The Forest of Dean, Gloucestershire

Lidar survey of selected areas of woodland and the Aggregates Resource Area

Project Number 4798 MAIN

Forest of Dean Archaeological Survey Stage 3A

Project Report Volume 1: Methodology, Results, Discussion and Recommendations

Jon Hoyle
Gloucestershire County Council
Environment Department
Archaeology Service

November 2008

Contents

Figures

Tables

Charts

Project details

Title:	The Forest of Dean, Gloucestershire Lidar survey of selected areas of woodland and the Aggregates Resource Area Forest of Dean Archaeological Survey Stage 3A
Project number:	HEEP Project Number 4798 MAIN
Authors:	Jon Hoyle Archaeology Service Environment Directorate Gloucestershire County Council Shire Hall GLOUCESTER GL1 2TH
Origination date:	November 2008
Version:	0.3
Status:	Third Draft
Summary of changes:	Version 0.1 submitted to English Heritage March 2007 Version 0.2 edited and revised November 2008 Version 0.3 final proof read before submission to ADS January 2012 – November 2008 date retained as no substantial changes made from Version 0.2 and no attempt made to revise interpretations based on subsequent research
English Heritage info.	
Circulation:	
Required Action:	
Approval:	

Summary

The following document is a report on the lidar survey of selected parts of the Forest of Dean, Gloucestershire (Project Number 4798 MAIN). The survey was undertaken in March and early April 2006 as Stage 3A of the Forest of Dean Archaeological Survey. It focused on areas of woodland and adjacent land covering the main hard rock Aggregates Resource Area of the Forest of Dean.

Lidar survey was selected for these areas because:

- *The Aggregates Resource Area in the Forest of Dean is an area of active quarrying and the results of the lidar survey augmented archaeological investigation already undertaken as part of the Scowles and Associated Iron Industry Survey (English Heritage Project Number 3342) and enhanced knowledge of the archaeological resource in these areas, informing future conservation and management strategies.*
- *Woodland in the Forest of Dean was identified by Stage 1 of the Forest of Dean Archaeological Survey (English Heritage project Number 2727) as an area where the known archaeological resource is underrepresented as a result of a lack of systematic field survey. Stage 2 of that survey demonstrated the value of lidar as a preliminary part of any future archaeological investigation within woodland.*

The project was undertaken in three phases:

- *Phase 1: A lidar survey was undertaken by the Cambridge Unit for Landscape Modelling of the selected area (Figure 1) in accordance with agreed specifications.*
- *Phase 2: The collected lidar data was processed by the Cambridge Unit for Landscape Modelling using an innovative technique designed to map the micro-topography of the ground surface concealed by the tree cover. This produced digital surface models, both pre and post-vegetation removal. Further manipulation of these data was undertaken by the Forest Research branch of the Forestry Commission to produce a series of hillshaded images, illuminated from four different directions to emphasise earthwork features.*
- *Phase 3: The hillshaded images were rapidly analysed by Gloucestershire County Council Archaeology Service staff to identify areas of potential archaeological interest which had not previously been identified and which would warrant further, more detailed analysis or fieldwork. The results of this preliminary analysis are presented in this report.*

The results of the lidar survey form a discrete body of work of enormous significance to an understanding of the archaeology of the area. This project makes a significant contribution to knowledge of the archaeology and history of the Forest of Dean through the use of a new survey technique which will inform future conservation and management of the archaeological resource both within woodland and the Aggregates Resource Area. This data will be added to the Gloucestershire County SMR and relevant sections sent directly to the Forestry Commission where they will inform future management of the archaeological resource in their landholdings.

The results of the survey will also form a significant part of any future field survey within the Forest of Dean to be undertaken as part of Stage 3B of the Forest of Dean Archaeological Survey, and will improve the efficiency of future field survey strategies by targeting resources towards areas which are most likely to produce significant results, and enabling strategies for individual survey operations to be formulated to ensure that identified features are assessed in the most efficient way possible.

The results of lidar survey will also facilitate the actual process of field survey, particularly in difficult environments such as woodland (Hoyle 2006a, 7.6.4) improving

the efficiency of any future fieldwork in these areas. Increased field validation of features identified through lidar survey will also lead to increased confidence in the interpretation of hillshaded lidar images and will reduce the future need for extensive field ground truthing of identified features.

1 Introduction

The following document is a report on a lidar survey which covered the central Forest of Dean, Gloucestershire, including extensive areas of woodland and the Aggregates Resource Area (Project Number 4798 MAIN). It was undertaken as Stage 3A of the Forest of Dean Archaeological Survey.

The project was undertaken in accordance with the specifications set out in the project design (Hoyle 2006) for a phased programme of survey consisting of*:*

- Undertaking lidar survey in the Forest of Dean in accordance with agreed specifications.
- Processing the collected data using an innovative technique designed to map the micro-topography of the ground surface concealed by tree cover.
- The production of digital surface models, both pre and post-vegetation removal, which were further manipulated to produce hillshaded images shaded to emphasise earthwork features.
- Preliminary analysis of the hillshaded images to identify areas of potential archaeological interest which would warrant further, more detailed analysis or fieldwork.
- The production of this report summarising the results of the preliminary analysis and making recommendations for further archaeological research or management of identified sites or areas of interest.

The project was jointly funded by*:*

- The Aggregates Levy Sustainability Fund administered by English Heritage.
- The Forestry Commission.
- Gloucestershire County Council.
- The Forest of Dean District Council.

Full details of the financial and non-financial contributions made by these bodies are contained in the project design to the 2006 survey (Hoyle 2006, section 7.3).

1.1 Area covered by the lidar survey

The 2006 lidar survey covered an area of 278.3km^2 of the Forest of Dean in west Gloucestershire, including the following areas*:*

- All of the Forestry Commission woodland in the Forest of Dean Archaeological Survey area (Hoyle 2008b, Figure 1) with the exception of*:*
  - The areas of Flaxley, Chestnuts and Welshbury Woods already covered by the 2004 lidar survey (Hoyle 2008a, Figure 16).
  - An area of *c.* 0.3km^2 centred at 369417 216233 which is the eastern part of Flaxley Woods and was not covered by the 2004 survey.
  - An area of *c.* 0.01km^2 centred at 367772 213943 which is the extreme southern tip of Chestnuts Wood and was not covered by the 2004 survey.
  - An area of *c.* 0.04km^2 centred at 359238 201694 in Alvington parish.
- The majority of the non-Forestry Commission woodland within the Forest of Dean Archaeological Survey area.
- The whole of the Statutory Forest.
- All of the hard rock Aggregates Resource Area in the Forest of Dean Archaeological Survey area with the exception of an area of *c.* 0.43km^2 centred at 354791 190657 at Beachley Point in Tidenham Parish.
- Almost all of the land in the Forest of Dean Archaeological Survey area over 50m AOD in height.

The reasons for the selection of these areas are explained more fully in the project design for the 2006 survey (Hoyle 2006, section 2).

In addition to the area surveyed in 2006, the project also included transcription of the 2004 lidar survey of Flaxley, Welshbury and Chestnuts Woods, an area of 6.17km^2. Although some of the findings from this pilot work have already been reported (Hoyle 2008a, section 4), and the survey was undertaken at a different resolution to the 2006 survey (Hoyle 2008a, section 4.1), the results of this survey had not been systematically transcribed.

As there was a slight overlap between the 2004 and 2006 surveys, the additional area represented only 5.31km^2 producing a combined survey area of area of 283.61km^2. Preliminary analysis and transcription was only undertaken of those parts of the survey within the county of Gloucestershire, and *c.* 39.87km^2 of lidar survey within the counties of Herefordshire and Monmouthshire remains un-analysed. All calculations within this report are made with reference to the transcribed survey area of *c.* 243.74km^2.

117.85km^2 (48.35%) of the transcribed survey area was under woodland.

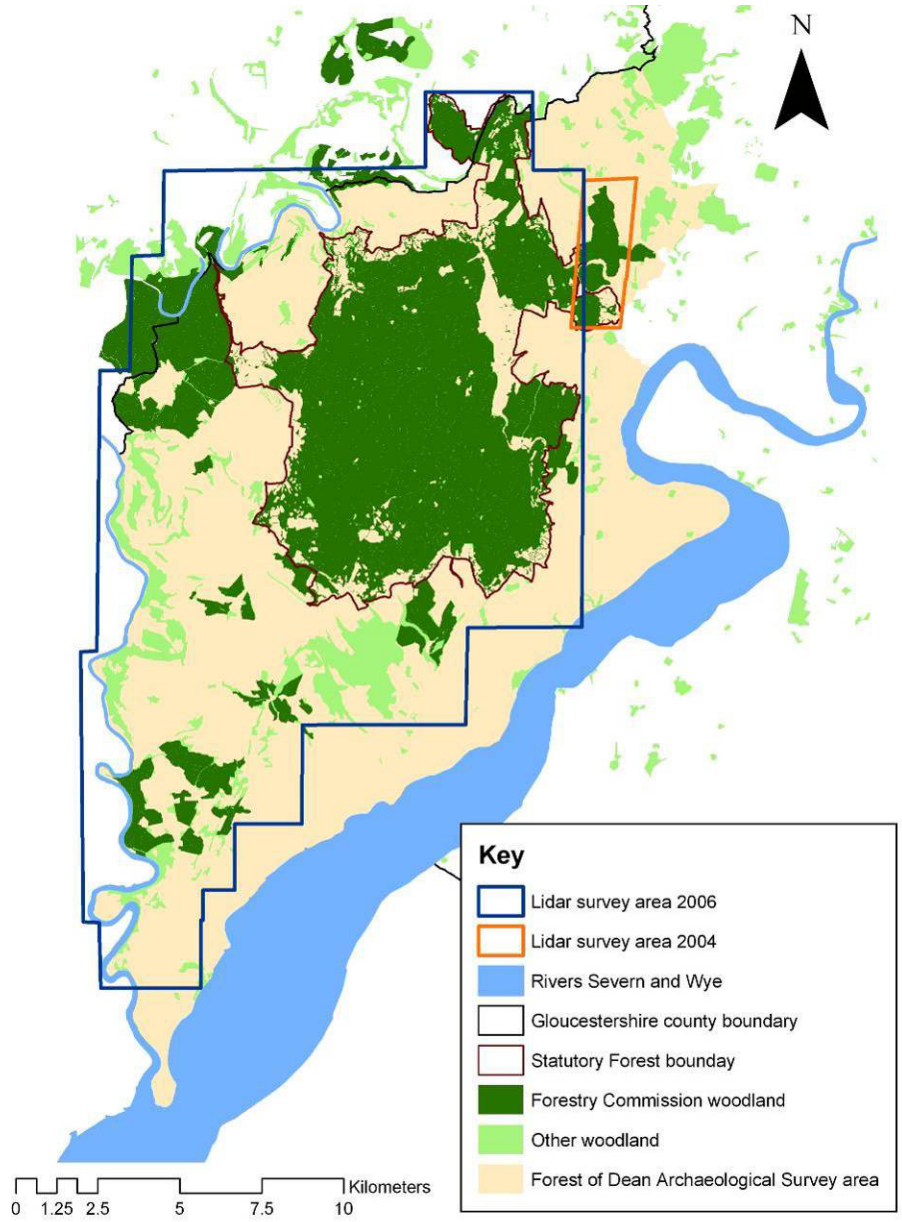

Figure 1: 2004 and 2006 lidar survey areas, woodland, the Statutory Forest and the area covered by the Forest of Dean Archaeological Survey

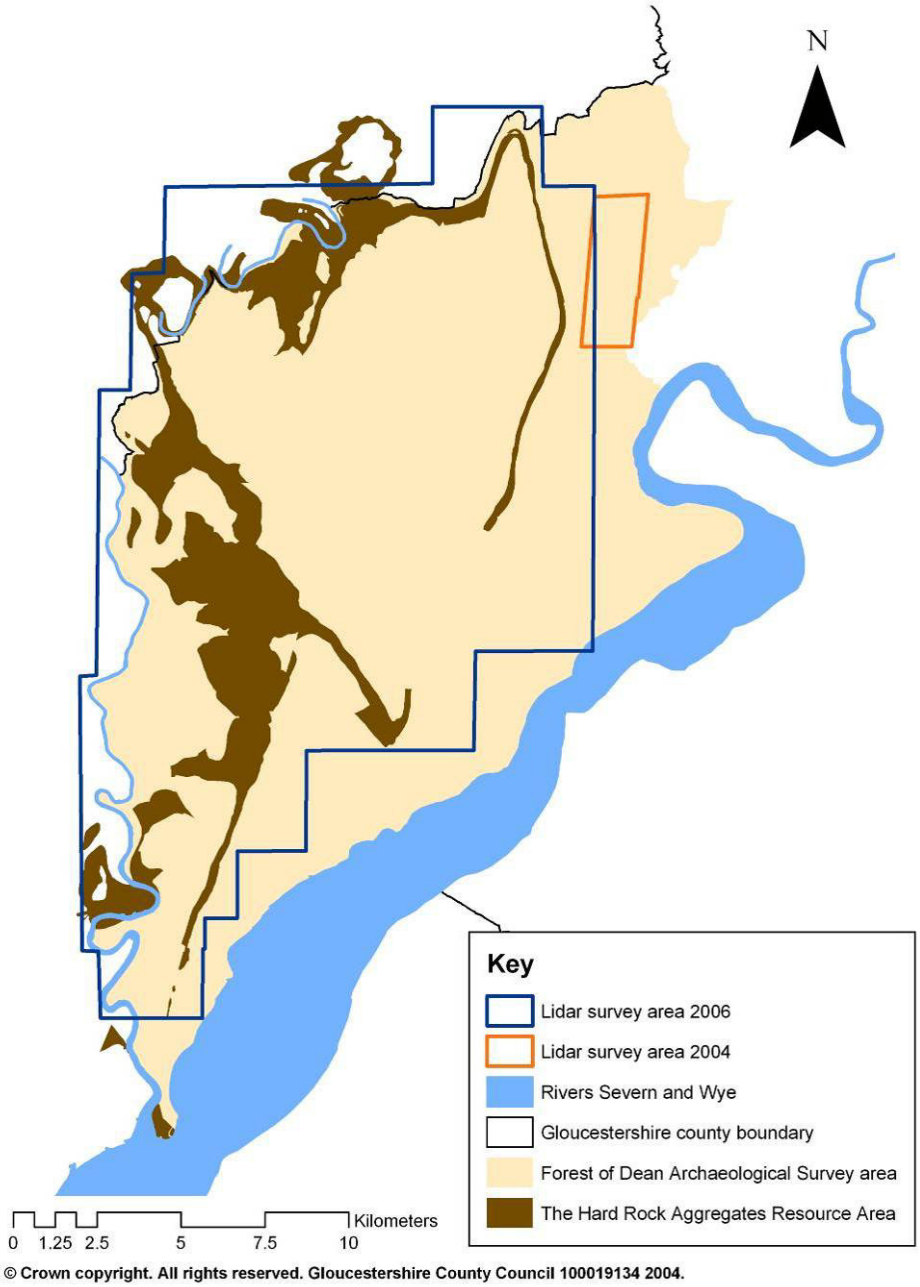

Figure 2: 2004 and 2006 lidar survey areas, the hard rock Aggregates Resource Area and the area covered by the Forest of Dean Archaeological Survey

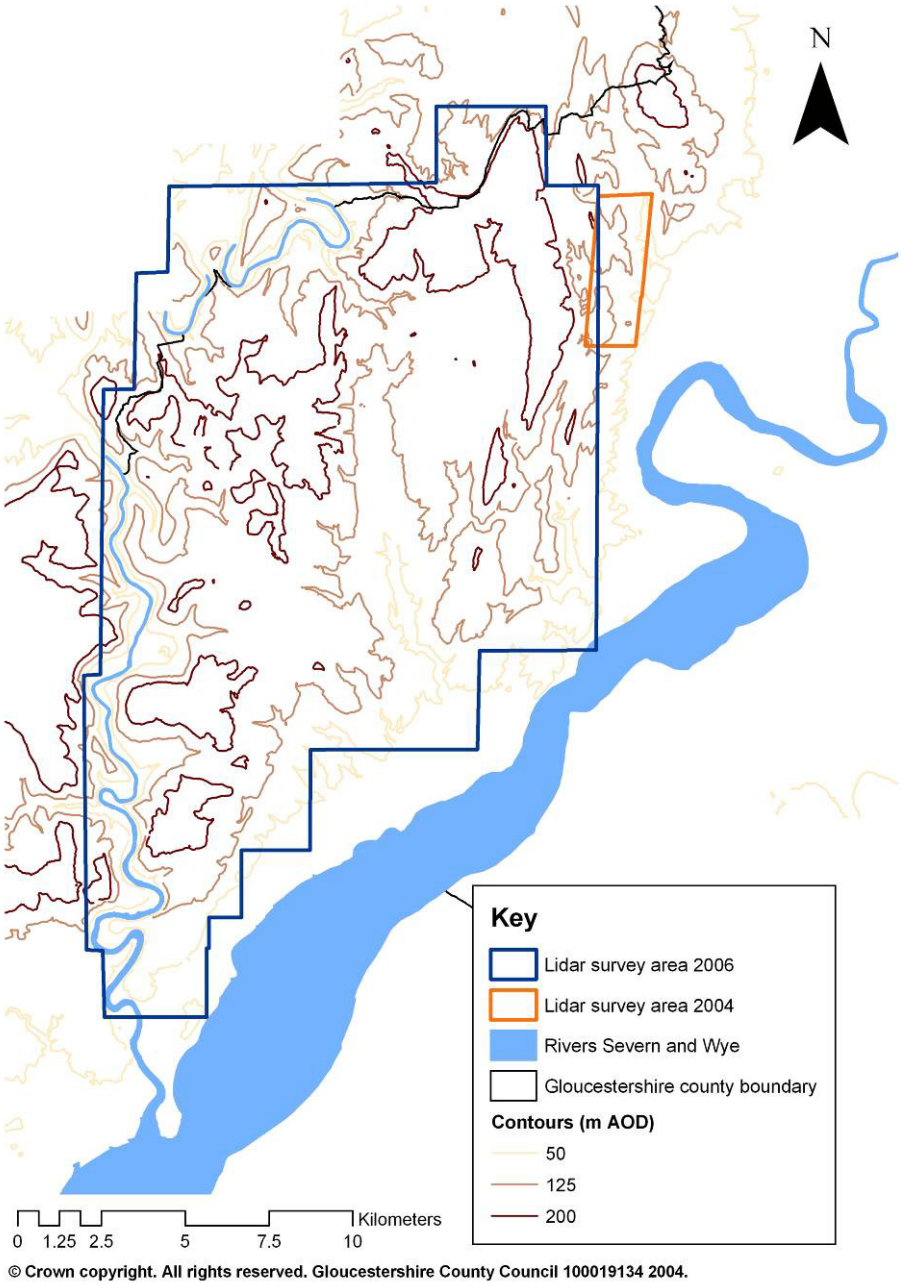

Figure 3: 2004 and 2006 lidar survey areas and topography

1.2 Geology, topography and landuse of the survey area

The Forest of Dean is geographically distinct from the rest of Gloucestershire and incorporates a dramatic range of topographies, reflecting the variety of the underlying geologies (Hoyle 2008b, 6.1).

For descriptive purposes, the survey area can be divided into four zones.

1.2.1 The central wooded area, the 'Statutory Forest'

A large area of woodland and waste within the area of the modern Forest of Dean was used as a royal hunting reserve before the Norman conquest of 1066. This presumably formed the basis of the later 'Royal Forest', i.e. an area reserved as a royal hunting ground and subject to separate Forest Laws, which had been established in the Forest of Dean by the time of the Domesday Survey of *c.* 1086

(Herbert 1996; Grant 1991). Although the whole of the survey area was subject to Forest Law between the 11th and 13th centuries (Hart 1945), for much of its history, the term 'Forest of Dean' referred to the relatively small area (*c.* 9,308ha) used as a royal hunting ground. This uncultivated area comprised the royal demesne and remained extra-parochial until the 1840s (Herbert 1996). It formed the basis of the Statutory Forest, which was defined by a perambulation in 1831. Much of the area has been either wooded, or within the woodland management cycle, since at least the medieval period and still comprises the core of the Forestry Commission landholdings in the area.

Much of the Statutory Forest lies above 200m AOD, reaching a maximum height of 290m AOD, and consists of a plateau incised by the valleys of numerous streams flowing towards both the Rivers Wye and Severn. It is bisected by the valley of the Cannop Brook.

Settlement in this landscape consists largely of sprawling hamlets of haphazardly positioned cottages which ring and have encroached into the central wooded area of the 'Statutory Forest' (Herbert 1996, 293), largely in response to 19th century population expansion to meet the needs of the growing industry of the area. In places such as Cinderford, these squatter settlements have grown into small towns.

The solid geology of this area is extremely complex, and consists of layers of sandstones of the Upper Carboniferous Series, which contain over 20 separate coal seams. These strata are in the form of a basin (the Dean Syncline) and coal seams outcrop, or are close to the surface, throughout the area (Dreghorn 1968). The sandstones overlie limestones of the Lower Carboniferous Limestone Series, including the iron ore bearing Crease Limestone, which forms a 'necklace' around the edge of the higher ground. This in turn overlies sandstones of the Tintern Sandstone Group of the Upper Old Red Sandstone Series. The eastern part of this zone has a solid geology of Brownstones and St Maughan's Sandstone of the Lower Old Red Sandstone Series (BGS 1974).

With the exception of some thin bands of alluvium in river valleys, no drift geology is recorded in this part of the zone (BGS 1974).

1.2.1.1 The northern and western Forest margins

This area includes the woodland to the west of the 'Statutory Forest' which borders Herefordshire and Monmouthshire. Much of this zone also lies above 200m AOD and is incised by steep valleys draining into the River Wye. Although largely wooded today, much of the woodland in this zone is the result of early 19th century plantation.

Enclosed farmland (both pasture and arable) is found in the vicinity of the settlements, particularly to the north and west of the 'Statutory Forest'. The major settlements in this zone, such as Mitcheldean, Ruardean and Coleford, are medieval in origin and tend to be sited close to the edge of the Statutory Forest.

Much of this area overlies the same solid geology as the western edges of the Statutory Forest with Upper Carboniferous Sandstone giving way to Lower Carboniferous Limestone which in turn gives way to Upper Old Red Sandstone. In the northeastern part of the zone, the geology becomes more complex. In this area the Old Red Sandstone gives way to bands of limestones and shales of the Ludlow, Wenlock and Llandovery groups of the Silurian Series. At the eastern edge of this zone, these are overlain by much more recent Triassic Mudstones (BGS 1974).

Drift geology in this area is limited to narrow bands of alluvium in river valleys (BGS 1974).

1.2.1.2 The southern Forest of Dean plateau

Although tilted to the south, this undulating plateau maintains heights of *c.* 200m AOD. Topographically this area consists of rolling ridges and valleys draining both to the River Severn to the east and the Wye to the west.

The eastern edge of this zone is characterised by steep-sided rounded hills, separated by narrow river valleys, whilst its western edge is defined by the steep gorge of the Wye valley.

The predominant landscape is one of enclosed farmland. This is generally under pasture, although arable is also found in some areas. Large tracts of woodland are also a feature of this zone. These are generally sited on the higher ground at the edges of this landscape zone and on the edges of the Wye valley where the ground is too steep for cultivation. Settlement has tended to avoid the central part of this zone and favour the river valleys, which drain from the plateau to west and east.

This area overlies a solid geology of Lower Carboniferous Limestone which gives way to Upper Old Red Sandstone and Lower Old Red Sandstone as the ground slopes towards the Rivers Severn and Wye to east and west (BGS 1974).

1.2.1.3 The Wye valley

Although generally less than 0.5km wide, the Wye valley is bounded by precipitous slopes or vertical cliffs. These are often *c.* 100m high, and rise directly from the edge of the river at their base.

Much of this landscape consists of early woodland which clings precariously to the steep slopes. Considerable evidence of limestone quarrying is also a feature of this area.

In the southern part of this area the River Wye runs through a steep gorge, with cliffs made up of the Lower Carboniferous Limestone. The sides of the central part of the Wye valley are less steep where they overlie a solid geology of both Upper and Lower Old Red Sandstone.

Within the survey area the Wye valley has no discernible floodplain, and no drift geology is recorded.

2 Survey Methodology

2.1 Lidar

Lidar is a form of aerial survey in which short pulses of laser energy are fired from an aircraft towards the ground, and the time taken for these to be reflected back to the aircraft is measured. Measurement of this time can be converted to distance by halving the return time and multiplying by the speed of light, and, so long as the height and position of the aircraft are known, this information can be used to create accurate maps of the topography of the ground surface (Devereux *et al* 2005).

Experimental work undertaken in conjunction with Stage 2 of the Forest of Dean Archaeological Survey has indicated that a vegetation removal algorithm can be applied to this data to create a digital elevation model of the topography under the forest canopy (Hoyle 2006b, section 4).

2.2 Specifications for the 2006 survey

The lidar survey was undertaken in accordance with the specification for this type of survey over extensive areas of woodland. These specifications were agreed as part of Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, Appendix M) but further refinement by the Cambridge Unit for Landscape Modelling resulted in the slightly altered specifications set out in Appendix A. Although this level of survey (2 points per m^2 as opposed to 0.5 points per m^2) was greater than that generally used for un-wooded areas (Challis 2002, 2.2), it would not have been cost effective to attempt to modify the survey level to suit differential ground covers within the survey area.

The specifications for lidar survey of woodland also specified that this type of survey should be undertaken between January and March to minimise the effects of ground cover and take full advantage of deciduous woodland being without leaf cover (Hoyle 2008b, section Mi). Although the eastern part of the survey area (including the majority of the Forestry Commission woodland) was flown between 22nd and 23rd March 2006, adverse weather conditions meant that the western part of the survey area, which included the Wye valley and much of the unwooded area to the west of the Statutory Forest was not flown until 3rd and 5th of April 2006.

2.3 Processing of the lidar data

Following the survey, the raw point cloud data was processed by the Cambridge Unit for Landscape Modelling through the application of a vegetation removal algorithm, which produced a digital elevation model of the micro-topography of those areas under the woodland canopy, a process piloted as part of the 2004 lidar survey of Flaxley, Welshbury and Chestnuts Woods (Devereux *et al* 2005), the results of which were successfully validated as part of Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 4).

The digital elevation models were further processed by Peter Crow of Forest Research (a branch of the Forestry Commission). They were illuminated, using a standard GIS hillshading procedure, to produce hillshaded images, which give the appearance of a three-dimensional model of the ground surface and highlight surface features.

The hillshaded images were passed to Gloucestershire County Council Archaeology Service in July 2006 in the following forms*:*

- Jpeg copies of A3 hillshaded images set out by OS grid square at scale *c.* 1:4500 – these images had been simultaneously illuminated from the northwest, the northeast, the southwest and the southeast.
- GIS-ready digital copies of the Digital Surface Models (essentially first pulse data which showed the tops of trees in areas of woodland) and Digital Terrain Models (smoothed out last pulse data which highlighted areas of alluvium) of the whole survey area divided into seven tiles which were not of a uniform size, but which could be combined to form a continuous data set. Two smaller tiles, representing the equivalent data from the 2004 Flaxley, Welshbury and Chestnuts Woods lidar survey were also included in this data set.
- GIS-ready digital copies of hillshaded images which had been generated from the data following the application of the vegetation removal algorithm. These covered the whole of the 2006 survey area and were divided into the same seven tiles as the Digital Surface Models and Digital Terrain Models. They could also be combined to form a continuous data set. Two additional tiles representing the equivalent data from the 2004 Flaxley and Welshbury Woods lidar survey were also supplied. This data consisted of four complete sets for the 2004 and 2006 survey areas, each one illuminated from a different direction (the northwest, the northeast, the southwest, and the southeast).

All the images were in vertical projection and accurate to within *c.* 0.15cm in relation to the Ordnance Survey Grid (Devereux *et al.* 2005). The GIS-ready digital images were imported directly into the Gloucestershire County GIS and draped over existing data sets held by the County Council.

2.4 Transcription methodology

At the time of the 2006 lidar survey, there were no agreed standards for the transcription of lidar data, and the Forest of Dean data was transcribed at four levels (detailed in Appendix B) to allow for cost-benefit comparisons to be undertaken.

Details of the methodology for the analysis and transcription of the lidar data are set out in Appendix B. The following is a summary of the methodological approaches adopted as part of this phase of the project.

2.4.1 Scope of the transcription

The lidar survey produced an enormous amount of data and it was not considered necessary to transcribe all of this to meet the aims and objectives of the project. These are set out in Hoyle 2008b, section 5 and can be summarised as*:*

- Enhancing existing knowledge of the archaeology of the Forest of Dean through identification of potentially significant archaeological features identified through lidar.
- Refinement of the process of lidar survey, particularly its potential application to the investigation of archaeological sites in woodland.

Within its budget and timescale, the project could not achieve full transcription and complete interpretation of all features identified on the lidar survey, and it was necessary to scope the transcription process to attain the following objectives*:*

- The principal objective was to identify previously unrecorded areas of surviving earthworks, particularly in areas of woodland, which may be of archaeological significance, and which would act as a focus for further archaeological fieldwork within Dean.
- A secondary objective was to collect data which could indicate those types of woodland, or ground conditions where lidar survey, or the application of the data processing systems adopted by the project, might be less successful.

2.4.2 Rapid transcription: Levels 1, 2, Revised Level 2 and 3

The whole of the survey area was transcribed at Levels 1, 2, Revised Level 2 or 3, and details of recording level for each 1kn^2 can be found in Appendix G. These were essentially variants of a single level of transcription based on the following fundamental principals*:*

- Features already identified on post-medieval and modern maps sources were not recorded.
- Features already recorded either on the Gloucestershire County SMR or as a result of English Heritage's National Mapping Programme for the Forest of Dean (generally already recorded on the SMR) were not recorded.
- Not all recognised features were mapped in detail. Lidar is accurate to within *c.* 0.15m (see above), and the hillshaded images themselves, are a more accurate representation of the location and form of features than transcribed lines or points.
- Mapping was schematic in accordance with the standard of English Heritage levels 1 and 2 (Bowden 1999), and consisted of the following*:*
    - Isolated linear features were mapped as lines.
    - Isolated discrete features less than *c.* 10 -15m across were mapped as points.
    - Isolated discrete features greater than *c.* 10-15m across were mapped as polygons.
    - Groups of similar linear or discrete features were mapped as polygons or multipoints rather than individually.

Levels 1, 2, Revised Level 2 and 3 differed from each other in the following ways:

Level 1 (Appendix B.i)

This was the level of transcription originally envisaged for the whole of the survey, and included not only transcription of identified features, but also a systematic assessment of the ways in which the lidar survey had augmented (or otherwise) the existing SMR and NMP record. In addition to this it was proposed that all hillshaded images illuminated from all four directions should be checked in a systematic way (Appendix B.i).

This level of transcription was only completed for two 1km grid squares (SO9009 and SO6013). Due to the continual and detailed cross-referencing with existing data sets this process could only be completed at a rate of *c.* 1.5 1km grid squares per day and was too cumbersome and time consuming for completion within the available timescale of the project.

Level 2 and Revised Level 2 (Appendix B.ii)

Level 2 transcription consisted of a revision of the methodology which concentrated on the recording of those features which*:*

- Were of possible archaeological significance and had not been previously identified.
- Contributed to an assessment of the value of lidar survey in areas of woodland.

Level 2 transcription did not make any formal assessment of the impact of lidar on existing SMR records (although this was occasionally recorded in an ad hoc way when deemed appropriate). It also differed from Level 1 transcription in the following ways*:*

- Hillshaded images illuminated from the south effectively made positive features appear negative and negative features appear positive. As this was extremely confusing, it was decided to only systematically check images illuminated from the northwest or northeast, and only use those illuminated from the south to

search areas which where shaded on hillshaded images illuminated from the north.

- The woodland of the Forest of Dean contained numerous features which could reasonably be interpreted as relatively recent but which were not recorded on the post-medieval or modern map sources consulted as part of the transcription process. Level 2 transcription allowed for the application of professional judgement in determining whether features of this nature should be recorded or not. These included*:*
    - Holloways or trackways which conformed to modern communication routes or related to known industrial sites and obvious modern tracks through woodland.
    - Areas which could be interpreted as forestry drainage patterns.
    - Irregular banks or small mounds adjacent to modern trackways through woodland which could be interpreted as dumps of timber or waste material from forestry operations.
    - Large positive features which could be interpreted as mining spoil heaps where these related to sites which were already known.
    - Small negative or positive discrete features which could not be clearly identified as charcoal platforms or small quarries and may just have been irregularities in undergrowth. It should be noted that some of these may represent archaeologically significant features, but fieldwork would be required to validate this and their identification is beyond the scope of this project.
    - Modern features outside of the woodland, such as golf course earthworks.

