



AIR PHOTO MAPPING,
INTERPRETATION AND
ANALYSIS FOR ALL
ARCHAEOLOGICAL APPLICATIONS
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Air photo mapping and interpretation for
land at and around Wiggin Hill Farm
Cambridgeshire

ECB3874

Archaeology

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Commissioned by

RPS Planning & Development

14 Cornhill

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Summary

This report concerns the results of interpretation and mapping of archaeological features from existing air photographs for land at and around Wiggin Hill Farm, Cambridgeshire.

This survey has identified the remains of levelled medieval and/or post medieval ploughing remains (ridge and furrow) within the proposed site. Beyond the site cropmarked evidence of possible Iron Age or Roman period activity, including a possible settlement, was found in three discrete areas. Medieval ridge and furrow was visible in many of the fields in the area surveyed, most of this had been levelled but earthworks do appear to survive in the strip fields south of Woodhurst. Post medieval field boundaries, drains and small quarries and mid-20th century features associated with RAF Wyton were also observed and recorded.

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ECB3874

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1 Introduction

1.1 Client details

- 1.1.1 This air photo survey was commissioned by RPS Planning & Development, 14 Cornhill, London, EC3V 3ND.

1.2 Specification

- 1.2.1 The client required the mapping of levelled and upstanding archaeological features that are visible on the available air photographs to fulfil the Brief for Archaeological Evaluation for Wiggin Hill Farm issued by Cambridgeshire County Council's Historic Environment Team (HET) on the 3rd October 2012. The mapping is at a nominal scale of 1:2500.

1.3 The Survey Area (see Figure 1)

- 1.3.1 The air photo survey area (hereon the Survey Area) covers the proposed 9 hectare site at Wiggin Hill Farm and 1000m of land around the centre point of that site. Thus the Survey Area covers 1.6 km², centred at TL3102 7478 (531020 274780).
- 1.3.2 The proposed site and most of the Survey Area lie in the parish of Woodhurst, the southern parts lie in the parish of St Ives. Both parishes are in the historic county of Huntingdonshire, now in the county of Cambridgeshire.
- 1.3.3 The Survey Area lies with RAF Wyton to the west, the small town of St Ives to the south and the village of Woodhurst to the north. It is rural in character and mainly under arable cropping regimes, with some small copses and plantations.
- 1.3.4 The topography is very gently undulating with no part rising much higher than 30m OD. The proposed site lies between two small unnamed brooks that flow eastward across the Survey Area, converge at Wiggin Hill Farm and then continue south-eastward beyond the Survey Area and ultimately to the River Great Ouse.
- 1.3.5 There are few built elements in this landscape: Wiggin Hill Farm near the centre of the Survey Area, Hiam Farm Cottages and the end of the RAF Wyton airfield runway and on the western side.
- 1.3.6 The underlying mudstone bedrock geology is capped with chalky till or boulder clay over much of the Survey Area, though the bedrock is partially exposed along the banks of the small brooks (BGS Geology of Britain Viewer).

- 1.3.7 North of the more northerly brook the soils are of the 513 CANNAMORE association. To the south of that brook the soils are 411D HANSLOPE to the west and 411C EVESHAM 3 to the east, all three are slowly permeable clayey soils (SSEW 1983).
- 1.3.8 In the past aerial photography has been considered a unproductive method of archaeological prospection on clay lands such as this. However air reconnaissance and mapping work in Northamptonshire and Bedfordshire has demonstrated that recent photography in particular, taken in the appropriate conditions can and does reveal buried landscapes (Palmer 2007, Deegan 2007).
- 1.3.9 A brief overview of the uses of air photography for archaeological remote sensing is provided in Appendix 1.

2 Methodology

2.1 Data sources

- 2.1.1 The air photo collections held by the English Heritage Archive (EHA), CUCAP (at Cambridge University) and Huntingdonshire Archives and Local Studies (HALS) were consulted for this survey.
- 2.1.2 The digital photographic images delivered freely online by Google Earth and Bing Maps were examined on screen.
- 2.1.3 Ortho-rectified digital air photo imagery taken in 2009 by Cities Revealed (CR/2009) was purchased for use by this investigation as a potential source for archaeological features and as a source of control information for the rectification of all the other air photo information.
- 2.1.4 Lists of the individual air photographs and image datasets consulted are provided in Appendix 2.

2.2 Image capture, rectification and mapping

- 2.2.1 All of the available printed air photos were systematically examined at EHA, CUCAP and HALS, using x2 magnification where necessary and stereoscopically where possible. Selected prints were then photographed with a hand-held digital camera, where permission to do so was granted.
- 2.2.2 Current and historic Google Earth imagery was captured onscreen and georectified using Airphoto 3.44. The Bing imagery was captured on screen.
- 2.2.3 The copies of photos and Bing Maps images were rectified to ground control points

derived from the CR/2009 ortho-rectified air photo, as necessary.

- 2.2.4 Image transformation was undertaken using the Bradford Aerial Photographic Rectification Programme, AERIAL5.14. Archaeological features were mapped to a scale of 1:2500 in accuracy and detail. AERIAL5.14 gives error readings for each control point, where 5 or more control points are used. In all cases errors of within $\pm 3\text{m}$ were achieved for the control points. However this may not reflect the on-the-ground positional accuracy of the features mapped since these tend to lie between rather than at the control points.
- 2.2.5 All of the georeferenced photos and images were then collated in MAPINFO Professional 11.5 where the archaeological features were digitised, with reference back to the original source material.
- 2.2.6 The same standards of depiction were employed throughout the Survey Area, with the exception of the ridge and furrow. Within the proposed site and its immediate environs individual plough furrows are depicted (in so far as they were visible). For the outer 500m of the Survey Area a simplified convention was employed that recorded the extents of furlongs (in so far as these were visible) and the direction of ploughing.
- 2.2.7 Data pertaining to each feature was recorded in the MapInfo table. The content of the digital map dataset is described in Appendix 4.

3 Results

3.1 The air photographs

- 3.1.1 The EHA holds 145 black and white vertical air photographs from 20 different sorties flown between the 1930s and 1995. Together these cover the whole of the Survey Area and provide good coverage for most decades, except the 1980s. These vertical photographs were taken by the Royal Air Force and the Ordnance Survey for military, civil engineering and cartographic purposes rather than to record archaeological sites. However earthwork, soilmark and cropmarked archaeological features are visible on many of these photographs.
- 3.1.2 The EHA does not hold any oblique air photos of the Survey Area. This is probably due to its proximity to RAF Wyton and the associated Military Aerodrome Traffic Zone (MATZ) restrictions that this would impose on archaeological air reconnaissance.
- 3.1.3 The CUCAP collection holds 4 vertical air photographs of the Survey Area taken in 1988. The CUCAP collection catalogue lists other photos from the same sorties and

another sortie flown in 2003 for this area but prints for these were not available for examination.

