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**LAND SOUTH OF STATION ROAD,
BLUNTISHAM,
AREA CENTRED TL358733,
CAMBRIDGESHIRE:**

AERIAL PHOTOGRAPHIC ASSESSMENT

REPORT No: 2011/7

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Commissioned by:
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**LAND SOUTH OF STATION ROAD, BLUNTISHAM,
AREA CENTRED TL358733,
CAMBRIDGESHIRE:
AERIAL PHOTOGRAPHIC ASSESSMENT**

SUMMARY

This assessment of aerial photographs examined an area of some 13 hectares (centred TL358733) in order to identify and accurately map archaeological, recent and natural features.

Within and south of the Development Area is a scatter of rectangular pits that probably indicate sunken floor buildings (SFBs) of Saxon date.

On the south-east side of this scatter is half an arc of a ring ditch of probable bronze age date.

The SFBs and the ring ditch are located on a area of slightly higher ground, possibly also of a more gravely nature than the surrounding clay-based bedrock.

East of the Development Area is a ditched enclosure of squareish shape within which are pits that may be contemporary with the enclosure. These features may be of iron age and/or Roman date and attest to recurrent use of this locally high ground.

Slight suggestions of ridge and furrow remaining from medieval cultivation occur in one modern field.

Hand-dug quarries occur in the area of the SFBs and overlap with some of them. They are thought to be of shallower depth, allowing survival of the lower levels of the SFBs.

Lengths of former field boundaries have been identified and mapped but no disturbance caused by orchards has been identified on the photos examined.

The field which contains the Development Area was in arable use, or had been cultivated, on 16 October 2003 and most earlier dates. From 2005 it seems to have been kept as unmanaged grass

Original photo interpretation and mapping was at 1:2500 level.

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Rog Palmer MA MIFA

INTRODUCTION

This assessment of aerial photographs was commissioned to examine an area of some 13 hectares (centred TL358733) in order to identify and accurately map archaeological, recent and natural features and thus provide a guide for field evaluation. The level of interpretation and mapping was to be at 1:2500.

ARCHAEOLOGICAL AND NATURAL FEATURES FROM AERIAL PHOTOGRAPHS

In suitable cultivated soils, sub-surface features – including archaeological ditches, banks, pits, walls or foundations – may be recorded from the air in different ways in different seasons. In spring and summer these may show through their effect on crops growing above them. Such indications tend to be at their most visible in ripening cereal crops, in June or July in this part of Britain, although their appearance cannot accurately be predicted and their absence cannot be taken to imply evidence of archaeological absence. In winter months, when the soil is bare or crop cover is thin (when viewed from above), features may show by virtue of their different soils. Upstanding remains, which may survive in unploughed grassland, are also best recorded in winter months when vegetation is sparse and the low angle of the sun helps pick out slight differences of height and slope.

Such effects are not confined only to archaeological features as almost any disturbance of soil and bedrock can produce its own range of shadow, crop and soil differences. Most may be distinguished as archaeological or other features but there may remain some features of unknown origin that cannot be classified without specialist knowledge or input from field investigation.

PHOTO INTERPRETATION AND MAPPING

Photographs examined

The most immediately informative aerial photographs of archaeological subjects tend to be those resulting from observer-directed flights. This activity is usually undertaken by an experienced archaeological observer who will fly at seasons and times of day when optimum results are expected. Oblique photographs, taken using a hand-held camera, are the usual products of such investigation. Although oblique photographs are able to provide a very

detailed view, they are biased in providing a record that is mainly of features noticed by the observer, understood, and thought to be of archaeological relevance. To be able to map accurately from these photographs it is necessary that they have been taken from a sufficient height to include surrounding control information.