As some of the process of transcription proved to be extremely time-consuming it was decided that transcription need not add data to the project database which could be generated by the GIS at a later date. Accordingly Level 2 transcription was revised to exclude direct inputting of the following information*:*

- OS Grid reference.
- Forestry Commission management category.
- Hillshaded image tile name prefix.
- Landuse.

This level of transcription was termed Revised Level 2.

Level 2, or Revised Level 2, transcription was undertaken for all 1km OS grid squares which contained Forestry Commission land, and OS grid reference and Forestry Commission management category were added to the database at the end of the transcription.

Level 3 (Appendix B.iii).

A further level of transcription, Level 3, was applied to those OS 1km squares which did not contain land owned and managed by the Forestry Commission. Details of the 1km squares in which this level of transcription was undertaken can be found in Appendix D.

Level 3 transcription was identical to the Revised Level 2 transcription with the exception that the following were not recorded*:*

- Areas of quarrying thought likely to be post-medieval in date
- Holloways or trackways regardless of whether they conformed to modern communication routes or related to known industrial sites and obvious modern tracks through woodland.

2.4.2.1 Division of survey area for Levels 1, 2, Revised Level 2 and 3

The survey area was divided into 1km^2 sections based on the OS national grid. Transcription was limited to features identified within Gloucestershire and grid squares were transcribed in the following order*:*

- Squares containing Forestry Commission land centred on the Statutory Forest.
- Squares containing other Forestry Commission land.
- Squares containing other areas of woodland.
- Squares containing no woodland.

2.4.2.2 Recording of identified features at Levels 1, 2, Revised Level 2 and 3

Details of the searching and transcription scales used for Levels 1, 2 and 3 transcription are set out in Appendix B. Searching of the hillshaded images and digitisation of identified features was generally undertaken at a scale of *c.* 1:3,500, although larger area features were recognised and digitised at a larger scale as appropriate.

Features identified as part of the lidar survey were directly traced from the geo-referenced hillshaded images onto layers which formed part of the Gloucestershire County Council GIS, and digitised as point, multipoints, polygons or lines.

Details of all features identified during the project were recorded on a dedicated Access database designed both to meet the specific needs of this project, and to provide information in a form compatible with the Gloucestershire SMR. The same database was used for all levels of transcription, although not all fields were completed for all levels. Details of the database and the fields completed for each level of transcription are found in Appendix B. At the end of the transcription the databases for transcription Levels 1, 2, and 3 were merged to form a single record of the preliminary analysis and transcription of the 2006 lidar survey, and this is the data which forms the basis of the information in this report, and will be transferred to the Gloucestershire County SMR. A single unique number was used to identify each database record regardless of the actual number of individual features this represented. This unique number consisted of the alphanumeric reference for the OS 1km grid square followed by an internal feature number for each 1km square beginning at 01. These consisted of two letters, followed by four numbers, followed by a forward slash, followed by the internal 1km number, thus*:* so6311/01, so6311/02, so6311/03 etc.

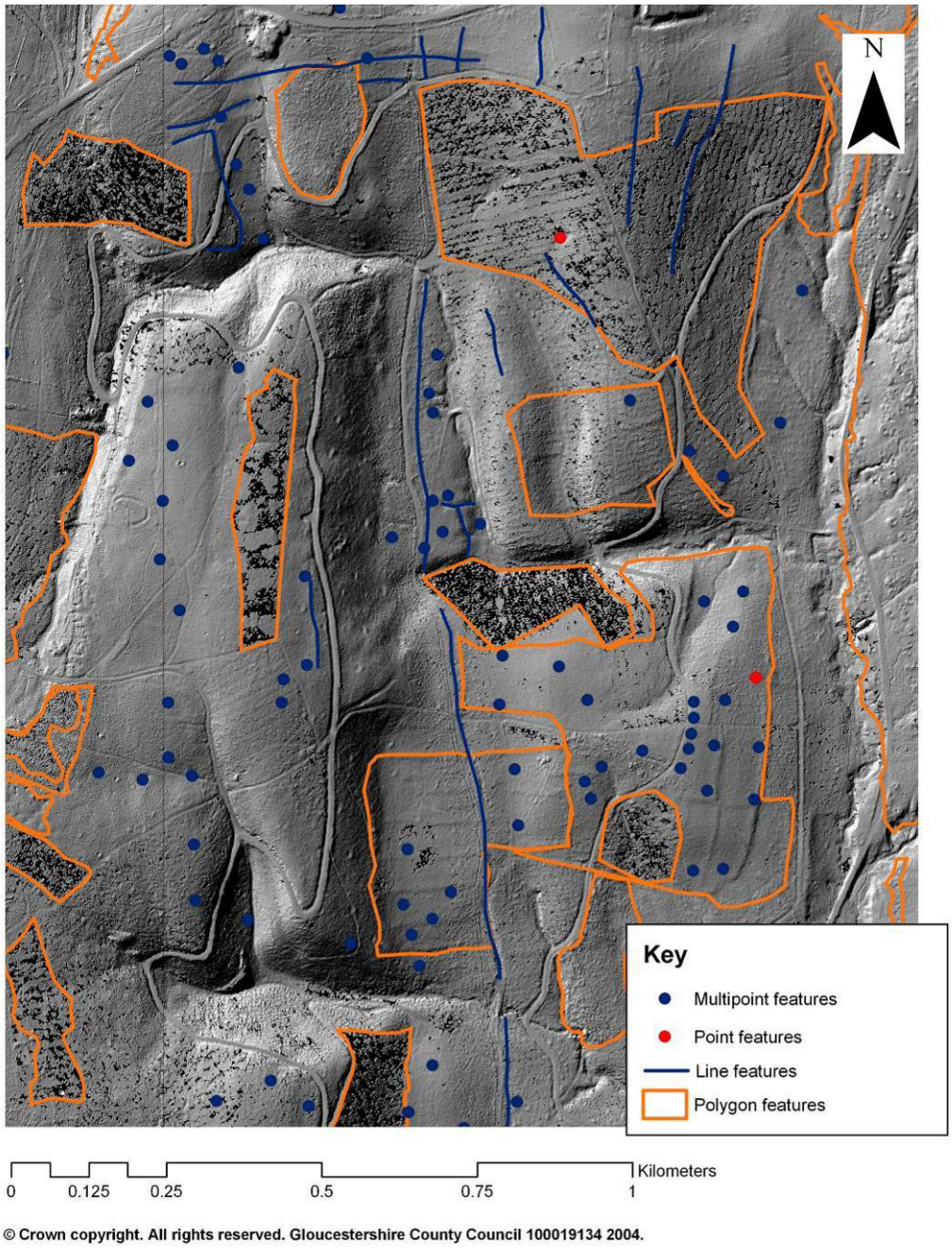

Figure 4: Rapid transcription (Revised Level 2) points lines and polygons in OS grid square SO6013. Lidar hillshaded image illuminated from the northwest.

2.5 Detailed transcription Level 4

Level 4 transcription was envisaged as a level broadly equivalent to NMP transcription, and was undertaken in only four kilometre squares (SO6013, SO5400, SO5505, SO6210). This allowed for comparison with the timescale and results of Levels 1, 2, Revised Level 2 and 3 transcription.

Unlike Levels 1, 2, Revised Level 2 and 3 transcription, Level 4 transcription did not compare lidar data with existing archaeological records or other data sets with the exception of the modern OS information contained within the Mastermap layers on the Gloucestershire GIS to ensure that clearly modern features, such as field or

property boundaries, modern tracks or paths, could be distinguished from features which may be archaeologically significant.

2.5.1.1 Recording of identified features at Level 4

Details of the searching and transcription scales used for Level 4 transcription are set out in Appendix B. Searching of the hillshaded images and digitisation of identified features was generally undertaken at a scale of *c.* 1:2,500, although larger area features were recognised and digitised at a larger scale as appropriate.

All identified lidar features were directly traced from the geo-referenced hillshaded images and digitised as polygons, although positive and negative features were differentiated and digitised onto separate layers within the GIS. All identified features were mapped individually, although groups of similar features were not individually tagged, but were assigned a single feature number within the database. Where this was the case, a single polygon encompassing a group of individual features of the same type was digitised on a separate layer within the GIS and was tagged with a single database number and description.

Details of all features identified during this level of transcription were recorded on a dedicated Access database. This was the same database as that used for Levels 1, 2 and 3, although not all fields were completed, and details of this are found in Appendix B. A single unique number was used to identify each database record, although unlike the unique numbers in Levels 1, 2, Revised Level 2 and 3 transcription, these consisted of a numerical sequence starting at 1, with an allocation of 49 numbers assigned to each of the 1km squares transcribed in this way. The database used for the Level 4 transcription was not merged with that used for Levels 1, 2, Revised Level 2 and 3 transcription but was retained as a separate database within the project archive.

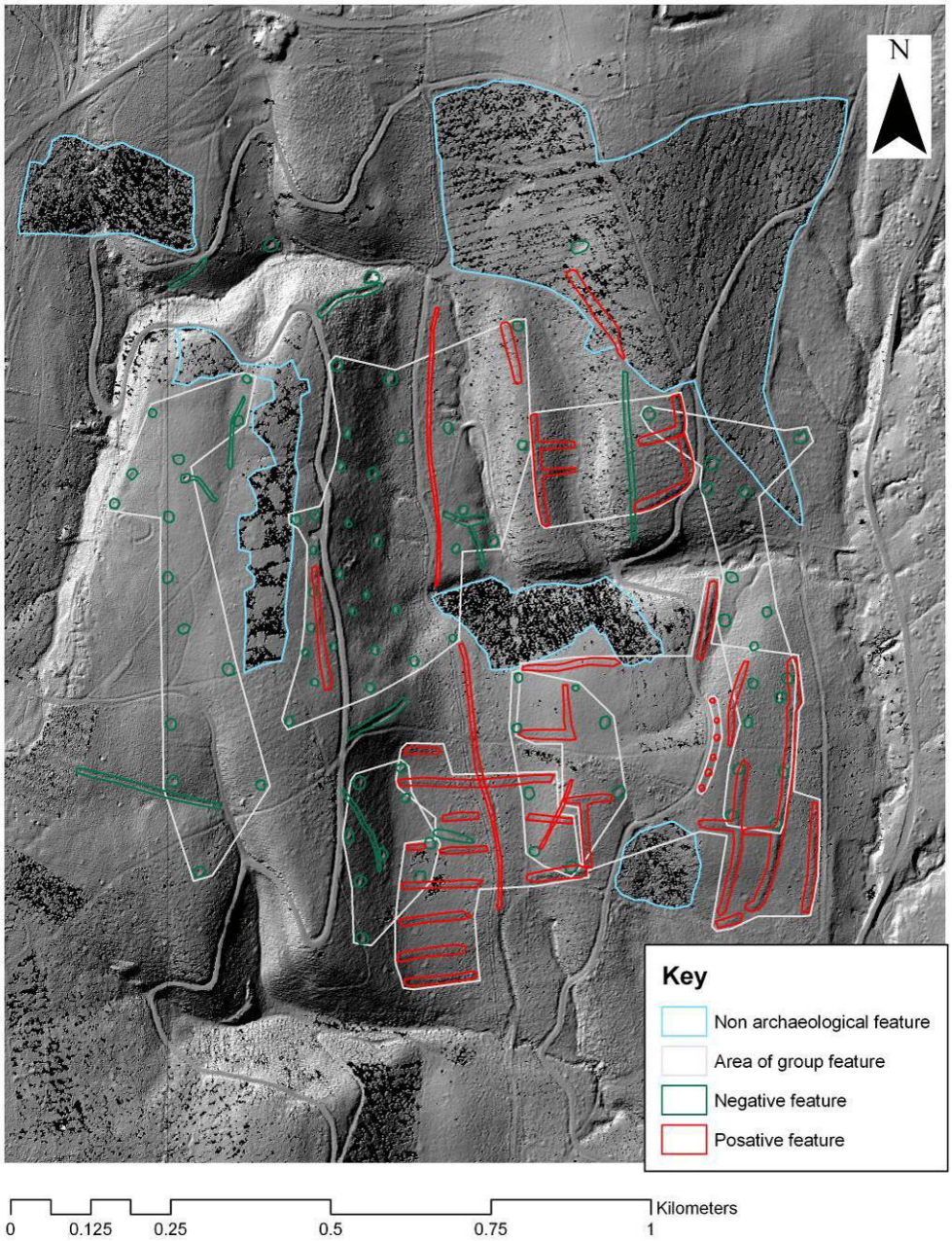

Figure 5: Detailed transcription (Level 4) in OS grid square SO6013. Lidar hillshaded image illuminated from the northwest.

2.5.2 Transcription timescales

The following timescales for different levels of transcription are averages based on aggregated data collected throughout the transcription process. These figures do not include time required to transfer data to the SMR.

Table 1: Transcription levels - person days per 1km square

Transcription level	1km^2 per day
Level 1	0.6
Level 2	2.25
Revised Level 2	4.7
Level 3	5.7

Transcription level	1km^2 per day
Level 4	1

3 Results of the survey

2,165 features, groups of features or other areas of interest were recorded during the rapid transcription (Levels 1, 2 and 3) of the lidar survey.

These are tabulated in Appendix E, and the following is a discussion of their distribution and possible significance.

3.1 Features of possible archaeological significance

In total 1,687 features, or groups of features of potential archaeological significance were recorded.

3.1.1 Enclosures

42 features were categorised as Enclosure during the rapid transcription process. This category encompassed a variety of features which may have a range of interpretations and dates. All of these were digitised as polygons with the exception of five features (so6012/03, so6017/01, so6707/07, so6814/02 and st5899/07) which were not recognisable as complete enclosures and were digitised as lines.

Of the 42 identified enclosures, 21 (50%) were assigned an interpretation confidence level of Low, indicating that they were either not clearly earthwork features, or appeared very vague on the hillshaded images. This designation does not indicate that these features will not prove to be archaeologically significant, but that the features visible on the hillshaded images were less clear than the remaining 21 enclosures, which were assigned an interpretation confidence level of Medium.

With the single exception of a triangular enclosure, which was assigned an interpretation confidence level of Low (so6018/03), all enclosures could be further subdivided by shape into sub-circular and rectangular/sub-rectangular enclosures.

3.1.1.1 Sub-circular enclosures

The rapid transcription identified twelve sub-circular enclosures of which seven were assigned an interpretation confidence level of Low. 22 enclosures of this type were already known within the Forest of Dean Survey area (Hoyle 2008b section 4.6.3.1) representing an increase of 54.5%.

Small sub-circular enclosures, enclosing an area of up to *c.* 750m^2

Five enclosures of this size and shape (so5600/15, so6411/16, so5500/05, st5498/20, st5699/29) were identified during rapid transcription compared to the six (divided into five SMR areas) already known within the Forest of Dean Survey area. The size and shape of these features is consistent with that of Bronze Age funerary monuments, although none of these could be interpreted as such with any degree of confidence, and three (so5600/15, so6411/16 and st5699/29) were only assigned an interpretation confidence level of Low.

One of the remaining small enclosures (st5498/20) was sited just over 200m to the southwest of two enigmatic features (Glos SMR 5041, 5042) which have variously been interpreted as prehistoric hut circles, or possible Bronze Age barrow sites (Hoyle 2008b, section 4.4.1.3).

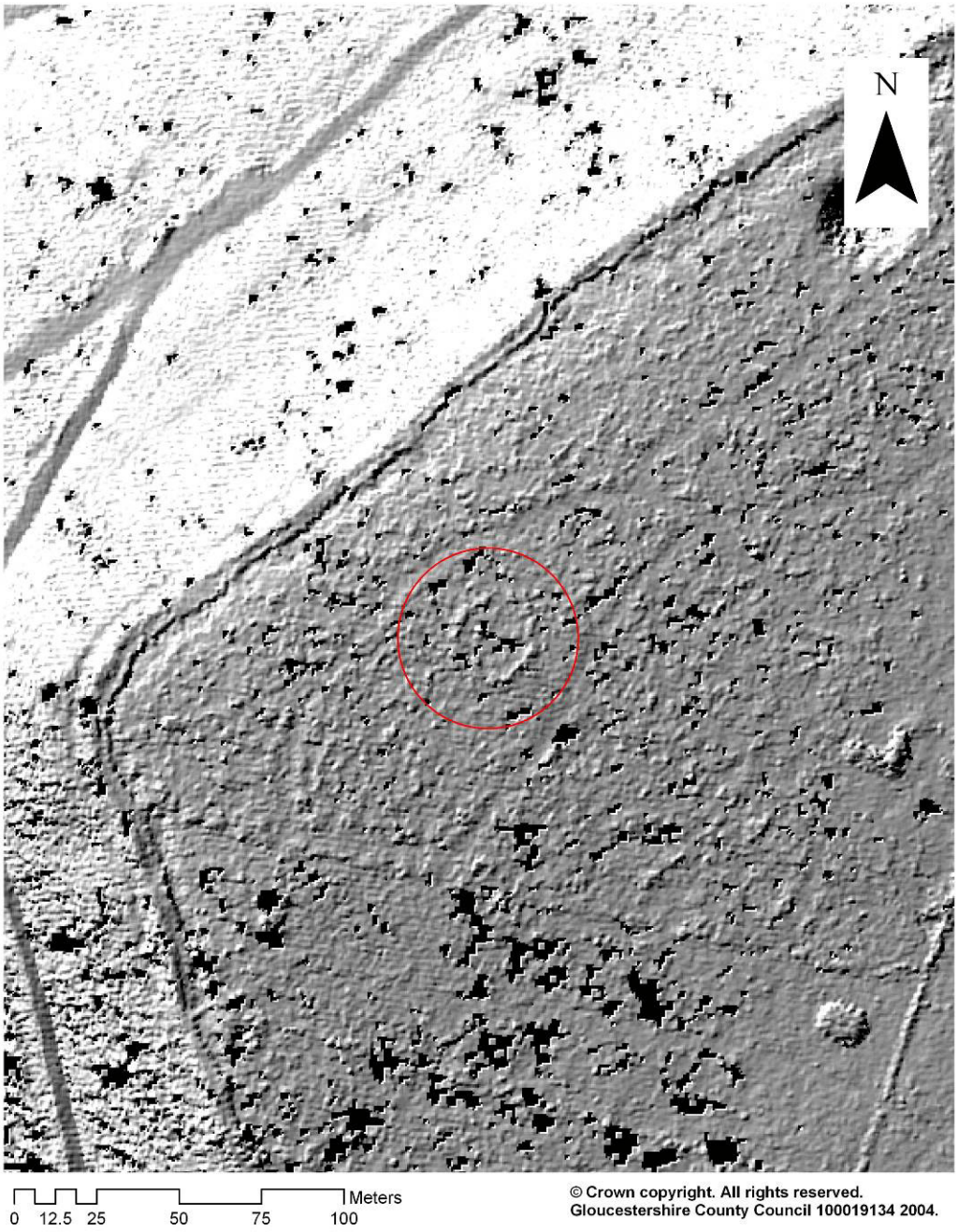

Figure 6: Enclosure st5498/20, illuminated from the northwest

The remaining feature in this category (so5500/05) is circular and consists of a bank *c.* 25m in diameter with a distinct mound (c. 7m in diameter) positioned centrally within it. The function of this feature is not clear, and a feature which appears morphologically similar to this on the ground is known at SO61591277. The latter feature is, however, considerably smaller (c. 8m in diameter), and as its central mound is not visible on the lidar hillshaded images this was categorised as a possible charcoal burning platform (so6612/19).

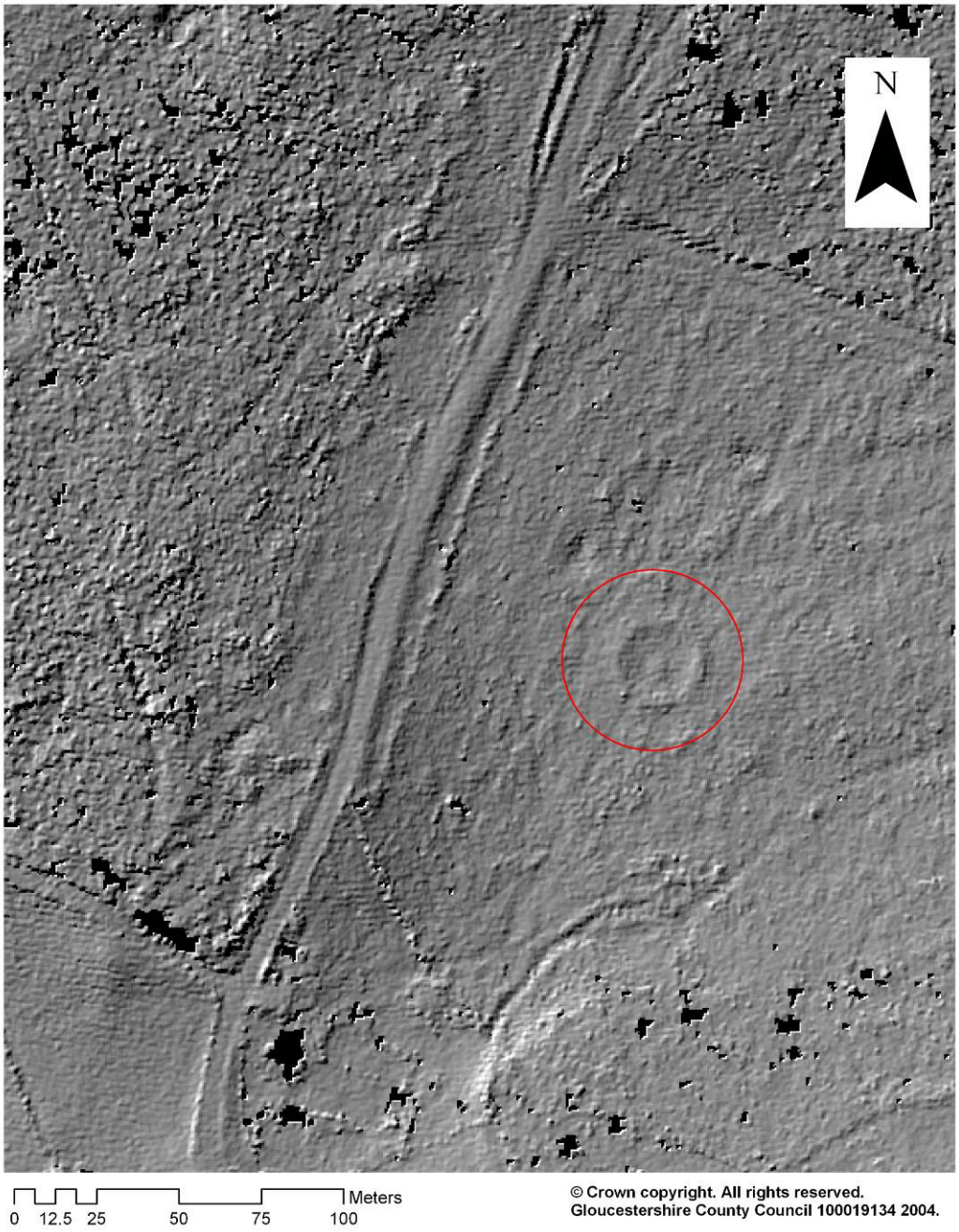

Figure 7: Small sub-circular enclosure so5500/05, illuminated from the northwest

In addition to the enclosures discussed in this section, a single small (c. 12m in diameter) sub-circular feature (so5500/06) was identified *c.* 100m to the west of so5500/05. This feature was categorised as Earthwork, and although its status and date is not clear, its appearance on the hillshaded images was similar to that of the putative hut circle (Glos SMR 5041) discussed above (see 3.1.11 below).

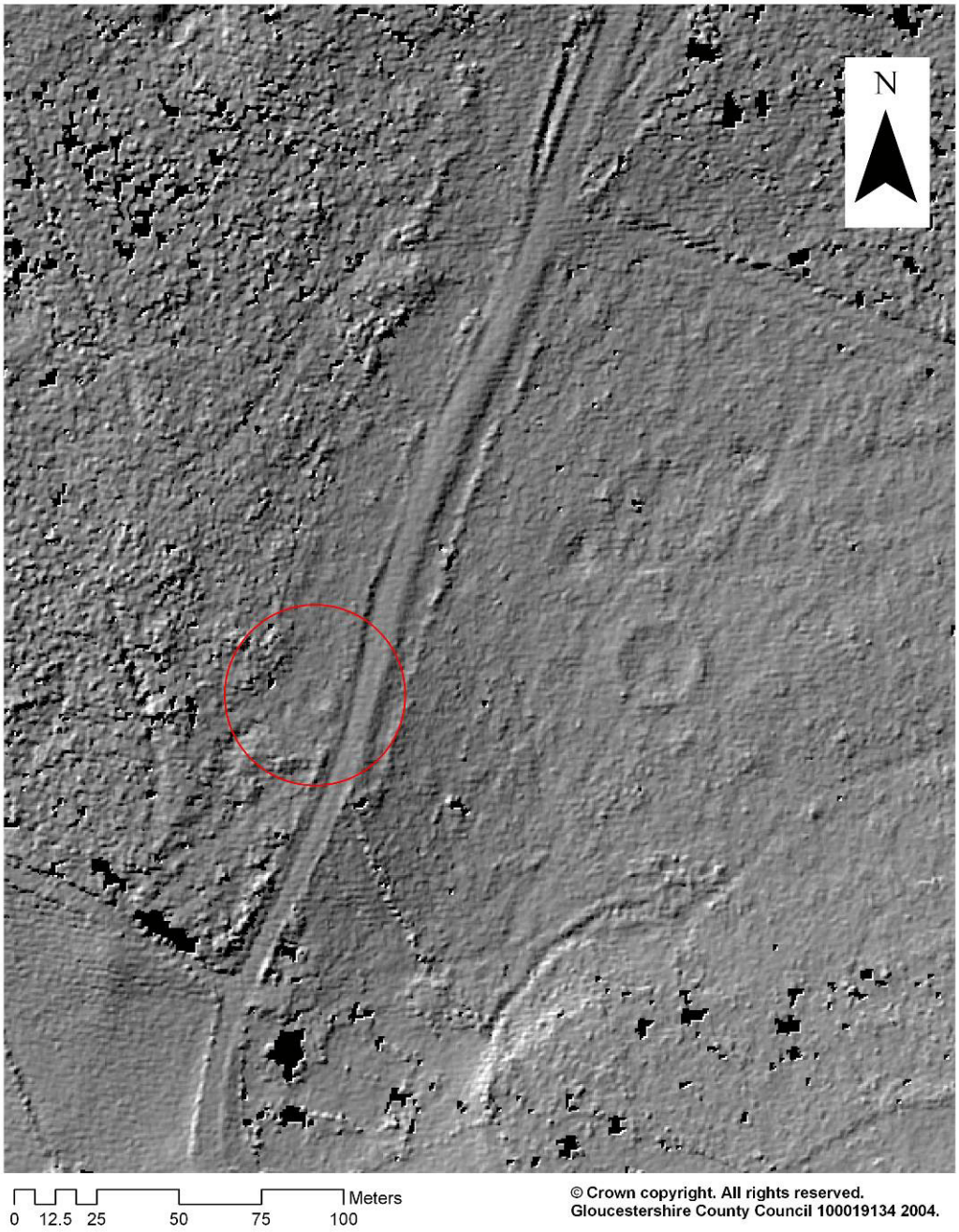

Figure 8: Earthwork features so5500/06, illuminated from the northwest

Larger sub-circular enclosures

19 features of this type were already known within the Forest of Dean Survey area (Hoyle 2008b, section 4.6.3.1) and the rapid transcription identified an additional seven (so5813/11, so6012/03, so6017/07, so6816/05, st5499/03, so5506/03 and st5598/02) defined by either a bank or ditch.

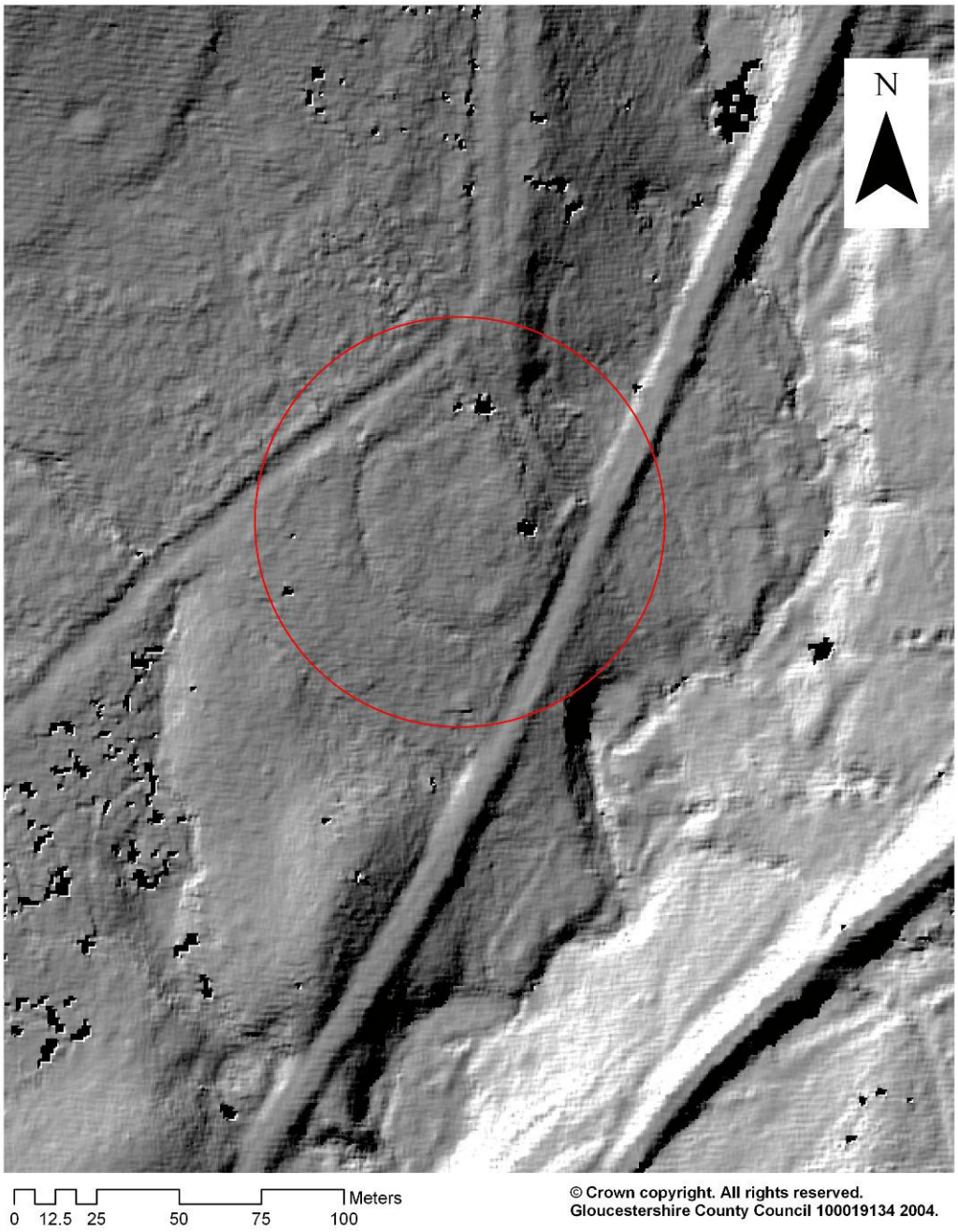

Figure 9: Enclosure so6012/03, illuminated from the northwest

Four of these (so5813/11, so6017/07, st5499/03 and so5506/03) were assigned a interpretation confidence level of Low, although the actual status of none of these has been established.

The majority of enclosures in this category enclosed an area of between 1,208m^2 and 1,723m^2, although one of these (st5598/02) was very circular and was sited in an area marked 'Disused Workings' on the most recent OS 1:10,000 map. Another (so5506/03) was clearly visible on recent aerial photographs and was the site of a pond on 19th and early 20th century OS maps. Neither of these is thought likely to be archaeologically significant. Only one of these features, a sub-circular/D-shaped enclosure in Flaxley Woods (so6816/05) had been validated as part of Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 4.5.3.6) and can confidently be interpreted as a genuine feature of archaeological potential, although its actual status or date is not clear (see 3.1.11 below).

Two of the large sub-circular enclosures enclosed a larger area. So6012/03, a pennanular feature defined by a ditch, enclosed an area of *c.* 2782.95m^2, whilst st5499/03, which was defined by an irregular narrow bank, enclosed an area of *c.* 7500m^2.

A further feature, categorised as Earthwork rather than Enclosure (so6317/01), consisted of a sub-circular ditch with possible traces of an outer bank.