- 3.1.4 HALS holds 9 black and white vertical air photographs of the Survey Area taken on 3 different occasions: 1946, 1969 and 1971.
- 3.1.5 Google Earth provides imagery from 1945 to 2010, these show some soilmark, cropmarked and earthwork features and they provide a valuable snapshot of the more recent land use and monument condition. The Bing Maps website also shows undated aerial imagery, although this was of limited use for this investigation.
- 3.1.6 The 2009 Cities Revealed imagery (see Figure 2) acquired for this survey appears to be the same dataset as that referred to as “HDC aerial 2009” in the Brief issued by the HET (para 1.2). This imagery provided control information for the rectification process and was a valuable record of some cropmarked features that were not visible on any of the other photos and images consulted.

3.2 **The archaeological features and other observations (Figures 3-4)**

- 3.2.1 The results of this survey are catalogued in Appendix 3 by archaeological feature or groups of archaeological features. The mapping is reproduced in Figures 2 and 3 at a small and approximate scale of 1:8000. This report is supplied in conjunction with a digital version of the map data which can be viewed and interrogated at up to 1:2500 scale.
- 3.2.2 Figure 3 shows all the results with the catalogue numbers and polygons around the features pertaining to each catalogue entry listed in Appendix 3. Figure 4 shows all the results but, for clarity, without the catalogue numbers and polygons.
- 3.2.3 Details including type, period and sources for individual archaeological features can be accessed in the digital version of the mapping (see Appendix 4).
- 3.2.4 In the absence of direct archaeological evidence all attributions of date and type are open to re-interpretation.
- 3.2.5 The following is an overview of the mapping results and is not intended to provide an exhaustive discussion of all the features that have been mapped and recorded in the catalogue (see Appendix 3).

3.3 **Prehistoric and Roman**

- 3.3.1 The Cambridge HER records Roman urn burials at a point approximately 100m to the north of the proposed site. However the record MCB4425/CHER03606 indicates that the actual location from which the urns were recovered is not known. This

record suggests the urns were found in 1801 in gravel diggings, the air photos have revealed no evidence of such activity at this location or within the proposed site, though some extractions have been observed to the south of Wiggin Hill Farm (see **AP nos 12 & 15**). These finds, together with other possible Roman finds in the vicinity of the farm do however indicate activity in this area in this period.

- 3.3.2 Cropmarks at three locations within the Survey Area suggest buried Iron Age or Roman features. The more complex of the three lies approximately 350m to the west of the proposed site (**AP no. 21**) It comprises of enclosures and other ditches and may be the remains of a settlement. Most of these features are only visible on the 2009 Cities Revealed image, although there are some faint traces on earlier photos, this site could not have been identified by those alone.
- 3.3.3 Approximately 710m to the south of the proposed site there is a small simple enclosure (**AP no. 19**). This enclosure was only visible on the 2009 Cities Revealed image.
- 3.3.4 Fragmentary cropmarks 360m to the north-east of the site may also indicate an enclosure (**AP no. 7**). Some of these cropmarks were visible on the Cities Revealed image, others were only visible on 1946 RAF photos.

3.4 **Medieval period**

- 3.4.1 Traces of possible medieval ridge and furrow and a possible plough headland are visible as cropmarks within the proposed site (AP no. 1). The furrows are aligned north to south and the headland east to west. These remains appear to have been levelled on the earliest of the air photographs (possibly 1930s) although ridge and furrow survived as earthworks in other fields in the Survey Area at that time. Although the levelled ridge and furrow in neighbouring fields shows repeatedly as cropmarks and/or soilmarks on 1950s and later photographs, the features on the proposed site are more ephemeral, which may suggest that they are more heavily truncated.
- 3.4.2 Ridge and furrow of likely medieval date is visible in many of the fields in the Survey Area. Some of the ridge and furrow appears to survive as earthworks on the earlier air photos (eg **AP nos 8, 11, 16** and **20**) but only the ridges in the strip fields south of Woodhurst (**AP no. 30**) appear to survive as earthworks on the more recent images.
- 3.4.3 There are several broad and irregular linear features visible as pale-toned cropmarks in the Survey Area (**AP no. 3, 6** and **31**). It is not clear from the air photo evidence alone if these are the levelled remains of medieval plough headland or

instead arise from underlying geological or pedological features.

3.5 **Post medieval period**

- 3.5.1 Some of the plough furrows identified in the Survey Area are straight and/or closely spaced, which may suggest that they are of post medieval rather than medieval origin. This includes the east to west aligned furrows running across the northern side of the proposed site and the blocks of north to south furrows to the immediate north and north west (AP no. 2). These furrows appear to be associated with narrow drainage ditches or field boundaries. Like the medieval ridge and furrow (AP no. 1) on the proposed site these cropmarks are faint and infrequent which may indicate that they have been heavily truncated.
- 3.5.2 To the south and south-west of Wiggin Hill Farm there are ditches and hollows that may be the remains of drainage works and small-scale extractions carried out in the post medieval period (see **AP nos 12, 13, 14 and 15**). Most of these features survived as earthworks on the earlier air photos but have now been levelled.
- 3.5.3 Cropmarks (**AP no. 10**) visible to the south-east of Wiggin Hill Farm are probably the remains of a post medieval enclosure or paddock that abutted a field boundary (now removed). Similarly the ditched in **AP nos 25 and 29** are likely to be of post medieval origin.
- 3.5.4 In a large field on the north-east side of the Survey Area the 2009 Cities Revealed imagery shows a series of broad cropmarks in a parallel arrangement (**AP no. 32**). Although this field was divided into small units on the earlier air photos those field boundaries do not correspond with the cropmarks. This area is however labelled as "Allotments" on historic Ordnance Survey maps and it is possible that these cropmarks arise from features associated with this use.

3.6 **Twentieth Century military remains**

- 3.6.1 A lighting array for the RAF Wyton airfield was erected across the western part of the Survey Area in the middle of the 20th century. Now removed, some traces of the array appear as cropmarks on the 2009 Cities Revealed imagery (AP no. 23).

3.7 **Undated features**

- 3.7.1 There are several linear cropmarks within the Survey Area for which no date or

function has been proposed. These include AP no. 5, which lies within the proposed site and AP no. 4, which may continue unseen into the far south-west corner of the site. The archaeological potential of these features is not known.

- 3.7.2 The 2009 Cities Revealed imagery shows a pattern of closely-spaced crop striations running approximately north-west to south-east across a large part of the field in which the proposed site lies. These features had been highlighted by the HET to the author for consideration. The crop at this time was ripening and the striations appeared as faint green lines against the paler, riper crop. The Bing image (undated) shows patches of similarly-spaced striations in the same field in a still-green crop, but at this time the striations were aligned near north to south. In 1961 this large field was still divided into two but a photograph taken in this year shows similar striations in the eastern-most field, but on this occasion in a concentric pattern originating from a point near the middle of the field (RAF/58/ 4804 1). On this evidence it is unlikely that the striations are of archaeological origin and more probable that they arise from a process of ground preparation in advance of sowing. These features have not been mapped.