Vertical photographs cover the whole of Britain and can provide scenes on a series of dates between (usually) 1946-7 and the present. Many of these vertical surveys were not flown at times of year that are best to record the archaeological features sought for this Assessment and may have been taken at inappropriate dates to record crop and soil responses that may be seen above sub-surface features. Vertical photographs are taken by a camera fixed inside an aircraft and with its exposures timed to take a series of overlapping views that can be examined stereoscopically. They are often of relatively small scale and their interpretation requires higher perceptive powers and a more cautious approach than that necessary for examination of obliques. Use of these small-scale images can also lead to errors of location and size when they are rectified or re-scaled to match a larger map scale.

Images in that are viewable in Google Earth comprise, for Britain, a mixture of mosaiced vertical aerial photographs and georectified image tiles from high-resolution satellites. For the purposes of photo interpretation, satellite images of this kind are no different from vertical aerial photographs except that they have a slightly lower degree of resolution. Both are perfectly adequate for recording crop variations and soil differences over many types of levelled archaeological feature and both record the complete landscape rather than those objects noticed by an airborne observer.

A cover was obtained from the National Monuments Record: Air Photographs (NMRAP), Swindon. Photographs had also been taken by the writer during a flight with RCHME in 1995. The photographs examined included those resulting from observer-directed flights and routine vertical surveys. Images current on Google Earth at the time of this work (June 2011) were also examined.

Photographs consulted are listed in the Appendix to this report.

Base maps

A suitable base map was not provided so a background was constructed using AirPhoto to crop and geolocate an image from Google Earth (Scollar and Palmer 2008). This provided a background 'map' that had accurate scale and position.

Study Area

Photographs were examined in detail for an area extending at least 100m beyond the Development Area.

Photo interpretation and mapping

All photographs were examined by eye and under slight (2x) magnification, viewing them as stereoscopic pairs when possible. Digital copies of the most informative were transformed to match the geolocated Google Earth background using the specialist program AirPhoto (Scollar 2002; 2011). When it seemed beneficial, digital photographs were enhanced using the default setting in AirPhoto before being examined on screen. Transformed files were set as background layers in AutoCAD Map, where features were overdrawn using standard conventions while making reference to the original prints. Layers from this final drawing have been used to prepare the figures in this report and have been supplied to the client in digital form.

Images in Google Earth were initially viewed and selected from within AirPhoto which automatically geo-references saved files (Scollar and Palmer 2008). These were then imported into AutoCAD, interpreted and overdrawn.

Accuracy

The accuracy of the geolocated Google Earth background fixes the greatest accuracy that can be achieved from transforming other photographs on to it. When that facility was being added to AirPhoto and tested, checks were made on a random sample of 12 UK triangulation points and showed most to be positioned within 2.0 metres (Scollar and Palmer 2008, 16).

AirPhoto computes values for mismatches of control points on the photograph and map. In the transformations prepared for this assessment the mean mismatches were less than $\pm 1.50\text{m}$.

COMMENTARY

Soils

The Soil Survey of England and Wales (SSEW 1983) shows the area to be situated on Oxford Clay (soil association 411c: EVESHAM 3) over which, in the south of the area, is a later deposit of river alluvium over peat (soil association 813a: MIDELNEY). Crops growing on either of these soils do not readily respond to variations of sub-surface depth and it seems likely that the features recorded are on local rises of ground that may be of gravely deposits (this corresponds to observations made elsewhere: David Hall, pers. comm.).

Archaeological features (Figure 1)

Within and south of the Development Area is a scatter of rectangular pits that probably indicate sunken floor buildings (SFBs) of Saxon date. On the south-east side of this scatter is half an arc of a ring ditch of probable bronze age date. SFBs cut into and lie within that ring ditch suggesting it was an insignificant feature by Saxon times. The SFBs and the ring ditch are located on a area of slightly higher ground, possibly also of a more gravely nature than the surrounding clay-based bedrock. Where it can be seen on aerial photographs, the edge of this higher ground is indicated in Figure 1.

