershire.

By George Issitt

Summary

University of Leicester Archaeological Services (ULAS) carried out an archaeological evaluation on land off South Kilworth Road, North Kilworth, Leicestershire, (SP 61332 83208) from the 30th to 31st October 2018. Eight trenches were excavated to evaluate an area for a proposed construction of up to 22 dwellings in the former pasture field.

The excavation revealed all trenches were negative of archaeological features. Four trenches had clear evidence of ridge and furrow earthworks, with one trench possibly showing evidence of ridge and furrow. Trench 8 was left at 2.20m after it became clear it was too disturbed by modern made ground for archaeology to survive.

The site archive will be held by Leicestershire County Council under accession number X.A124.2018.

Introduction

An archaeological evaluation was carried out on land off South Kilworth Road, North Kilworth, Leicestershire (SP 61332 83208; Figs 1 and 2) by University of Leicester Archaeological Services (ULAS) on behalf of Snowdon Homes Ltd.

Outline planning permission has been granted for residential development of up to 22 dwellings on land at The Stables, South Kilworth Road (16/01904/OUT). Planning condition 27 requires a programme of archaeological work and the Planning Archaeologist for Leicestershire has requested an archaeological field evaluation. This will comprise a phased programme of archaeological work commencing with trial trenching to determine the impact of the proposed scheme on any buried archaeology, and produce a mitigation strategy for the site.

This report presents the results of the archaeological work, which took place between 30th and 31st October 2018. It follows a Scheme of Investigation (Speed 2018) and provide a c. 5% sample of the 1.09 ha area. This was undertaken in order to ensure that any archaeological items are investigated and recorded.

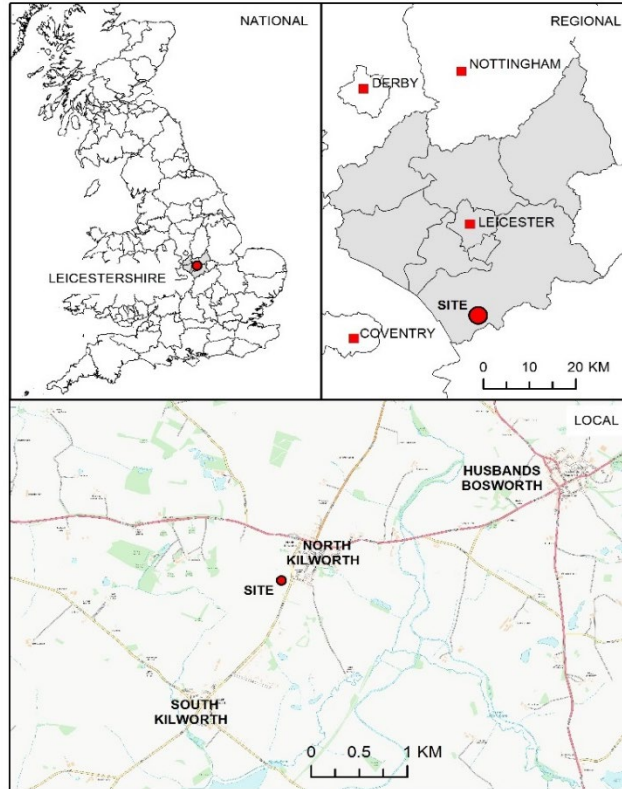


Figure 1: Site Location

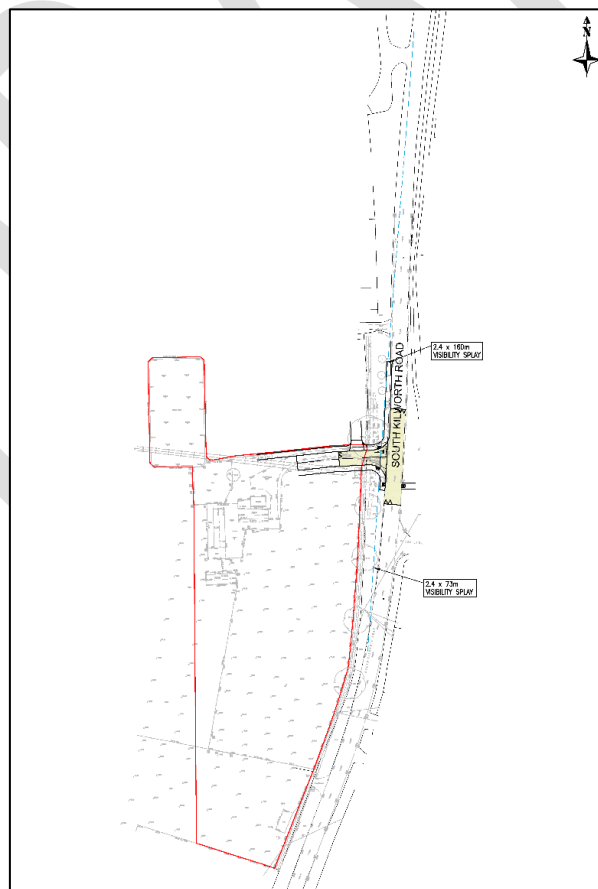


Figure 2: Location of the proposed site (Plan provided by client).