4 **Conclusion**

- 4.1.1 The evidence of the air photos suggests that there was Iron Age or Roman activity in this area, although there is no direct evidence of remains from these or earlier periods on or immediately adjacent to the proposed site.
- 4.1.2 The absence of evidence may be a factor of visibility and reconnaissance: cropmarks only form on these heavily clay soils in exceptional circumstances and recent archaeological aerial reconnaissance in this area has been impeded by MATZ restrictions.
- 4.1.3 The site does encompass the remains of possible medieval and post medieval ridge and furrow and a possible plough headland, however these features are likely to be heavily truncated.
- 4.1.4 The wider Survey Area has produced evidence of extensive medieval and some post-medieval ridge and furrow, post medieval land divisions and drains and some small scale quarrying activity.
- 4.1.5 The Survey Area also contains some peripheral features associated with the RAF Wyton airfield.

Appendix 1 Archaeology from black and white and colour air photographs

Air photographs taken in appropriate conditions can record crop marks, soilmarks and earthworks of archaeological origin.

Crop marks result from variations in leaf and stalk colour and plant height and vigour. Crop marks occur where there are anomalies below the ground: in-filled hollows, palaeochannels, frost cracks, archaeological pits, ditches, surfaces and banks or modern disturbances such as land drains. Crop marks can also be created by variations in the treatment of the topsoil and ground cover, for example the uneven application of fertilizers, pesticides and herbicides or damage.

Crop marks that delineate buried and levelled archaeological features are the effect of differential growth and ripening between the vegetation on the archaeological deposits and that on surrounding undisturbed ground. Variations in growth and ripening are most visible when there is a significant difference in the water and nutrient availability between the archaeological and natural deposits. Crop marks can form at any stage from germination to ripening but the optimal conditions are during periods when precipitation is exceeded by transpiration. This results in potential soil moisture deficit (SMD) and water-stressed plants (Jones and Evans 1975). Prolonged periods of SMD halt plant growth and then cause wilting of the plant leaves, stem and finally root. Water-stress is exacerbated by free-draining sub-surface deposits such as archaeological walls or road surfaces but mitigated by rich and humic ditch and pit deposits. Even after ripening, differences in crop height and bulk can indicate the presence of buried features where there are no tonal differences. Crop marks can be seen most clearly in large areas of homogenous, fast-growing plants such as cereal crops and, less frequently, in root crops and grass. Crop marks produced in arable and grass at times of significant moisture stress, usually over buried structures or other highly permeable archaeological deposits, are often referred to as parchmarks.

Soilmarks are the colour and tonal differences between archaeological deposits and the plough or subsoil. The action of ploughing, which can penetrate the ground to a depth of 45cm, brings to the surface previously buried material. The rotation of the plough exposes the cut surface uppermost. Where the plough cuts buried and infilled archaeological features such as banks and ditches it brings to the surface slices of these deposits. If these slices are sufficiently differentiated from the natural plough or subsoil they can be visible from the air.

Archaeological earthworks that are visible on the ground can also be seen from the air. Detection and recording of earthworks from the air is determined by their survival and visibility. The survival of earthworks depends on past and present land use; natural erosion processes, deliberate destruction and ploughing can all reduce upstanding features to ground level. Earthworks can be revealed by the pattern of sunlight and shadow, differential frost or snow cover or the distribution of standing and flood water. Large and subtle variations in ground relief are further accentuated when viewed stereoscopically. Most stereo images are vertical photographs taken in long, regular sorties but stereo-

overlapping can also be achieved from correctly set-up oblique views.

Appendix 2 Sources consulted

English Heritage Archive

English Heritage, The Engine House, Fire Fly Avenue, Swindon SN2 2EH. Enquiry reference no. AP 73360. The black and white vertical air photos listed below were consulted at the Archives on the 23rd October 2012

Vertical air photos

Sortie no.	Frame	Date	Scale 1:
TL 3174 / 1	-	Undated – 1930s?	NA
TL 3176 / 1	-	Undated – 1930s?	NA
RAF/106G/UK/1557	3122	07/06/1946	9800
RAF/106G/UK/1557	3123	07/06/1946	9800
RAF/106G/UK/1557	3124	07/06/1946	9800
RAF/106G/UK/1557	4369	07/06/1946	9800
RAF/106G/UK/1557	4370	07/06/1946	9800
RAF/106G/UK/1557	4371	07/06/1946	9800
RAF/106G/UK/1557	4372	07/06/1946	9800
RAF/106G/UK/1557	6381	07/06/1946	9800
RAF/106G/UK/1557	6382	07/06/1946	9800
RAF/106G/UK/1557	6383	07/06/1946	9800
RAF/106G/UK/1557	6384	07/06/1946	9800
RAF/106G/UK/1589	4021	21/06/1946	10000
RAF/106G/UK/1589	4022	21/06/1946	10000
RAF/106G/UK/1589	4023	21/06/1946	10000
RAF/106G/UK/1589	4024	21/06/1946	10000
RAF/106G/UK/1589	4025	21/06/1946	10000
RAF/543/294 f21	277	05/06/1958	5000
RAF/543/294 f21	278	05/06/1958	5000
RAF/543/294 f21	361	05/06/1958	5000
RAF/543/294 f21	362	05/06/1958	5000
RAF/543/294 f21	363	05/06/1958	5000
RAF/543/294 f21	364	05/06/1958	5000
RAF/543/294 f21	365	05/06/1958	5000

Sortie no.	Frame	Date	Scale 1:
RAF/543/294 f21	366	05/06/1958	5000
RAF/543/294 f21	367	05/06/1958	5000
RAF/543/294 f21	368	05/06/1958	5000
RAF/543/294 f22	364	05/06/1958	5000
RAF/543/294 f23	365	05/06/1958	5000
RAF/543/294 f24	366	05/06/1958	5000
RAF/543/294 f25	367	05/06/1958	5000
RAF/543/294 f26	368	05/06/1958	5000
RAF/543/294 f27	369	05/06/1958	5000
RAF/543/294 f28	370	05/06/1958	5000
RAF/543/294 f29	371	05/06/1958	5000
RAF/543/294 f30	408	05/06/1958	5000
RAF/543/294 f31	409	05/06/1958	5000
RAF/543/294 f32	410	05/06/1958	5000
RAF/543/294 f33	411	05/06/1958	5000
RAF/58/5754 f21	133	04/06/1963	10000
RAF/58/5754 f21	134	04/06/1963	10000
RAF/58/5754 f21	135	04/06/1963	10000
RAF/58/2296 f21	1	01/11/1957	10000
RAF/58/2296 f21	2	01/11/1957	10000
RAF/58/2296 f21	3	01/11/1957	10000
RAF/58/2296 f21	4	01/11/1957	10000
RAF/58/2296 f21	5	01/11/1957	10000
RAF/58/2296 f22	14	01/11/1957	10000
RAF/58/2296 f22	15	01/11/1957	10000
RAF/58/2296 f22	16	01/11/1957	10000
RAF/58/2296 f22	17	01/11/1957	10000

