# STOKE HAMMOND, BUCKINGHAMSHIRE TWO POSSIBLE NEOLITHIC ENCLOSURES AERIAL INVESTIGATION AND MAPPING

ARCHAEOLOGICAL REPORT

Zoe Edwards





**REMOTE SENSING** 

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# STOKE HAMMOND BUCKINGHAMSHIRE

# TWO POSSIBLE NEOLITHIC ENCLOSURES

Zoe Edwards

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Cover Photograph: The Enclosure Cropmarks at Stoke Hammond. 26957/026 02-JUN-2011 © English Heritage

#### SUMMARY

The cropmarks of a group of probable prehistoric enclosures in Stoke Hammond, Buckinghamshire, were discovered during English Heritage aerial reconnaissance in 2011. Mapping and analysis suggested the cropmarks indicate the location of two subrectangular enclosures and a ring ditch, interpreted as possible Neolithic long mortuary enclosures and a Bronze Age round barrow. The surrounding area was investigated to reveal further cropmarks and earthworks defining a probable medieval settlement, along with additional evidence of activity in the medieval and post medieval periods including fields of ridge and furrow and gravel extraction pits.

#### CONTRIBUTORS

Mapping and interpretation by Zoe Edwards supervised by Fiona Small.

#### ACKNOWLEDGEMENTS

Thanks to Fiona Small, Martyn Barber, Edward Carpenter, and Helen Winton for their advice on the interpretation of the cropmarks, and to Damian Grady for discovering the site through aerial reconnaissance. Thanks to Julia Wise; Historic Environment Record Officer for Buckinghamshire County Council who provided details of potential related monuments in the area, and Luke Griffin and the English Heritage Archive Services team for providing the required photographs.

ARCHIVE LOCATION The English Heritage Archive The Engine House, Fire Fly Avenue Swindon SN2 2EH

DATE OF SURVEY

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## INTRODUCTION

This report presents the interpretation and mapping of three probable prehistoric enclosures identified through English Heritage aerial reconnaissance in 2011, and the landscape surrounding them within a kilometre square. The enclosures are all located within a single field at Stoke Hammond, Buckinghamshire, on a former gravel island at approximately SP 887 296 and close to the confluence of the River Ouzal and a stream. The 2011 aerial photographs, plus historic aerial photographs from the English Heritage Archive and lidar images from the Environment Agency were examined in order to identify and map as much detail as possible for the enclosures and their immediate environs. Only the 2011 oblique photographs showed the cropmarks of two sub-rectangular enclosures, a ring ditch, and a number of pits; all of probable prehistoric date, while features surviving as cropmarks and earthworks of medieval - post medieval agriculture and gravel extraction appear in the other sources. What survives of ridge and furrow extends beyond the confines of the surveyed area.

This project was a training exercise in aerial photographic transcription and analysis for Zoe Edwards as part of a placement within English Heritage's Aerial Investigation and Mapping team.



Figure I Oblique view facing north-west, showing the field containing cropmarks of the enclosures. Note the considerable periglacial frost cracking also visible as cropmarks across the entire field. 26957/022 02-JUN-2011 © English Heritage.

# PROJECT AREA

Aerial reconnaissance by English Heritage identified of a group of possible prehistoric enclosures visible as cropmarks at Stoke Hammond, Buckinghamshire (Figs 1-2). The field containing the cropmarks and the surrounding one kilometre map square were surveyed in order to discover any further evidence of past activity in the area (Fig 3). The eastern edge of the core survey area is defined by the course of the Grand Union Canal, while the Stoke Hammond – Soulbury parish boundary and the road from Stoke Hammond mark the southern extent. The site lies on a low former gravel island close to the confluence of the River Ouzal (to the North), toward which a stream leads to create the western edge of the core survey area. The modern village of Stoke Hammond lies just over half a kilometre to the east of this site, with its surrounding area primarily agricultural land; predominantly in pasture with some arable.

The English Heritage AMIE database (part of the National Record of the Historic Environment (NRHE)) and Buckinghamshire HER hold records of a number of notable features within the kilometre around the site, including Roman metalwork and coins which may relate to the Roman Town of Magiovinium circa four kilometres to the North. Other noted features include the site of a former watermill, and a number of houses within the village of medieval origin. Ridge and furrow of medieval date survives as earthworks c.1.65 kilometres to the south, surrounding the deserted village of Hollingdon.