Site Description, Topography and Geology

North Kilworth lies in south Leicestershire east of Lutterworth. The proposed development area lies to the south of the village (Figs 1 and 2) on the western side of South Kilworth Road, adjacent to the North Kilworth football grounds. The land is currently a pasture field with clear ridge and furrow earthworks running east-west across majority the site, with a small amount of ridge and furrow running north-south at the far south end of the site (Fig. 3). It lies at approximately 150m OD.

The British Geological Survey website indicates that the underlying geology is likely to be Charmouth mudstone formation with no superficial deposits.

Historical and Archaeological Background

An archaeological desk-based assessment has been undertaken for the site (Sutherland 2016). The site lies on the southern outskirts of the village core, which was mentioned, along with neighbouring South Kilworth, in the Domesday Book of 1086 and shows evidence of medieval arable agriculture in the form of ridge and furrow earthworks. The Historic Environment Record (HER) for Leicestershire and Rutland indicates that there are no known archaeological remains recorded on the assessment area itself. There was no prehistoric activity recorded within a 1km radius. A single Roman pottery sherd was discovered in the 1980s during ploughing 760m southwest (Sutherland 2016, 16). Several instances of medieval archaeology are recorded in the HER; most relate to the medieval village of North Kilworth (notably a manor house 410m east-northeast). Archaeological evaluations / excavations in recent years have discovered a number of medieval ditches and pits with 300m of the site.

Previous trial trenching in a field directly to the south of the development area (now visible at the bottom of Fig. 3 as the site of houses under construction) consisted of four trenches all empty of archaeology (Brown 2018).

Earthworks survey

An aerial survey was undertaken of the in the area. This was done on the 30th of October 2018 (Appendix 2). The survey shows the ridge and furrow earthworks running east to west across the northern part of site with some running north to south at the southern end. The earthworks are seen quite clearly in Fig 3 and can be seen to steadily become narrower towards the south end of the site, where an east-west trackway (possibly reuse of a head land) separates the east-west and north-south running ridge and furrow earthworks.



Figure 3: Proposed site showing ridge and furrow (Imagery Stanford 2018).