Sortie no.	Frame	Date	Scale 1:	Sortie no.	Frame	Date	Scale 1:
RAF/58/3245 f21	40	07/10/1959	8000	RAF/540/1275	71	30/03/1954	6000
RAF/58/3245 f21	41	07/10/1959	8000	RAF/540/1275	72	30/03/1954	6000
RAF/58/3245 f21	42	07/10/1959	8000	RAF/540/1275	73	30/03/1954	6000
RAF/58/3245 f21	43	07/10/1959	8000	RAF/540/1275	83	30/03/1954	6000
RAF/58/3245 f22	26	07/10/1959	8000	RAF/540/822	5060	25/07/1952	5000
RAF/58/3245 f22	27	07/10/1959	8000	RAF/58/1315	35	16/11/1953	5500
RAF/58/4804	1	20/11/1961	6000	RAF/58/1315	36	16/11/1953	5500
RAF/58/1345	35	22/01/1954	5000	RAF/58/1315	37	16/11/1953	5500
RAF/58/1345	36	22/01/1954	5000	RAF/58/1315	38	16/11/1953	5500
RAF/58/1345	37	22/01/1954	5000	RAF/58/1315	60	16/11/1953	5500
RAF/58/1345	38	22/01/1954	5000	RAF/58/1315	61	16/11/1953	5500
RAF/58/1345	39	22/01/1954	5000	RAF/58/1315	62	16/11/1953	5500
RAF/58/1345	40	22/01/1954	5000	RAF/58/1315	63	16/11/1953	5500
RAF/58/1345	41	22/01/1954	5000	RAF/58/1315	64	16/11/1953	5500
RAF/58/1345	42	22/01/1954	5000	RAF/58/1315	65	16/11/1953	5500
RAF/58/1345	43	22/01/1954	5000	RAF/58/1315	66	16/11/1953	5500
RAF/58/1345	68	22/01/1954	5000	RAF/58/1315	117	16/11/1953	5500
RAF/58/1345	69	22/01/1954	5000	RAF/58/1315	118	16/11/1953	5500
RAF/58/1345	70	22/01/1954	5000	RAF/58/1315	122	16/11/1953	5500
RAF/58/1345	71	22/01/1954	5000	RAF/58/1374	42	08/03/1954	5000
RAF/58/1345	72	22/01/1954	5000	RAF/58/1374	61	08/03/1954	5000
RAF/58/1345	73	22/01/1954	5000	RAF/58/1374	62	08/03/1954	5000
RAF/58/1345	74	22/01/1954	5000	RAF/58/1374	63	08/03/1954	5000
RAF/58/1345	75	22/01/1954	5000	RAF/58/1374	64	08/03/1954	5000
RAF/58/1345	94	22/01/1954	5000	RAF/58/1374	65	08/03/1954	5000
RAF/58/1345	95	22/01/1954	5000	RAF/58/1374	66	08/03/1954	5000
RAF/58/1345	96	22/01/1954	5000	RAF/58/1379	30	10/03/1954	5000
RAF/58/1345	97	22/01/1954	5000	RAF/58/1379	31	10/03/1954	5000
RAF/58/1345	98	22/01/1954	5000	RAF/58/1379	32	10/03/1954	5000
RAF/58/1345	99	22/01/1954	5000	RAF/58/1379	33	10/03/1954	5000
RAF/58/1345	100	22/01/1954	5000	RAF/58/1379	34	10/03/1954	5000
RAF/540/1652	36	28/06/1955	15000	RAF/58/1379	35	10/03/1954	5000
RAF/540/1652	37	28/06/1955	15000	RAF/58/1379	36	10/03/1954	5000
RAF/540/1275	49	30/03/1954	6000	RAF/82/897	84	09/04/1954	6000
RAF/540/1275	50	30/03/1954	6000	RAF/82/897	88	09/04/1954	6000
RAF/540/1275	70	30/03/1954	6000	RAF/82/897	100	09/04/1954	6000

Sortie no.	Frame	Date	Scale 1:	Sortie no.	Frame	Date	Scale 1:
RAF/82/897	101	09/04/1954	6000	OS/71408	43	16/08/1971	7450
RAF/82/897	102	09/04/1954	6000	OS/71408	44	16/08/1971	7450
RAF/82/897	103	09/04/1954	6000	OS/68138	256	02/06/1968	7500
RAF/1504/BAT/FLT15/3	1	06/05/1942	6000	OS/68138	257	02/06/1968	7500
RAF/1504/BAT/FLT15/3	2	06/05/1942	6000	OS/68138	291	02/06/1968	7500
RAF/1504/BAT/FLT15/3	3	06/05/1942	6000	OS/68138	292	02/06/1968	7500
RAF/1504/BAT/FLT15/3	4	06/05/1942	6000	OS/89174	831	16/05/1989	7700
RAF/1504/BAT/FLT15/3	33	06/05/1942	6000	OS/95717	45	15/08/1995	7300
RAF/1504/BAT/FLT15/3	34	06/05/1942	6000	OS/95717	46	15/08/1995	7300
RAF/1504/BAT/FLT15/3	35	06/05/1942	6000	OS/95717	47	15/08/1995	7300
OS/71408	31	16/08/1971	7450	RAF/58/2116	109	28/02/1957	10000
OS/71408	32	16/08/1971	7450				

Huntingdonshire Archives and Local Studies (HALS)

Huntingdon Library and Archives, Princes Street, Huntingdon, PE29 3PA. The following vertical air photographs of the Survey Area were consulted on the 16th October.

Vertical air photos

Reference no.	Frame	Date
RAF/106G/UK1557	4370	07/06/1946
RAF/106G/UK1557	4371	07/06/1946
HSL/UK/69892	1416	08/06/1969
HSL/UK/69892	1417	08/06/1969
HSL/UK/69892	1418	08/06/1969
BKS/65	2674	Spring 1971
BKS/65	2675	Spring 1971
BKS/65	2676	Spring 1971
BKS/65	2677	Spring 1971

Cambridge University Committee for Aerial Photography (CUCAP) Library

Department of Geography, University of Cambridge, Downing Place, Cambridge, CB2 3EN. The following vertical air photographs of the Survey Area were identified by a search of the collection's online catalogue. Those that were available were consulted at the library on the 15th October 2012.

Reference no.	Frame	Date	Comment
RC8 kn BM	211	16/07/1988	Print not available
RC8 kn BM	212	16/07/1988	
RC8 kn BM	213	16/07/1988	Print not available
RC8 kn BM	214	16/07/1988	

Reference no.	Frame	Date	Comment
RC8 kn BN	34	16/07/1988	
RC8 kn BN	35	16/07/1988	Print not available
RC8 kn BN	36	16/07/1988	
RC8 kn BN	37	16/07/1988	Print not available
Z kn PA	344	16/07/1988	Print not available
Z kn PA	345	03/03/2003	Print not available
Z kn PA	346	03/03/2003	Print not available
Z kn PA	407	03/03/2003	Print not available
Z kn PA	408	03/03/2003	Print not available
Z kn PA	409	03/03/2003	Print not available

Other imagery consulted

The following resources were consulted between 13th October 2012 and 26th October 2012.