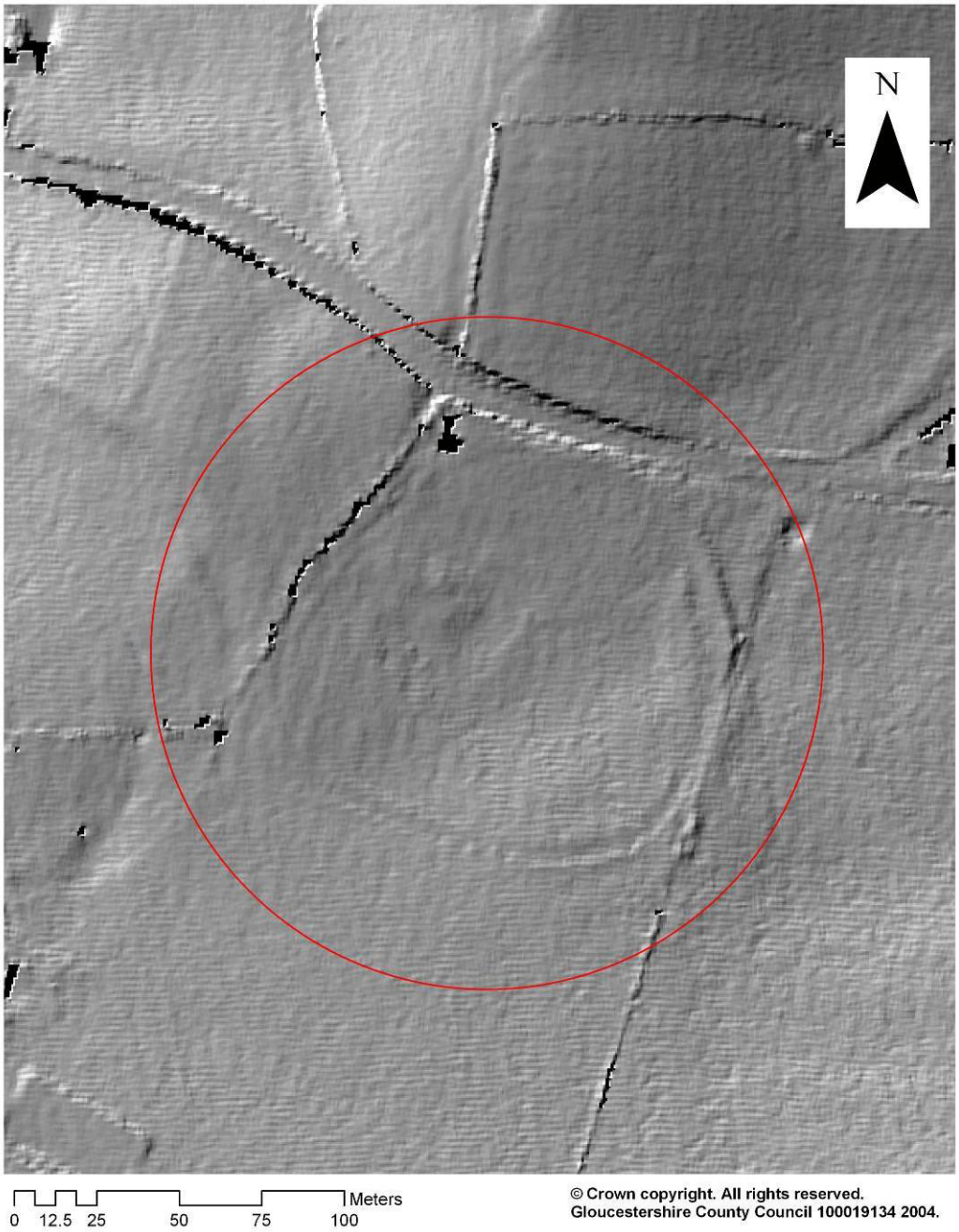

Figure 10: Earthwork feature so6317/01, illuminated from the northwest

This feature, which was *c.*123m in diameter, was not recorded on any post-medieval maps despite the fact that it is in open pasture, is not visible on the aerial photographs taken in 2000, which were consulted as part of the project (Getmapping.com 2000) and is largely contained within, and apparently constrained by, modern field boundaries. The actual status of this feature is not certain but it is thought likely to be recent and either relate to agricultural practice, or be a trail bike course or circular pathway or similar (see 3.1.11 below).

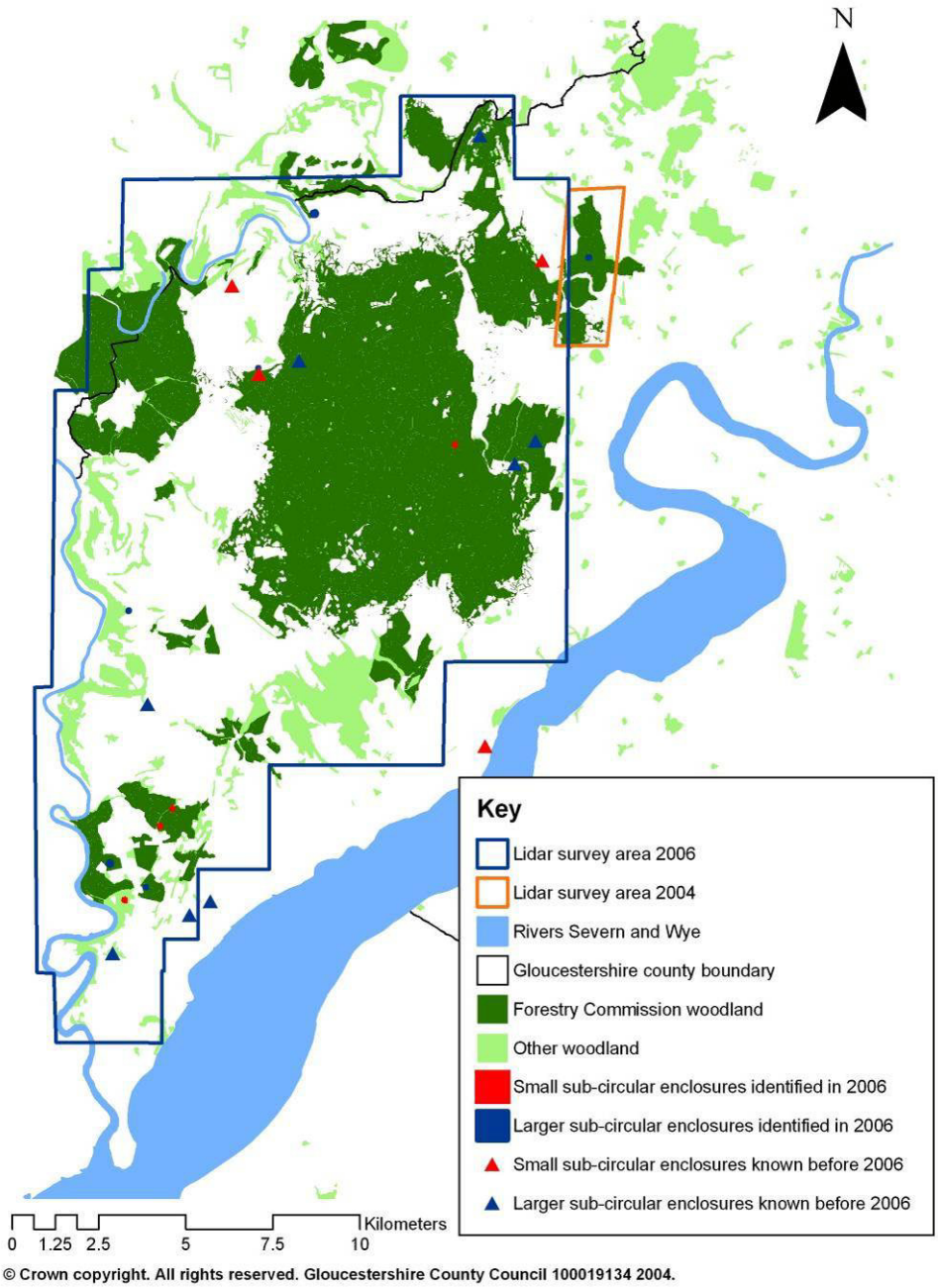

Figure 11: Sub-circular enclosures

Discussion of sub-circular enclosures

Although none of the sub-circular enclosures identified as part of the 2006 lidar survey can be unequivocally interpreted as archaeologically significant, all are consistent in both size and shape with a variety of archaeological monuments known from other areas of southwest Britain and ranging, from later prehistoric funerary or settlement sites, to enclosures relating to prehistoric, Romano-British or medieval stock control.

3.1.1.2 Rectangular or sub-rectangular enclosures

The rapid transcription identified 43 rectangular or sub-rectangular enclosures of which 21 were assigned an interpretation confidence level of Low. Only 10 enclosures of this type were already known within the Forest of Dean Survey area (Hoyle 2008b section 4.6.3.3) representing a 330% increase.

Small rectangular or sub-rectangular enclosures, enclosing an area of up to *c.* 1000m^2

Four enclosures of this size and shape (so6216/03, so6519/06, so6705/05, st5597/05) were identified during rapid transcription. Two similar enclosures were already known within the Forest of Dean Archaeological Survey area, although neither were thought likely to be indicative of prehistoric or later occupation, and were not discussed in detail in the report on Stage 1 of that survey (Hoyle 2008b, section 4.6.3 and project digital archive). Only one of the features identified through lidar (so6519/06) was assigned an interpretation confidence level of Medium, and this was sited in the back garden of a modern house and may conform to a rectangular clearing in a small area of woodland. Of the remaining features in this category st5597/05 appeared to consist of irregular banks and was also within the garden of an existing house. The remaining two (so6216/03, so6705/05) both appeared to be extremely vague on the hillshaded images, although so6705/05 (which measured *c.* 25m x 25m) was visible as a crop mark on the aerial photographs consulted during the transcription project (Getmapping.com 2000).

Medium rectangular or sub-rectangular enclosures (enclosing an area of *c.* 1000 – 3200m^2)

Eight features of this type were recognised during the rapid transcription, compared with six already known within the Forest of Dean Survey area (Hoyle 2008b, section 4.6.3.3 and project archive). With two exceptions (so6814/02 and st5698/14) these were all assigned an interpretation confidence level of Medium.

Five of the features in this category (so5712/02, so6316/07, so6407/01, so6519/18, and st5499/02) were all rectangular enclosures of similar proportions generally defined by banks. For discussion and illustrative purposes these have been referred to as 'Standard' enclosures. Two of these (so5812/02 and so6316/07) also displayed signs of external ditches whilst so6519/18 was defined only by ditches. These generally enclosed an area of between1084m^2 and 2301m^2, although two (so5812/02 and st5499/02) were slightly larger enclosing 2743m^2 and 3134m^2 respectively. Of the two larger enclosures st5499/02 appeared to have an internal linear division. Two of the enclosures (so5812/02 and possibly so6407/01) also displayed evidence of entrances. All of these were located within areas of Forestry Commission woodland, and with one exception (st5499/02, which was sited on the edge of Tidenham Chase) all were within the Statutory Forest or within *c.* 500m of its edges.

The general shape, size and location of these enclosures suggests that they were of a similar date and function. Only one of the sub-rectangular enclosures already recorded within the Forest of Dean Survey area (Fairplay Enclosure - Glos SMR 4353), which measures *c.* 55m x 55m, and is sited *c*. 1km from the eastern edge of the Statutory Forest, was comparable to the five enclosures identified by the lidar survey.

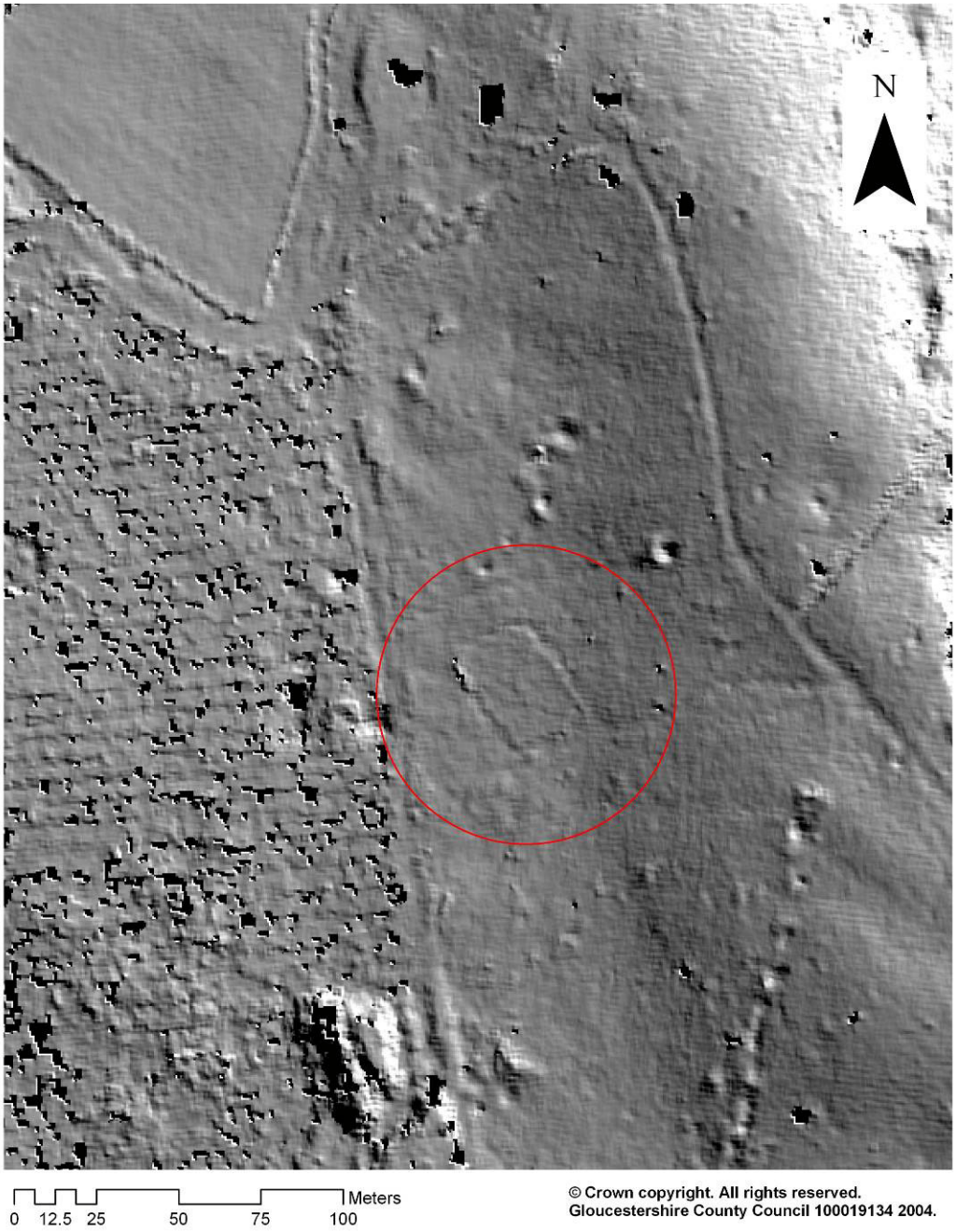

Figure 12: Standard sub-rectangular enclosure so6519/18, illuminated from the northeast

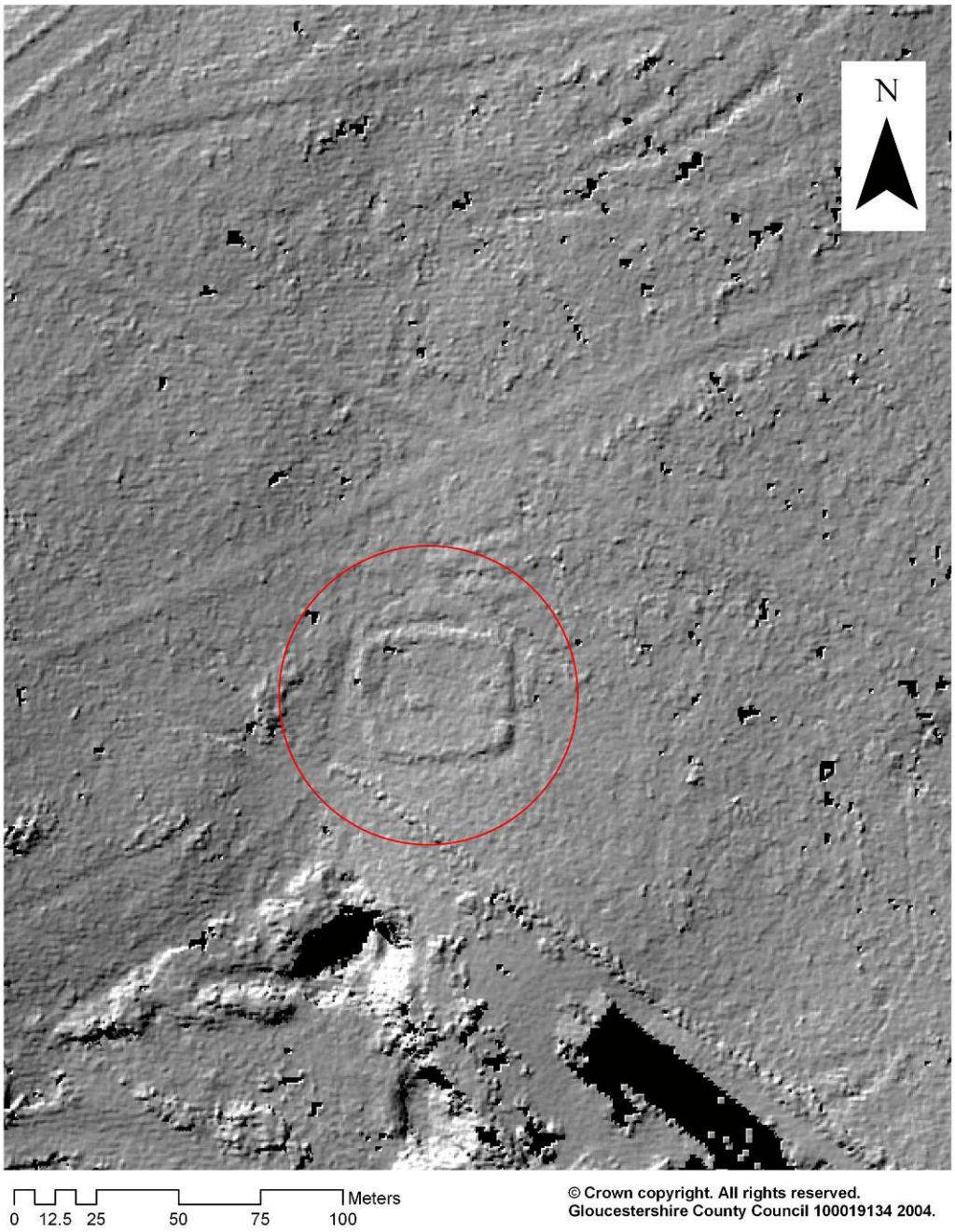

Figure 13: Standard sub-rectangular enclosure so5812/02, illuminated from the northwest

The date and function of these enclosures could not be established on the basis of the lidar hillshaded images, and their form is consistent with a variety of features which range in date from the prehistoric to the medieval periods. Their general size and shape is consistent with that of small Roman fortlets (Adkins & Adkins 1982, 100; Breeze 1982, 101), and these could represent evidence of early Roman military expansion and consolidation of the Forest of Dean area from the mid 1st century AD.

These features are also consistent in size and shape to medieval hunting lodges recorded in the New Forest, Hampshire (Smith 1999, Fig 4), and may represent the same phenomenon in the Forest of Dean. The majority of these are sited within *c.* 1km of the modern boundaries of the Statutory Forest, and they may also relate to medieval Forest administration in some way. The system of forest lodges constructed following the Dean Forest Reafforestation Act of 1668 is well documented (Jurica

1996a) and has been the subject of recent research (Waygood 2003; 2004). Physical evidence of the administration of the Crown woodland prior to this, however, is not currently known.

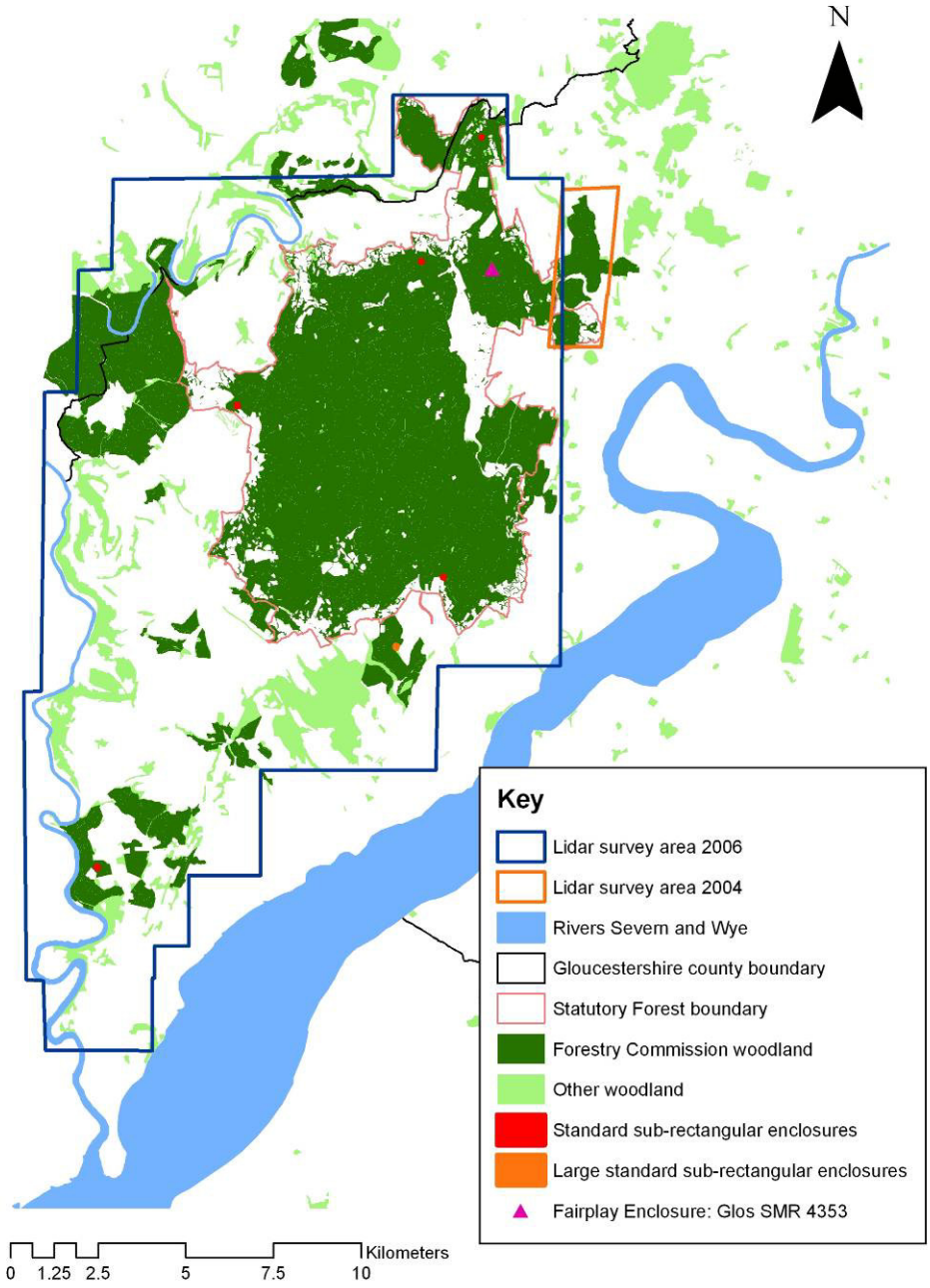

Figure 14: Standard sub-rectangular enclosures

Large rectangular or sub-rectangular enclosures (enclosing an area of above 3650m^2)

Although the Gloucestershire SMR recorded eight large rectilinear enclosures in the Forest of Dean Survey area prior to the 2006 lidar survey, only three of these (Glos SMR 4053, 21767, 22703) were discussed in the report of Stage 1 of the Forest of Dean Archaeological Survey as the remaining five were thought unlikely to be archaeologically significant or were an integral part of medieval or post-medieval settlement patterns and were discussed with those (Hoyle 2008b, section 4.6.3.3).

17 large rectilinear enclosures were identified during rapid transcription of the lidar data, although eight of these were assigned an interpretation confidence level of Low. Two (so6707/07 and st5899/07) were rectilinear banks which were digitised as lines and their Low confidence level reflects the fact that their status as enclosures was not clear. Of the remainder, so5612/13 appears to be defined by linear tracks and its status as an archaeologically significant features is dubious, whilst the remaining four (so5303/04, so5509/05, so5601/03 and st5699/21) all appear as relatively vague earthworks on the hillshaded images.

Of the remaining nine large enclosures, five (so6605/04, so6606/07, so6606/08, so6708/02 and so6708/03) are rectilinear enclosures defined by banks and range in size from 4,654m^2 to 8,867m^2. All of these are located outside woodland and either within, or in close proximity to, features which have been interpreted as medieval or early post-medieval field systems (so6605/02 and so6708/01 – see 3.1.3.1 below), and it is possible that these simply represent fields within these systems rather than separate enclosures, although this is not clear at the present time.

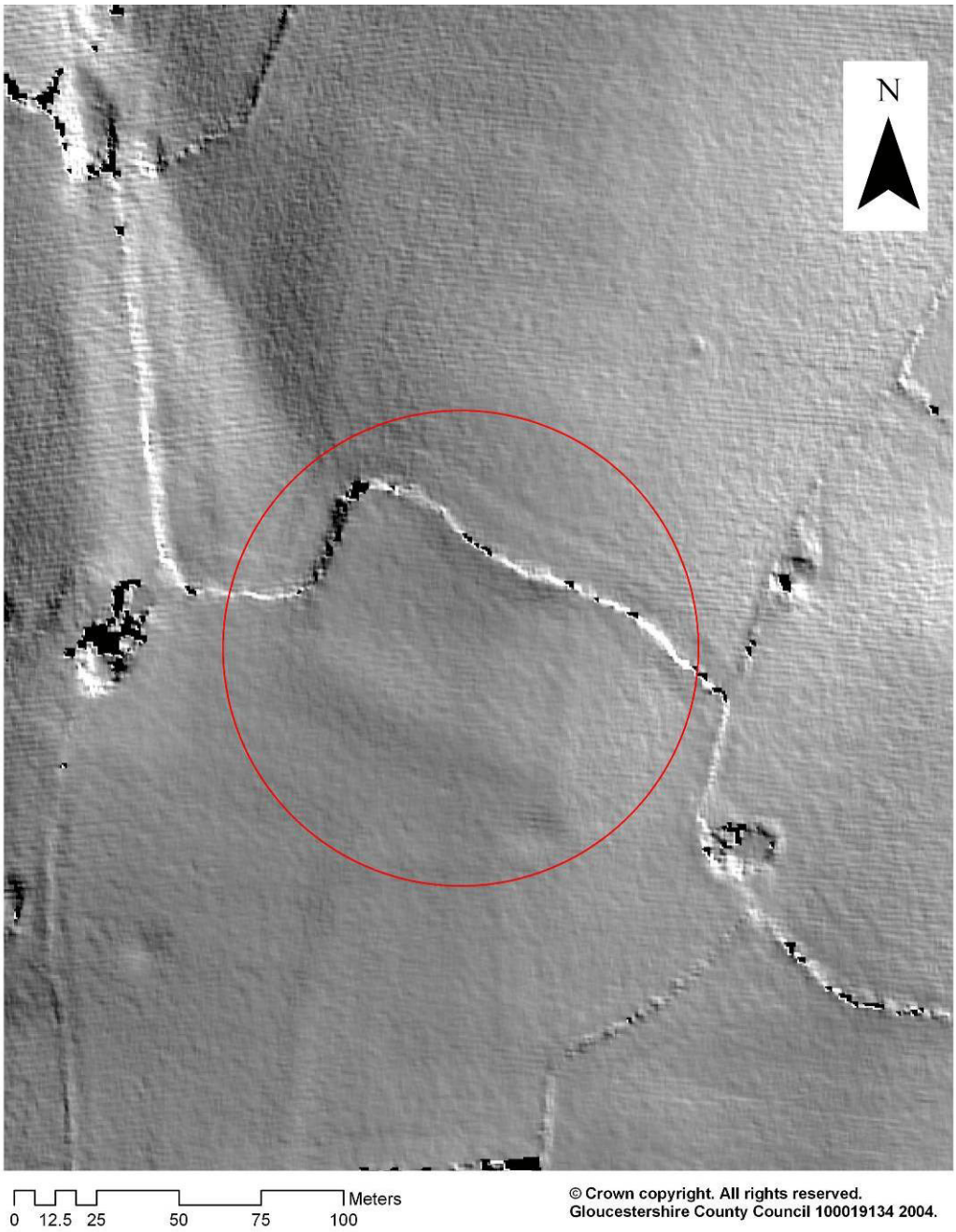

Figure 15: Enclosure so6606/08, illuminated from the northeast

Another enclosure (so6205/06 enclosing an area of 4,183m^2) has a number of similarities with the group of medium sized enclosures (the Standard enclosures) identified at the edges of area of woodland (see above). Like these, so6205/06 is sited within Forestry Commission land, and although outside of the modern Statutory Forest, is only *c.* 850m to the south of this boundary. This enclosure may fulfil a similar function as the enclosures discussed above, although the status of these is not clear.

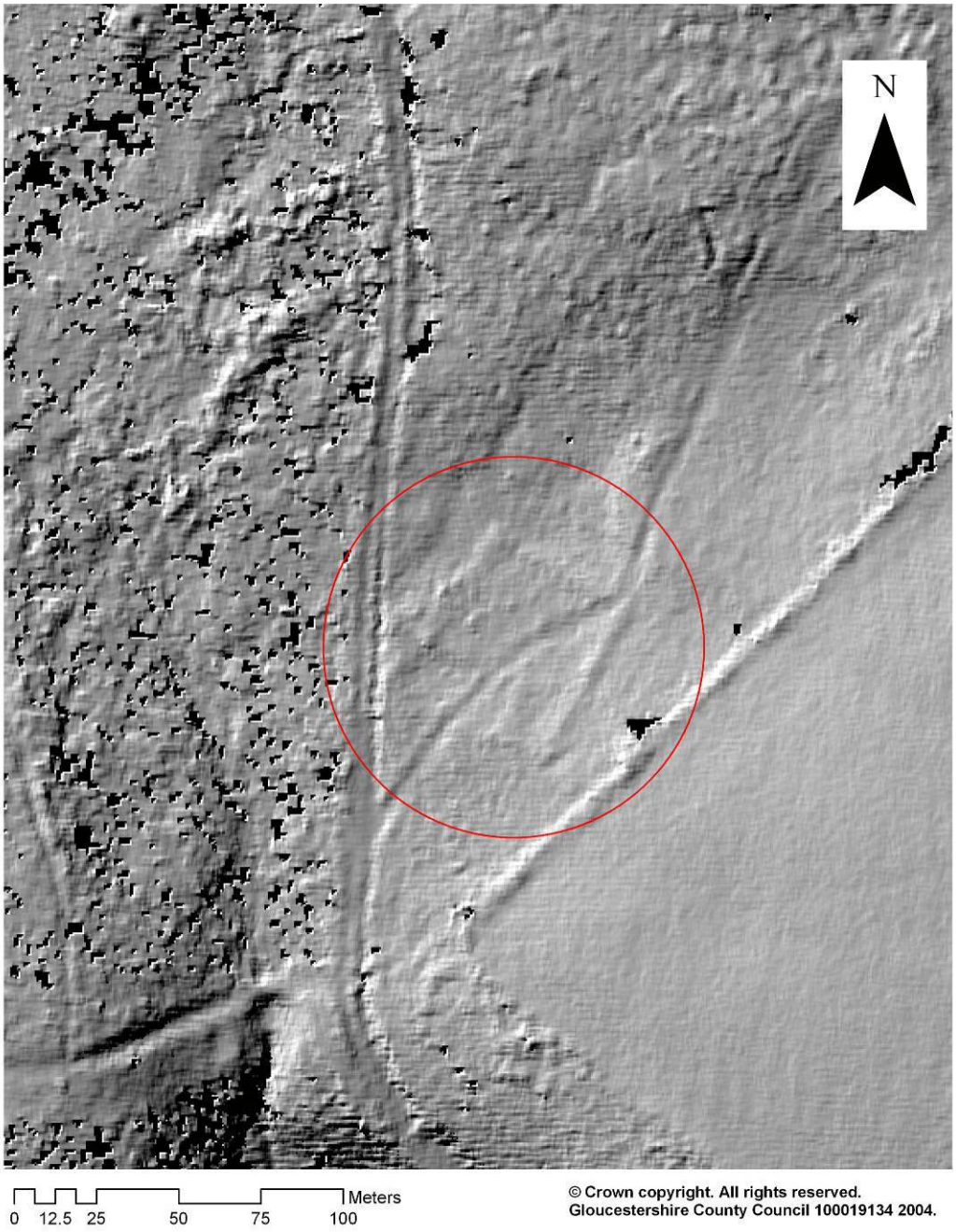

Figure 16: Enclosure so6205/06, illuminated from the northwest

Although the status of the remaining three large enclosures (so5600/08, so6713/01 and st5599/06) is not clear, all of them can be confidently interpreted as genuine earthworks of potential archaeological significance.