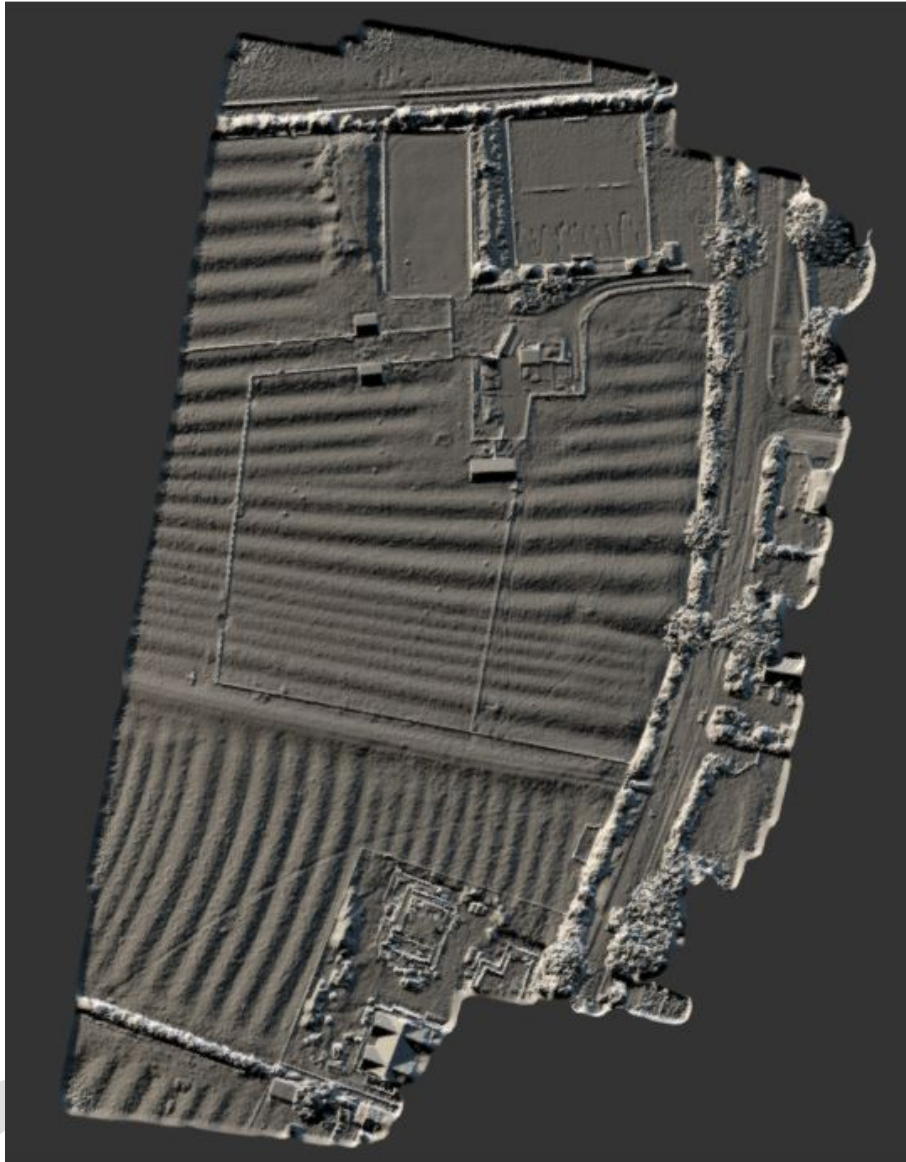


Figure 4: Proposed site showing ridge and furrow greyscale DEM (Imagery Stanford 2018).

Aims and Objectives

The main objectives of the archaeological work were:

- To identify the presence/absence of any archaeological deposits.
- To establish the character, extent and date range and significance of any surviving archaeological deposits.
- To establish the ecofactual and environmental potential of any archaeological deposits and features encountered.
- To provide sufficient information on the archaeological potential of the site to assess the impact of the proposed development on cultural heritage and to help formulate a mitigation strategy
- To record any archaeological deposits and produce an archive and report of any results.
-

Within the stated project aims, the principal objective of the recording was to establish the nature, extent, date, depth, and significance of the heritage assets within their local and regional context in order to formulate a mitigation strategy to address the impacts of the proposed development on cultural heritage.

Draft Research Themes

Although there was low potential for the site the following specific research topics were identified:

Early Medieval – High Medieval

Investigate the morphology of rural settlements (7E)

Investigate development of the open field system and woodland management (7I)

Post-medieval

Research the development of industry and its impact upon landscape and settlement morphology (8F).

Methodology

Prior to any machining of trial trenches, general photographs of the site areas were taken.

A total of eight trenches, six of which were 30m long and two that were 20m long had been proposed, located where constraints allowed representing a 4% sample of the available area. (Fig. 4). Five of the trenches were aligned and placed on top of the ridges where any archaeology might have been protected, with three further trenches placed perpendicular to the ridges and the road.

The trenches were excavated using a mechanical 360 excavator equipped with a 1.6m wide toothless ditching bucket. The topsoil and overlying layers were removed and separated under full archaeological supervision. Trenches were examined for archaeological deposits or finds by hand cleaning. The trenches were tied into the Ordnance Survey National Grid and then were backfilled and leveled at the end of the evaluation.

The work followed the approved Written Scheme of Investigation (WSI; Speed 2018) and adhered to the Chartered Institute for Archaeologists (CIfA) *Code of Conduct* and their *Standard and Guidance for Archaeological Field Evaluations* (2014a and b).