Resource	Link/Source	Date	Description and comment
Google Earth	http://earth.google.com/	1945	Full coverage. Images were accessed and examined on screen.
		1999	Full coverage. Images were accessed and examined on screen.
		2003	Full coverage. Images were accessed and examined on screen.
		2006	Full coverage. Images were accessed and examined on screen.
		2008	Full coverage. Images were accessed and examined on screen.
Bing maps	http://www.bing.com/maps	nd	Aerial & bird's eye imagery, full coverage.
Cities Revealed aerial imagery	www.centremapslive.com	2009	High resolution (25cm) Ortho-rectification aerial imagery supplied by www.centremapslive.com

Appendix 3 Catalogue of features (see Figures 2-4)

AP no.	Central NGR	Types	Periods	Description of features
1	TL3094 7476	PLOUGH HEADLAND RIDGE AND FURROW	MEDIEVAL	Traces of levelled ridge and furrow and a possible plough headland are visible as cropmarks on historic air photos on the proposed site. The furrows are aligned north to south and the plough headland runs near east to west along the northern edge of the furrows, some of furrows do appear to cut into the putative headland. These features may be of medieval date. (1-2) 1 RAF/540/1652 37 28/06/1955 EHA 2 RAF/58/2296 F21 3 01/11/1957 EHA
2	TL3079 7501	NARROW RIDGE AND FURROW FIELD BOUNDARY DRAINAGE DITCH	POST MEDIEVAL	Traces of narrow ridge and furrow and possible drainage ditches or field boundaries are visible as cropmarks on historic air photographs to the north and north-west of AP no. 1 . The proposed site takes in parts of some of these features. The narrowly-spaced furrows are arranged in blocks and run in various directions and some run perpendicular to two possible drainage ditches. These features are likely to be of post medieval date. Other complex cropmarks aligned north-west to south-east and north-east to south-west in this area are likely to indicate the presence of more recent land drains. (1) 1 RAF/540/1652 37 28/06/1955 EHA
3	TL3064 7490	PLOUGH HEADLAND NATURAL FEATURE	MEDIEVAL UNCERTAIN	A broad, gently curving linear feature is visible as diffuse soilmarks on historic air photos. These may be the remains of a medieval plough headland, but a natural origin cannot be discounted. The proposed site may encroach on the eastern end of this feature. (1) 1 RAF/58/2296 f21 3 01/11/1957 EHA
4	TL3073 7473	DITCH	UNCERTAIN	A linear cropmark is visible on historic air photos taken in 1946. This feature lies to the immediate west of the proposed site and may run into its the far south-west corner. This cropmark may indicate a buried ditch of uncertain date, but a non-archaeological origin cannot be discounted. (1) 1 RAF/106G/UK1557 3122 07/06/1946 EHA
5	TL3116 7481	DITCH	UNCERTAIN	A faint linear cropmark is visible on recent air photos. This feature runs north to south through the proposed site near its eastern edge. This cropmark may indicate a buried ditch of uncertain date, but a non-archaeological origin cannot be discounted. (1) 1 CR/2009 2009 DIGITAL

AP no.	Central NGR	Types	Periods	Description of features
6	TL3135 7503	PLOUGH HEADLAND NATURAL FEATURE	MEDIEVAL UNCERTAIN	Broad and curving bands of faster ripening crops are visible on the 2009 image. Some or all of these may be the remains of medieval plough headlands but a natural origin is more likely. (1) 1 CR/2009 2009 DIGITAL
7	TL3172 9493	RECTILINEAR ENCLOSURE DITCH	IRON AGE ROMAN	Cropmarks of possible archaeological ditches are visible on historic and recent air photos. The marks may indicate part of an Iron Age or Roman period rectilinear enclosure and fragments of associated features. (1-2) 1 CR/2009 2009 DIGITAL 2 RAF/106G/UK1557 4369 07/06/1946 EHA
8	TL3146 7458	RIDGE AND FURROW	MEDIEVAL	The remains of possible medieval ridge and furrow are visible in the large fields to the east of Wiggin Hill Farm on historic and recent air photos. The ridges in the more southerly field survived as earthworks in 1954, but now all of the ridge and furrow appears to have been levelled.(1-5) 1 GE/2008 2008 WWW 2 RAF/106G/UK1557 4370 07/06/1946 HALS 3 RAF/58/1345 38 22/06/1954 EHA 4 RAF/58/2296 F21 3 01/11/1957 EHA 5 OS/71408 31 16/08/1971 EHA
9	TL3135 7465	DITCH	UNCERTAIN	A Y-shaped arrangement of short cropmarks is visible on the 2009 image. These features are not visible on any other photos and though they may indicate buried archaeological ditches other causes for these marks cannot be discounted. 1 CR/2009 2009 DIGITAL
10	TL3141 7420	PADDOCK ENCLOSURE	POST MEDIEVAL	A perpendicular arrangement of ditches is visible as cropmarks on the 2009 image. Some of these features were extant hedgerows on the 1930s air photos so it is likely that the represent the remains of a small paddock or enclosure of likely post medieval date. (1-3) 1 CR/2009 2009 DIGITAL 2 RAF/106G/UK1557 3122 07/06/1946 EHA 3 TL 3174/1 1930s EHA

AP no.	Central NGR	Types	Periods	Description of features
11	TL3128 7410	RIDGE AND FURROW	MEDIEVAL	A block of possible medieval ridge and furrow is visible as earthworks on historic air photos and as cropmarks or soilmarks on more recent sources. This block lies to the south of Wiggin Hill Farm and appears to be cut by two ditches and a possible quarry pit (see AP nos. 12 & 14). (1-2) 1 BKS652673 1971 HALS 2 TL 3174/1 1930s EHA
12	TL3127 7416	QUARRY	POST MEDIEVAL	A possible quarry pit and associated ditch are visible as earthworks on the earliest air photos and as cropmarks on the 2009 image. These features appear to cut possible medieval ridge and furrow (see AP no. 11). (1-2) 1 CR/2009 2009 DIGITAL 2 TL 3174/1 1930s EHA
13	TL3109 7408	DRAINAGE DITCH POND	POST MEDIEVAL	A substantial drainage ditch runs to the west and south of Wiggin Hill Farm. It appears to drain through a small pond at TL3095 7424. The features are likely to be of post medieval date and appear as well-defined earthworks on the 1930s air photo. This drain now runs through belts of trees and arable fields, it appears to have been levelled in the latter. (1-6) 1 BKS65676 1971 HALS 2 CR/2009 2009 DIGITAL 3 RAF/58/1374 62 08/03/1954 EHA 4 RAF/58/2296 F21 3 01/11/1957 EHA 5 HSL UK 69892 1418 08/06/1969 HALS 6 TL 3174/1 1930s EHA
14	TL3121 7413	DRAINAGE DITCH	POST MEDIEVAL	A post medieval drainage ditch is visible as earthworks on the earliest air photo and as cropmarks on the more recent sources. It cuts across possible medieval ridge and furrow (see AP no. 11). (1-3) 1 GE/2006 2006 WWW 2 HSL UK 69892 1418 08/06/1969 HALS 3 TL 3174/1 1930s EHA