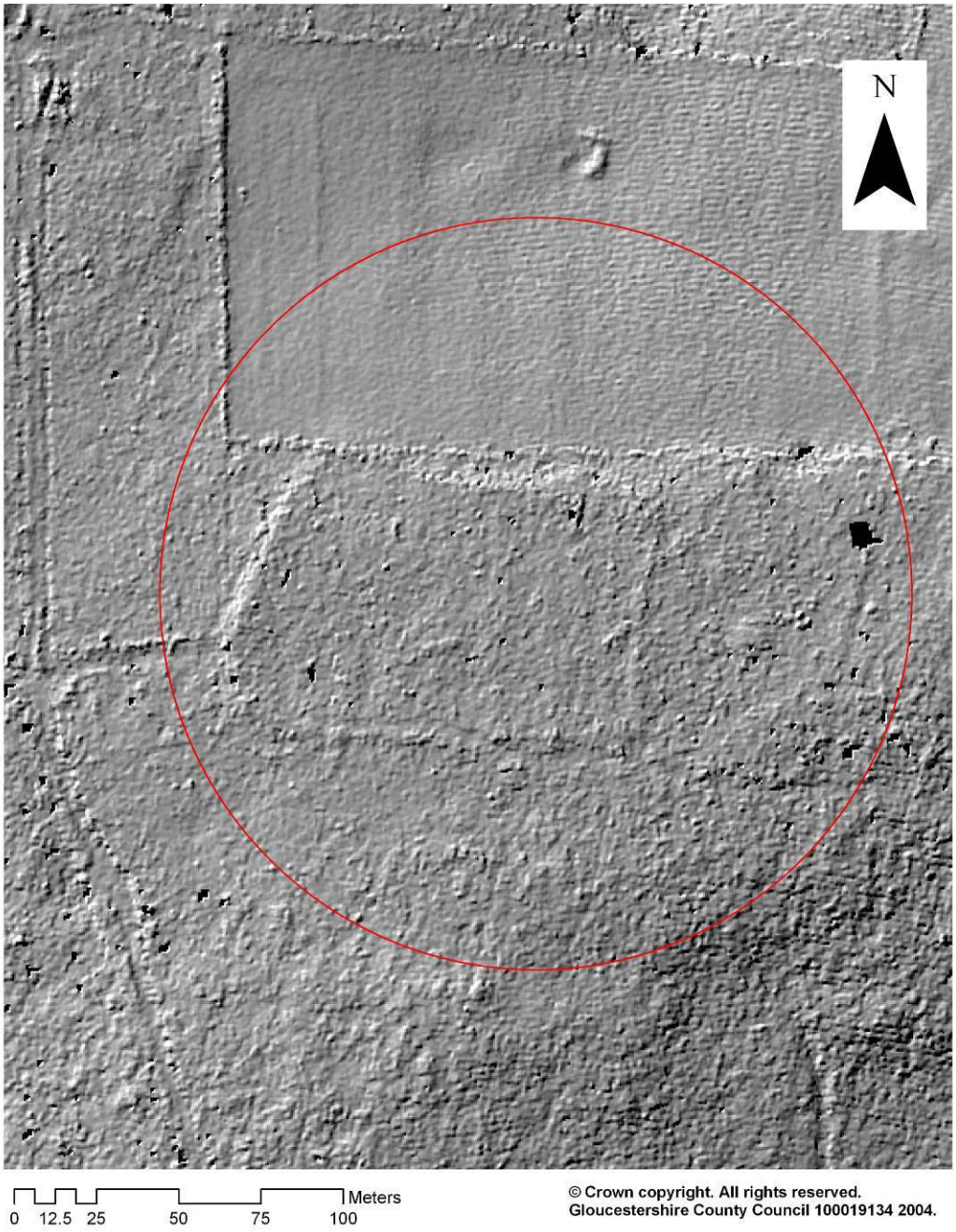

Figure 17: Enclosure st5599/06, illuminated from the northwest

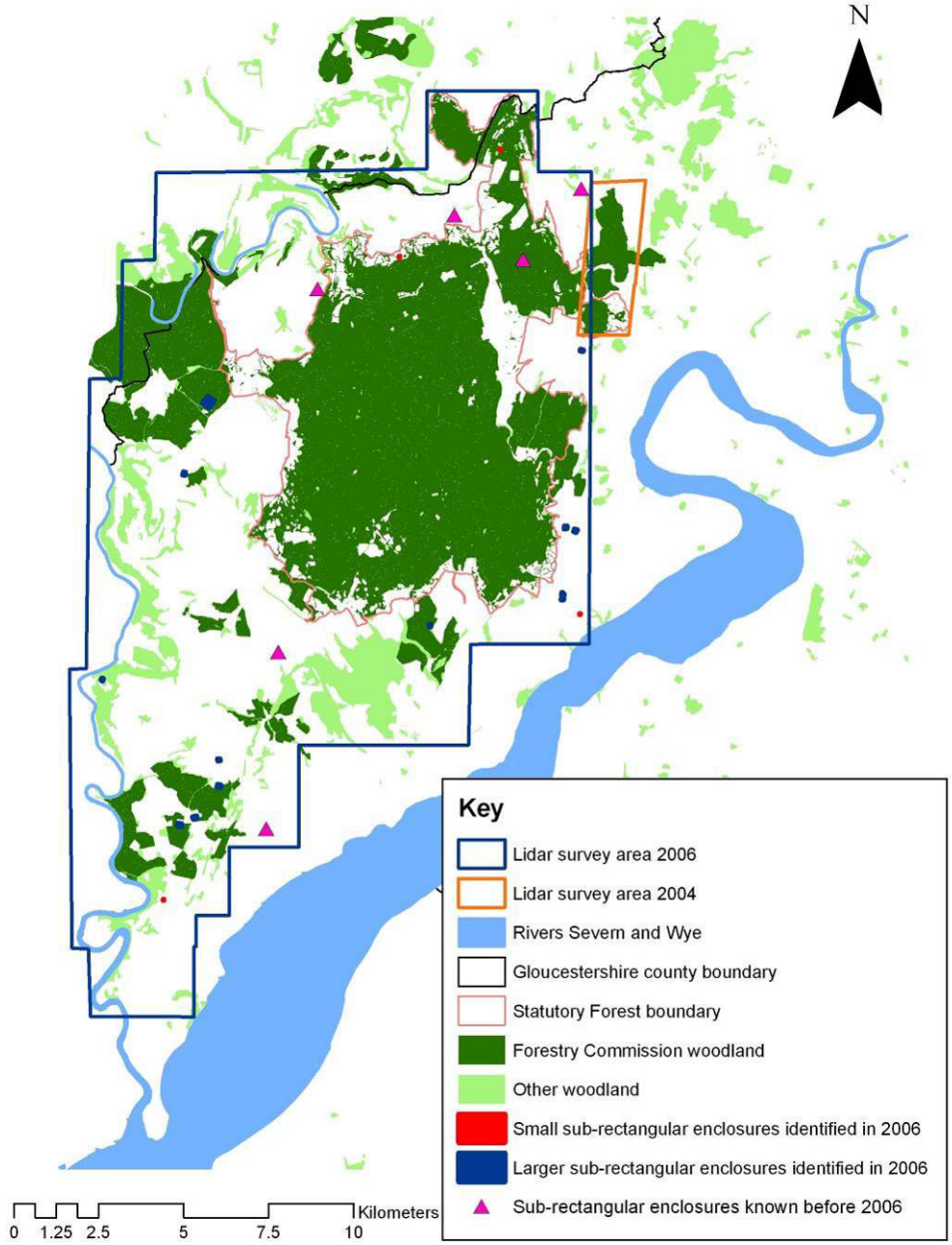

Figure 18: Sub-rectangular enclosures

Discussion of rectangular or sub-rectangular enclosures

The 2006 lidar survey has greatly increased the number of rectangular or sub-rectangular enclosures known within the Forest of Dean, and particularly those known within the areas currently under woodland. The status of none of these is known with any degree of certainty, and a number, particularly those enclosing an area of less than *c.* 1000m^2 or those with a Low interpretation confidence level, may not represent archaeologically significant features. The variety of archaeological features which may be represented by these rectilinear enclosures, however, remains very wide, and includes Romano-British military installations, medieval Forest or hunting lodges (see above) and a range of other possibilities from prehistoric or Romano-British farmsteads to medieval moated sites and animal pounds.

3.1.2 Hilltop enclosures

Two sites were interpreted as Hilltop enclosures during rapid transcription. Both of these were where the results of the lidar survey had augmented knowledge of archaeological sites already recorded on the SMR. Although the rapid transcription did not systematically compare the lidar hillshaded images and sites already recorded on the SMR (see 2.4.2 above), such comparisons were made in selected areas where the lidar results appeared to have a significant effect on an understanding of existing records.

3.1.2.1 So5400/04, Glos SMR 6033, 26234: Madgetts Farm

Evidence of deserted settlement was already known at Madgetts Farm, Tidenham (Glos SMR 6033, 26234), and a series of lynchets, linear and rectilinear cropmarks, enclosures and old field boundaries had been recorded at this site during the 1995 Offa's Dyke Survey for Management (Hoyle and Vallender 1997, section 2.17.1.3) and the Forest of Dean National Mapping Programme (GCCAS SMR 2007; Small *et al.* 2006, section 7.1.3).

The site at Madgetts is immediately to the east of Offa's Dyke (Glos SMR 502) which, at this point, follows a very regular arc as if following the line of some pre-existing feature. This, in combination with other visible features on the site, had led some earlier authorities to postulate that Madgetts was the site of a pre-Offan earthwork, which was incorporated into the line of the monument (Fosbroke 1831, 1832; OS 1880, 1900; 1925; Playne 1877). During his survey of Offa's Dyke, Fox found no trace of this 'Camp' (Fox 1955, 203), and the 1995 survey for management suggested that the major lynchets, which form the northern part of the Madgetts settlement, respected and post-dated Offa's Dyke. It was also suggested that the curve in Offa's Dyke at this point was the result of the builders closely following the natural break in slope in this area which forms a very regular arc, and that this regularity had contributed to earlier, but incorrect interpretations of Offa's Dyke here utilising a pre-Offan earthwork (Hoyle and Vallender 1997, section 217.1.3).

Analysis of the lidar hillshaded images not only identified a number of unrecorded earthworks within woodland at that site, but also suggested that these, along with the curved line of Offa's Dyke, could reasonably be interpreted as elements of a single monument. Earthworks to the east of Offa's Dyke appeared to both continue its distinctive curve and be a continuation of unexplored features to its west, which seem consistent with the outer ramparts of a prehistoric defended settlement. None of the above has been validated through field survey, but analysis of the hillshaded lidar images has re-opened discussion about the status of the Madgetts site and of the possible re-use of an earlier earthwork by the builders of Offa's Dyke in this area.

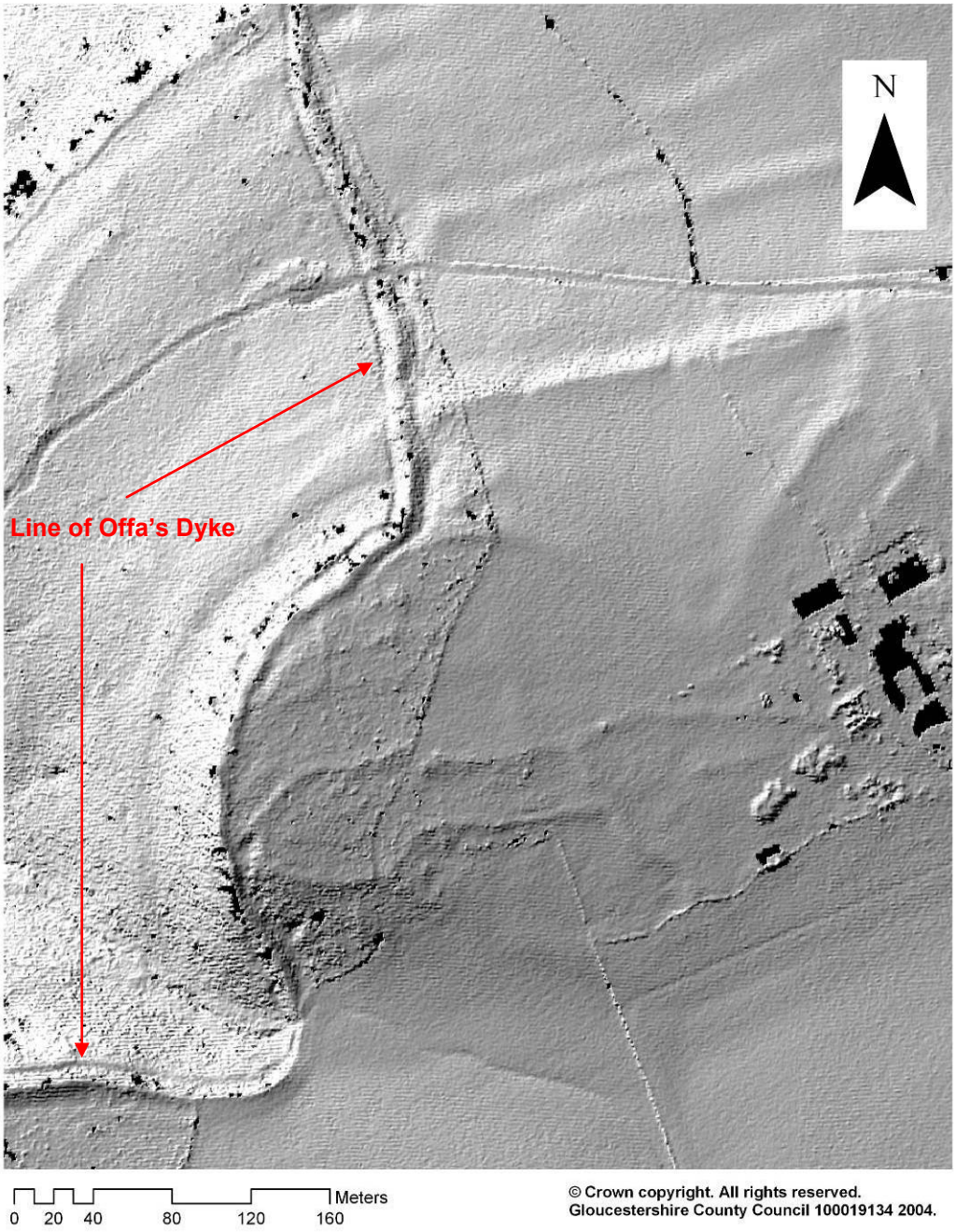

Figure 19: Madgetts Farm, so5400/04, Glos SMR 6033, 26234, illuminated from the northwest

3.1.2.2 St5496/03, Glos SMR 5008

Glos SMR 5008 is the site of an enclosure of unknown date in Tidenham Parish (SO54609650). The site, which is associated with the placenames 'Ashberry House' and 'Caerwood', was recorded as an enclosure in 1877 (Playne 1877, p 236), although no earthworks could be traced when the site was revisited in 1951 (Scott-Garret 1918-1958, entry for 27th November 1951). The rapid transcription of the lidar results identified a slightly curved bank (st5496/03), the location of which accorded with Playne's 19th century description of the location of this site, and accordingly this feature, which was digitised as a line, was assigned an interpretation of Hilltop enclosure.

3.1.3 Linear and rectilinear earthwork systems

The rapid transcription identified 165 areas of linear and rectilinear earthwork systems.

In total features of this kind covered an area of *c.* 14.06km^2 representing *c.* 5.76% of the transcribed survey area.

These are discussed in relation to whether they were identified in woodland, as, in some cases, this may influence discussion of their interpretation and date. It is recognised that this division, although possibly valid in the majority of cases, is over simplistic. Some of the earthwork systems identified in open farmland, e.g. the co-axial system to the northwest of Flaxley Woods (so6717/03; so6716/06), are likely to represent a continuation of systems currently within woodland (so5600/10, so6107/03).

3.1.3.1 Linear and rectilinear earthworks outside of woodland

Approximately 57% (by area) of linear and rectilinear features were identified outside woodland. Without detailed historical research, beyond the scope of this project, it is not possible to identify areas where woodland clearance is documented, and, for discussion purposes, these are assumed to represent features which were not created in woodland.

These tended to consist of small rectilinear enclosures, and, although none of these could be dated with any certainty, *c.* 62% (by area) of these were assigned a medieval or post-medieval date. This date was assigned where systems related to known medieval or post-medieval features, or where they appeared to be a continuation of one of the ten areas of relatively small rectilinear enclosures (90% of which were identified during English Heritage's National Mapping Programme for the Forest of Dean) which have been interpreted as medieval field systems (Hoyle 2008b, section 4.10.2).

Figure 20: Probable medieval or post-medieval field system so5505/01, illuminated from the northwest
21st century features shown black; similar earthworks to the south were already recorded on the SMR

In addition to these, two areas (so5510/01 and so5506/02) were identified where the lidar added significantly to the boundary pattern recorded by NMP. These were digitised as lines and are not included in the quantification of the extent of new features identified by the rapid lidar transcription.

Prior to the 2006 lidar survey, this type of feature had only been identified in the area to the west of Statutory Forest (Hoyle 2008b, section 4.10.2.1). The 2006 lidar survey has increased the distribution of this type of feature to all parts of the survey area outside of woodland (Figure 25).

Discussion of linear and rectilinear earthworks outside of woodland

The report on Stage 1 of the Forest of Dean Archaeological Survey recognised that features of this type were found on steeper ground and suggested that areas of small enclosure may have been a feature of medieval agriculture, contemporary with unenclosed 'open field' systems and could be interpreted as the result of differential enclosure of relatively marginal ground at the periphery of open fields, a phenomenon noted in the area of the Cotswolds AONB. It also, however, suggested that these could represent the remains of an earlier system of enclosure which had been obliterated by medieval open fields, except in areas where these were restricted by the steepness of the slope (Hoyle 2008b, section 4.10.3.2).

The detailed analysis of the slope and aspect of identified lidar features was not undertaken as part of the 2006 lidar transcription, although a rapid comparison of the location of these features with slope information for the Forest of Dean indicated that, although these features had a slight preference for steeper slopes, particularly in the northern part of the survey area, they were found on all terrains. Although this does not demonstrate that these features do not represent a marginal adjunct to an open field system, their relatively widespread distribution may suggest that, in some areas, they are indicative of a widely practised agricultural system in which small enclosures predominated. The report on the National Mapping Programme for the Forest of Dean, noted that coaxial field systems in the area of Hewelsfield were '…reminiscent of Iron Age or Romano-British coaxial field systems' and suggested that these may be '…a survival from…Saxon holdings with perhaps even earlier origins.' (Small *et al.* 2006, section 8.2.2.1). The features identified in the 2006 lidar survey tend to be found in fairly close proximity to the settlements on the periphery of the Forest of Dean which were mentioned in the Domesday survey of 1086 (Hoyle 2008b, Figure 26) and even where some elements of these have clearly been fossilised in the post-medieval field system it is tempting to suggest that, like those in the Hewelsfield area identified by NMP, they may have pre-conquest, and possibly earlier, origins.

3.1.3.2 Linear and rectilinear earthworks within woodland

Approximately 42% (by area) of these features were found within Forestry Commission woodland, although some of these (e.g. so5700/08, so6107/03) were only partly within Forestry Commission land. These covered an area of *c.* 5.9km^2, and a further *c.* 0.41% (by area) was within non-Forestry Commission woodland. This represents a dramatic increase in the number of this type of feature recognised as only two (Chestnuts Wood – SO67811440, Glos SMR 22053 and Welshbury Wood - SO67881530, Glos SMR 5161) were known when the report on Stage 1 of the Forest of Dean Archaeological Survey was prepared (Hoyle 2008b, section 4.6.4), whilst a further two (Flaxley Woods – SO68261658, Glos SMR 28170 and Great Berry Wood, Brierley – SO61841517, Glos SMR 28155) were identified as part of Stage 2 of that survey (Hoyle 2008a, sections3.3; 4.5). As the rapid transcription of the 2006 lidar data added significantly to all of these sites, they have been included in the transcription process, even though they were already recorded on the SMR. Even when this is taken into account, the 2006 lidar survey has increased the known incidence of this type of feature within woodland by a factor of *c.* 472%.

The majority of those recognised in non-Forestry Commission woodland may be a continuation of similar systems outside of the woodland. Detailed documentary and field research would be required to date these areas of woodland, although for the purposes of this report it is reasonable to interpret these earthwork systems as medieval in date, although of possible earlier origins (see 3.1.3.1 above). Approximately 7% of those systems in Forestry Commission woodland, in the area to the south of Staunton Coleford, can be interpreted as post-medieval in date (although, again, with possible earlier origins) as these are in an area which documentary evidence has shown to have been open farmland until the mid 19th century (PRO 1608; GCRO 1792).

Another group of earthwork systems (so5700/08, so5500/12, so5600/10, st5599/10, st5698/22) were found in woodland in the area of Tidenham Chase, Tidenham (centred at *c.* ST55409971), an area which was detached from the Forest of Dean by 1300 (Herbert 1972, p 5). All of these, with the exception of so5700/08, which is largely outside woodland (see above), were in areas designated as Ancient Semi-natural Woodland (GCC 2007). Despite this designation, the actual date of the woodland is not clear, and there are historical records of this area being subject to encroachment and conversion to arable land in the 13th and 16th centuries (Herbert 1972, p 51). All of these earthworks were also in the vicinity of field systems already identified on the SMR in the area of Hewelsfied (Glos SMR 26204, 26232) and Madgetts Farm, Tidenham (Glos SMR 6033) and also earthwork systems outside woodland recorded in the 2006 lidar survey (so5600/12, st5499/05, st5799/05, st5799/06). It is possible that the earthworks in these woods are contemporary with those outside of the woodland, and therefore possibly (but not definitely) of medieval date.

With the exception of three small areas (so5715/05, so5703/04 and so6205/07) the remaining undated earthwork systems within woodland were found within *c.* 1.5km of the modern boundary of the Statutory Forest.

The majority (but not all of these) were below the 200m and above the 50m contour lines and within, or at the edges of, valleys, which contained alluvial deposits (BGS 2004). Almost all of these (the exception being so6208/05) were outside, or at the edges of, the mudstone and sandstones of the Cinderford formation which overlies the Pennant Sandstones in the central part of the Forest of Dean and is the main coal-bearing sandstone in the area (BGS 1974, 2004).

With the exception of the earthwork system associated with Welshbury Hillfort (so6510/01, Glos SMR 5161) which has been interpreted as prehistoric in date (see above; McOmish and Smith 1996), the remaining earthwork systems within woodland are undated.

The rapid transcription process did not make detailed analysis of the morphology of these systems, and some were certainly more extensive, and apparently better preserved, than others.

Broadly speaking, however, although some of these systems were characterised by linear boundaries which were often, but not always, segmented by shorter perpendicular boundaries to produce a co-axial system, the majority, including the likely prehistoric system at Welshbury (so6715/12, Glos SMR 5161), lacked a clear common axis, and could be more reasonably described as contiguous rectilinear enclosures which were clearly part of a common scheme of landscape organisation, and contained some common boundaries. In a few areas, such as the western side of Chestnuts Hill, Flaxley (Glos SMR 22053, so6714/13) or Haywood Plantation to the north of Cinderford (so6515/01) these systems appeared to consist of long more or less parallel linear banks or terraces, without visible perpendicular boundaries.

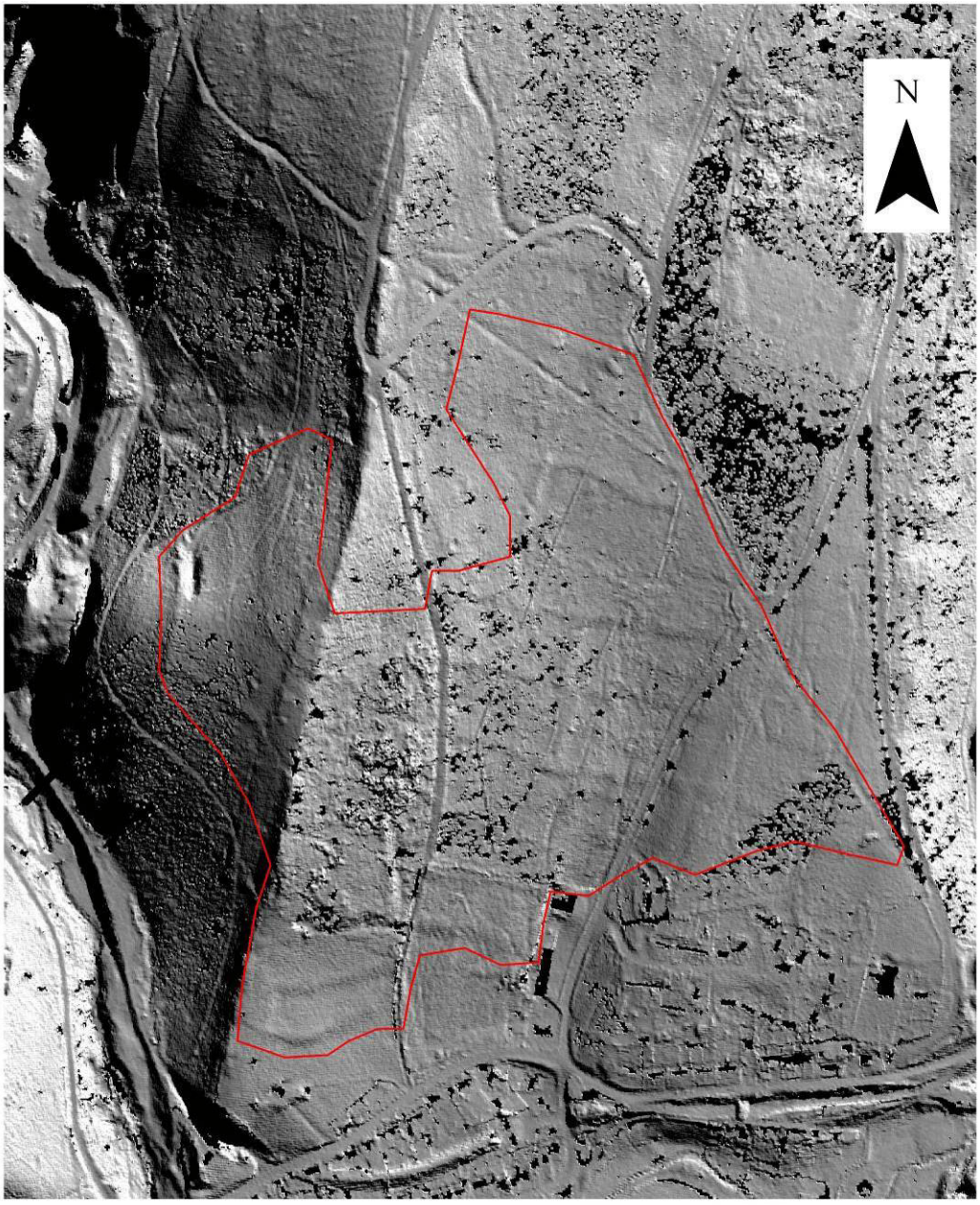

Figure 21: Earthwork system so6510/01, illuminated from the northeast

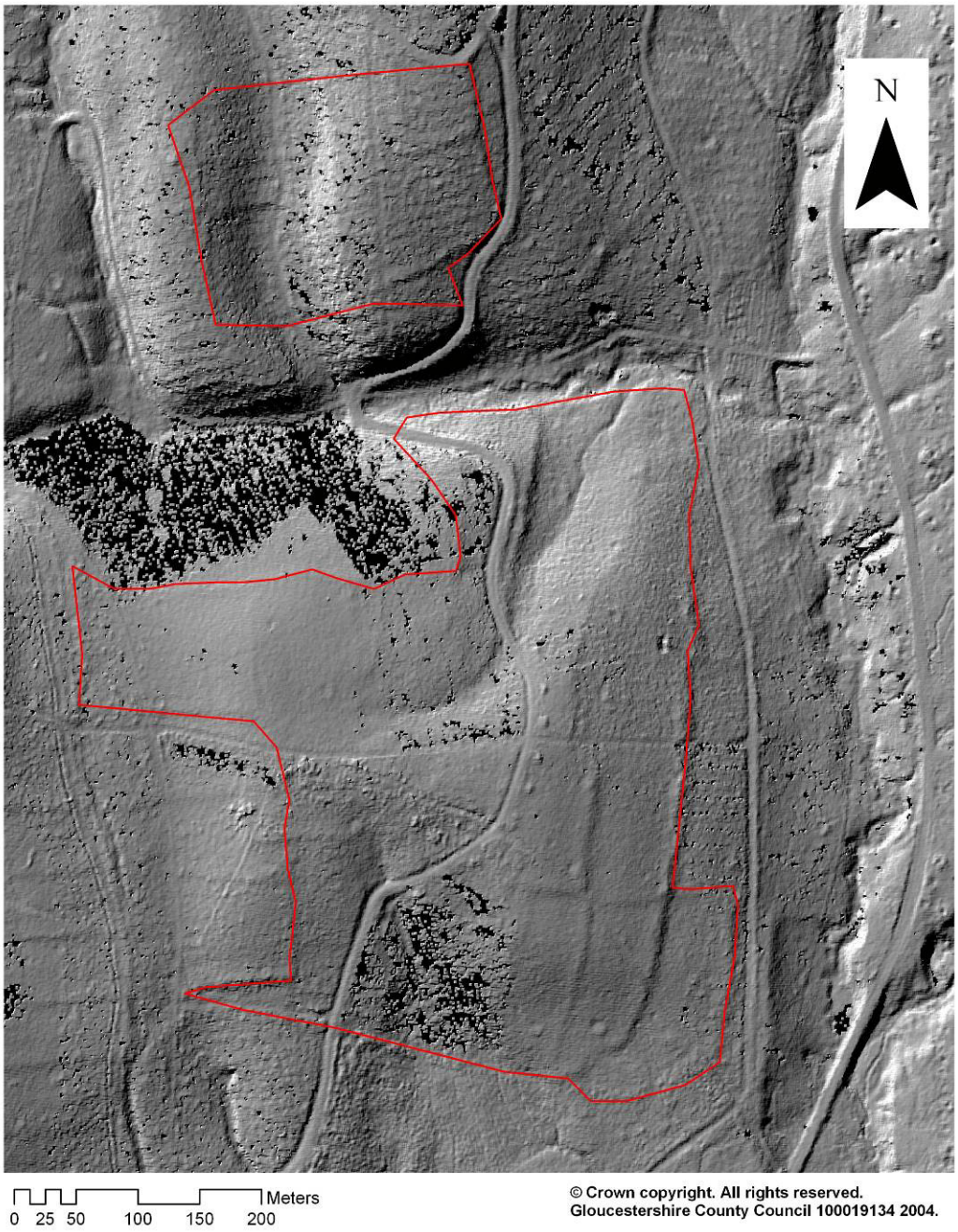

Figure 22: Earthwork system so6013/02, illuminated from the northwest

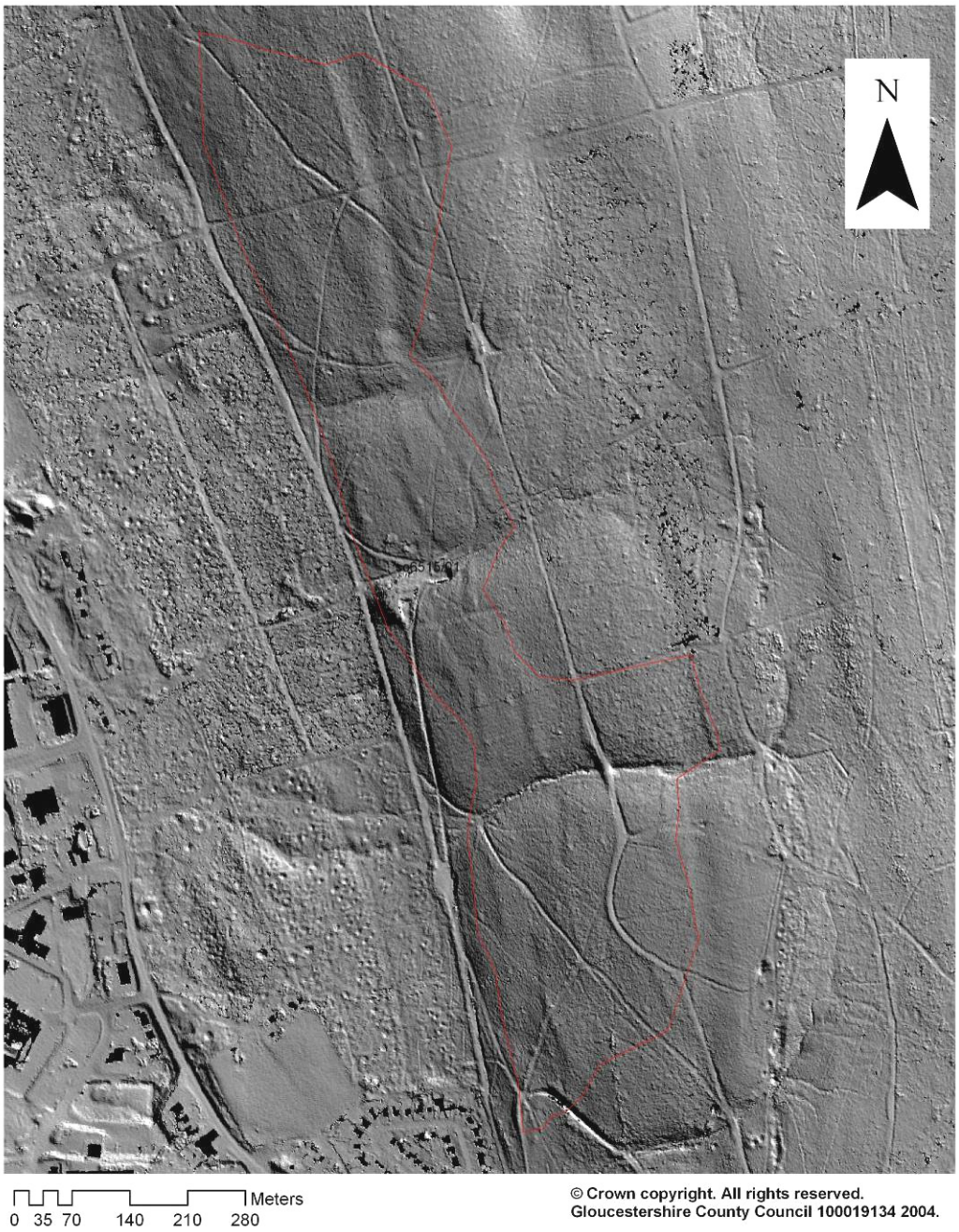

Figure 23: Earthwork system so6515/01, illuminated from the northeast

Discussion of linear and rectilinear earthworks within woodland

Although the actual date of the woodland within the Forest of Dean is not known, a large area of woodland and waste in the area of the modern Forest of Dean is thought to have been used as a Royal hunting reserve before the Norman conquest of 1066. This area formed the basis of the later Royal Forest, an area reserved as a royal hunting ground and subject to separate Forest Laws, which was established in Dean by the time of the Domesday Survey of *c.* 1086 (Herbert 1996a, p 285). Between the 11th and 13th centuries, the whole of the area covered by the 2006 lidar survey was 'Forest' in the sense that it was subject to Forest Law (Hart 1945). Although this would have supported a range of communities and landuses, settlement was restricted in the central uncultivated area and the Statutory Forest remained extra-parochial until the 1840s (Herbert 1996a). This area is thought to have been either wooded, or within the woodland management cycle since at least the later medieval period, an interpretation supported by 13th century references to (and

restrictions on) semi-legal iron smelting and up to 2,685 charcoal pits (Herbert 1996a, 362).