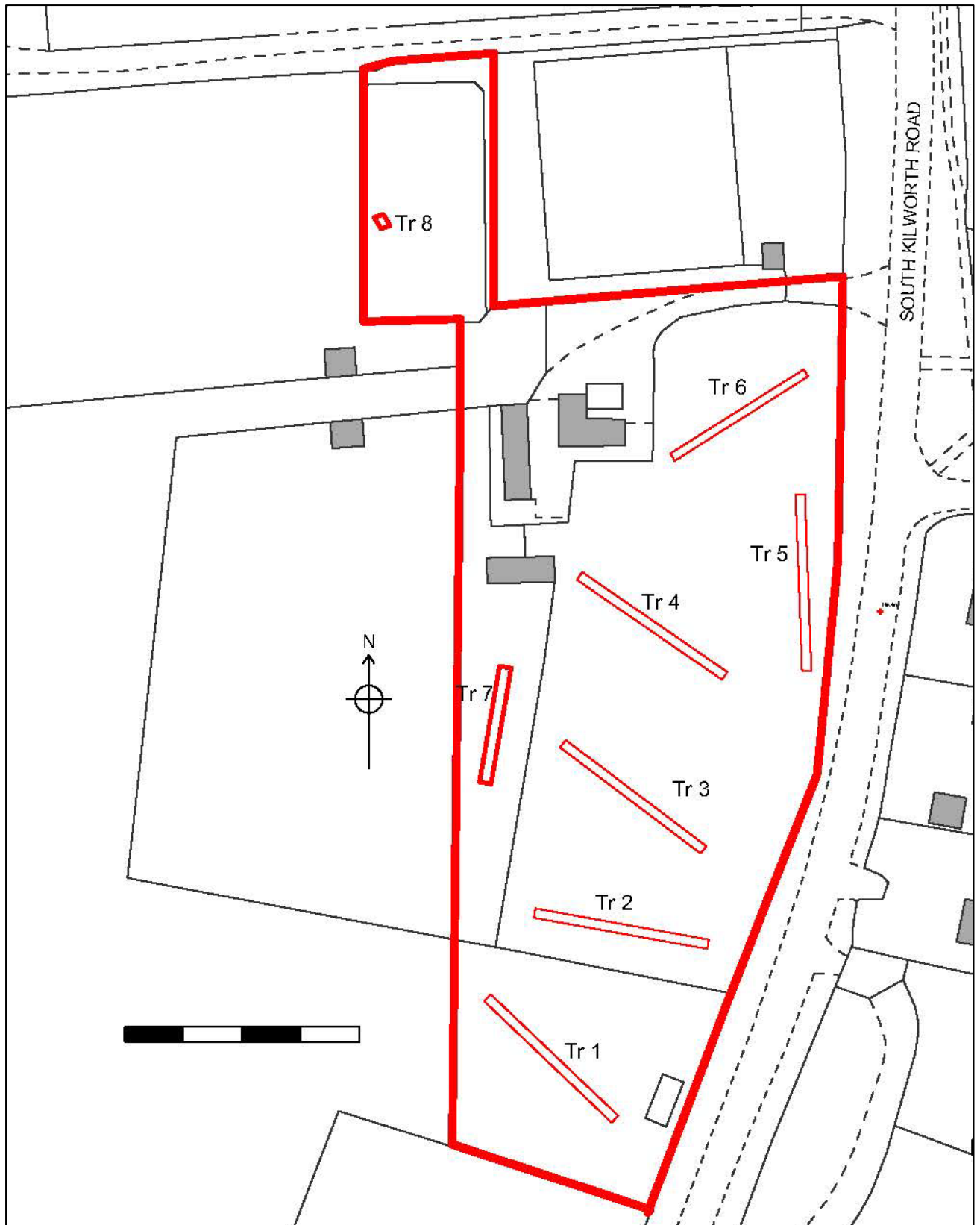


Figure 5: Actual trench plan.

Results

The results of all excavated trenches are presented below in Table 1.

Table 1: Trench Summaries

Trench	Length (m)	Max height of Trench to base (m)	Natural Substratum	Notes	Min. depth to archaeology/natural (m)
1	c.30	0.42	Orange plastic clay patches of gravel	Empty of Arch features, except for two field drains	0.28
2	c.30	0.62	Orange plastic clay and sandy orange/yellow clay in places with patches of gravel	Possible linear at east end of trench proved to be shallow depression filled by sub soil	0.32
3	c.30	0.50	Orange plastic clay	Negative trench for arch features. Ridge and furrow can be seen	0.32
4	c.30	0.56	Orange plastic clay and sandy orangey yellow clay in places	Negative trench for arch features. Ridge and furrow can be seen	0.30
5	c.30	0.50	Orange plastic clay and sandy orangey yellow clay in places with patches of gravel	Negative trench for arch features. Ridge and furrow can be seen along with a filed drain	0.30
6	c.30	0.52	Orange plastic clay and sandy orangey yellow clay in places	Negative trench for arch features. possible Ridge and furrow can be seen	0.34
7	C.20	0.45	Orange plastic clay and sandy orangey yellow clay in places with patches of gravel	Negative trench for arch features. Ridge and furrow can be seen	0.30
8	c.2.20	0.88	Orangey yellow clay in places with patches of gravel	Negative trench. Trench not fully excavated due to disturbed ground	NA

Trench Results

Eight trenches were excavated, five following the ridge and furrow earthworks and three perpendicular to them (Fig. 4).