AP no.	Central NGR	Types	Periods	Description of features
15	TL3113 7419	QUARRY DITCH	POST MEDIEVAL	The remains of two small quarries and several ditches are visible in a small field to the south of Wiggin Hill Farm. These features are likely to be of post medieval date. They are visible as earthworks on the earlier air photos but appear to have been levelled on more recent sources. (1-3) 1 RAF/58/2296 F21 3 01/11/1957 EHA 2 RAF/58/3245 F21 41 07/10/1959 EHA 3 HSL UK 69892 1418 08/06/1969 HALS
16	TL3090 7445	RIDGE AND FURROW	MEDIEVAL	Traces of possible medieval ridge and furrow are visible as cropmarks in fields to the west of Wiggin Hill Farm. The ridges at TL3093 7439 survived as earthworks in the 1930s. Some of this ridge and furrow is obscured by trees and its present condition is not known but where it has been under arable cultivation it appears to have been levelled. (1-4) 1 RAF/106G/UK1557 3122 07/06/1946 EHA 2 RAF/58/1374 62 08/03/1954 EHA 3 RAF/58/2296 F21 3 01/11/1957 EHA 4 RAF/58/3245 F21 41 07/10/1959 EHA
17	TL3095 7456	DITCH	UNCERTAIN	A faint cropmark of a possible ditch of uncertain origin is visible on the 2006 air photos. This feature may not be of archaeological origin. (1) 1 GE/2006 2006 WWW
18	TL3113 7390	DITCH	UNCERTAIN	A straight ditch is visible as a cropmark on the 2009 image. This feature may be of recent origin. (1) 1 CR/2009 2009 DIGITAL
19	TL3095 7393	RECTILINEAR ENCLOSURE	IRON AGE ROMAN	A small rectilinear enclosure of possible Iron Age or Roman date is visible as cropmarks on the 2009 image. It measures approximately 45x40m and appears to have an east-facing entrance. (1) 1 CR/2009 2009 DIGITAL

AP no.	Central NGR	Types	Periods	Description of features
20	TL3061 7428	RIDGE AND FURROW FIELD BOUNDARY BANK (EARTHWORK)	MEDIEVAL POST MEDIEVAL	Possible medieval ridge and furrow and field boundaries of similar or post medieval date are visible as cropmarks on air photos in the south-eastern part of the Survey Area. Most of these remains have been levelled since the 1940s and they show as cropmarks or soilmarks. (1-9) 1 GE/1945 1945 WWW 2 CR/2009 2009 DIGITAL 3 RAF/106G/UK1589 4022 21/06/1946 HALS 4 RAF/106G/UK1589 4022 21/06/1946 EHA 5 RAF/58/1374 62 08/03/1954 EHA 6 HSL UK 69892 1418 08/06/1969 HALS 7 HSL UK 69892 1417 08/06/1969 HALS 8 RC8 KN BM 212 16/07/1988 CUCAP 9 TL 3174/1 1930s EHA
21	TL3028 7465	SETTLEMENT RECTILINEAR ENCLOSURE	IRON AGE ROMAN	A possible Iron Age or Roman period settlement is visible as cropmarks on the 2009 image. Several rectilinear enclosures and other straight and curving ditches can be identified. These features are only clearly visible on the 2009 image but there are very faint hints of their presence on some earlier photos. These remains appear to lie beneath medieval ridge and furrow (AP no. 20), now levelled. (1-3) 1 CR/2009 2009 DIGITAL 2 RAF/106G/UK1589 4022 21/06/1946 EHA 3 HSL UK 69892 1418 08/06/1969 HALS
22	TL3022 7521	RIDGE AND FURROW NARROW RIDGE AND FURROW PLOUGH HEADLAND FIELD BOUNADRY	MEDIEVAL POST MEDIEVAL	Medieval ridge and furrow and a possible plough headland and post medieval narrow ridge and furrow and a field boundary are visible as cropmarks and soilmarks on historic and recent air photos. These remains are located on the western side of the Survey Area and some have been buried or destroyed by part of the RAF Wyton runway. (1-5) 1 GE/1999 1999 WWW 2 CR/2009 2009 DIGITAL 3 RAF/1504 1 06/05/1942 EHA 4 RAF/106G/UK1557 4071 07/06/1946 HALS 5 RAF/540/1652 37 28/06/1955 EHA

AP no.	Central NGR	Types	Periods	Description of features
23	TL3065 7517	AIRFIELD (Lighting array)	MID 20TH CENTURY	A lighting array for RAF Wyton was erected across the western part of the Survey Area in the middle of the 20th century. Now removed, some traces of the array appear as cropmarks on the 2009 image. (1-4) 1 GE/2006 2006 WWW 2 CR/2009 2009 DIGITAL 3 RAF/58/2296 F21 3 01/11/1957 EHA 4 RAF/58/4804 1 20/11/1961 EHA
24	TL3053 7534	DITCH	UNCERTAIN	Four short cropmarks are visible on the 2009 image. These features are not visible on any other source and though they may indicate buried archaeological ditches other causes for these marks cannot be discounted. (1) 1 CR/2009 2009 DIGITAL
25	TL3073 7522	DITCH	POST MEDIEVAL	A ditch of likely post medieval date is visible as a cropmark on the 2009 image. (1) 1 CR/2009 2009 DIGITAL
26	TL3059 7552	RIDGE AND FURROW FIELD BOUNDARY	MEDIEVAL	Medieval ridge and furrow and boundary ditches are visible as cropmarks on air photos in the north-west of the Survey Area. (1) 1 CR/2009 2009 DIGITAL
27	TL3074 7528	RIDGE AND FURROW	MEDIEVAL	Furlongs of medieval ridge and furrow are visible as cropmarks on air photos. (1-2) 1 RAF/106G/UK1557 3122 07/06/1946 EHA 2 RAF/106G/UK1557 4071 07/06/1946 HALS
28	TL3102 7550	RIDGE AND FURROW	MEDIEVAL	Interlocking furlongs of medieval ridge and furrow are visible as cropmarks and soilmarks on air photos. (1-2) 1 RAF/106G/UK1557 4071 07/06/1946 HALS 2 RAF/58/1374 65 08/03/1954 EHA
29	TL3111 7510	FIELD BOUNDARY	POST MEDIEVAL	A short ditch is visible as a cropmark on the 2009 Imagery. This feature was an extant field boundary on the earliest air photos. (1-2) 1 GE/1945 1945 WWW 2 CR/2009 2009 DIGITAL