Although the later medieval woodland is well documented, palaeoenvironmental sampling undertaken as part of Stage 2 of the Forest of Dean Archaeological Survey suggested that, in some areas, the woodland may have been less extensive in earlier periods. Pollen analysis of dated samples taken in the area of the Flaxley Valley in the eastern part of the Forest of Dean (SO68341557) suggested that, in this area at least, the environment in the late Saxon period was characterized by an open landscape of dry grassland, which subsequently became increasingly wet, and supported an expanding alder and hazel woodland (Hoyle 2008b, section 5.2, Appendix O).

Given this, any features identified within these areas of woodland could either be the remains of activity relating to the management of the woodland, features indicative of periods of woodland clearance, or earlier features predating the woodland. The following are possible interpretations of some of these features.

Post-medieval woodland management features

In two areas (so6509/05 and so6013/26) these consisted of very straight, parallel banks or terraces *c.* 50m apart. A similar configuration of boundaries was recorded as so6615/02 and st5599/10, but these were less consistent and may not represent the same phenomenon. The regularity of some co-axial systems (e.g. so6510/01, Figure 21) also appeared similar to these with the exception that the long parallel earthworks were segmented by shorter perpendicular boundaries.

The regularity of these suggests recent forestry activities, such as drainage or subdivisions within areas of plantation. Images of these two areas were sent to Ben Lennon of the Dean office of the Forestry Commission who reported that, although the features at so6013/26 could be interpreted as drainage, this was a more problematic interpretation of the features at so6510/01, as they were not aligned with the topography in a suitable way. This type of feature did not appear similar to modern drainage systems, and Ben Lennon did not recognise them as the result of any recent forestry practise (Ben Lennon pers. comm.). These features may, however, be similar to 18th century timber plantation boundaries recorded in the New Forest (Smith 1990, p 40). It may be noteworthy that those recorded as so6013/26 appear to pre-date charcoal burning platforms on the site (see Figure 24) which may suggest greater antiquity, although only further field survey could validate this relationship.

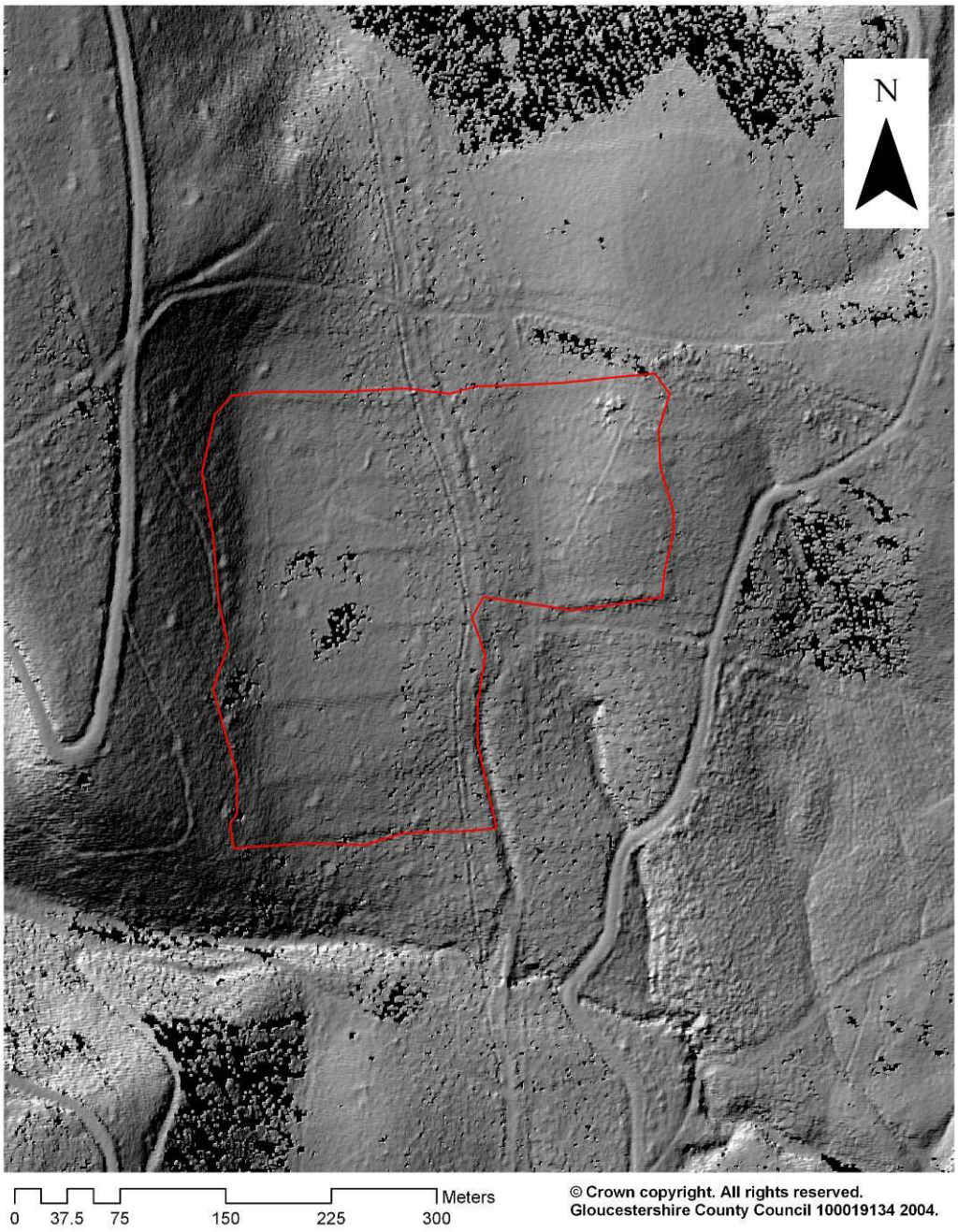

Figure 24: Regular parallel earthwork system so6013/26, illuminated from the northwest

Earlier woodland management features

Small enclosures are a feature of some medieval and later woodland management regimes where they are used to protect coppice from browsing animals and facilitate the management of coppice rotation systems, and some of these features may represent the remains of coppice enclosure boundaries dating to the medieval or early post-medieval periods. Coppice enclosures defined by hedges were recorded at Wroughton, Overton and Enford in Wiltshire in the 14th century (Harrison 1995, p 5), but earthwork systems are also known from a variety of periods (Rackham 1995, 126; Simco 2003 Fig 4), and similar earthwork systems have been recorded in the New Forest, Hampshire (Smith 1999, p 38).

Coppiced wood was used for a variety of purposes, and would have been particularly important to supply the production of charcoal, a well-documented industry in the Forest of Dean (see above).

Eight areas of coppice are recorded on the 'fringes' of the Statutory Forest in the mid 16th century, most notably at Chestnuts Wood, Littledean, Bradley Hill, west of the Soudley Brook, and the Kidnalls, north of Lydney (Herbert 1996a, p 362). Earthwork systems were recorded at Chestnuts Wood (so6714/13) and although none were recorded on Bradley Hill, extensive areas were recorded immediately to its west in an almost continuous band running from Long Green (SO65591195) in the north to Organ's Green (SO65492080) in the south (so6511/08, so6510/01, so6509/05, so6508/01, so6508/03). One of these (so6510/01) was recorded as 'Soudley Copse' in the 19th century (Gwatkin 1997). A small area of these was also recorded both inside and outside the modern woodland at Kidnalls (so6205/07).

In addition to this a number of coppices were named on documents dating to 1634 and 1656 (Hart 1995, 68, 108-111; Appendix G), some of which may correspond to identified earthwork systems:

Table 2: Named early post-medieval coppices and lidar earthwork features

Coppice Name	Date	Lidar feature	Modern Name
Morestocke	1634	so6014/13	Mireystock
Abbotts Wood	1656	so6510/01	Abbots Wood
Part of Flaxley Woods	1656	so6816/02, so6816/03, so6817/01, so6818/08, so6716/05	Flaxley Woods
Harpe Grove, Mitcheldean	1656	Linear Feature so6618/05	Harp Grove
Winnel and Blakes Wood, Stanton	1656	so5612/02, so5513/02	Blakes Wood, Staunton
Ellens Redding, Stanton	1656	so5513/02	Redding Enclosure, Staunton (or possibly Ellis Redding Wood, Coleford - so5513/02?)

However, a number of identified named coppices from this period do not contain earthwork features identified by lidar:

Table 3: Named early post-medieval coppices with no lidar earthwork features

Coppice Name	Date	Modern Name	OS Grid reference
Within Sir John Winter's Park	1656	Lydney park	SO 6040 0371
Abinghall Grove	1656	Abenhall Grove, Abenhall	SO 6774 1752
Wilkwood, Abinghall	1656	Wilk Wood, Abenhall	SO 6731 1820
Lower Furnace Grove, Newland	1656	Furnace Grove, Newland	SO 5391 1061
Lords Land Grove, Newland	1656	Not clear but possibly Lords Grove English Bicknor or Lord's Grove, north of Redbrook	SO 5790 1641 or SO5300 1097
Bircham, Newland	1656	Bircham Wood, Newland	SO 5611 0981
Astredge Grove, Newland	1656	Astridge Wood, Newland	SO 5484 0857
Wysil, St Briavels	1656	Wyeseal Wood	SO 5451 0614
Rodmore Grove, St Briavels	1656	Rodmore Grove	SO 5870 0321

Coppice Name	Date	Modern Name	OS Grid reference
Bunjeps Grove, Stanton	1656	Bunjups Wood, Staunton	SO5375 1143

Assarts

There is a considerable history of illegal and semi-legal encroachment and assarting into the area of the Royal demesne in the Forest of Dean throughout the medieval periods, and sections of the demesne woodland were sold in the 14th century (Herbert 1996a, p298-299; 362). The modern Statutory Forest essentially represents the surviving residue of demesne land after this encroachment and the majority of the earthwork systems within its bounds are unlikely to represent the remains of assarting during this period.

The following areas, either within or just outside the modern boundaries of the Statutory Forest, may correspond with areas of medieval assart (Herbert 1996a, 298-299)*:*

- Early 13th century grants of land to Flaxley Abbey
  - so6818/08
  - so6817/01
  - so6816/02
  - so6716/05
  - so6816/03
  - so6815/03
  - so6714/13
- 13th century grants of land at Abbots' Wood Soudley to Flaxley Abbey
  - so6511/08
  - so6510/01
- Mid 14th century assarting at Bream
  - so6105/01
- Mid 14th century assarting at Elwood
  - so5907/01
  - so5907/05
  - so6007/01
  - so6007/02

To the south of the Statutory Forest, a total of 267 acres of assarts was reported in 1282 in the area of Tidenham Chase to the northwest of the Gloucester-Chepstow road, the modern A38 (Herbert 1972, 51). These assarts had converted woodland to agricultural use and the following earthwork systems, currently either within or on the edges of woodland, may have been created at that time:

- so5500/12 – currently within woodland.
- so5600/10 – currently within woodland.
- so5600/12 – currently outside of woodland.
- st5499/05 – currently outside of woodland.
- st5599/10 – currently within woodland.

Features not related to woodland

Undated earthwork features, sometimes pre-dating later coppice boundaries, have also been identified in areas of woodland outside of the Forest of Dean, with examples known at Salcey Forest, Northamptonshire (Simco 2003, 3) or at Great Church Wood, Marden, Surrey (Bannister 2003, 8) outside of the Forest of Dean, and none of the earthwork systems discussed above can definitely be assigned a medieval or early post-medieval date on the basis of currently available evidence. Given this, It may be instructive to consider that the only field system currently considered to be pre-historic in date (Welshbury Hill, Glos SMR 5161, so6715/12) would have been classed as the possible result of early 13th century land grants to

Flaxley Abbey, without the benefit of detailed earthwork survey (McOmish and Smith 1996).

Even if all of the possible assarting and coppice boundary interpretations for these features are accepted, the following earthwork systems within woodland cannot be linked to either of these interpretations on the basis of the documentary research undertaken during the project*:*

- so5307/01
- so5406/05
- so5411/04
- so5411/06
- so5413/02
- so5413/03
- so5504/03
- so5511/01
- so5511/02
- so5700/08
- so5703/04
- so5705/05
- so5911/10
- so6011/09
- so6013/04
- so6013/07
- so6205/07
- so6015/05
- so6107/03
- so6115/03
- so6115/04
- so6208/05
- so6215/04
- so6304/01
- so6315/01
- so6515/01
- so6608/03
- so6608/04
- so6609/03
- so6615/02
- so6616/14
- so6709/02
- so6715/02
- so6715/03
- st5698/22

Although these features are not completely uniform (see above) they are broadly similar in form and give the impression of a large-scale system of landscape organisation predating the patterns of woodland distribution and similar to prehistoric field systems identified in other areas of the British Isles. These may be the result of increased levels of landscape organisation and control from the middle Bronze Age (c. 1300 – *c.* 900 BC) perhaps indicative of changes in the social order at that period (Cunliffe 1995, 36). The surviving remains of these features are particularly prevalent in areas of highland where agriculture was subsequently abandoned (Fowler 1983, 119-128, Figures 45-47), perhaps in response to land pressure brought about by climatic deterioration (Darvill 1987, 124), and where subsequent landuse has not obliterated all traces of them. From the later Bronze Age, the settlements which these field systems served were replaced with defended enclosures or hillforts in some areas. These now form the focus of earthwork systems and numerous examples are known throughout central southern Britain (e.g. Woolbury, Hampshire - Cunliffe 1978, Fig 11:16; Danebury, Hampshire – Cunliffe and Poole 1991, Fig 1.1, Sidbury,

Wiltshire and Segsbury, Berkshire – Fowler 1983, Figs 40 and 57). Many of these features are found in the vicinity of Welshbury Hillfort (Glos SMR 5161) in the northeastern part of the survey area, and although these systems are found in the vicinity of the other Forest of Dean hillforts (Figure 26), this correlation is not so marked in other part of the survey area.

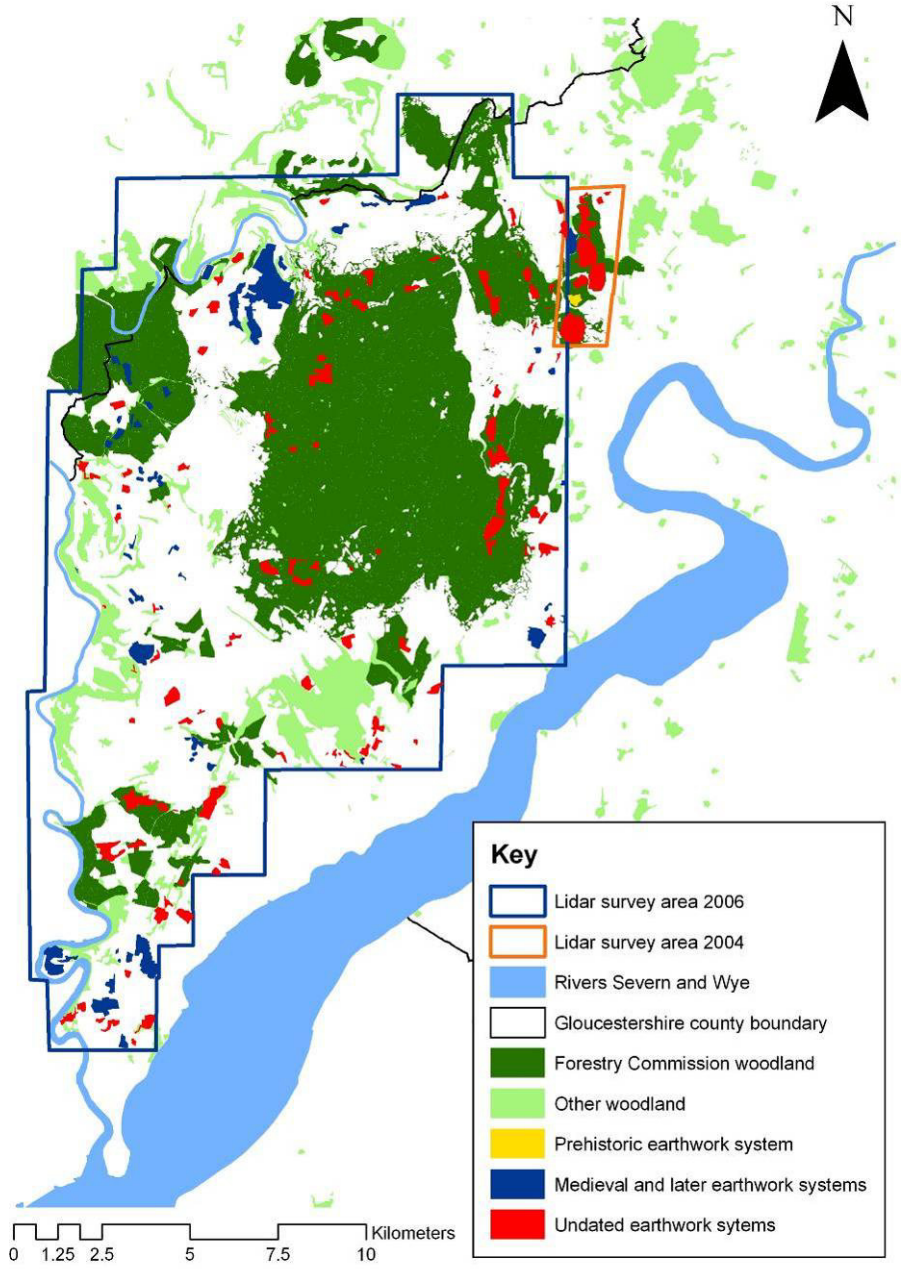

Figure 25: Earthwork systems

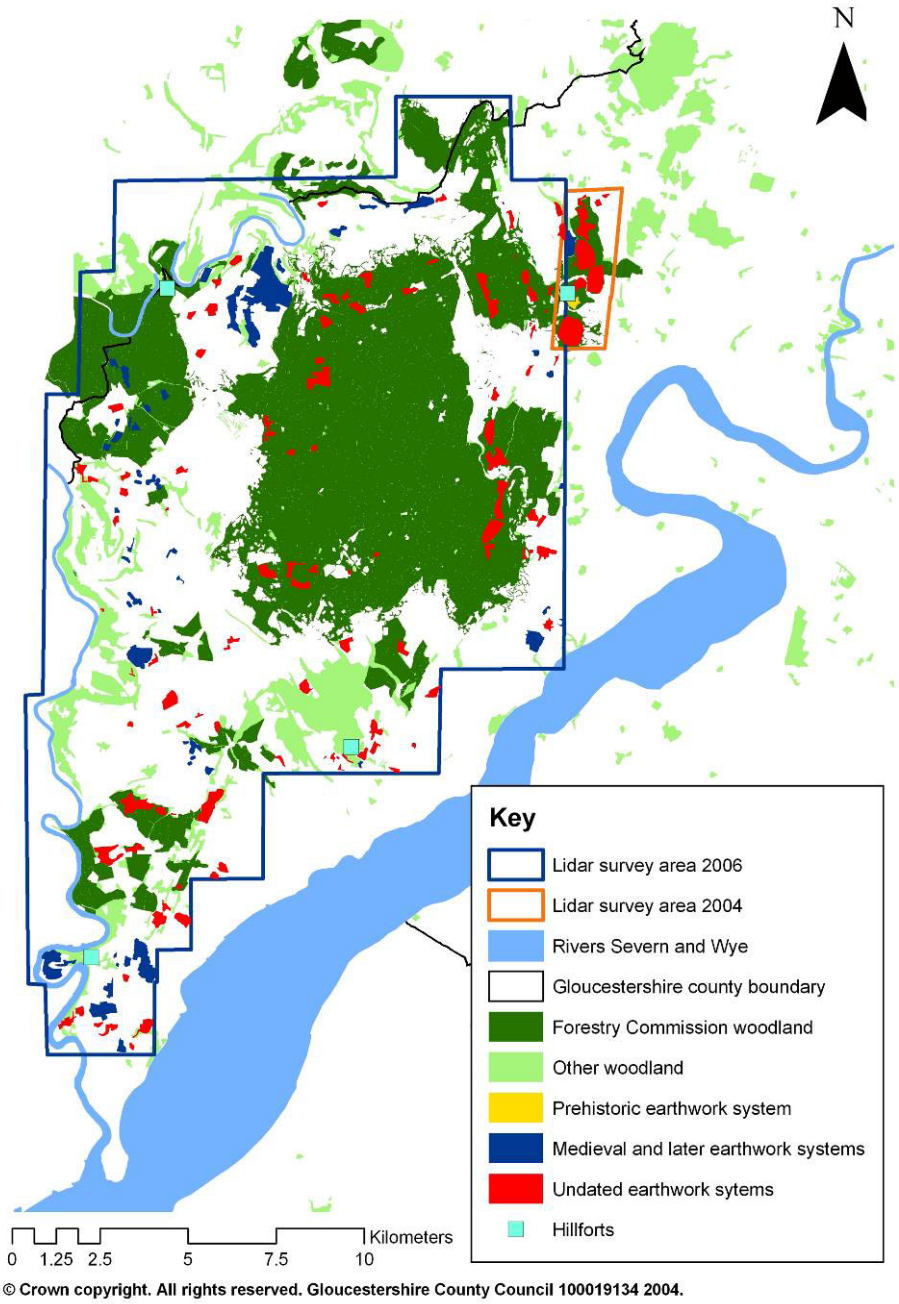

Figure 26: Earthwork systems and hillforts

3.1.4 Possible iron working sites

Although the production of iron is likely to have been a major industry in the Forest of Dean from the later prehistoric period, few *in situ* bloomery smelting sites have been recognised (Hoyle *et al.* 2004 section 4.2).

Sixteen sites were interpreted as Possible iron working sites, whilst a further 14 were interpreted as Possible slag heaps. These sites were generally identified by groups of low sub-circular or elongated mounds, which may indicate the remains of smelting waste although some, particularly in the northwestern part of the survey area (OS gird squares SO5713 and SO5714) were essentially just irregular and amorphous areas of mounds and hollows, which could equally indicate the remains of small-scale irregular quarrying or similar activities.

It is not possible to identify early smelting sites from the hillshaded lidar images with any certainty. These designations can only be seen as an identification of areas where earthwork remains may be consistent with those of early smelting sites, and the majority of these sites were assigned a feature interpretation confidence level of Low. Considerable caution should be applied before any of these sites are recognised as associated with iron smelting

All of these sites were found outside woodland in the northern part of the survey area and in the vicinity of settlements, such as Coleford, English Bicknor, Ruardean and Mitcheldean, where historical sources, or existing SMR records, indicate that bloomery smelting took place. Even if their interpretation is correct, they can only indicate a small proportion of the likely smelting sites in the Forest of Dean.

The difficulty of identifying smelting sites is highlighted by the fact that none of these were identified in woodland and particularly within the Statutory Forest. Historical sources indicate that numerous small-scale bloomery operations (itinerant forges) were operating in the Royal demesne (broadly coincident with the modern Statutory Forest) in the 13th and 14th centuries (Herbert 1996a, 362), although the sites of none of these has been identified with any certainty (Hoyle *et al.* 2004, section 4.2.4.4) and none were identified as a result of the rapid transcription.

The reasons for this are not entirely clear, but a contributing factor may be that extensive areas of bloomery waste were removed and re-smelted in the post-medieval period (Nicholls 1860, 236-7; Herbert 1996a, 291) which is assumed to have effectively removed much of the more visible evidence for this activity which lidar may have been able to detect.

A further problem may be one of feature recognition. Until a larger number of *in situ* bloomery sites have been identified in the Forest of Dean, and particularly in areas of woodland, it is not entirely clear what physical form these take in this area. Earthwork features, which indicate the sites of bloomeries, may have either gone unrecorded or been misidentified during the rapid transcription process and some of the features recorded as Mounds (see 3.1.19 below) or charcoal burning platforms (see 3.1.13 below) may fall into this category. Further analysis of the hillshaded images, based on a better understanding of the form of these features, perhaps combined with further manipulation of the raw lidar data, may be required to fully realise lidar's potential to identify iron working sites.

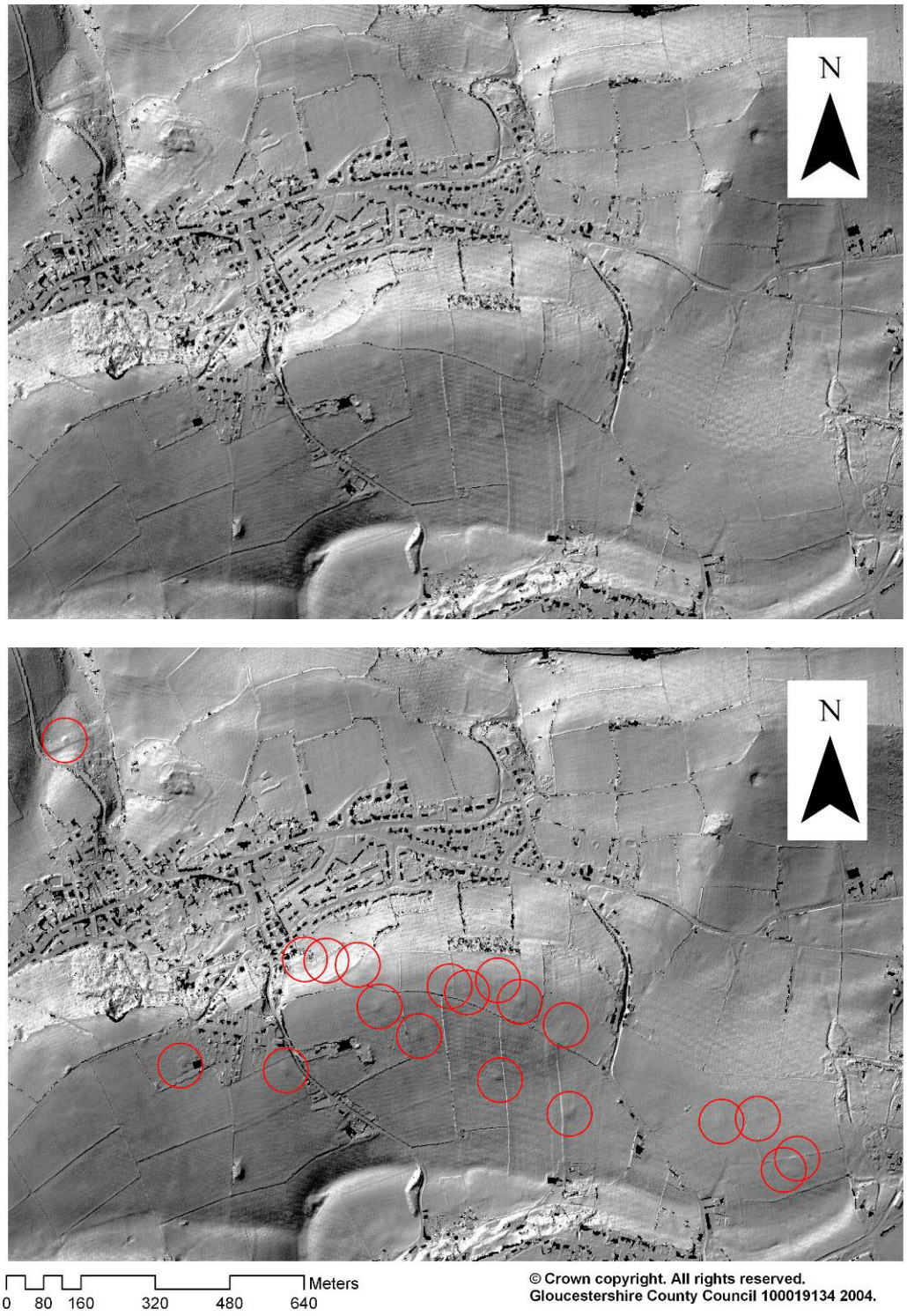

Figure 27: Possible small mounds of smelting waste so6217/01, illuminated from the northwest

3.1.5 Scowles

Scowles are found only in the Forest of Dean, Gloucestershire, and are landscape features of major geological, archaeological and ecological value. A base line survey (The Scowles and Associated Iron Industry Survey) was undertaken by the Archaeology Service of Gloucestershire County Council's Environment Department, between January 2003 and March 2004, one of the aims of which was to '…identify,

map and quantify' the visible remains of these features (Hoyle *et al.* 2004, 2.2.1). As part of the project the results of the mapping were added to the Gloucestershire SMR.

As part of that survey, the footprint of these features was mapped in a rapid and schematic way making use of technology available at that time. Although scowles, which fell into six broad categories, were mapped separately, no attempt was made to record internal detail (Hoyle *et al.* 2004, Appendix D.xi.i). A number of areas (representing *c.* 0.9km^2 of the search area defined for that project) were impossible to survey either on account of the density of undergrowth at the time of the field survey, or because access was denied (Hoyle *et al.* 2004, section 3.1).

Although it was not the purpose of the rapid transcription to refine the existing SMR record of scowles, or update the mapped record of the 2003-04 survey (Appendix B), it was clear that the hillshaded images provided a huge amount of additional detail of the precise location and form of identified scowles, both refining and augmenting the data recorded in the 2003-04 field survey.

The rapid transcription also recorded 51 areas where the survey identified significant features which could reasonably be interpreted as the remains of scowles.