Trench 1 and 2 (Figs 5 and 6).

These trenches were empty of archaeological features. Trench 1 consisted of an orange plastic clay and sandy orange/yellow clay in places with patches of gravel. Two land drains were seen in Trench 1 at the south-west end and in the centre of the trench. Trench 2 contained more orange clay as well as sandy clay. Trench 2 contained a shallow depression filled by subsoil, which was investigated to make sure it was not an archaeological feature.



Figure 6: Trench 1 looking north-east



Figure 7: Trench 2 looking east

Trench 3, 4 and 5 (Figs 7, 8, 9).

Trenches 3, 4 and 5 all Contained of the same orange natural clay and sandy orangey yellow clay with patches of gravel. No archaeological features were identified but all three trenches clearly showed the presents of ridge and furrow earthworks. The trenches had an average of 3 to 4 furrows in each, running east-west. Trench 5 also had a land drain in the centre of the trench.



Figure 8: Trench 3 looking south-east



Figure 9: Trench 4 looking north-west



Figure 10: Trench 5 looking north

Trenches 6 (Fig 10).

This trench was empty of archaeological features. The trench was placed approximately 2m from its original planned position due to the presence of a fence. It is possible that there is some ridge and furrow at the far north east end of the trench. The natural was a similar orange clay with sandy patches as across the rest of the site.



Figure 11: Trench 6 looking south-west

Trench 7 (Fig 11)

This trench was empty of archaeological features. The natural was the same as many other trenches although it became more gravelly with small stones at the south end of the trench. Ridge and furrow was visible in the trench running east-west.



Figure 12: Trench 7 looking south

Trench 8 (Fig 12)

This trench was placed on a modern ménage soft landing artificial surface. After 5m it was clear that the likelihood of any archaeology surviving was very low as the ménage surface, with the hardcore and made ground was nearly 1m in depth well above the average natural depth of natural seen across the site at around 0.40m. It was deemed that no further useful information would be gained and machining was stopped.



Figure 13: Trench 8 looking north-west



Figure 14: Close up of section of Trench 8 in Ménage

Discussion and Conclusion

The archaeological evaluation by trial trenching of the development area revealed no evidence of any archaeological features within the site and there are unlikely to be any significant archaeological deposits present within the proposed development area. Ridge and furrow earthworks were clearly present on the site.

Archive

The site archive will be held by *Leicestershire Museums Service*, under accession no. X.A124.2018.

The site archive consists of:

- 1 Unbound A4 copy of this report
- 8 A4 Trench recording sheets
- 1 A4 Photo record sheet
- A4 Colour digital contact print 1 CD of digital photos

The archive will be held by Leicestershire Museum Service under the accession number X.A124.2018.

Publication

Since 2004 ULAS has reported the results of all archaeological work to the *Online Access to the Index of Archaeological Investigations* (OASIS) database held by the Archaeological Data Service at the University of York. A summary of the work will also be submitted for publication in the local archaeological journal, the *Transactions of the Leicestershire Archaeological and Historical Society*, in due course

Acknowledgements

The fieldwork was carried out by the author George Issitt and Claire Brown of ULAS. Vicki Score managed the project. Richard Clark of LCC HNET monitored the work on behalf of the planning authority.