AP no.	Central NGR	Types	Periods	Description of features
30	TL3144 7560	RIDGE AND FURROW NARROW RIDGE AND FURROW POND	MEDIEVAL POST MEDIEVAL	Extensive medieval ridge and furrow and some post medieval narrow ridge and furrow are visible on the south side of the village of Woodhurst. These ridges are arranged in strips that have been fossilised by hedgerows. Some of these remains appear to survive as earthworks on the most recent air photos. A small pond of likely post medieval date cuts some of ridges at SE3149 7557. (1-5) 1 GE/1945 1945 WWW 2 RAF/106G/UK1557 4071 07/06/1946 HALS 3 RAF/58/1345 74 22/01/1954 EHA 4 RAF/58/1374 65 08/03/1954 EHA 5 RC8 KN BM 212 16/07/1988 CUCAP
31	TL3143 7531	RIDGE AND FURROW PLOUGH HEADLAND	MEDIEVAL	Traces of possible medieval ridge and furrow and a plough headland are visible as faint cropmarks on historic air photo. (1-2) 1 RAF/106G/UK1557 4071 07/06/1946 HALS 2 RAF/58/1374 65 08/03/1954 EHA
32	TL3174 7526	DITCH ALLOTMENT	POST MEDIEVAL	An extensive arrangement of parallel ditches is visible as cropmarks in the north-east of the Survey Area. These features are only visible on the 2009 image. It is possible that they are associated with the use of this land as allotments in the late 19th century. (1-2) 1 CR/2009 2009 DIGITAL 2 Ordnance Survey 1:2500 scale Sheet XIX 5 Survey 1885 Revised 1900. Second Edition 1901.

Appendix 4 Structure and content of digital map dataset

All features in the MapInfo table APWIGGINHILLFARM are associated with the following information, where applicable.

UID	Catalogue no. (referred to by AP no. 1 etc in the text)
TYPE	NMR Monument Type Thesaurus term
PERIOD	Period
LAYER	Indicates nature of feature depicted eg bank, ditch, ridge and furrow, modern etc
PHOTO1	Photo reference number
DATE1	Date photograph or image was taken
FORM1	Evidence (earthwork, structure, soilmark, parchmark, cropmark) as features appears on PHOTO1
SOURCE1	Location of the photograph or image (eg EHA, CUCAP, HALS, WWW or digital)
PHOTO2	Photo reference number
DATE2	Date photograph or image was taken
FORM2	Evidence (earthwork, structure, soilmark, parchmark, cropmark) as features appears on PHOTO1
SOURCE2	Location of the photograph or image (eg EHA, CUCAP, HALS, WWW or digital)
PHOTO3	Photo reference number
DATE3	Date photograph or image was taken
FORM3	Evidence (earthwork, structure, soilmark, parchmark, cropmark) as features appears on PHOTO1
SOURCE3	Location of the photograph or image (eg EHA, CUCAP, HALS, WWW or digital)

References and resources cited

- Deegan, A 2007. 'Archaeology on the Boulder Clay in Northamptonshire: some results from the Northamptonshire National Mapping Programme Project.' in Mills and Palmer (eds), *Populating Clay Landscapes*. Tempus.
- Jones, R J A and Evans, R 1975. 'Soil and crop marks in the recognition of archaeological site by air photography' in Wilson, D (ed) *Aerial Reconnaissance for Archaeology*. CBA Research Report 12. 1-11
- Palmer, R. 2007. 'Seventy-five years v. ninety minutes. Implications of the 1996 Bedfordshire vertical aerial survey on our perceptions of clayland archaeology.' in Mills and Palmer (eds), *Populating Clay Landscapes*. Tempus.
- Soil Survey of England and Wales 1983 Soils of England and Wales, 1:250 000 scale map and legend. Sheet 4.

Map sources

Ordnance Survey 1:2500 scale Sheet XIX 5 Survey 1885 Revised 1900. Second Edition 1901

Digital resources

CUCAP Catalogue <http://www.geog.cam.ac.uk/cucap/>. Accessed 04/10/2012

Geology of Britain Viewer http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html for geological information. Accessed 22/10/2012



Figure 1. Location plan of air photo interpretation and mapping for land at and around Wiggin Hill Farm, Cambridgeshire