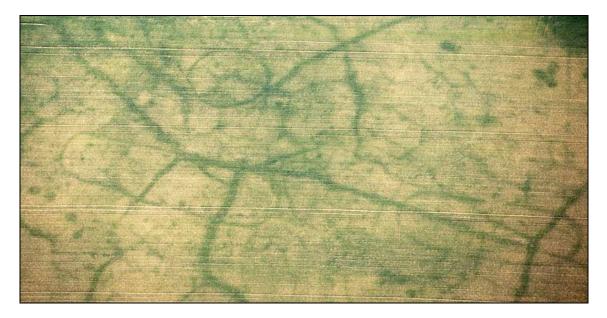


Figure 2 The enclosures at Stoke Hammond. Extract of 26957/026 02-JUN-2011 © English Heritage.

The nature of the geological cropmarks visible on the aerial photographs, along with the sites proximity to a river and evidence for quarrying suggests that the survey area comprises a low, elongated former gravel island overlying deposits of clays at the confluence of the River Ouzal and a small stream. The English Heritage WebGIS NSRI

Soilscapes layers indicate there are loamy clayey soils in the project area, which range from lime-rich, to acidic but base-rich, with some sandy soils to the eastern edge of the area. The land is relatively flat at c.75 metres OD and aerial photographs show that the land use has remained under arable crops and some pasture since the 1940s. The course of the River Ouzal is to the east of the site.

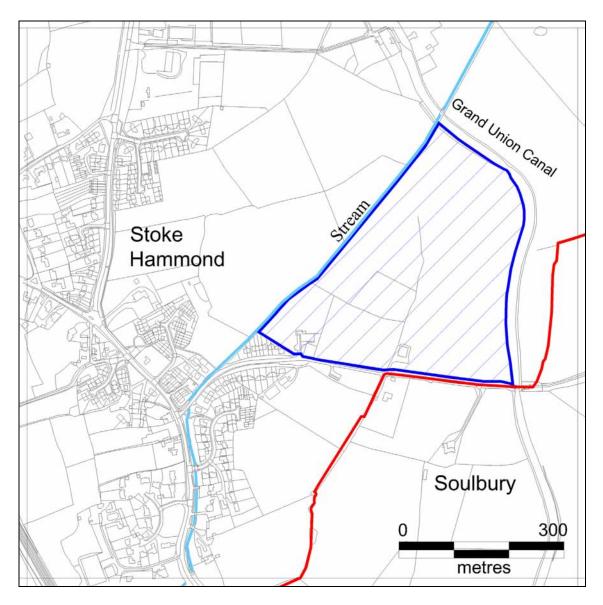


Figure 3 The extent of Stoke Hammond project area (north to top). The area outlined and hatched in dark blue shows the bounds of the core survey area. The boundary between the Parishes of Stoke Hammond and Soulbury is shown in red, and the stream is highlighted by the light blue line. Background mapping © Crown Copyright and database right 2013. All rights reserved. Ordnance Survey Licence number 100024900.

# METHODS AND SOURCES

All available aerial photographs were consulted for the mapping and analysis. All prints of vertical air photos were viewed using a hand held stereoscope to enable the site to be viewed in 3D. The mapping was produced in AutoCAD by tracing the archaeology from relevant transformed and georeferenced aerial images. Monument descriptions for the main elements of the site, and an event record, were created in the English Heritage AMIE monuments and events database (part of the National Record of the Historic Environment). Monument Records are available online via the PastScape database on the Heritage Gateway. <u>http://www.heritagegateway.org.uk/gateway/</u>

See appendix 1 for further details.

## Aerial photographic sources

A total of 61 black and white vertical photographs from the RAF and OS dating from March 1946 to August 1998 were supplied by the English Heritage Archive (formerly part of the NMR). No photographs of the survey area are held at the Cambridge University Collection of Aerial Photography.

The earliest available aerial photographs covering the project area are RAF survey verticals from 1946. The area has subsequently been photographed on several occasions during survey flights by the RAF and the Ordnance Survey. The earliest specialist archaeological reconnaissance obliques are ten colour photographs, taken when the cropmarks were first identified by Damian Grady of English Heritage during aerial reconnaissance in June 2011. These record the cropmarks of two sub-rectangular enclosures and a ring ditch.

Lidar images of the survey area derived from the Environment Agency and taken in April 2000 and November 2006 were consulted. Google Earth vertical photographs labelled as July 2003 and 2012 were reviewed. Most of these additional sources did not contribute any further detail on the enclosures, but were useful for the surrounding medieval and post medieval landscape.

See appendix 3 for references to all photographs and lidar images used for mapping.