In total the rapid transcription identified an additional 0.43km^2 of scowles representing an additional *c.* 12.6% of the area of scowles identified in 2003-04. 28% (by area) of these were assigned an interpretation confidence level of Low, whilst the remaining 72% were rated as Medium with the exception of so6616/15 which was rated as High.

Approximately 30% (by area) were outside woodland, and tended to comprise amorphous areas of hollows which are likely to correspond to Scowle Forms 1 or 2 (Hoyle *et al.* 2004, section 3.1.4), and may be fairly insignificant landscape features whose status was not clear during the field survey. The form of the remaining new scowle sites within woodland is not clear, although the majority of these were in areas which were designated as inaccessible in 2003-04, and it is possible that significant landscape features (e.g. scowle forms 4 or 5 – Hoyle et at 2004, 3.1.4) survive in these areas.

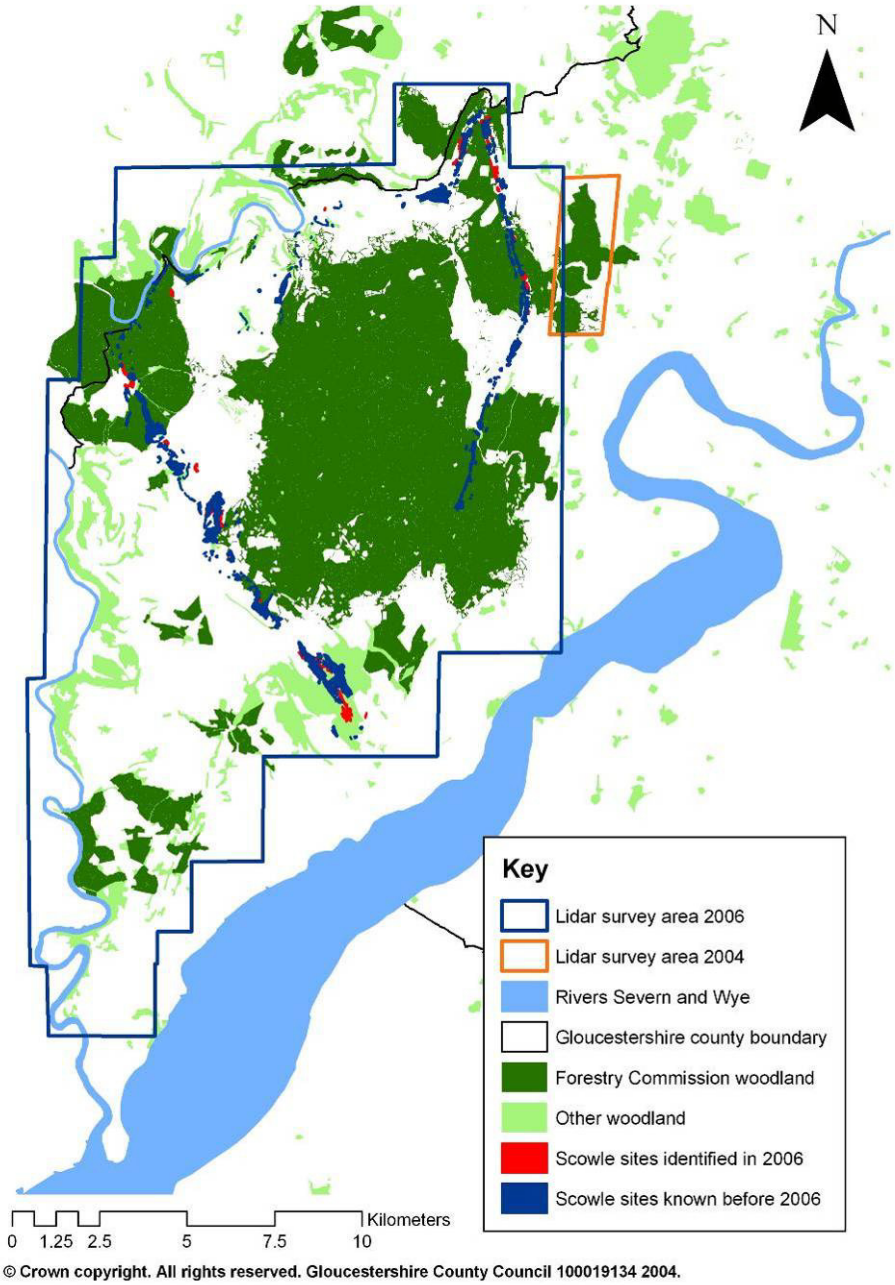

Figure 28: Scowle sites

3.1.6 Isolated earthwork features

453 features were identified during the rapid transcription which appeared to be isolated linear or rectilinear earthwork features on the hillshaded images. For ease of data recovery all of these were classified as Boundary in the project database.

The majority of these (374) appeared to be positive earthwork features, whilst only 44 appeared to be linear ditches. The remaining 35 appeared to be terrace features.

3.1.6.1 Dated earthwork features

Two of these (so5815/03 and so5815/04) were classed as medieval. Both of these formed very vague broad rectilinear banks. These were both in the same field which had been recorded as ‘Conegree’ on a map of 1608 (Glos SMR 21808) and these

features may be surviving earthworks, such as enclosure boundaries, relating to medieval rabbit warrens.

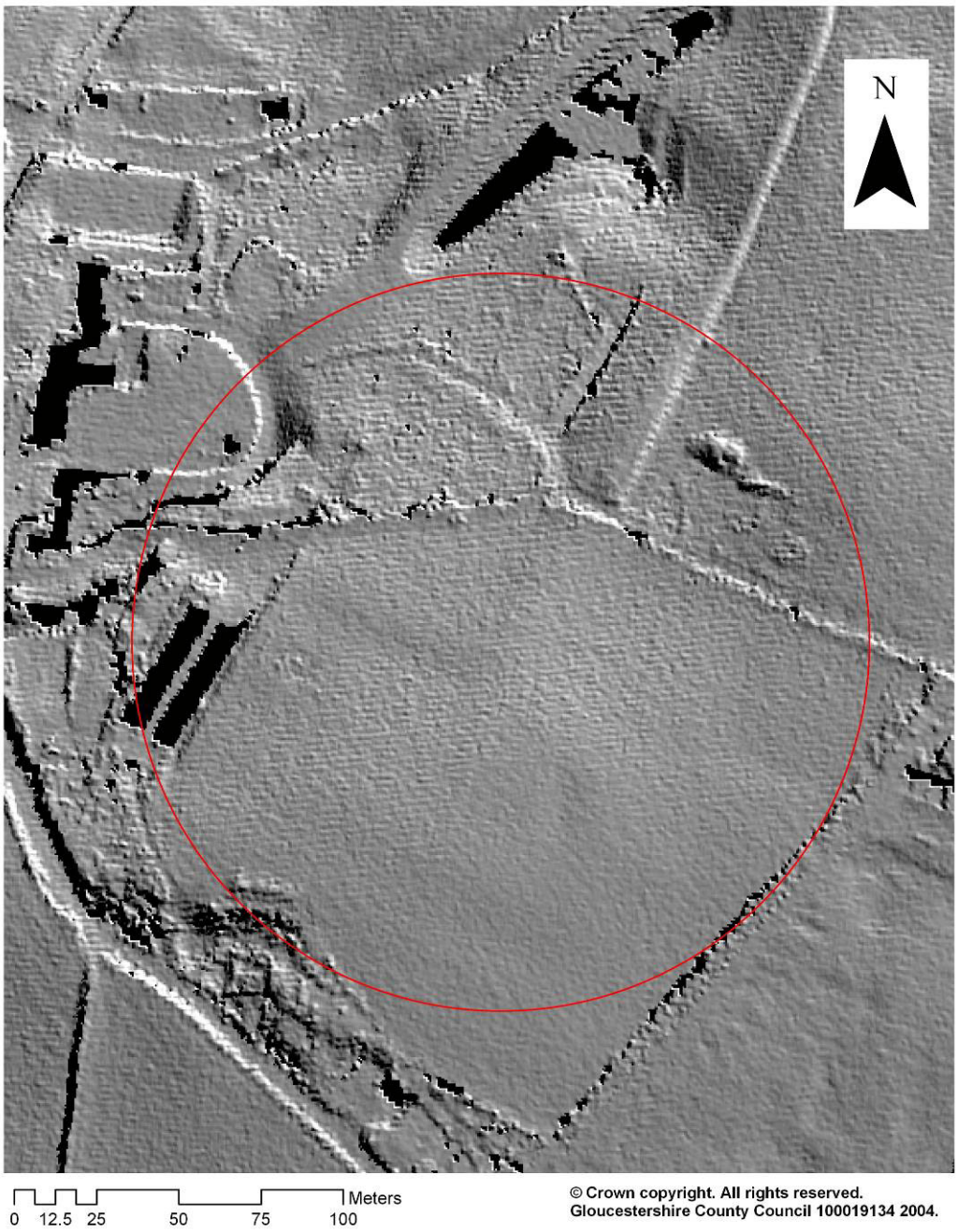

Figure 29: Possible rabbit warren features so5815/03 and so5815/04, illuminated from the northeast

A further two (st5496/08 and st5496/09) were assigned a prehistoric date. Both of these appear to be unrecorded linear and slightly rectilinear banks within the interior of Lancaut Iron Age Promontory Fort (Glos SMR 23). The actual date and function of these, however, is not clear and they may not represent features contemporary with the use of the Hillfort

78 earthwork features (consisting of both positive and negative earthworks) were assigned a modern or post-medieval date as they were interpreted as boundaries which were part of the modern or post-medieval boundary system but which had not been recorded on the post-medieval map sources consulted as part of the project. All

but three of these (so5500/18, so6211/08, so6314/07) were outside of Forestry Commission woodland, and only two of the remaining (so6118/02 and so6002/04) were either within or encroached into privately owned woodland.

3.1.6.2 Undated earthwork features

The remaining 376 features in this category were assigned an unknown date.

37 of these comprised negative linear features such as ditches, 25 were terraces whilst the remaining 310 were positive linear features such as banks.

Undated earthwork features outside of woodland

213 undated earthworks, comprising 34 negative linear features, 9 terraces and 179 positive linear features, were identified in areas of open farmland.

It is not possible to make general statements about these with any degree of confidence, but any interpretation of their status is subject to the same set of constraints as those of the earthwork systems found outside of woodland (see 3.1.3.1 above) and the majority are likely to be the remains of field boundaries of probably medieval or post-medieval date, but with possible earlier origins. Although the possibility that these (particularly the banks or terraces) represent the remains of other types of linear and rectilinear earthwork features cannot be discounted

Undated earthwork features inside woodland

125 undated earthworks (three negative linear features, 11 terraces and 111 positive linear features) were within Forestry Commission woodland, and a further 23 (three terraces and 20 positive linear features) were either within or partly within areas of non-Forestry Commission woodland.

As with the undated earthworks outside woodland, there is a wide range of possible interpretations for these features.

They may be isolated survivors of more extensive systems and possible interpretations will include all the options (including the implications of their location) discussed for earthwork systems in woodland (see 3.1.3.2 above).

Isolated features do, however, have a number of other possible interpretations. Those found on the periphery of areas of woodland may be the remains of wood banks which were used to define areas of woodland from at least the early medieval period, whilst other isolated features would be the remains of prehistoric or later land boundaries.

3.1.7 Deserted villages, and Building platforms

A number of features were identified which may indicate the sites of former buildings or settlement. These were categorised as either Building platform or Deserted village

3.1.7.1 Building platforms

The rapid transcription identified 27 features which were interpreted as building platforms. 15 of these were assigned an interpretation confidence of Low, whilst the remaining 12 were assigned an interpretation confidence level of Medium. Only one of these (so5412/03) was within woodland.

These features tended to consist of small isolated rectilinear platforms, although some were associated with existing farms or settlements. Three (so6015/02, so6520/04 and st5594/06) were assigned a post-medieval date as they either

appeared to conform to existing post-medieval settlement patterns (so6015/02) or corresponded to the site of buildings recorded on post-medieval map sources consulted during the project (st5899/04). The remainder were assigned an Unknown date, although at least one of these (so5712/01) may be associated with a post-medieval farm complex (Glos SMR 20103).

The status of the remainder remains unclear, although the following are thought most likely to indicate archaeologically significant features*:*

- So5500/09 – This rectangular hollow is sited in a field recorded as 'Chapel Meadow' (SMR 25393).
- So6017/02 – This feature is sited in a field recorded as 'Old House Piece' on mid 19th century maps consulted during the project.
- So6513/01 – This feature may correspond to the site of an Anchorite cell (SMR 5624) the precise location of which is not known.
- So6717/01 – This feature may represent medieval settlement remains associated with the possible shrunken settlement at Abenhall, Mitcheldean (Glos SMR 9670) although it may be associated with a post-medieval farm (Glos SMR 13875) on the site.

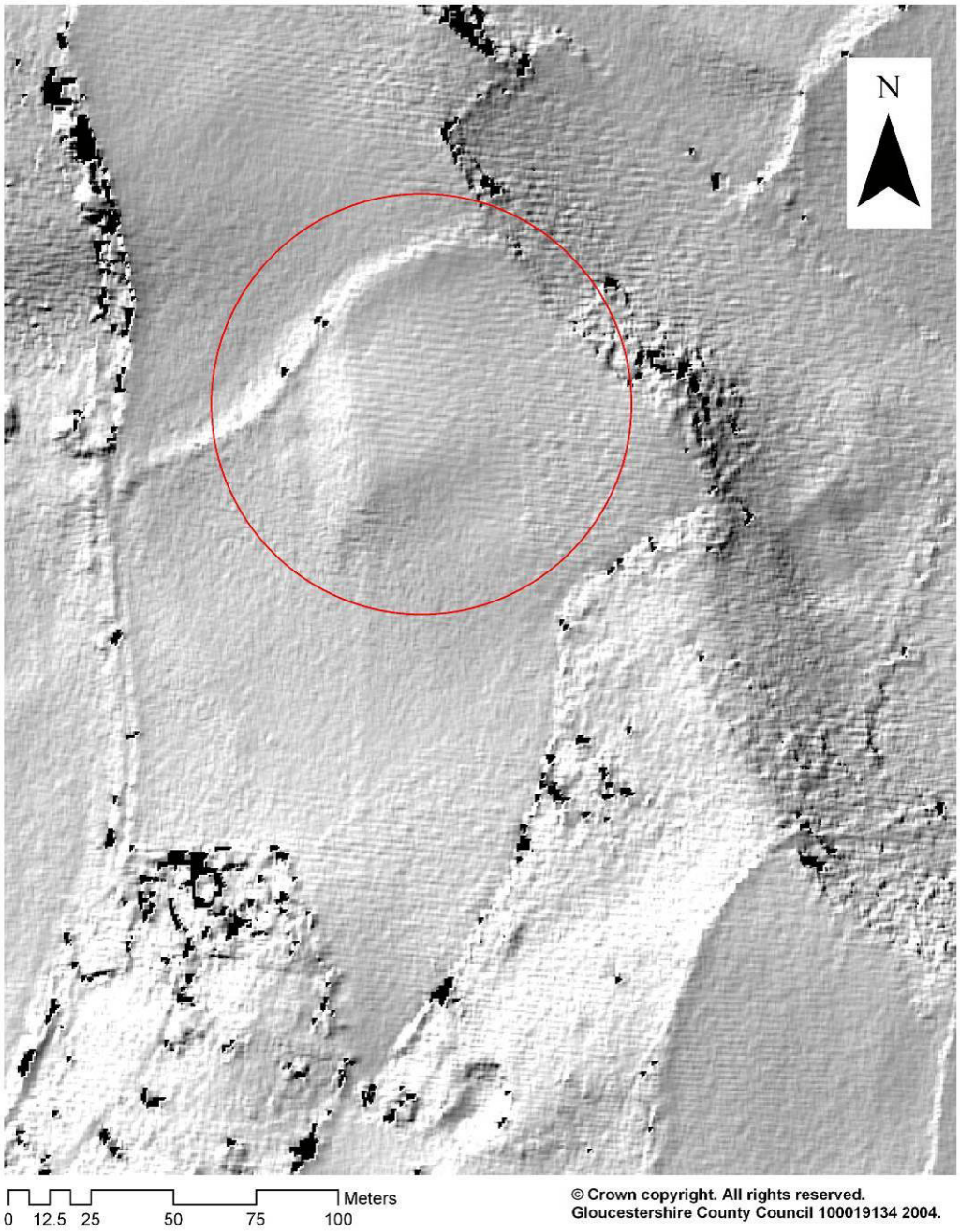

Figure 30: Possible house platform so6017/02, illuminated from the northwest

3.1.7.2 Deserted settlement features

Four areas, all of which were mapped as polygons, indicated areas of deserted settlement. These were assigned an interpretation of Deserted village. None of these were found within areas of woodland.

Although the rapid transcription did not systematically check the lidar data for existing SMR records (Appendix B), two of these were areas where the data on the hillshaded images significantly augmented knowledge of the extent of known sites of shrunken or deserted settlements. These are:

- st5495/01 - Glos SMR 6034, Bishton Farm, Tidenham.
- st5899/05 - Glos SMR 6383, Woolastone.

The remaining two did not augment sites already recorded on the SMR, these were:

- so6417/02 – This site represents the remains of a group of buildings last recorded as White Hill Farm in *c.* 1925 (OS 1925).
- st5495/02 – This site consisted of a series of small enclosure/platform features which may indicate former settlement at the northeastern edge of Tutshill, Tidenham.

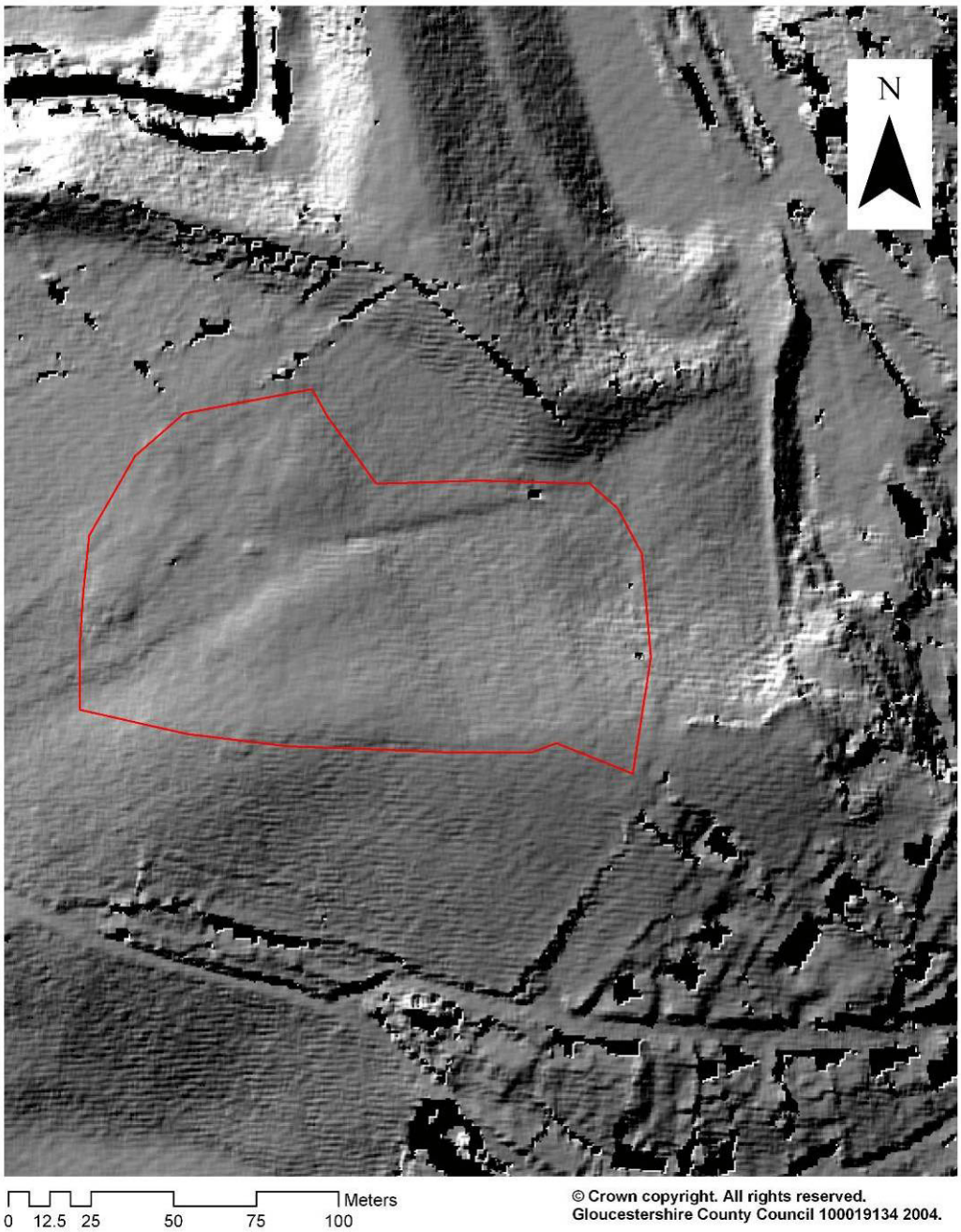

Figure 31: Settlement features so6417/02, illuminated from the northwest

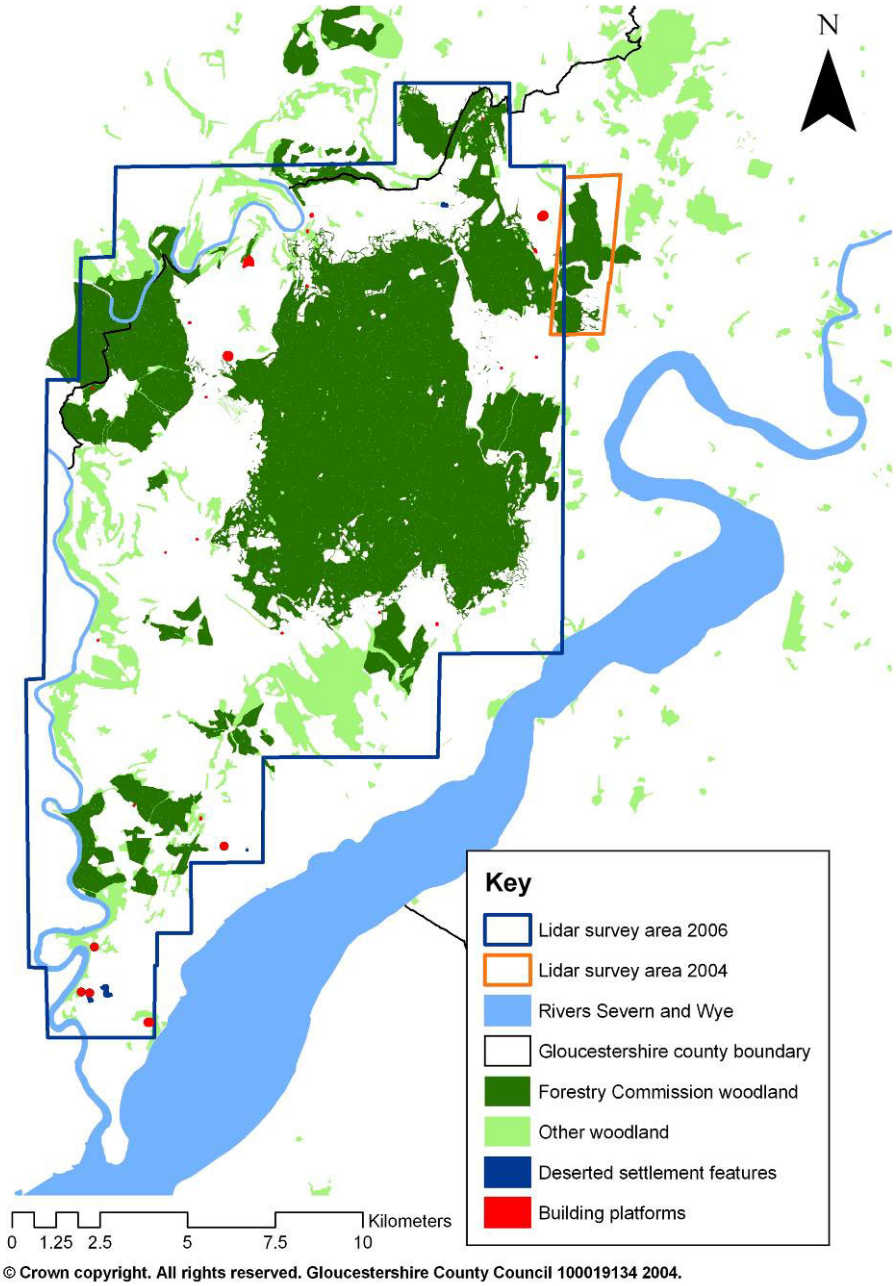

Figure 32: Building platforms and Deserted settlement features

3.1.8 Surface or shallow mineral extraction

The rapid transcription identified 142 features or areas of features, which were categorised as Extractive pit.

These almost exclusively comprised an extensive palimpsest of small sub-circular hollows, sometimes associated with mounds, and with the exception of so5505/03, so5911/13, so6016/01 and so6610/16 (which were mapped as points), all were mapped as either multipoint features or (more usually) as polygons. With the exception of a single feature (so5911/13) which was recorded as a gravel pit in the late 19th century (OS *c.*1880), all of these represent the visible remains of undated surface or shallow mineral extraction.

Before the 2006 lidar survey the Gloucestershire SMR recorded 93 Extractive pits, which represent the same type of feature as those identified in 2006 (Hoyle 2008b,

section 4.10.4.2). Although it is not possible to calculate precisely how many individual pits are represented by these records, the lidar has more than doubled archaeological knowledge of the extent of these features, particularly in areas of woodland. The report on Stage 1 of the Forest of Dean Archaeological Survey predicted that '…extensive areas of features similar to these await discovery' in areas of woodland (Hoyle2005b, section 4.10.4.2), and the lidar survey has clearly fulfilled this prediction as only 15 of these sites were identified outside of woodland.

The majority of these sites (both those recorded through lidar and those known before 2006) overlie outcrops of coal within the Carboniferous Sandstones of the central Forest and are likely to represent surface coal workings. Although these are generally considered to be late medieval or early post-medieval in date, none have been dated with any degree of certainty. Coal has been found at Romano-British villa sites in the Forest of Dean where it was probably used either for heating or other processes which did not need very high temperatures (Fulford and Allen 1992). Coal is also known to have been exploited throughout the medieval period, and would have continued to be exploited by means of irregular surface workings until deep mining became the norm as drainage techniques improved from the 17th century (Hart 1971). Surface workings, however, continued to be worked on a smaller scale and in an ad hoc way after this period and some surface coal extraction is reported from the 20th century (Brian Johns pers. comm.). It has been suggested that the earliest exploitation of coal deposits may have taken place in those areas closest to the iron ore outcrops around the edge of the Statutory Forest (Hoyle *et al.* 2004) as these would have been able to make use of the existing communications infrastructure set up for iron ore exploitation in these areas (D Bick pers. comm.). No serious archaeological exploration to determine the date of individual areas of surface coal workings has, however, been undertaken and all of these features should be regarded as undated.

Where these features were identified in areas with no surface coal outcrops, their interpretation will be dependent on the minerals which could be extracted by this method in those locations, and superficially similar features could represent undated extraction pits for iron ore, gravel, clay or small-scale quarrying.

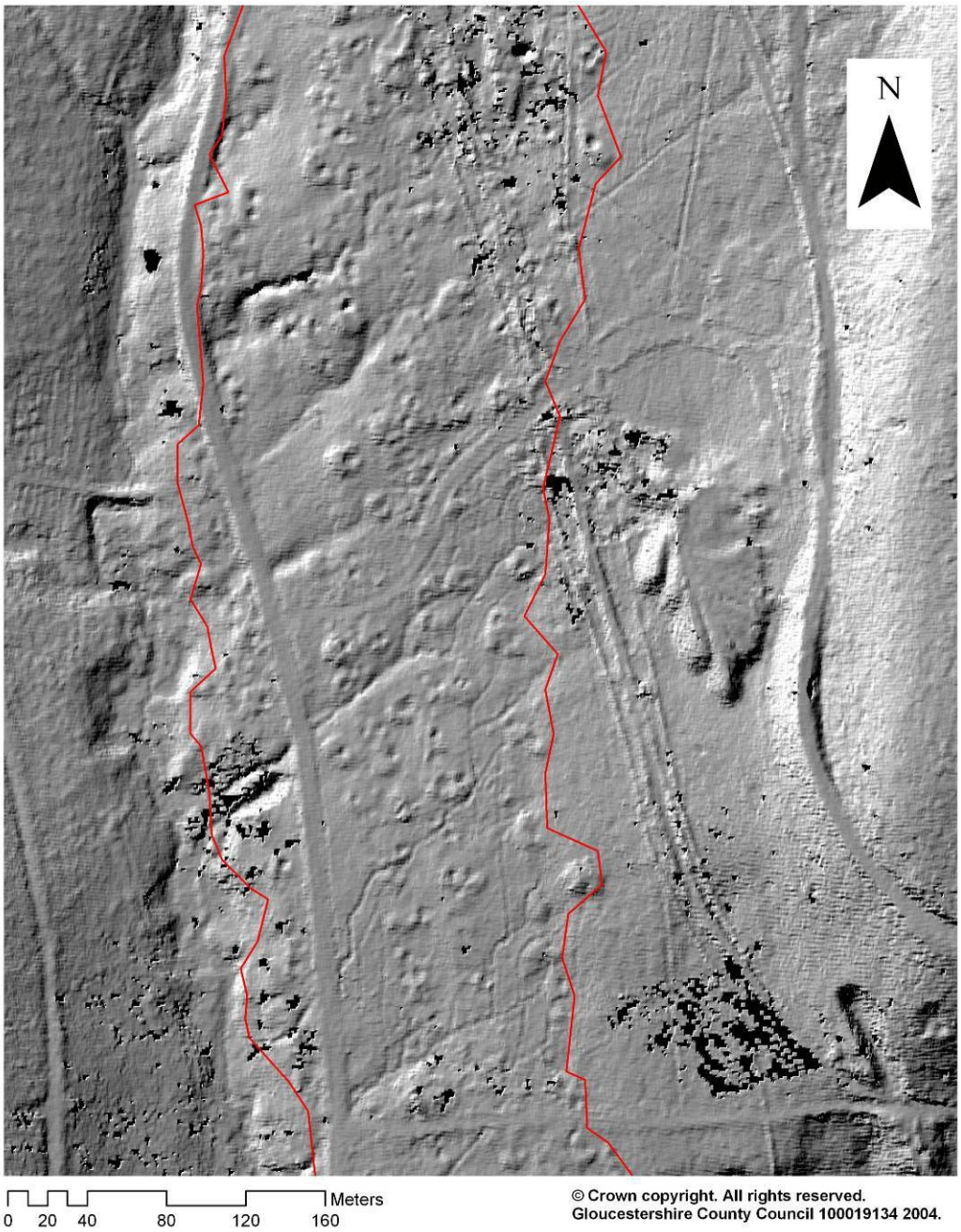

Figure 33: Surface extraction pits so6113/01, illuminated from the northwest

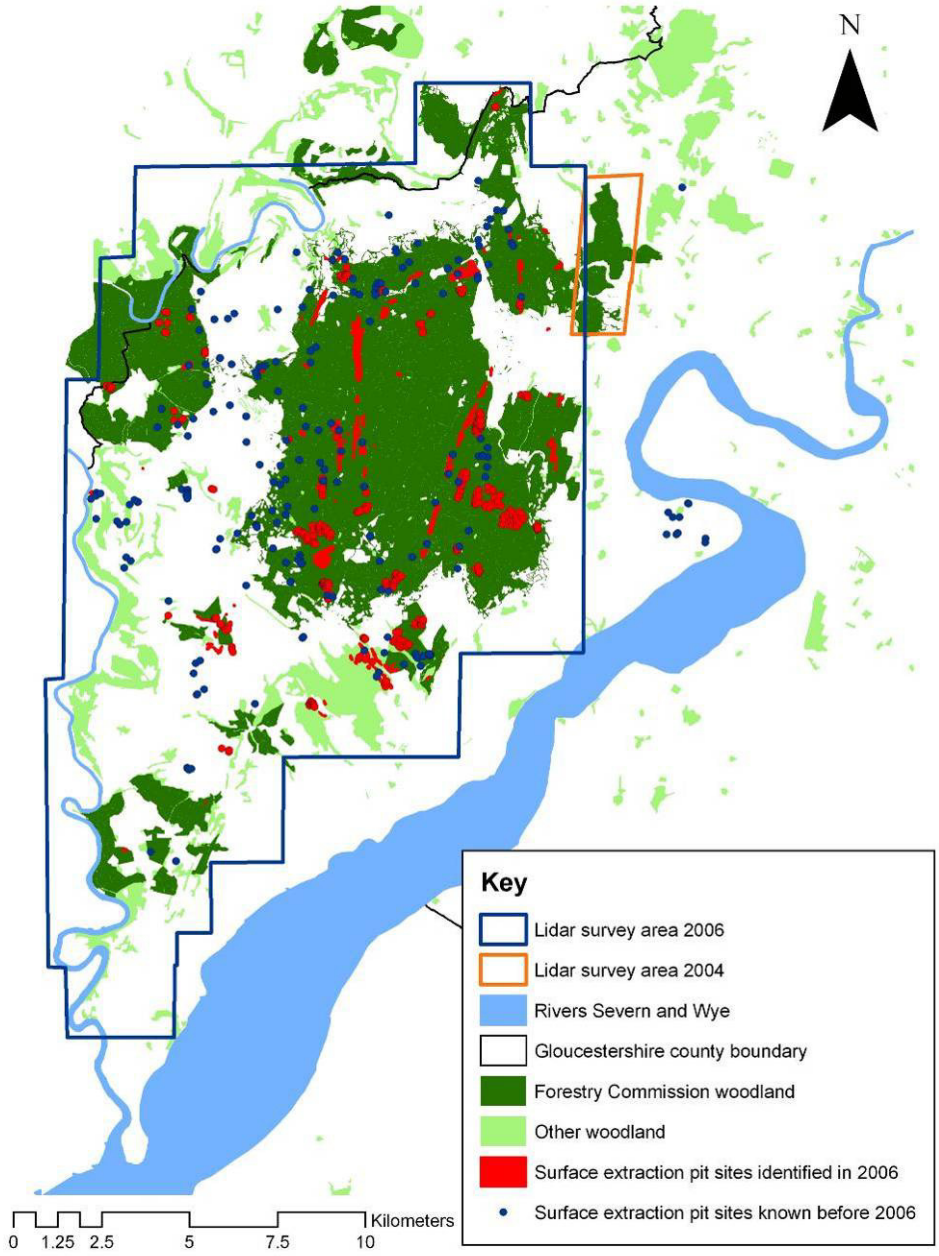

Figure 34: Surface extraction pits

3.1.9 Post-medieval Forestry Enclosure boundaries

A type of boundary which may have been represented by some isolated linear earthworks in the area of the Statutory Forest are the linear banks relating to the various episodes of the enclosure of Crown woodland between the late 17th and 19th centuries, primarily to safeguard the supply of timber for naval use, which survive as low banks enclosing large areas of woodland (Hart 1995, p 228 ff).