OASIS data entry

PROJECT DETAILS	Oasis No	universi1- 376870		
	Project Name	An Archaeological Evaluation on land off South Kilworth road, North Kilworth, Leicestershire.		
	Start/end dates of field work	30/10/2018 – 31/10/2018		
	Previous/Future Work	None		
	Project Type	Evaluation		
	Site Status	None		
	Current Land Use	Arable		
	Monument Type/Period	Ridge and furrow, medieval		
	Significant Finds/Period	None		
	Development Type	Residential		
	Reason for Investigation	NPPF		
	Position in the Planning Process	Planning Condition		
	Planning Ref.	16/01904/OUT		
PROJECT LOCATION	Site Address/Postcode	Land off South Kilworth Road, North Kilworth, Leicestershire, LE17 6HE		
	Study Area	1.09ha		
	Site Coordinates	SP 61332 83208		
	Height OD	150 OD		
PROJECT CREATORS	Organisation	ULAS		
	Project Brief Originator	Local Planning Authority (LCC) Harborough District Council		
	Project Design Originator	ULAS		
	Project Manager	Vicki Score		
	Project Director/Supervisor	Claire Brown/Vicki Score		
	Sponsor/Funding Body	Snowdon Homes Ltd		
PROJECT ARCHIVE		Physical	Digital	Paper
	Recipient	LCC Mus Service	LCC Mus Service	LCC Mus Service
	ID (Acc. No.)	X.A124.2018	X.A124.2018	X.A124.2018
	Contents	None	Photos	Evaluation records Field Notes
PROJECT BIBLIOGRAPHY	Type	Grey Literature (unpublished)		
	Title	An Archaeological Evaluation on Land off South Kilworth Road, North Kilworth, Leicestershire		
	Author	Issitt, G.		
	Other bibliographic details	ULAS Report No 2018-176		
	Date	2/11/2018		
	Publisher/Place	University of Leicester Archaeological Services / University of Leicester		
	Description	Developer Report A4 pdf		

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Appendix 1: Site and Trench Photos



Trench 1 Facing south-east



Trench 2 Facing west



Trench 1 Facing north-west



Trench 3 Facing south-east



Trench 2 Facing east



Trench 3 Facing north-west



Trench 4 Facing south-east



Trench 5 Facing south (numbered wrong on photo)



Trench 4 Facing north-west



Trench 6 Facing north-east



Trench 5 Facing north (numbered wrong on photo)



Trench 6 Facing south-west



Trench 7 Facing south



Trench 8 Section facing north-west



Trench 7 Facing north



Site looking north-east, east edge of site



Trench 8 Facing north-west



Site looking southeast, east edge and south end of site



Site looking north at north end of site



Far south end of site looking south.
Mechanical excavator used on site



Site looking south, west edge of site

Appendix 2: Ridge and Furrow Processing Report

N-Kilworth-DEM-rpt

Processing Report

30 October 2018



Survey Data

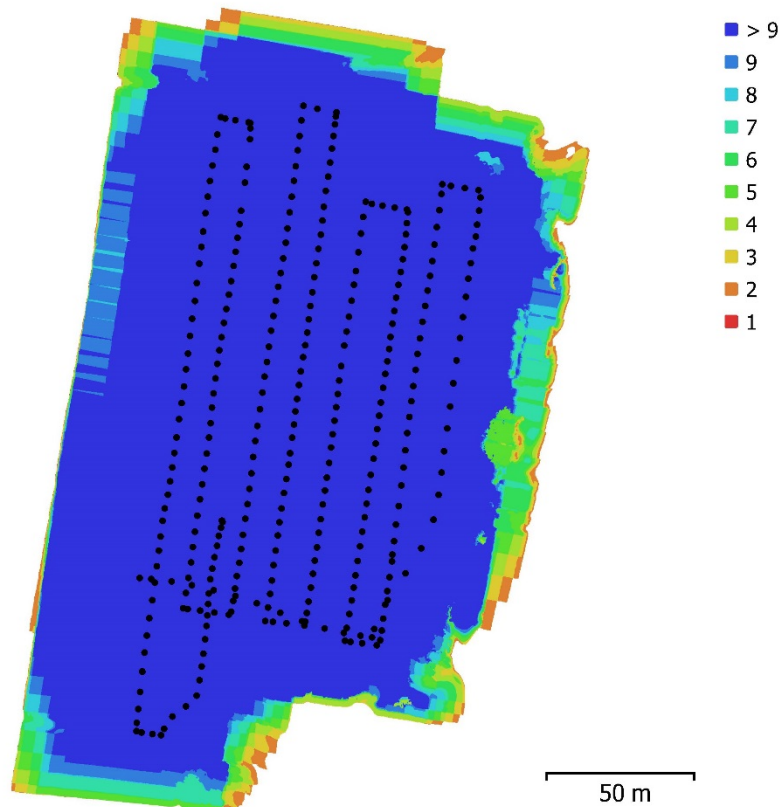


Fig. 1. Camera locations and image overlap.

Number of images:	320	Camera stations:	320
Flying altitude:	56.7 m	Tie points:	62,652
Ground resolution:	1.41 cm/pix	Projections:	943,809
Coverage area:	0.0383 km ²	Reprojection error:	0.903 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6510 (8.8mm)	4856 x 3640	8.8 mm	2.61 x 2.61 μ m	No

Table 1. Cameras.