The ring ditch is cut by a modern road. East of the road is a ditched enclosure of squareish shape within which are pits of different forms and sizes to the SFBs, and may be contemporary with the enclosure. These features may be of iron age and/or Roman date and attest to recurrent use of this locally high ground.

Slight suggestions of ridge and furrow remaining from medieval cultivation were noticed in one modern field on photographs taken in 1947. Those same photographs (RAF/CPE/UK/1952: 4036, 4248) showed the extent of the flooding in that year and showed the water lapping at the southern edge of the mapped higher ground.

Non-archaeological features (Figure 1)

Rectangular areas of darker (greener) crop growth in photographs taken in 1995 (APS: 95.92/5-6) indicate hand-dug quarries. On those photographs, most of the quarries show with a lighter tone than the SFBs and this is thought to indicate that they have shallower depth. Indeed, some SFBs have been identified within the quarried areas and this indicates that their lower parts have survived below the quarry bottoms. (An alternative argument could be that the so-called SFBs are later in date than the quarries and have cut into them – but this is not considered to be a valid case.)

Lengths of former field boundaries have been identified east of the Development Area but no disturbance caused by orchards (see Figure 2) has been identified on the photos examined.

Land use (Figure 2)

The field which contains the Development Area was in arable use, or had been cultivated on 16 October 2003 and most earlier dates. The Geoinformation photograph on Google Earth appears under two dates – 2003 and 2005 – and was probably taken in October. As landuse in the Development Area is unmanaged grass the date is likely to be 2005 and that landuse continued after that date. Details of changing landuse are shown in Figure 2, but in recent years the larger fields surrounding the Development have been, and remain, in arable use to the date of the latest photography (October 2008).

REFERENCES

- Scollar, I., 2002. Making things look vertical, in Bewley, R.H. and Rączkowski, W., (ed). *Aerial archaeology: developing future practice*. NATO Science Series, Vol 337, 166-172.
- Scollar, I., 2011. <http://www.uni-koeln.de/~al001/airdown.html> (accessed 6 April 2011)
- Scollar, I. and Palmer, R., 2008. Using Google Earth Imagery. *AARGnews* 37, 15-21.
- SSEW, 1983. *Soils of England and Wales: sheet 4: Eastern England (1:250,000)*. Soil Survey of England and Wales, Harpenden.

APPENDIX

Aerial photographs examined

Source: Air Photo Services

Oblique photographs

95.92/5-6 TL360733 22 June 1995

Source: Google Earth (searched 23 June 2006)

Vertical photographs

Geoinformation Group 1945 (approx date)
 Infoterra/Bluesky 1999
 Geoinformation Group 2003 or 2005
 Getmapping 2006
 Infoterra/Bluesky 17 October 2008

Satellite images

Digital Globe 16 October 2003

Source: National Monuments Record: Air Photographs (cover search 61907)

Specialist collection

TL3673/4-5 22 June 1995

Vertical collection

<i>Sortie number</i>	<i>Library number</i>	<i>Camera position</i>	<i>Frame number</i>	<i>Held</i>	<i>Centre NGR</i>	<i>Date</i>	<i>Sortie quality</i>	<i>Scale 1:</i>
RAF/106G/UK/1557	386	RP	3130	P	TL 363 742	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	RV	6373	P	TL 365 727	07 JUN 1946	AC	9800
RAF/106G/UK/1557	386	RV	6374	P	TL 359 728	07 JUN 1946	AC	9800
RAF/106G/UK/1589	408	FS	2030	P	TL 357 730	21 JUN 1946	AB	10000
RAF/106G/UK/1589	408	FS	2031	P	TL 361 731	21 JUN 1946	AB	10000
RAF/CPE/UK/1952	554	RS	4036	P	TL 358 734	25 MAR 1947	A	10000
RAF/CPE/UK/1952	554	RS	4248	P	TL 359 737	25 MAR 1947	A	10000
RAF/58/1983	1737	F22	82	N	TL 352 737	20 APR 1956	A	10000
RAF/58/1983	1737	F22	83	N	TL 352 729	20 APR 1956	A	10000
RAF/58/5754	2153	F21	140	P	TL 355 742	04 JUN 1963	A	10000
RAF/58/5754	2153	F21	141	P	TL 363 742	04 JUN 1963	A	10000