## **Documentary Sources**

Further sources were consulted during the mapping, interpretation, analysis and recording stages of this assessment. The English Heritage AMIE database and the Buckinghamshire Historic Environment Record were consulted to identify nearby monuments, features, and interpretations of the landscape. Modern and historic Ordinance Survey maps in digital form were viewed using the English Heritage WebGIS. Other published sources were consulted for possible similar sites or situations.

## SUMMARY OF RESULTS

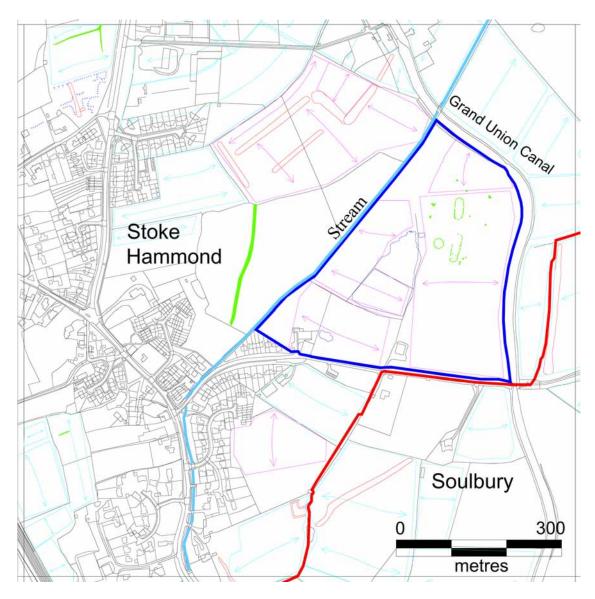


Figure 4 The archaeological features mapped from aerial photographs and lidar images (north to top). Ditches are shown in green, banks in red. The extent of ridge and furrow is outline in magenta (levelled) or cyan (earthworks) with the main direction of ploughing indicated by an arrow. Background mapping © Crown copyright and database right 2013, all rights reserved. Ordnance Survey Licence number 100024900.

English Heritage aerial reconnaissance identified a group of cropmarks to the east of Stoke Hammond, which probably represent the remains of two Neolithic enclosures and a Bronze Age round barrow (Figs 4-5). The extensive cropmark traces of periglacial frost cracking in the underlying deposits are also visible in the field, making the form of the archaeological features more difficult to determine.

## Prehistoric

#### Sub-rectangular Enclosures

Both enclosures are of elongated sub-rectangular shape, and are defined by a single ditch with possible entrances or causeways in their longer sides (Fig 5). Both are aligned approximately north-south, although the southern enclosure is angled very slightly more in a NNE-SSW position. Internal features appear only in the southern enclosure as possible pits.

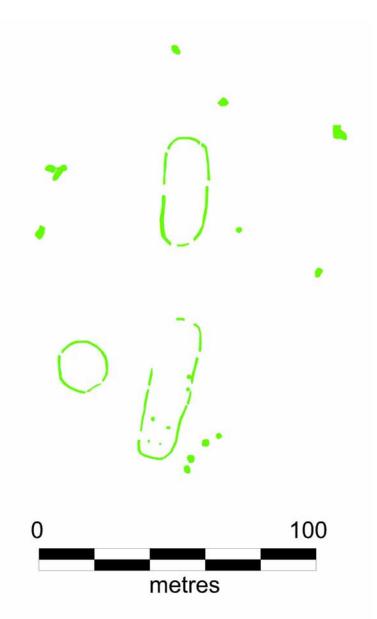


Figure 5 Digital transcription of the enclosures and features of possible prehistoric date, surrounded by post medieval gravel pits (north to top).

The southern enclosure (centred at SP 8878 2958) is 50 metres long, and varies in width between c.14 metres and c.12 metres, tapering towards its southern end. The cropmark remains of what may be two pits can be seen flanking a possible causeway or entrance of c.2.5 metres on the eastern side, just inside the line of the enclosure ditch. This area is obscured by the cropmarks of the background geological frost cracking and disturbance from the current land use, making it difficult to determine whether breaks in the visible line of the ditch are indeed reflecting the form of the archaeology and showing a true entrance.

The ditches of the southern enclosure range from c.0.5 metres to c.0.9 metres in width. Within the southerly end there are the traces of four pits or post holes of c.0.8 metres to c.1.6 metres in diameter, in a sub-rectangular arrangement. The cropmarks caused by frost cracking may have obscured the traces of any other internal features.