Figure 2. 2009 Cities Revealed imagery for land at and around Wiggin Hill Farm

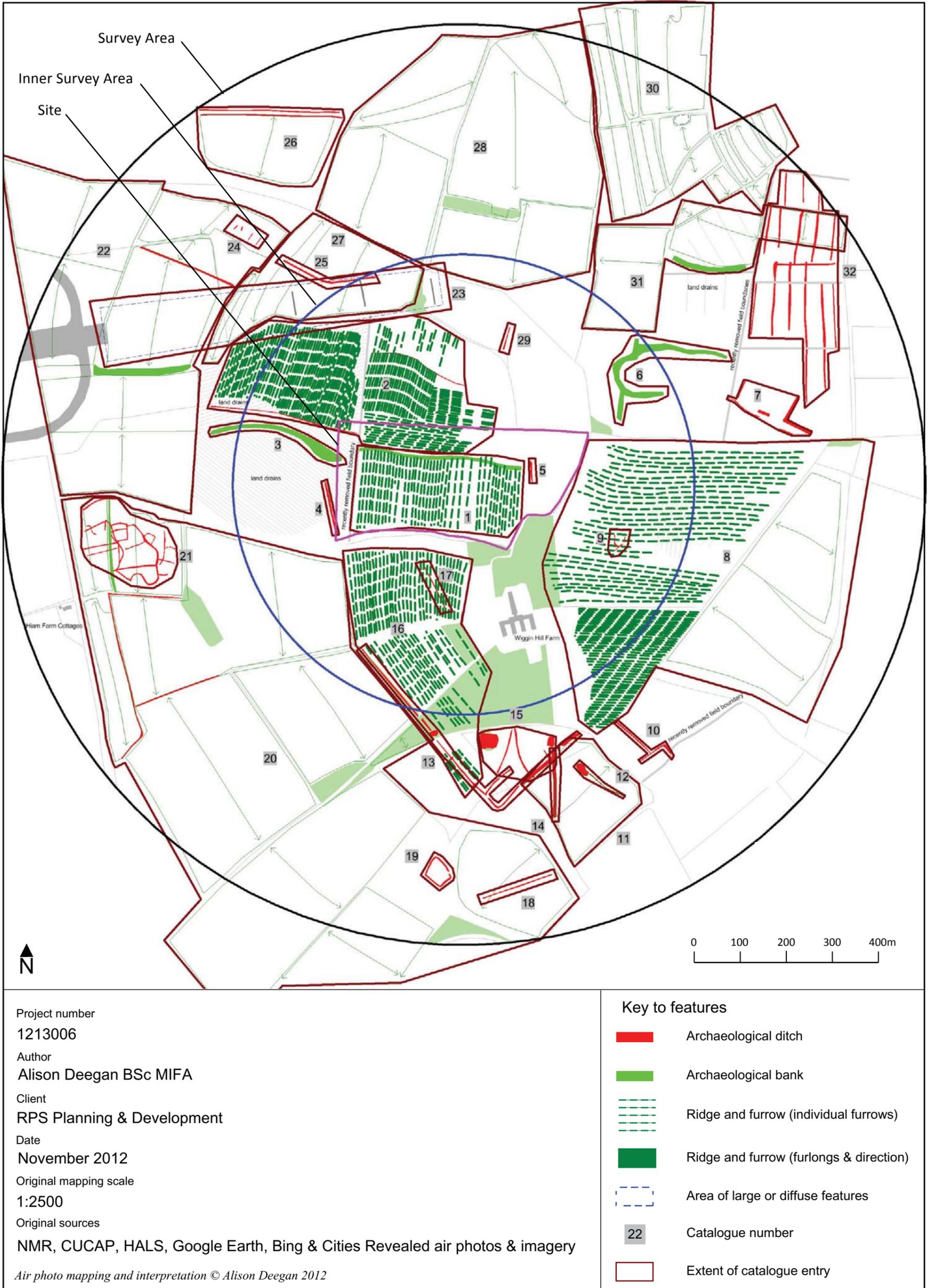


Figure 3. Archaeological features from air photos at and around Wiggin Hill Farm, with catalogue reference numbers

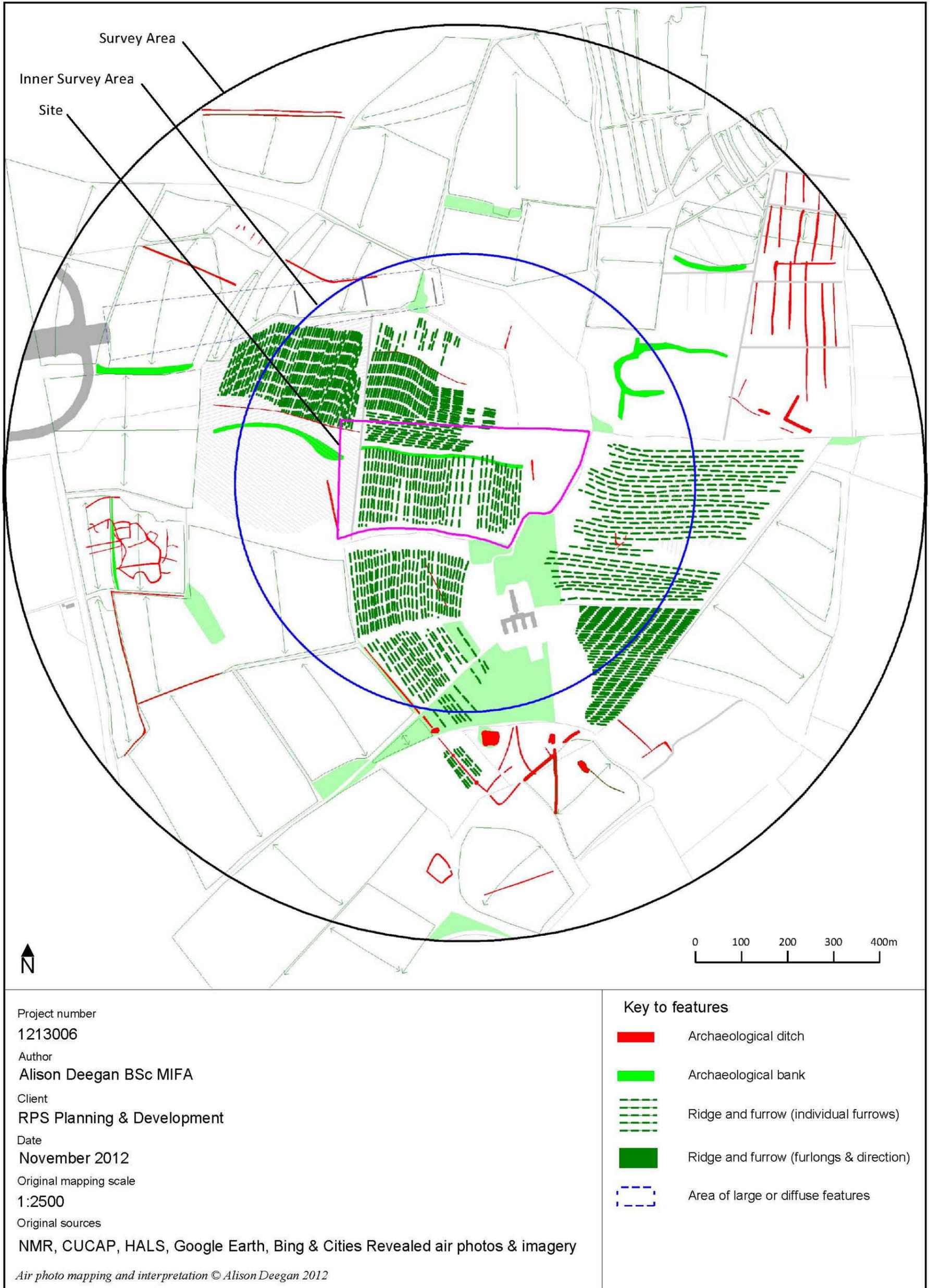


Figure 4. Archaeological features from air photos at and around Wiggin Hill Farm, without catalogue reference numbers

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OASIS ID: alisonde1-137939

Project details

Project name	Air photo mapping and interpretation for land at and around Wiggin Hill Farm, Cambridgeshire
Short description of the project	Air photo mapping and interpretation from existing air photos (English Heritage Archive, CUCAP, Google Earth, Huntingdon Archive and Library Service and Cities Revealed).
Project dates	Start: 11-10-2012 End: 02-11-2012
Previous/future work	No / No
Any associated project reference codes	ECB3874 - HER event no.
Type of project	Desk based assessment
Current Land use	Cultivated Land 4 - Character Undetermined
Monument type	SETTLEMENT Iron Age
Monument type	SETTLEMENT Roman
Monument type	RIDGE AND FURROW Medieval
Significant Finds	N/A None
Methods & techniques	"Aerial Photography - interpretation"
Development type	Solar Farm
Prompt	Planning condition

Project location

Country	England
Site location	CAMBRIDGESHIRE HUNTINGDONSHIRE WOODHURST Wiggin Hill Farm
Study area	3.14 Kilometres
Site coordinates	TL 3102 7478 52 0 52 21 18 N 000 04 33 W Point

Project archives

Physical Archive Exists?	No
Digital Archive Exists?	No
Digital Media available	"GIS", "Spreadsheets", "Text"
Paper Archive Exists?	No
Paper Media available	"Report"

Project bibliography**1**

Publication type	Grey literature (unpublished document/manuscript)
Title	Air photo mapping and interpretation for land at and around Wiggin Hill Farm, Cambridgeshire
Author(s)/Editor(s)	Deegan, A
Other bibliographic details	Report No. 1213006
Date	2012
Issuer or publisher	Alison Deegan
Place of issue or publication	UK
Description	Comb bound A4 report with text, catalogue of features and coloured small scale reproductions of digital mapping data.
Entered by	Alison Deegan (ad@alisondeegan.co.uk)
Entered on	20 November 2012

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