RAF/58/5754	2153	F22	140	P	TL 355 725	04 JUN 1963	A	10000
RAF/58/5754	2153	F22	141	P	TL 363 725	04 JUN 1963	A	10000
MAL/68061	5155	V	102	P	TL 356 731	12 AUG 1968	A	10000
MAL/68061	5155	V	103	P	TL 365 731	12 AUG 1968	A	10000
MAL/69068	5422	V	26	P	TL 360 730	18 JUL 1969	A	10500
OS/70210	10509	V	230	P	TL 363 731	04 JUN 1970	A	7500
OS/70210	10509	V	231	P	TL 363 737	04 JUN 1970	A	7500
OS/70210	10509	V	288	P	TL 352 733	04 JUN 1970	A	7500
OS/68138	11706	V	250	P	TL 362 735	02 JUN 1968	A	7500
OS/68138	11706	V	251	P	TL 356 737	02 JUN 1968	A	7500
OS/89174	13499	V	857	P	TL 361 733	16 MAY 1989	A	7700
OS/89174	13499	V	858	P	TL 354 733	16 MAY 1989	A	7700
OS/95717	14995	V	4	P	TL 361 735	15 AUG 1995	A	7300
OS/95717	14995	V	5	P	TL 355 732	15 AUG 1995	A	7300
OS/97287	22372	V	50	N	TL 355 730	25 OCT 1997	A	7600

Most informative photographs

APS: 95.92/5-6
 Infoterra/Bluesky 1999
 RAF/CPE/UK/1952: 4036, 4248

TERMS AND CONDITIONS

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Air Photo Services has consulted only those aerial photographs specified. It cannot guarantee that further aerial photographs of archaeological significance do not exist in collections that were not examined.

Due to the nature of aerial photographic evidence, Air Photo Services cannot guarantee that there may not be further archaeological features found during ground survey which are not visible on aerial photographs or that apparently 'blank' areas will not contain masked archaeological evidence.