Although narrow positive earthwork features which could reasonably be interpreted as post-medieval Forestry enclosure boundaries were often clearly visible on the hillshaded images, only 12 were recorded during the rapid transcription, compared with 125 identified from 19th and 20th century map analysis undertaken as part of the Gloucestershire and Wye Valley AONB Historic Landscape Characterisation (Hoyle 2006, section 3.3.6, Figure 24).

The methodology of rapid transcription militated against the comprehensive recording of these, as features already recorded on selected post-medieval maps were not transcribed (Appendix B.i). This not only excluded many of the Forestry enclosure boundaries recorded during HLC, but also a number of others not identified in that survey which did not use map sources as detailed as those consulted during rapid lidar transcription. It is acknowledged that more post-medieval Forestry enclosure boundaries survive within the Statutory Forest and are visible on the hillshaded lidar images than have been recorded either through HLC or the rapid transcription of the 2006 lidar survey, and this should be included as part of a future project in the Forest of Dean.

3.1.10 Park pale

Two positive linear features (st5599/08 and st5599/09) were assigned an interpretation of Park pale. These appear to form two parts of a slightly curved linear bank at the northern edge of a known medieval deer park at Tidenham (Glos SMR 5049). They are likely to be a reported, but not accurately located, undated earthwork (Glos SMR 21680) which has been interpreted as the northern boundary of the park in this area (Hoyle 2008b, section 4.10.5.2).

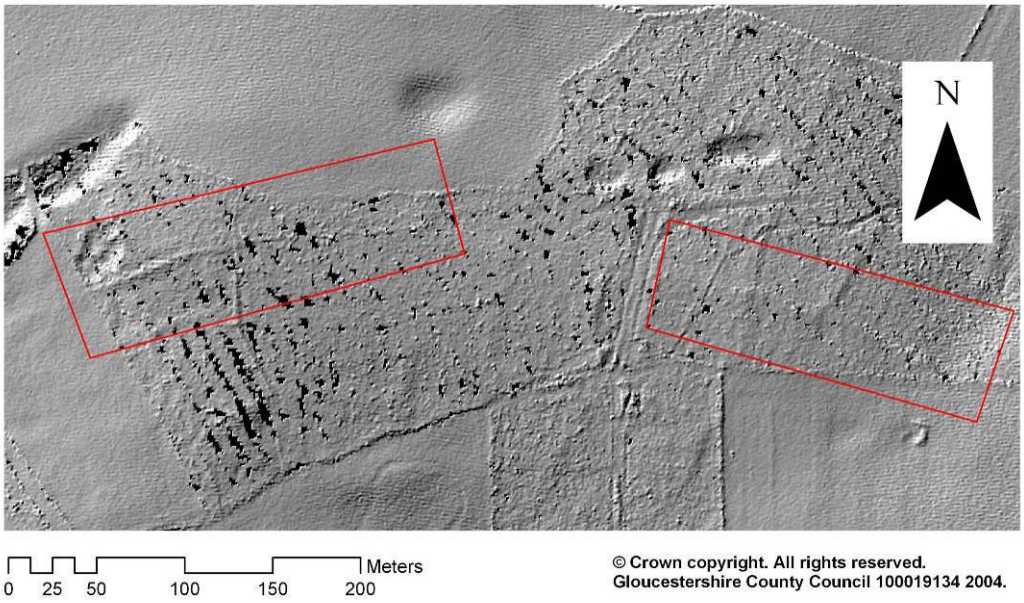

Figure 35: Park pale st5599/08 and st5599/09, illuminated from the northwest

3.1.11 Motte and Bailey

3.1.11.1 So5401/07, Glos SMR 5088

Only one identified feature was assigned an interpretation of Motte and Bailey. This feature was a short stretch of terrace within the postulated area of a possible Motte and Bailey castle, known as Castle-a-Buff, at Brockweir in Hewelsfield parish (SO54700170). No earthworks associated with the putative remains of the castle have been identified, and it would seem very likely that so5401/07 (which was assigned an interpretation confidence level of Low) in fact relates to landscaping associated with the gardens and drives of nearby houses rather than an archeologically significant feature.

3.1.12 Earthwork

Thirteen features were recorded as Earthwork. As with Features (see 3.2.1 below), this designation was assigned to features which could not easily be allocated a clear interpretation, although features in this category are thought more likely to indicate archaeologically significant sites than those designated as Feature (see 3.2.1 below).

Three of these (so5401/04, so5404/05, so5405/04) may represent short sections of the linear earthwork Offa's Dyke, (Glos SMR 500-517) which had not been recorded during the 1995 Offa's Dyke Survey for Management (Hoyle and Vallender 1997) and were not recorded on the Gloucestershire SMR, whilst a fourth (so5402/03) is a parallel earthwork which may be associated with it.

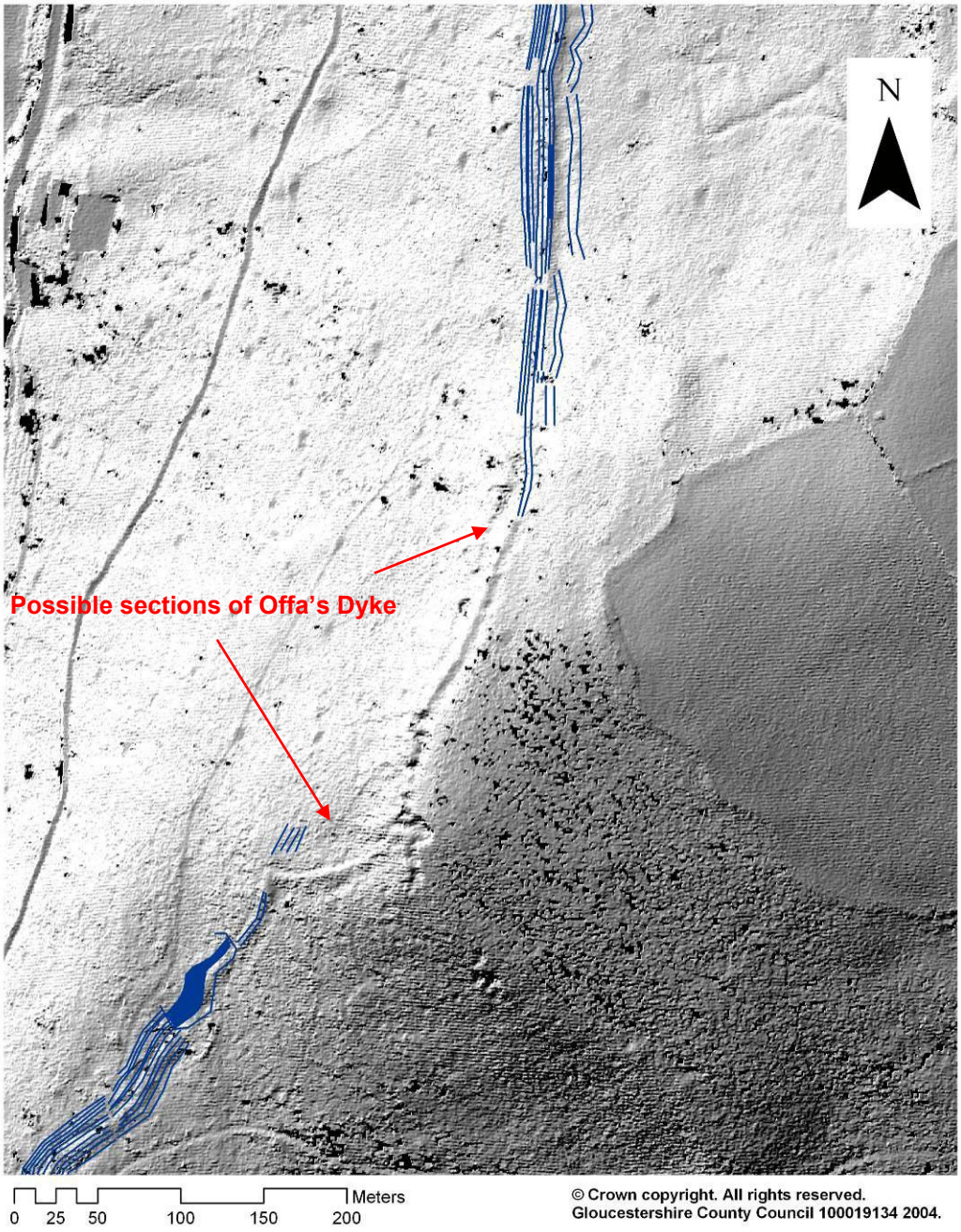

Figure 36: Possible section of Offa's Dyke so5405/04, illuminated from the northwest

Sections of Offa's Dyke recorded before 2006 shown blue

One (so6715/17) represents banks and terraces in the interior of Welshbury hillfort (Glos SMR 5161) which can be interpreted as evidence for contemporary activity, whilst a further site (st5597/07) is a group of irregular terraces which may be associated with Boughspring Roman Villa (Glos SMR 20).

One Earthwork (so5500/06) appears identical to features interpreted as prehistoric hut circles (Glos SMR 5041), whilst another (so6317/01) may have been a sub-circular enclosure, but appeared to be largely constrained by, modern field boundaries (these are discussed and illustrated in 3.1.1.1 above).

The status of the remaining five Earthworks is not clear, although one (so5911/04) may be associated with nearby quarrying activity (Glos SMR 4388),

3.1.13 Charcoal platforms

The survey identified 111 charcoal platform sites, representing 942 individual platforms. Before the 2006 survey, only 25 charcoal burning sites (representing 88 individual platforms) were recorded on the Gloucestershire SMR for the Forest of Dean Survey area (Hoyle 2008b, section 4.10.4.4).

Charcoal platforms are the surviving remains of a process of charcoal production in which wood was converted to charcoal by roasting in earth-covered stacks or clamps (Kelley 1996). This method of production was used throughout the Romano-British, medieval and post-medieval periods and provided industrial grade fuel, primarily for the smelting of iron. It is likely that charcoal production was a significant industry in this area from at least the Romano-British period until the introduction of the coke fired blast furnace in the early 19th century (Hoyle 2003, 3.3.2.1). Charcoal platforms in the Forest of Dean could date from any of these periods, and it has been suggested that they may be the most common archaeological feature within the woodland of the Forest (Hoyle 2008a, section 2.1.1).

Many of these features have been recorded in woodland survey in the Forest of Dean and typically they comprise roughly circular levelled areas on a slope measuring *c.* 4-6m in diameter, although examples of up to 10.5m in diameter had been identified in Welshbury Wood, Blaisdon (Hoyle 2006a, section 3.2.4.1). Most of the features identified in the lidar survey were of these dimensions although in places larger features (13-14m in diameter) were identified (e.g. so6113/05, Figure 36).

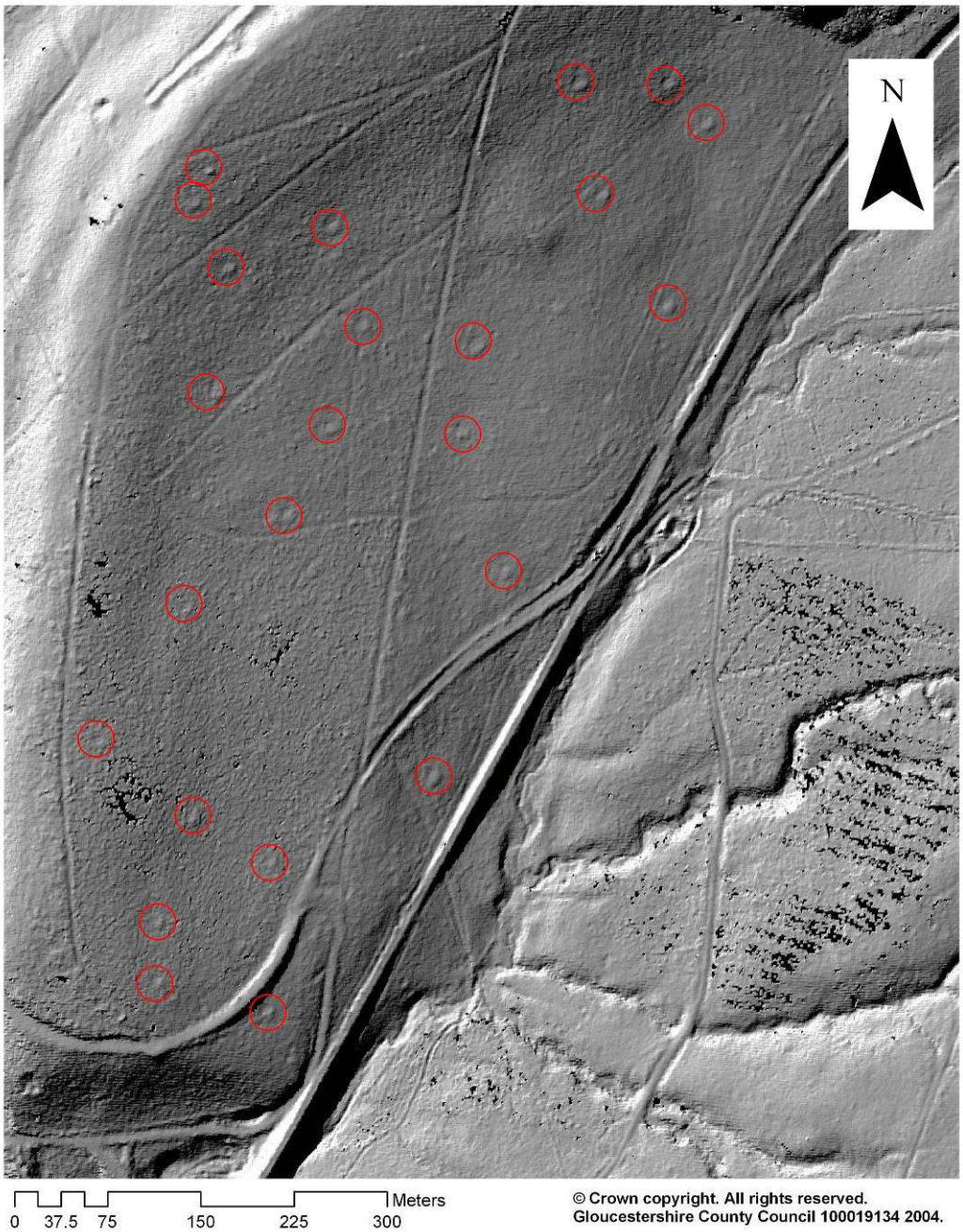

Figure 37: Charcoal platforms so6113/05, illuminated from the northwest

Charcoal platforms are a product of woodland exploitation and all but 22 of these (198 individual platforms) were within Forestry Commission woodland. All of the remaining platforms were within areas of private woodland with the exception of so6617/05 and so6613/06 which were within scrubland, and so6613/06 and so6505/01 which were in open farmland. These are likely to be areas of cleared woodland, and the latter was identified in an area known as the Purlieu (centred at SO65260536). This area is recorded as 'well wooded' in 1722 (Herbert 1996b) but which appears to have been cleared of woodland by 1777 at which time it was recorded as Purley Common (Taylor 1777). A number of other charcoal platforms were already known in this area (Glos SMR 4625, 4626, 26015, 26016, 26017, 26018, 26035, 26036) and the date of the woodland clearance allows a t*erminus ante quem* to be assigned to the charcoal platforms here (Hoyle 2006b, section 4.10.4.4).

Comparison between the results of the lidar survey and woodland field surveys undertaken before the 2006 lidar survey indicates that not all charcoal burning

platforms are necessarily identified through lidar survey (see Hoyle 1996a, section 4). This appears to be borne out by the results of the rapid transcription as, although charcoal burning platforms were recorded throughout the survey area, they were not identified in all areas. Charcoal platforms were generally absent from the southern and central part of the Statutory Forest, and some other areas of woodland in the northern part of the survey area (see Figure 37). Charcoal platforms tended to be identified in areas with steeper slopes, and it is unlikely that this represents the actual distribution of these features. It does, however, suggest that lidar is most successful in identifying this type of feature where they survive as clearly visible landscape features, such as well-defined platforms.

Despite this limitation, rapid transcription has added significantly to knowledge of the distribution of these features within the woodland of Dean, and as their location is likely to be closely related to that of smelting sites (see Hoyle *et al.* 20054, section 4.2.2; Hoyle 2008a, section 2.1.1), this information may enable future research into early smelting sites in woodland (see 3.1.4 above) to be targeted in an efficient fashion.

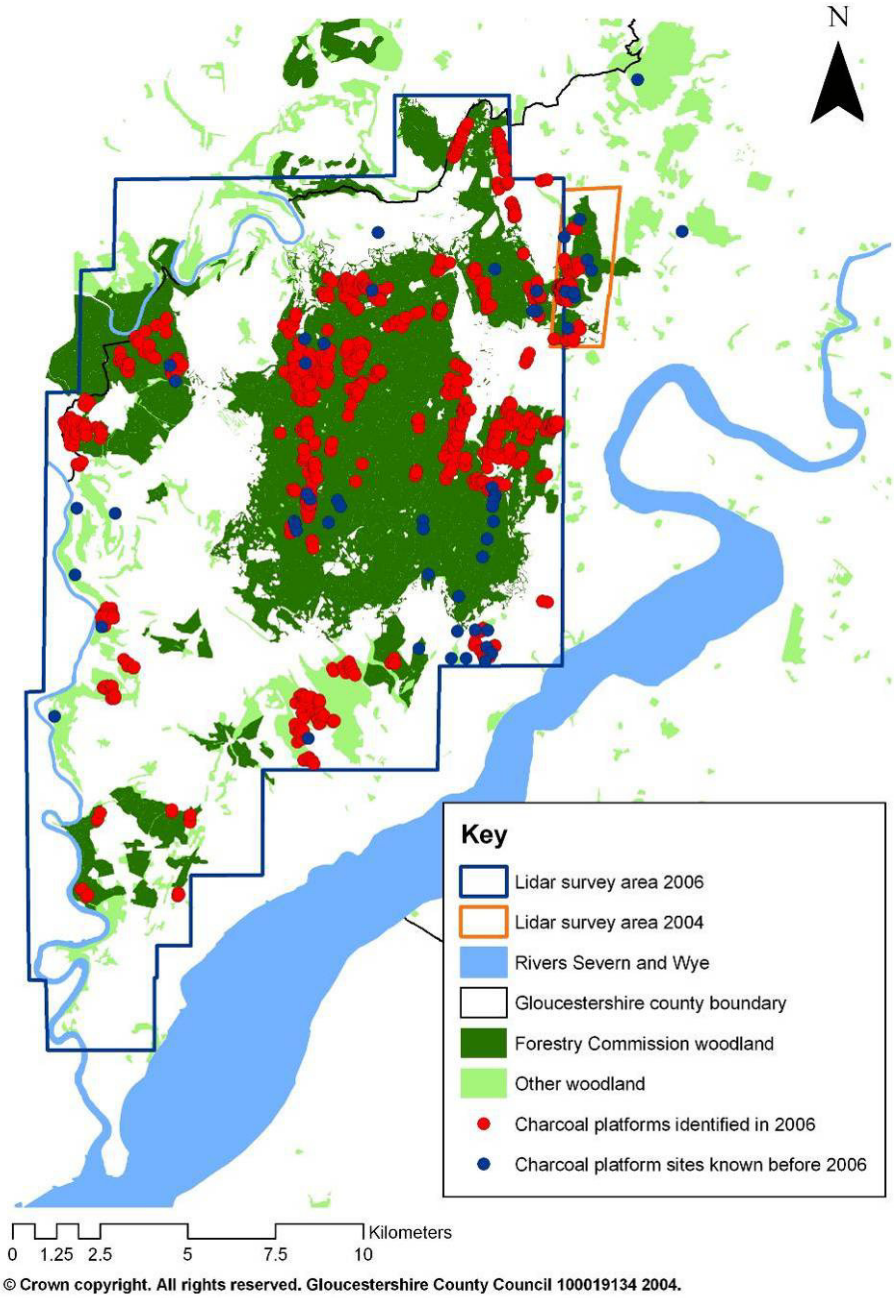

Figure 38: Charcoal platforms

3.1.14 Tramroads

The railway and tramroad systems of the Forest of Dean have already been extensively researched and post-medieval map sources were systematically searched as part of Stage 1 of the Forest of Dean Archaeological Survey (Hoyle 2008b, section 4.11.1.3, section 6.2). 637 features relating to these systems were already known within the Forest of Dean Archaeological Survey area including the lines of trackways and features such as bridges, embankments, stations and tunnels (Hoyle 2008b, section 4.11.1.3).

The rapid transcription identified 15 additional sites which may relate to disused tramroad and rail communications in the Forest of Dean. Seven of these were embankments, five were cuttings whilst the remaining three were a section of curving terrace (so6418/02) or a combination of both embankments and cuttings (so6309/02, so5715/02). The majority of these were fairly short and contiguous with the tramroad

system known before 2006. They can be interpreted as the remains of possibly short lived links between the main system and industrial features (such as quarries) which were not recorded on post-medieval map sources.

Two of the features do not fall easily into this category, as so6418/02 and so6518/12, were both part of what may originally have been a single stretch of terrace or embankment. The status of this feature is not clear as it does not link with any known part of the rail or tramway system. It does however, appear to run towards the modern water works at Mitcheldean (SO65421869) and so may be the remains of a communications link, although not necessarily a rail link, associated with that site.

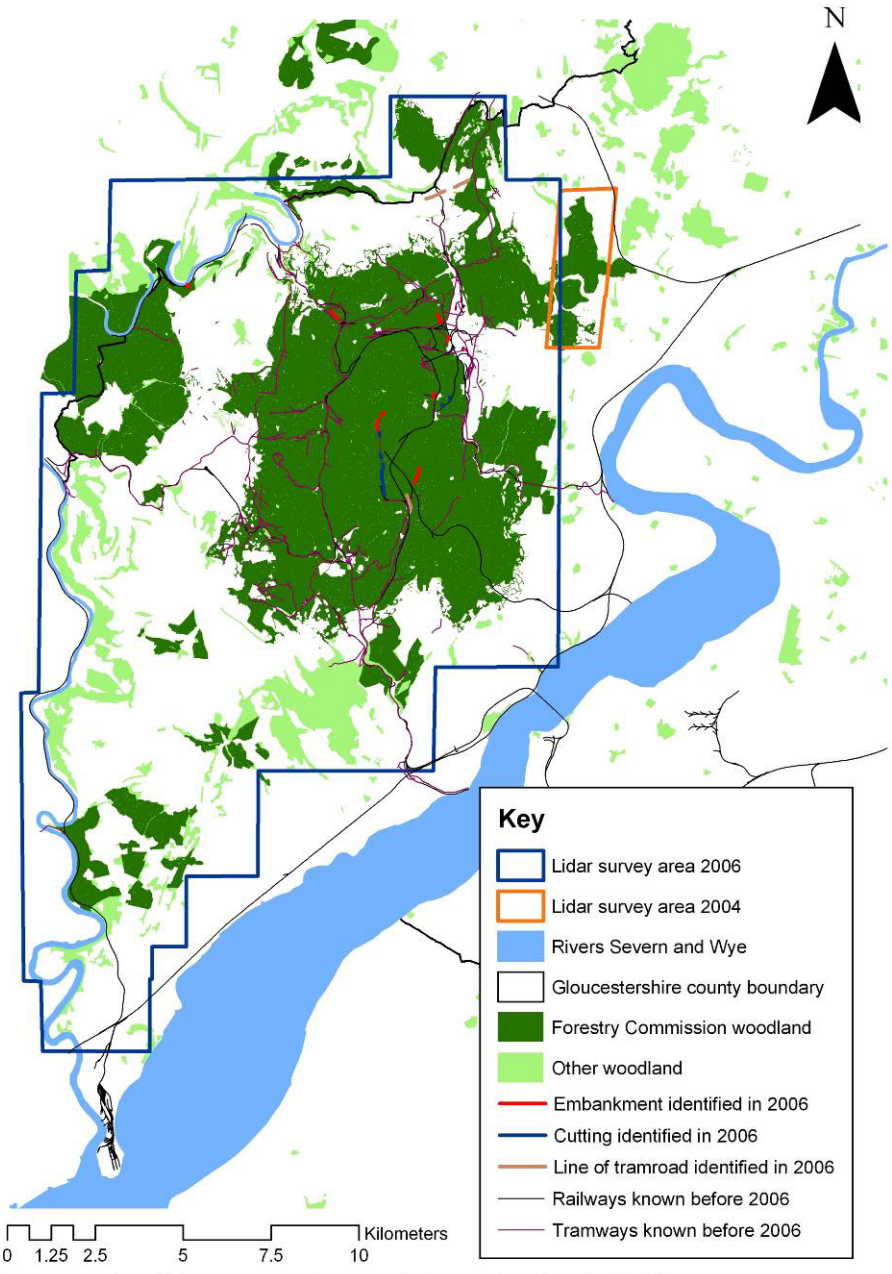

Figure 39: Rail and tramway features

3.1.15 Post-medieval mining sites, and spoil heaps

3.1.15.1 Post-medieval mining sites and mine shafts

The rapid transcription identified 13 sites interpreted as post-medieval coal mining sites which had not been recorded on the documentary sources consulted as part of Stage 1 of the Forest of Dean Archaeological Survey (Hoyle 1995b, section 2.2.1).

12 of these consisted of sub-circular mounds centred with a small circular hollow, and have been interpreted as the remains of post-medieval mineshafts. An additional site (so5912/06) was a sub-rectangular platform which was interpreted as associated with known mining activity Glos SMR 22581. 566 sites of this nature were already recorded on the Gloucestershire SMR for the Forest of Dean (Hoyle 2008b, section 4.11.1.1) and as Stage 1 of the Forest of Dean Archaeological Survey had already systematically trawled the post-medieval map sources thought most likely to provide information on these sites (Hoyle 2008b, section 2.2.1), it had not been anticipated that the lidar survey would add significantly to a knowledge of this aspect of the Forest of Dean's industrial past.

The remaining site in this category so6107/05 consisted of a group of sub-circular, sub-rectangular and linear mounds. This was interpreted as a coal mining site of unknown date, although it was assigned an interpretation confidence level of Low. If this does prove to be a coal mining site, it is likely to be post-medieval in date.

The majority of these sites overlie outcrops of the coal measures within the Carboniferous Sandstones of the central Forest, supporting their interpretation as the remains of post-medieval coal mining. Two of the mine shafts (so5710/07 and so6519/14) overlie the iron ore bearing Carboniferous Limestones and Drybrook Sandstones at the periphery of the central forest, and although coal seams are found in these areas (BGS 1974), these may represent remains of post-medieval iron mining activity.

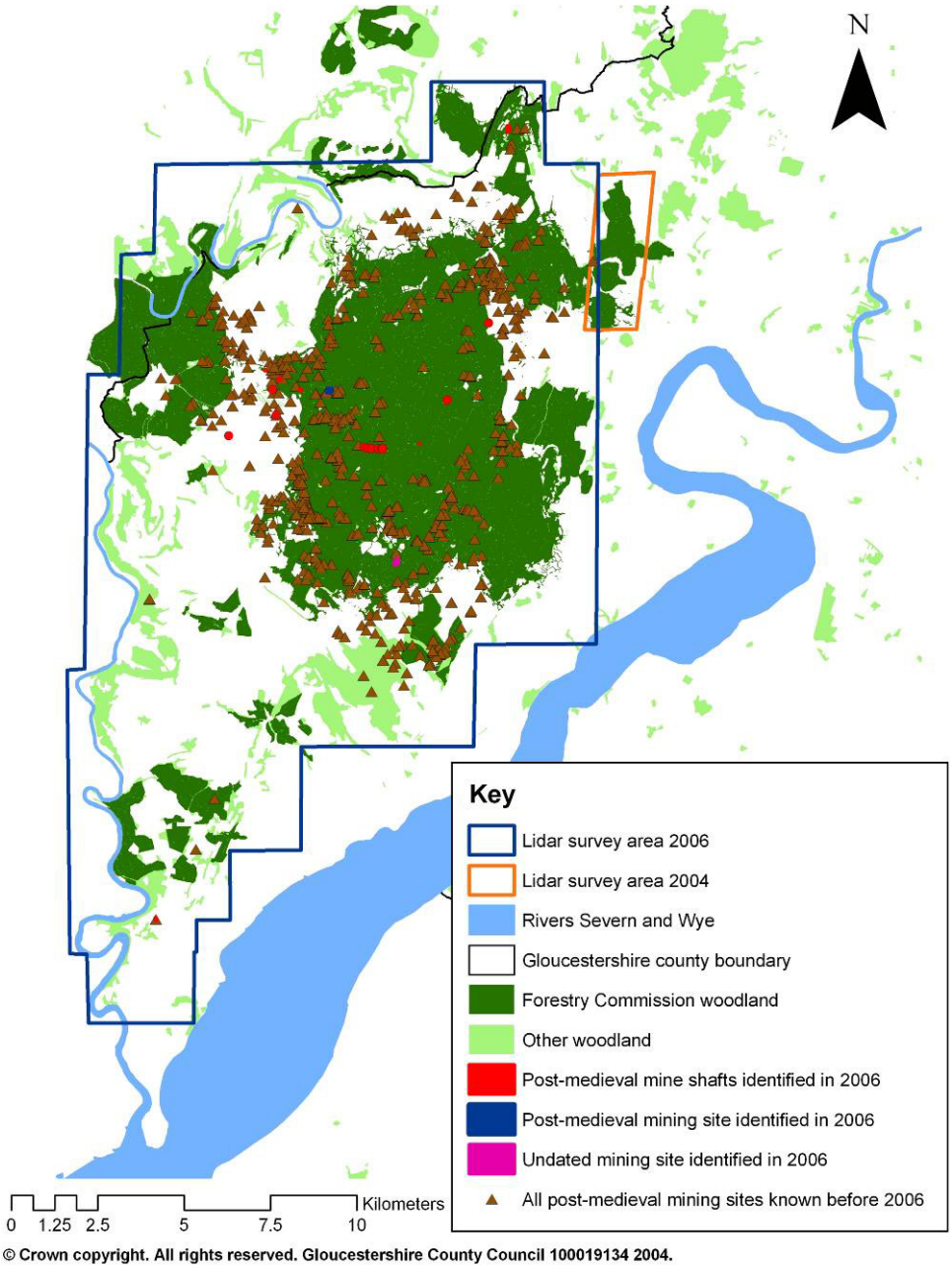

Figure 40: Post-medieval mining sites

3.1.15.2 Spoil heaps

In addition to the post-medieval mining sites, the rapid lidar transcription identified 11 sites which were interpreted as Spoil heaps. 360 of these were already recorded on the Gloucestershire SMR for the Forest of Dean (Hoyle 2008b, section 4.11.1.1) and as Stage 1 of the Forest of Dean Archaeological Survey had already systematically searched those post-medieval map sources thought most likely to provide information on these sites (Hoyle 2008b, section 2.2.1), it had not been anticipated that the lidar survey would add significantly to knowledge of this aspect of the Forest of Dean's industrial past. In addition to this, a number of mining spoil heaps were visible on the hillshaded images, but were not separately recorded as they were part of existing SMR records (see Appendix B).