Camera Calibration

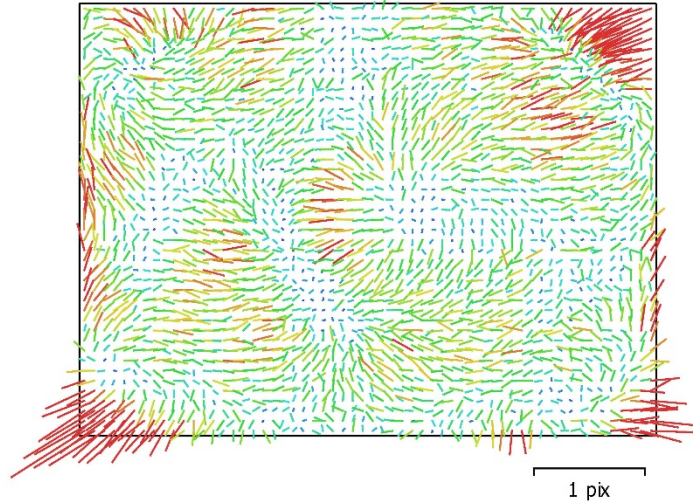


Fig. 2. Image residuals for FC6510 (8.8mm).

FC6510 (8.8mm)

320 images

Type **Frame** Resolution **4856 x 3640** Focal Length **8.8 mm** Pixel Size **2.61 x 2.61 μ m**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
B1	-0.690321									
B2	-1.05142									
F	3652.88	4.3	1.00	-0.57	-0.54	-0.58	0.68	-0.66	-0.09	-0.52
Cx	-28.6312	0.46		1.00	0.34	0.33	-0.39	0.38	0.07	0.39
Cy	11.6851	0.48			1.00	0.33	-0.37	0.36	0.17	0.53
K1	-0.00551316	3.4e-05				1.00	-0.95	0.92	0.04	0.29
K2	0.018096	0.00013					1.00	-0.99	-0.07	-0.36
K3	-0.0119453	0.00013						1.00	0.07	0.35
P1	-0.00048639	4e-06							1.00	0.07
P2	-0.00210325	4.6e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

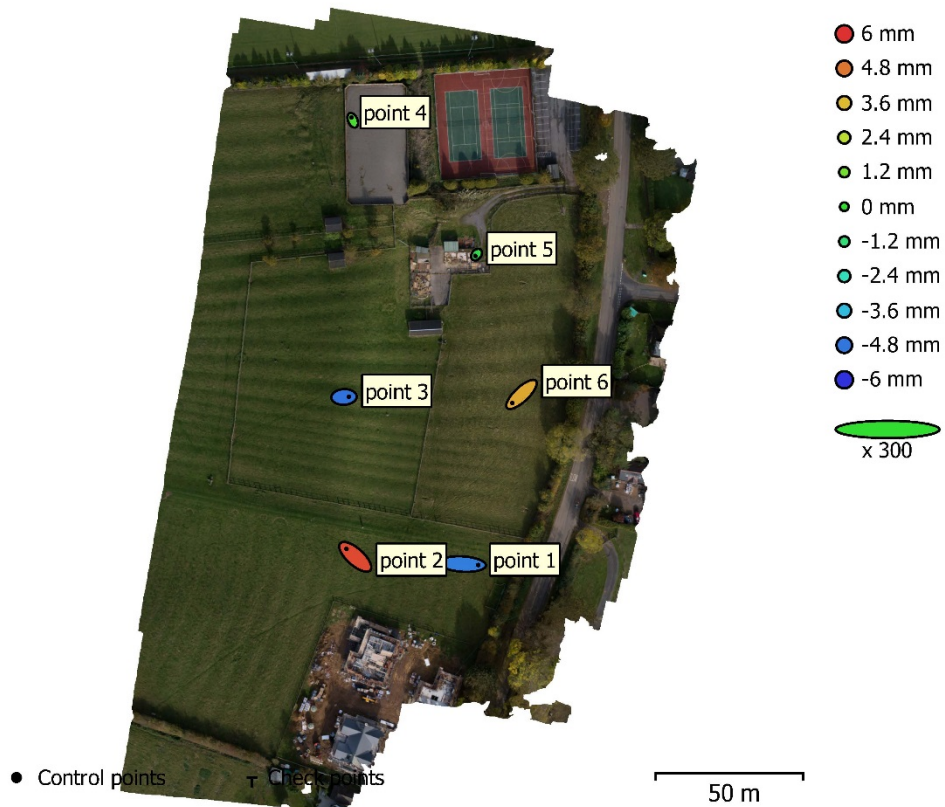


Fig. 3. GCP locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated GCP locations are marked with a dot or crossing.