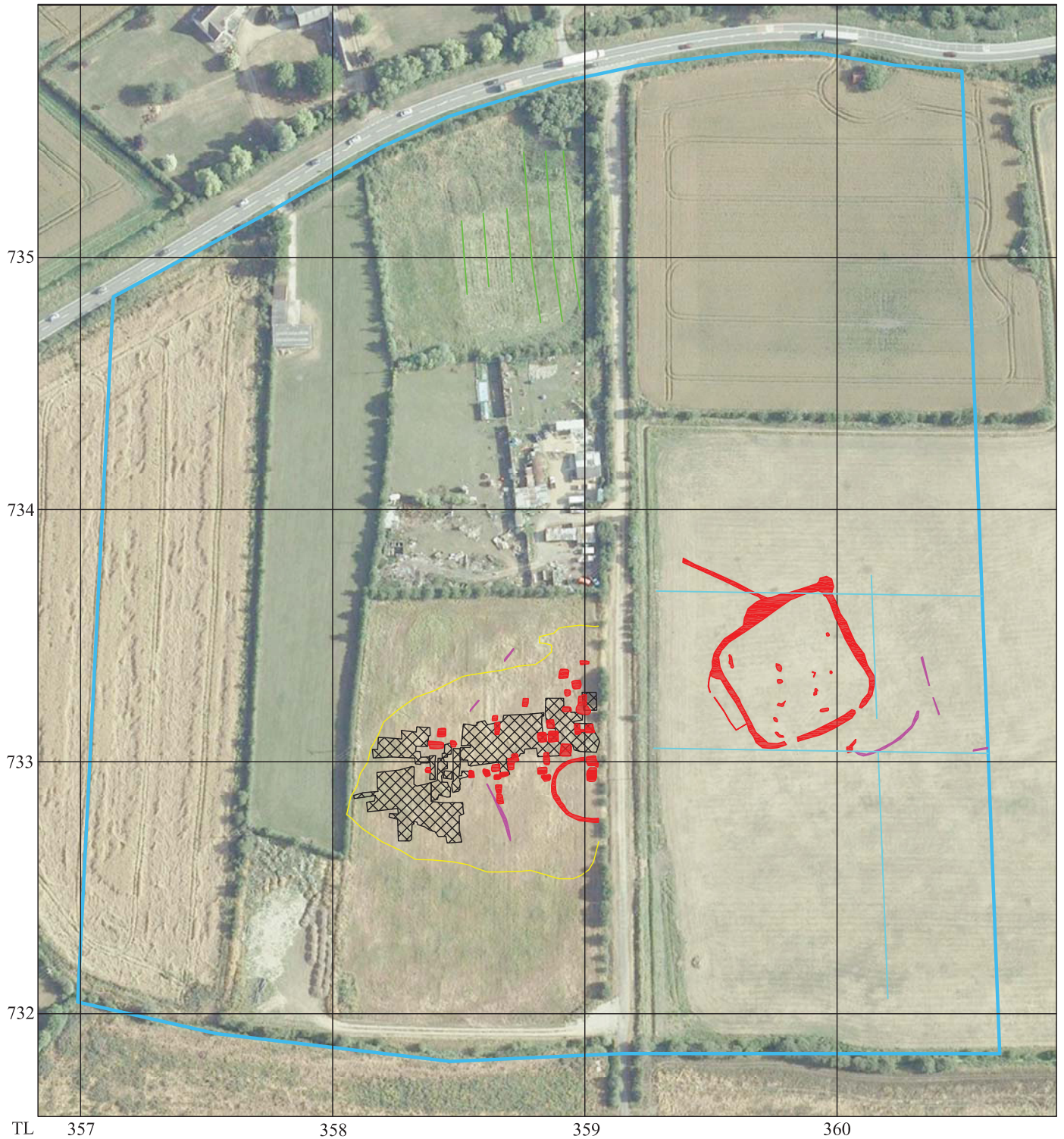
We suggest that if a period of 6 months or more elapses between compilation of this report and field evaluation new searches are made in appropriate photo libraries. Examination of any newly acquired photographs is recommended.

That the original working documents (being interpretation overlays, control information, and digital data files) will remain the property of Air Photo Services and be securely retained by it for a period of three years from the completion date of this assessment after which only the digital files may be retained.

It is requested that a copy of this report be lodged with the relevant Sites and Monuments Record within six months of the completion of the archaeological evaluation.

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Land south of Station Road, Bluntisham, Cambs:
 Figure 1. Features identified on aerial photographs



- Study Area
- Archaeological features
- Ditch or pit
- Possible ditch
- Ridge and furrow traces
- Natural feature
- Edge of higher ground
- Recent features
- ⊠ Hand dug quarry
- Former field boundary