The second enclosure (SP 8879 2966) lies c.26 metres to the north. This is smaller and appears more regular in form, measuring c.38 metres long and c.15 metres wide. The ditches measure between 0.5 metres and 1.4 metres wide. The ditches of the long sides are straighter than those of the southern enclosure. The ends of the enclosure are curved to form a 'capsule' shape. There is a break roughly mid-way along the western ditch (c.3.8 metres wide) which is presumed to represent an original entrance. The form of the ditch on the eastern side is more difficult to discern.

#### **Ring Ditch**

A ring ditch of sixteen metres in diameter with an average ditch width of approximately one metre is situated c.15 metres west of the southern sub-rectangular enclosure at SP 8874 2959. Ring ditches of this form are usually considered to be the remains of prehistoric round houses or round barrows. Very rarely, prehistoric round houses may be visible as cropmarks, but in this case the diameter of the ring ditch and the width of the ditch itself make it highly unlikely that these are the cropmarks of a roundhouse.

Ring ditches such as this generally represent the remains of plough-levelled round barrows of Early or Middle Bronze Age date. Funerary monuments of this date are commonly constructed adjacent to other funerary or ceremonial monuments of earlier date, for example long barrows, cursuses and henges. Similar examples can be seen in the Stonehenge Landscape, Knowlton, and Roughton in Norfolk (Fig 6).

#### Pits

A number of possible pits of varying shape and size were seen as cropmarks across the site. Most appear geological in origin, or related to more recent quarrying, but some seem to be of archaeological origin and possibly related to the prehistoric enclosures.

The possible prehistoric pits measure between c.2.2 metres and c.2.9 metres in diameter and appear to be positioned as two pairs of pits near SP 8867 2954. The two southerly pits are c.1 metre apart; separated then by a gap of c.5 metres towards the northern two, which sit c.3 metres apart (Fig 5). Although they appear to follow a curving line opening towards the south east, there is no evidence visible to suggest that a ring of pits was once present, or that the line continued.

#### Discussion of prehistoric features

The capsule shaped enclosures at Stoke Hammond share many characteristics with a group of sub-rectangular monuments of Neolithic date. This includes long barrows, features sometimes called 'mortuary enclosures', and cursus monuments. While long barrows with a north-south orientation and a fully enclosing ditch are not unknown, the form of the Stoke Hammond enclosures would be highly unusual in a long barrow, as would entrances or causeways in the long sides rather than the ends. In addition, the ditches do not appear wide enough to provide material for an internal mound of any great size.



Figure 6 Cropmarks at Roughton, Norfolk, where cropmarks of a Neolithic causewayed enclosure and possibly two enclosures with similarities to those at Stoke Hammond lie to the south of a possible Bronze Age round barrow. TG2235/A/AKP23 31/JUL/1977 © Norfolk County Council. Photo by Derek A. Edwards.

While the form of the Stoke Hammond enclosures does resemble many of the 'cursuslike enclosures' classified by Webster and Holey in 1954. However, the term 'cursus monument' refers to linear or elongated rectangular monuments which are by definition considerably longer than either enclosure at Stoke Hammond. In contrast, their presence on a gravel terrace and parallel to a river would not be an unusual location for a cursus, in particular in this case as they are near to the confluence of two rivers and close to a potential river crossing point (Loveday 2006).

The Stoke Hammond enclosures fit more closely with a poorly understood category known as 'long mortuary enclosures' (or 'oblong enclosures' as they are occasionally termed). Broad similarities between the form and setting for cursuses, long barrows and mortuary enclosures may imply a common meaning in the landscape between these monuments. Although a chronological overlap with long barrows and cursuses seems likely, the few sites classified as long mortuary enclosures that have been excavated have in fact provided no evidence for any funerary or mortuary function.

## Medieval and/or Post Medieval

Survey of a contextual one kilometre area surrounding the field containing the cropmarks was also carried out. This identifyied a number of medieval and post medieval features visible as cropmarks and earthworks (Fig 1).

## Medieval Settlement

Earthworks to the north-west of Stoke Hammond village appear as a pattern of banks and a hollow way, which are likely to be what survives of a medieval settlement (top left Fig 1). These earthworks are centred at SP 8809 2985 and cover an area of c.100 metres by c.80 metres. A hollow way appears to run through the centre of the settlement, with house platforms on either side. A bank cuts across the earthworks of the settlement at a right angle to the hollow way, which may represent a later field boundary. The settlement is likely to be contemporary with fields of ridge and furrow in the surrounding area.