Count	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
6	1.91198	1.12208	0.393032	2.21691	2.25148

Table 3. Control points RMSE.

X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
point 1	3.50999	-0.215697	-0.466465	3.54741	0.013 (53)
point 2	-1.99101	1.77985	0.559266	2.72851	0.013 (78)
point 3	1.09398	0.0557864	-0.486203	1.19845	0.013 (49)
point 4	-0.283271	0.64145	0.0415321	0.702442	0.008 (31)
point 5	-0.255176	-0.303119	-0.0472439	0.399033	0.012 (63)
point 6	-2.07549	-1.95792	0.395129	2.88049	0.013 (38)
Total	1.91198	1.12208	0.393032	2.25148	0.012

Table 4. Control points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

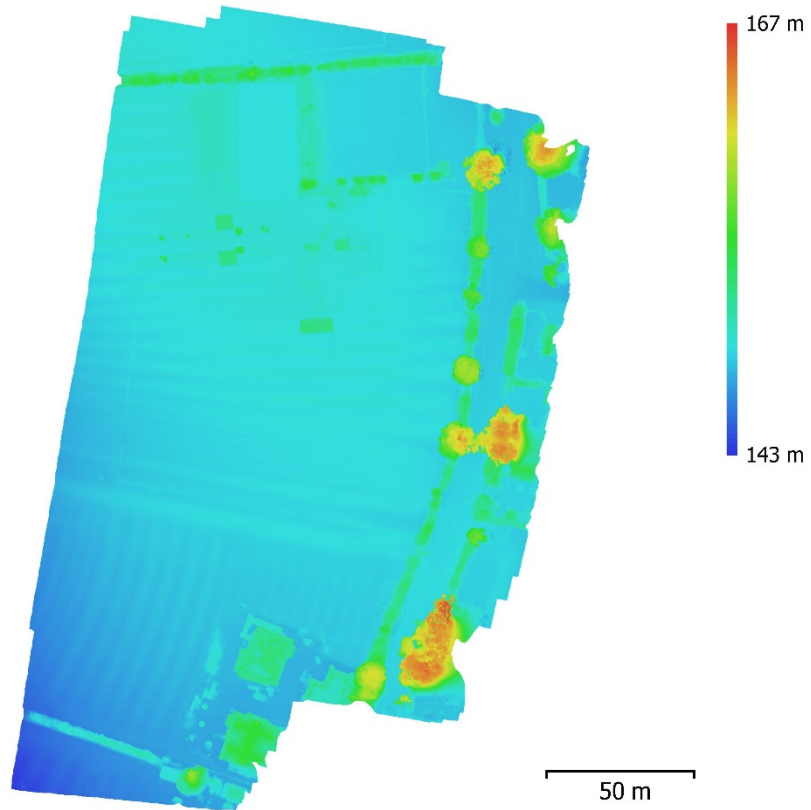


Fig. 4. Reconstructed digital elevation model.

Resolution: 5.65 cm/pix
Point density: 313 points/m²

Processing Parameters

General	
Cameras	320
Aligned cameras	320
Markers	6
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	62,652 of 83,164
RMS reprojection error	0.151277 (0.903395 pix)
Max reprojection error	0.585031 (56.2887 pix)
Mean key point size	5.61713 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	17.8576
Alignment parameters	
Accuracy	Medium
Generic preselection	Yes
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	3 minutes 59 seconds
Alignment time	4 minutes 52 seconds
Optimization parameters	
Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	16 seconds
Depth Maps	
Count	320
Reconstruction parameters	
Quality	Medium
Filtering mode	Aggressive
Processing time	29 minutes 48 seconds
Dense Point Cloud	
Points	15,157,292
Point colors	3 bands, uint8
Reconstruction parameters	
Quality	Medium
Depth filtering	Aggressive
Depth maps generation time	29 minutes 48 seconds
Dense cloud generation time	30 minutes 14 seconds
Model	
Faces	4,999,999
Vertices	2,503,336
Vertex colors	3 bands, uint8
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense
Interpolation	Enabled
Quality	Medium
Depth filtering	Aggressive
Face count	5,000,000
Processing time	11 minutes 4 seconds
DEM	
Size	5,281 x 6,897

Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	36 seconds
Orthomosaic	
Size	14,002 x 19,507
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	Mesh
Enable hole filling	Yes
Processing time	6 minutes 36 seconds
Software	
Version	1.4.3 build 6529
Platform	Windows 64



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