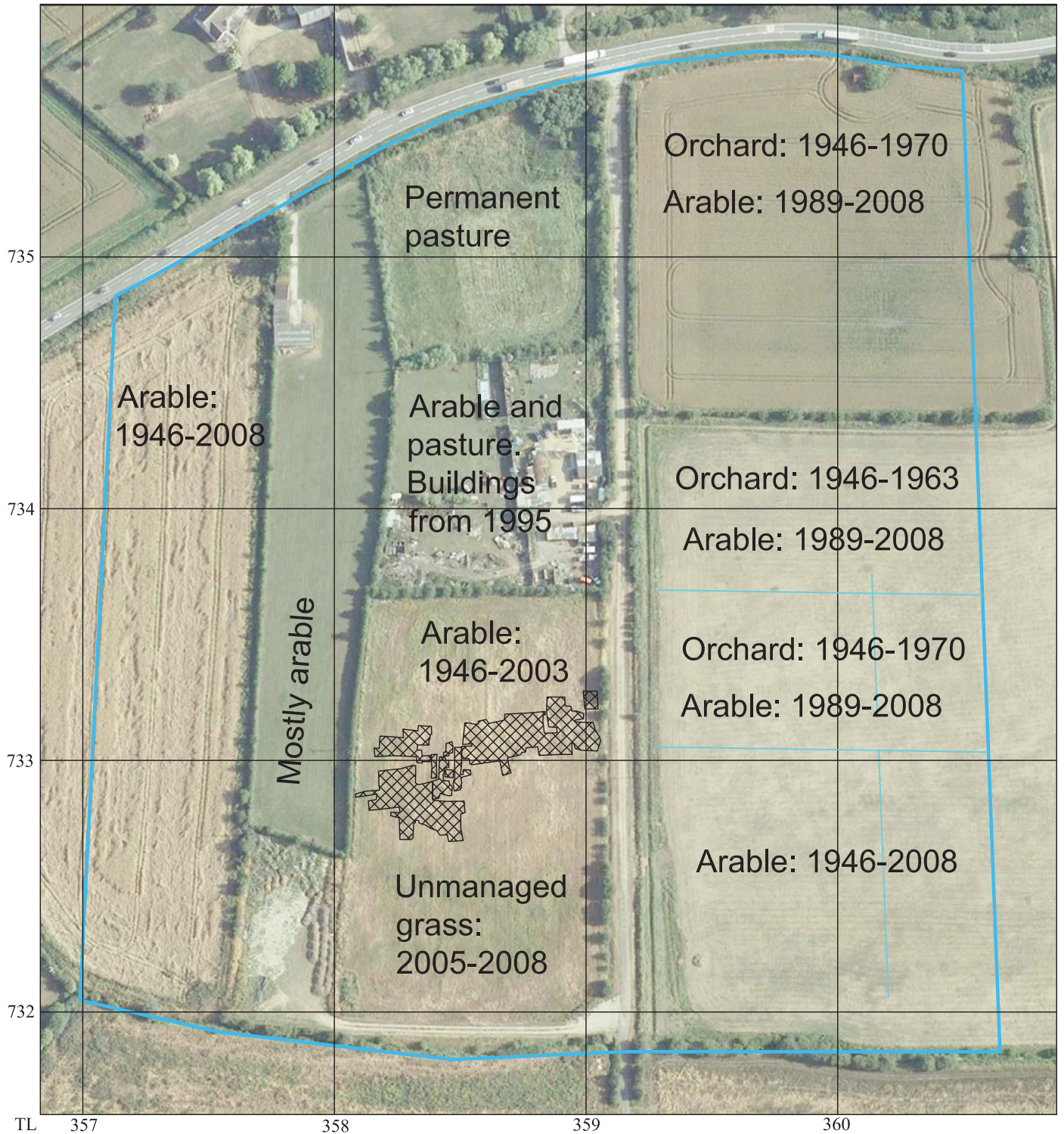
Original photo interpretation and mapping at 1:2500 level based on aerial photographs at Air Photo Services, NMRC and Google Earth. Background georeferenced from Google Earth/Getmapping 2006.

Air Photo Services

June 2011

Drawing: 1107-Bluntisham-map.dwg

Land south of Station Road, Bluntisham, Cambs:
 Figure 2. Landuse identified on aerial photographs



- Study Area
- Recent features
- XXXX Hand dug quarry
- Former field boundary

Land use information based on aerial photographs at
 Air Photo Services, NMRC and Google Earth.
 Background georeferenced from Google Earth/Getmapping 2006.
 Air Photo Services
 June 2011
 Drawing: 1107-Bluntisham-map.dwg