## Medieval - Post Medieval Agriculture

The lidar images and aerial photographs show the cropmarks and earthworks of extensive ridge and furrow across the area (Fig 7). These are easily distinguishable from modern farming due to the curving shape in the direction of plough, and the wider ridges (Hall 1982). A field of ridge and furrow in the north of the survey area has been cut by the Grand Union Canal which provides it with the latest date of 1805 when the 'Grand Junction Canal' (as it was called) was constructed. Amongst the fields of ridge and furrow are plough headlands and field boundary banks which are likely to be contemporary.

It appears that modern ploughing has removed any additional fields of ridge and furrow within the survey area, but the modern arable fields also provided the conditions for the enclosures to be recorded as cropmarks.

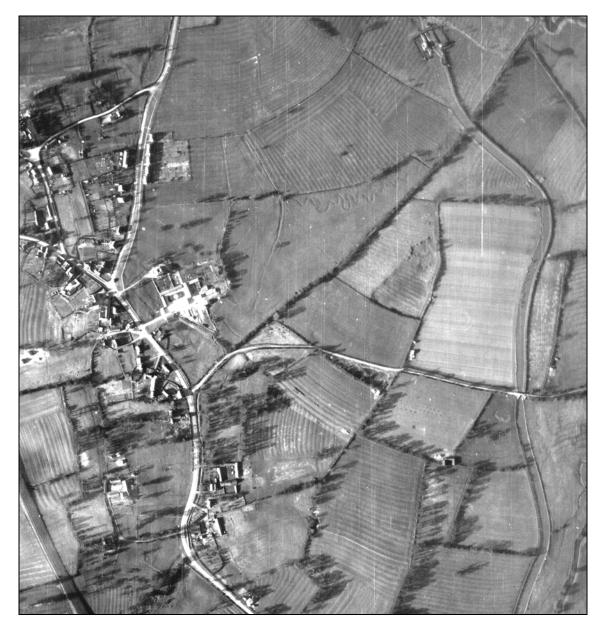


Figure 7: Vertical photograph showing the ridge and furrow within the survey area at Stoke Hammond and Soulbury (north to top). RAF/3G/TUD/UK/86 RV 6165 26-MAR-1946. English Heritage RAF Photography.

## Gravel Extraction Pits

The earthwork and cropmark traces of post medieval gravel extraction were seen as an irregular in-filled quarry to the west of the cropmark site, centred at SP 8867 2954. At its longest point, it measures c.159 metres with its southern end c.100 metres in width. After 100 metres the northern end of the quarry begins to taper to c.16 metres in width. A vertical RAF photograph taken in 1946 revealed what appeared to be post medieval ridge and furrow across the pit (centre right, Fig 7). Also, it does not appear to be present on

the 1881 OS map of Buckinghamshire in which another extraction pit is mapped c.110 metres to the south. It is therefore likely that this gravel pit had gone out of use by the nineteenth century.

There are cropmarks of small, sub-circular cuts surrounding the enclosures and ring ditch which may be due to additional gravel extraction on a smaller scale. Another pit of c.65 square metres is to the south of the large area of extraction.

#### Streams and Mills

There appears to be a ditch between the modern village of Stoke Hammond at SP 8834 2941 and a gap in the hedgerow field boundary at SP 8841 2967. It is aligned north-south and is c.220 metres in length. This is present on the OS historic maps of the area in 1884 and 1891 as a two parallel rows of trees or hedges which may have once flanked a former stream. The 1946 RAF vertical photograph (Fig 7) shows that this was close to the former natural course of a stream nearby (unmapped). It is possible that the recorded ditch is what remains of a new water course constructed to improve the flow of the natural stream. The southern end of this ditch ends close to the site of a watermill, providing a potential purpose for the management of this water course. The AMIE database records a watermill at Stoke Hammond which was first noted in the Domesday Book. The structure was subsequently replaced by another established in 1610, therefore presenting a potential date for the possible management of the water course in the medieval or post medieval period. It is also likely that the stream on the western side of the survey area has been straightened at some point in the past. Therefore this may also have a purpose relating to the watermill.

#### Rectilinear enclosure

A rectilinear enclosure can be seen as cropmarks and earthworks in the corner of a field in the south of the project area. The enclosure is in the form of a ditch with slight interior bank, located at SP 8849 2912. A precise date and monument type cannot be interpreted from the aerial photographs alone, but its location close to the edge of a field of ridge and furrow could suggest a medieval or post medieval date.

# CONCLUSION

Recent aerial reconnaissance revealed the presence of a group of probable prehistoric enclosures on a low former gravel island at the confluence of a stream and a river. An accumulation of the sources has provided evidence for activity in the Stoke Hammond survey area from Prehistoric, Roman, medieval and post medieval dates. The aerial photographs have not provided any evidence of Roman features, but activity of this date in the area is known from finds and the results of nearby excavation.

The mapping and investigation of the cropmarks within the core project area identified that the sub-rectangular enclosures and ring ditch which are thought to be remains of two Neolithic long mortuary enclosures and a Bronze Age round barrow. These are surrounded by small cropmarks which may relate to gravel extraction, for which cropmarks and earthworks of larger pits show additional large scale quarrying. Investigation of the wider landscape has identified the cropmarks and earthworks of the various features of a medieval/post medieval field system, with evidence from aerial survey and monument records of occupation in Stoke Hammond from the medieval period.

The existing structures of post medieval date show that by this time, Stoke Hammond was home to a settled community, in a village where good resources of gravel were exploited. The village exists into the present day with most of the land remaining in arable use.

## Further work

Geophysical survey in the area of the ring ditch and enclosures would be advantageous for the purpose of defining the features more accurately against the geological background, and defining with more certainty whether the cropmarks of the possible entrances are of archaeological origin. It may also reveal additional internal features which are not visible as cropmarks. Excavation could provide the possibility of finding evidence for the date of the enclosures and the ring ditch, which would be beneficial in understanding the relationship between the monuments. It may also provide more detail in terms of purpose and function for the poorly understood 'long mortuary enclosures'.

## REFERENCES

Hall, D., 1982. *Medieval Fields.* Buckinghamshire: Shire Publications Limited.

Loveday, R., 2006. Inscribed Across The Landscape: The Cursus Enigma. Gloucestershire: Tempus Publishing Limited.

# APPENDIX I: METHODOLOGY

Each of the oblique aerial photographs of Stoke Hammond were supplied digitally and two which displayed the cropmarks most clearly were enhanced in Adobe Photoshop CS3. These photographs (before and after enhancement), as well as one vertical RAF photograph from the EH Archive were rectified in the AERIAL 5.29 Photograph Rectification Programme designed by John Haigh, University of Bradford. Control information from a digital Ordinance Survey 1:2500 scale Mastermap and dxf digital height data files were applied in the rectification with an accuracy of  $\pm 3.1$ m to the base map.

The rectified photographs were then imported into AutoCAD Map and the archaeological features transcribed from each photograph. Georeferenced lidar images in the form of raster and 3D asci data supplied by the Environment Agency were also imported to identify and transcribe any additional features.

Google Earth vertical photographs of the area were consulted but did not provide any further information. A search of the Cambridge University Collection of Aerial Photographs was also made but there were no photographs available of the survey area. PGA (Pan Government Agreement) vertical photographs taken between 2003 and 2012 were also consulted to identify any further evidence of historic agriculture, and although they were not used in mapping, they were useful in providing contextual information on the modern landscape and land uses.

The new monuments recorded were added to the National Monuments Database (AMIE) with detail of period, classification, form and photographic source.

# APPENDIX 2: PERIOD CLASSIFICATIONS

For the purpose of this report, the period classifications are those used for the AMIE database as follows.

?500,000BC - 43AD
?500,000BC - 43AD
4500BC - 2200BC
2500BC - 700BC
800BC – 43AD
43AD - 410AD
410AD - 1066
1066 - 1540
1540 – 1901
1939 – 1945
1901 - present

## APPENDIX 3: KEY AERIAL PHOTOGRAPHS

## Vertical Photographs

Sortie Number	Library Number	Frame Number	Date Flown	Film Held By
RAF/3G/TUD/UK/86	212	6165	26-MAR-1946	MOD

#### PGA Vertical Photographs

Next Perspectives PGA Imagery SP8829 15-JUL-2003

## **Oblique Photographs**

Film and Frame Number	Date Flown
NMR 26957 / 021	02-JUN-2011
NMR 26957 / 022	02-JUN-2011
NMR 26957 / 022	02-JUN-2011
NMR 26957 / 029	02-JUN-2011

#### Lidar Images

LIDAR SP8828 Environment Agency D0070356 23-29-NOV-2006	Resolution: 1.00m
LIDAR SP8828 Environment Agency D0009806 30-APR-2000	Resolution: 2.00m
LIDAR SP8828 Environment Agency D0030156 12-NOV-2003	Resolution: 2.00m



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