With the exception of so6211/13 (a rectilinear mound), all of these were assigned an Unknown date, but are likely to be associated with post-medieval mining activity.

So6211/13 overlay the coal measures within the Carboniferous Sandstones of the central Forest, although all the others were in the vicinity of outcrops of the iron ore bearing Carboniferous Limestones at the periphery. Although coal seams are found in these areas (BGS 1974), these may be more likely to represent waste from post-medieval iron mining.

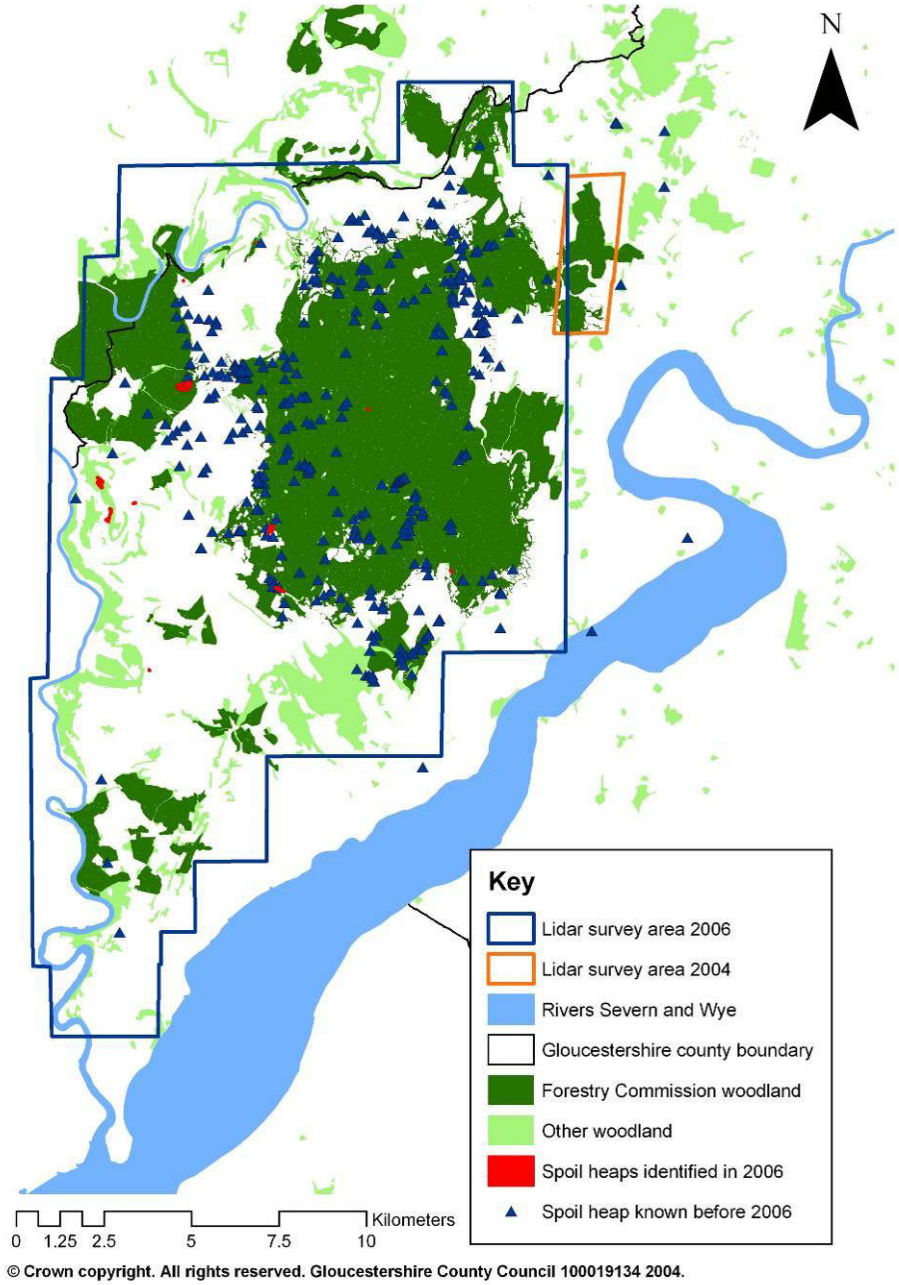

Figure 41: Spoil heaps

3.1.16 Quarries

The rapid transcription identified 240 features which were interpreted as Quarry. Before the 2006 lidar survey, 471 sites of this type were already recorded on the Gloucestershire SMR for the Forest of Dean (Hoyle 2008b, sections 4.10.4.3 and 4.11.1.1).

Quarrying for both limestone and sandstone has been an important industry in the Forest of Dean 'since earliest times' (Cross 1982, 26). Limestones tended to be

quarried for the production of lime, whilst sandstones were principally quarried to provide building stone or millstones (Jurica 1996). The greatest need for building stone and lime in the Forest of Dean is likely to have been during the post-medieval period to meet the increased demands of both expanding industry and housing requirements (Jurica 1996). Like the surface coal workings discussed above, however, quarrying can have (and would have) been undertaken from any time since the Romano-British period (Hoyle 2008b, 203).

Stage 1 of the Forest of Dean Archaeological Survey had already systematically trawled the post-medieval map sources most likely to provide information on these sites (Hoyle 2008b, section 2.2.1). Despite this the 50% increase in the number of known quarries is not surprising as the quarries recorded through lidar tended to be fairly small scale features, often in woodland, which had been ignored, or missed by earlier surveyors.

Not all quarry features visible on the lidar hillshaded images within the survey area were recorded, as these were not documented as part of Level 3 rapid transcription. This has skewed the distribution of these features as the majority of quarries identified in 2006 were either in Forestry Commission woodland or in those 1km OS grid squares which include Forestry Commission woodland. Lidar almost invariably added greater detail to quarrying sites already recorded on the SMR, although systematic recording of this was beyond the scope of the rapid transcription (Appendix B).

Only 14 of the quarries recognised in 2006 were assigned a post-medieval date and, in common with the majority of these features identified as part of Stage 1 of the Forest of Dean Archaeological Survey, the date of most of these is unknown (Hoyle 2008b, section 4.10.4.3).

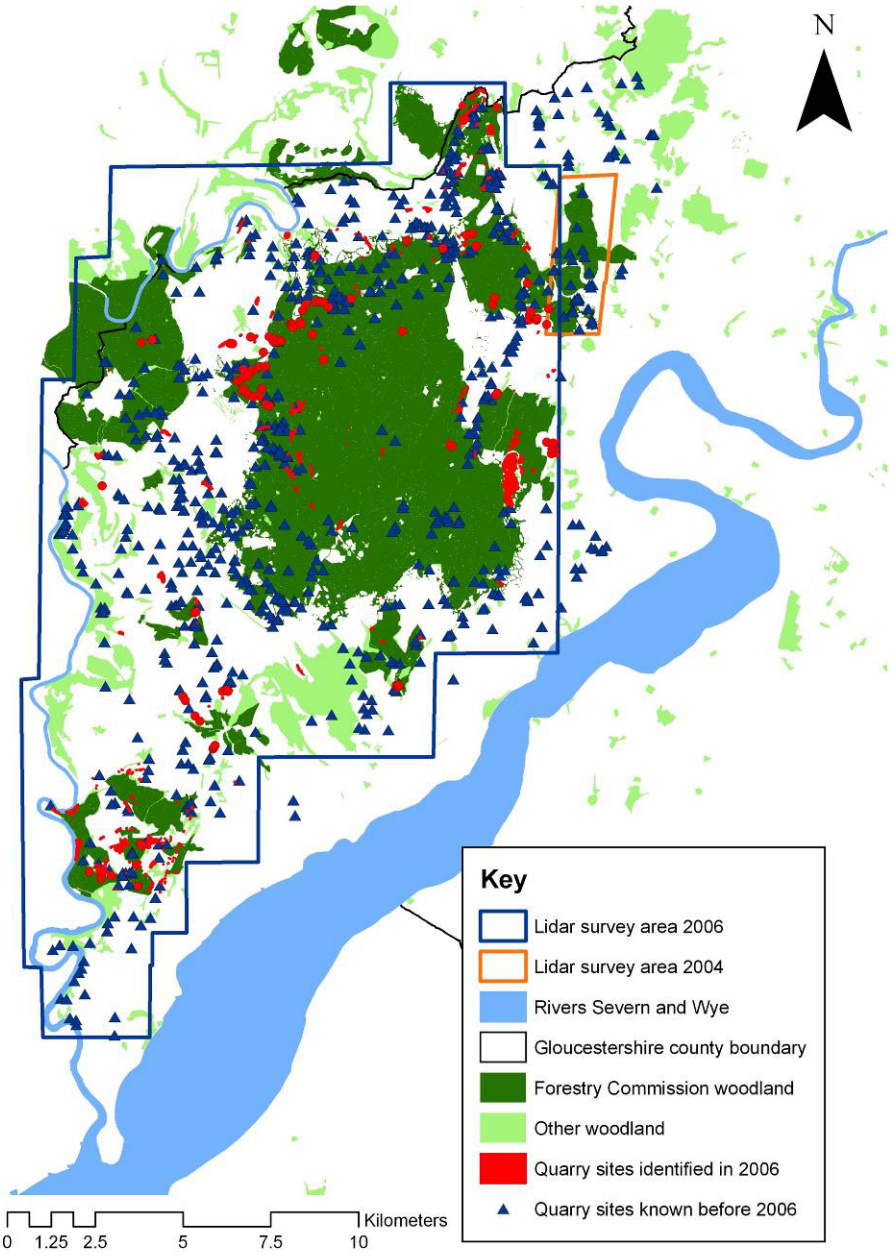

Figure 42: Quarries

3.1.17 Ridge and furrow

45 areas interpreted as Ridge and furrow were identified as part of the rapid transcription. These were generally mapped as polygons and consisted of areas of closely spaced parallel banks and ditches. Two of these sites (so6519/16 and st5597/01) consisting of a reverse S linear ditch and a linear bank were interpreted as components of open field systems and mapped as lines.

Although these features are interpreted as ridge and furrow, i.e. the remains of medieval open field systems, the status of 20 of these sites was not clear, and they were assigned an interpretation confidence level of Low.

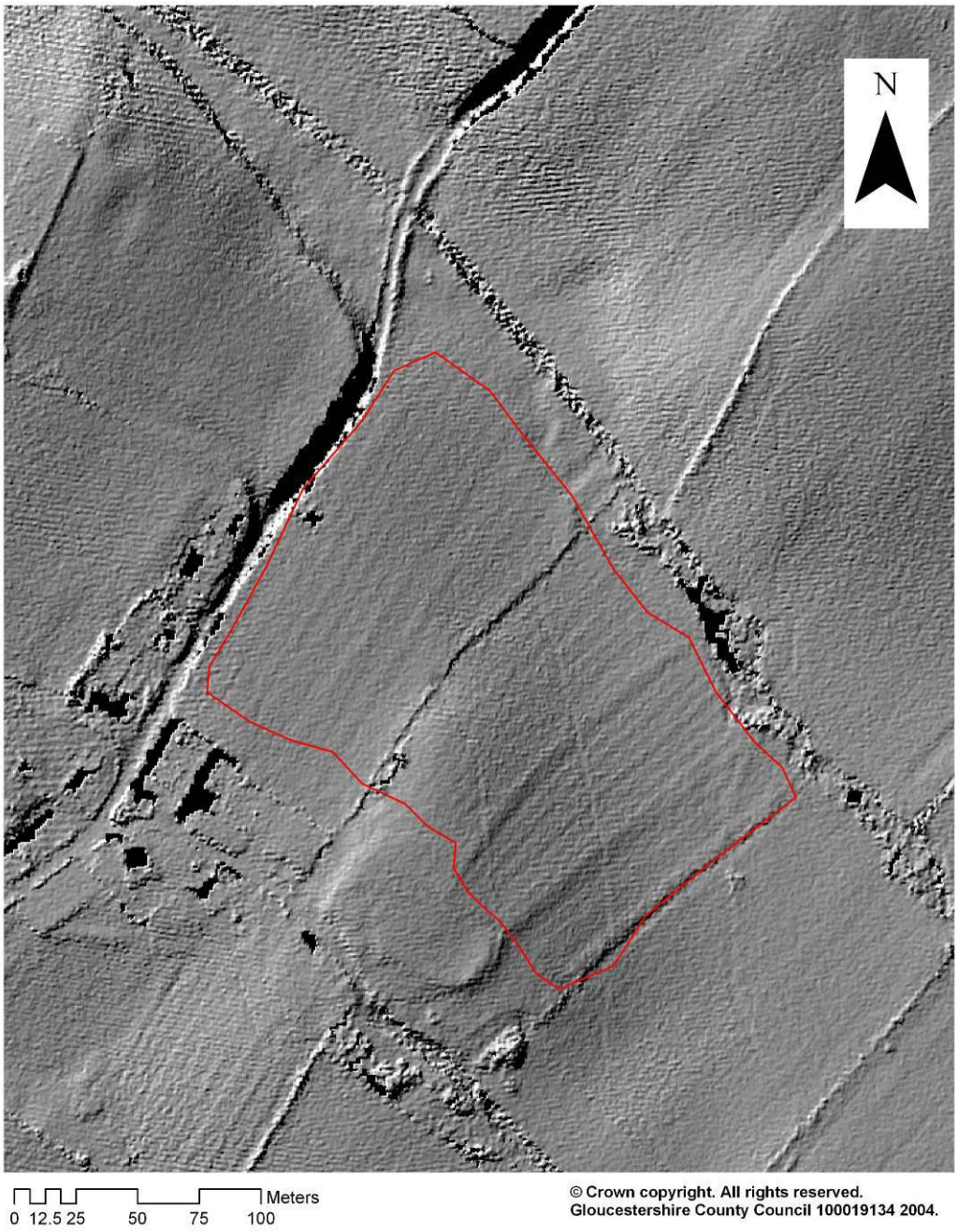

Figure 43: Ridge and furrow st5899/01, illuminated from the northwest

Although only 20 areas of ridge and furrow were recorded on the Gloucestershire SMR prior to the 2006 lidar survey, these represented only a small proportion of the extent of known ridge and furrow, much of which had been identified by aerial photography, particularly the National Mapping Programme. This data was not integrated into the Gloucestershire SMR and exists only as a layer within the GIS (Hoyle 2008b, section 4.10.1.1).

All of the ridge and furrow identified in the 2006 lidar survey was, in common with that known before 2006, outside of woodland (Hoyle 2008b, section 4.10.1.1). The Statutory Forest was devoid of established settlement until the 18th century and extensive areas of open field cultivation would not be expected in this area (Herbert 1996). The boundaries of the Statutory Forest were not established until 1668 (Herbert 1996) and its precise boundaries during earlier periods are not clear (Hart 1945). Open fields may have encroached into the fringes of the Crown land, particularly during the mid 14th century when population pressure, combined with poor

harvests, led to the increased cultivation of marginal areas. There is evidence for ridge and furrow within the bounds of the Statutory Forest, although not within woodland (Hoyle 2008b, section 4.10.3.1), and no ridge and furrow was identified through lidar in these areas, nor in areas of woodland outside of the Statutory Forest. None was found in the extensive areas of woodland to the south of the village of Staunton Coleford, known to have been open farmland prior to the mid 19th Century (PRO 1608. GCRO 1792), although enclosures corresponding to field systems mapped in the 18th century were visible in this area (see 3.1.3.2 above).

Possible ridge and furrow was identified in both the lower ground (below the 100m contour line) on the northern bank of the River Severn and the higher ground bounded by the Statutory Forest and the River Wye, i.e. both of the two main areas of medieval open fields identified in the report on Stage 1 of the Forest of Dean Archaeological Survey (Hoyle 2008b, section 4.10.1.1). The majority of this was identified in the former of these two areas where it overlies the drift deposits of gravel and alluvium and also the Brownstones, St Maughn's Sandstones and Raglan Mudstones of the Lower Old Red Sandstone series, and the clays of the Lower Lias.

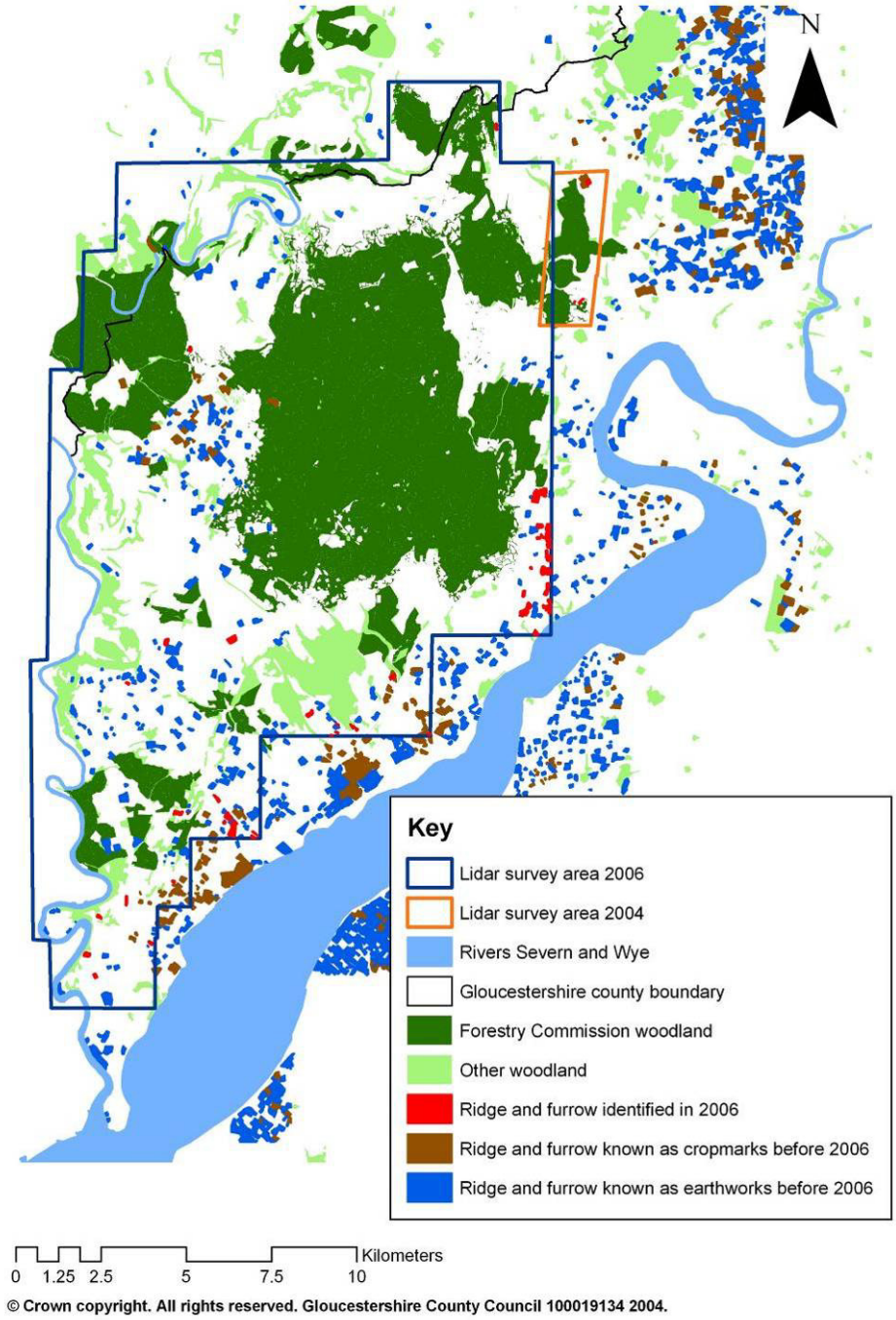

Figure 44: Ridge and furrow

3.1.18 Roads, tracks and holloways

3.1.18.1 Road

The rapid transcription identified only one feature which was interpreted as Road. This feature (st5394/01) consisted of a linear bank and may represent the *agger* of the known Roman road (Glos SMR 6212) which runs southwards through Tidenham Parish to cross the River Wye at Striguil Bridge (Glos SMR 5061). Although this is on the right alignment to be part of the Roman road, it is also within a recognised system of earthwork features (st5394/02 - see 3.1.3.1 above), and this earthwork may be part of that system.

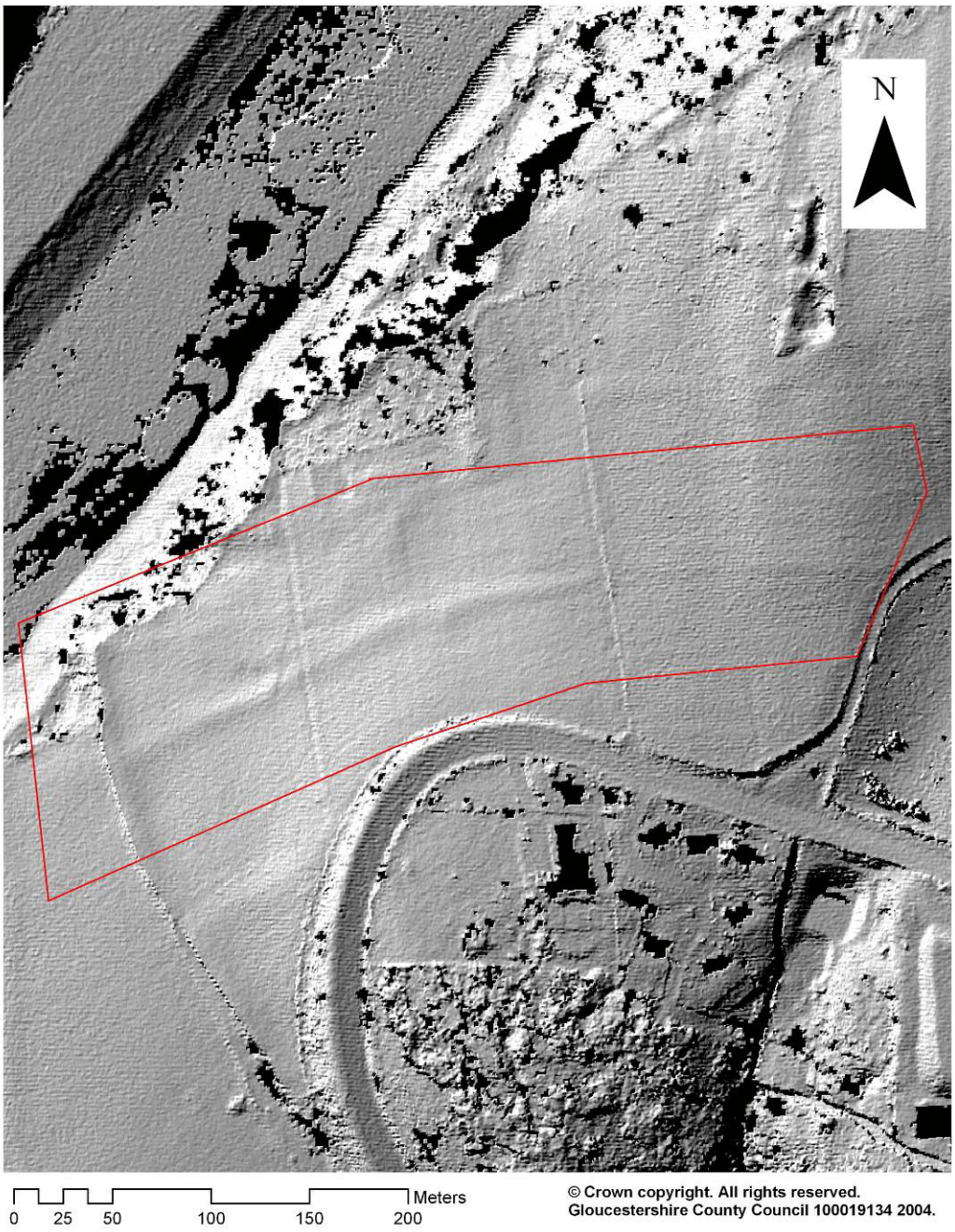

Figure 45: Possible Roman road st5394/01, illuminated from the northwest

3.1.18.2 Holloways

Although the rapid lidar transcription did not make a systematic record of all holloways identified in the woodland of the Forest of Dean (Appendix B), 25 of these features were recorded during rapid transcription. 66 were already recorded on the SMR when the report on Stage 1 of the Forest of Dean Archaeological Survey was prepared (Hoyle 2008b, section 4.11.1.3).

These tended to be recorded where they appeared to be associated with other features such as scowles (so6518/11), undated surface extraction pits (so6412/15, so6412/16), undated enclosures (so6517/05, so6517/07) or where they appeared earlier than post-medieval features (so6314/08, so6314/09, so6412/05). Some (so6007/04, so6710/12) were recorded as they appeared to be continuations of holloways which, although probably post-medieval in date, were already recorded on the SMR.

The remaining 15 were recorded as they did not appear to be obviously modern forestry routes, although without evidence to the contrary this is the most likely interpretation of the majority of these.

3.1.18.3 Trackways

59 Trackways were recorded on the SMR for the Forest of Dean Archaeological Survey area when the report on Stage 1 of that project was prepared (Hoyle 2008b, section 4.11.1.3). The rapid transcription of the 2006 lidar survey identified an additional 46 features which were interpreted as trackways. 13 of these were identified as post-medieval, whilst the remaining 33 were assigned an Unknown date, although the majority of these are also likely to be post-medieval. 17 were assigned an interpretation confidence level of Low, the remaining 29 were assigned a Medium confidence level.

The project did not set out to record all trackway features, and this does not represent all trackways which were visible on the lidar hillshaded images. The methodology for rapid transcription specified that trackways recorded on post-medieval maps, or those which could reasonably be interpreted as recent communications, should not be transcribed (Appendix B).

Like holloways (see 3.1.18.2 above), some of these were recorded where they appeared to be associated with other features such as the post-medieval designed landscape at Clanna (so5802/07), undated quarrying (so6412/20), or appeared to be continuations of trackways which although probably post-medieval in date were already recorded on the SMR (so5708/09). Trackways were also recorded to allow them to be discounted in any discussion of features of potential archaeological significance.

3.1.19 Mound

The rapid transcription identified 75 features which were interpreted as Mound. 41 of these were individual features, whilst 34 were groups of two or more. 50 of these were assigned an interpretation confidence level of Low and many of these, particularly in areas of woodland, were small irregular mounds whose status as archaeologically significant features must be in doubt (see 4.3.2 below). None of these can be interpreted with any degree of confidence, but a number of these could be linked with the following possible interpretations.

3.1.19.1 Possible burial mounds

Three mounds were linked with placename evidence which may suggest that they are of archaeological significance. These are*:*

- so6707/14 – this mound is in a field called 'Barrows' on the mid 19th century tithe map (Glos SMR 21375).
- so6413/09 – this irregular mound is in the area of a placename Legg Tump (SMR 25323) identified as a possible barrow site in the report on Stage 1 of the Forest of Dean Archaeological Survey (Hoyle 2008b, section 4.6.5.1). The status of this mound is not clear and it may represent upcast from the creation of a nearby forestry track.
- so6708/04 – this mound is in a field called 'Bledisloe Meadow' on the mid 19th century tithe map. Although Bledisloe is the name of a settlement in Awre Parish, the name may also be linked to the site of possible prehistoric or early medieval burial mounds (Hoyle 2008b, section 4.6.5.1).

A fourth mound (so5500/02) identified in an area where both neolithic and Bronze Age flint has been recovered in recent years (e.g. Glos SMR 28258, 31952, 31954, 31955, 31968) may also represent the remains of a barrow, whilst a fifth (st5599/16) was identified *c.* 700m to the north of the excavated Bronze Age barrow at Tidenham Chase (Glos SMR 5043).

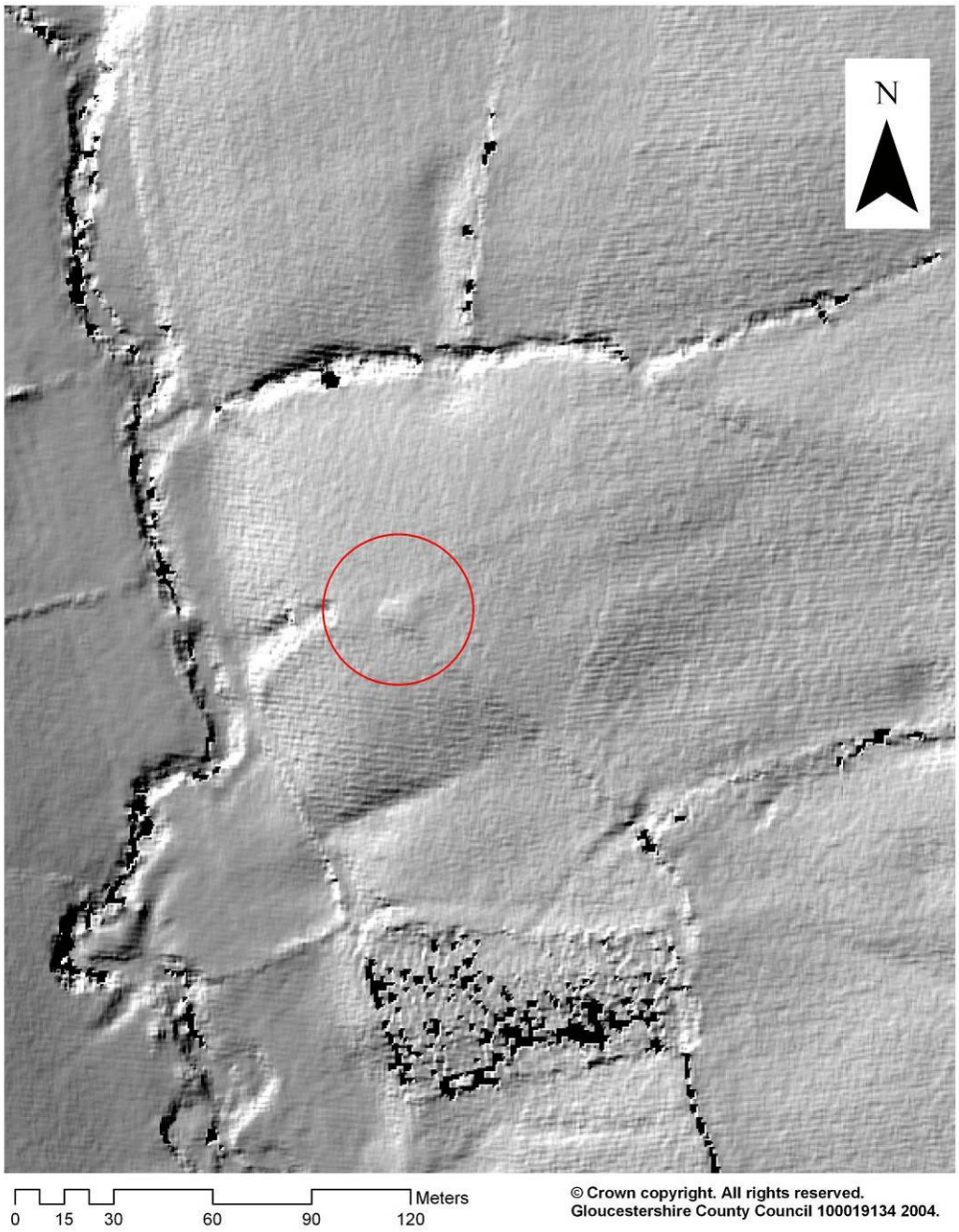

Figure 46: Mound so6707/14 in 'Barrows' field, illuminated from the northwest

3.1.19.2 Possible rabbit warrens

One site (so5309/01) which was designated an interpretation confidence level of High, consisted of a group of 14 irregular rectilinear mounds in a field recorded as 'Great Coney' on the mid 19th century tithe map (Glos SMR 21450), and these may represent pillow mounds or rabbit warrens of medieval date. Five other mound features (so5503/03, so5709/05, so5914/15, so6709/06, st5496/19) were represented by individual or small groups of sub-rectangular mounds and these may also indicate the sites of medieval rabbit warrens, although three of these (so5914/15, so6706/06 and st5496/16) were assigned an interpretation confidence level of Low, and none have a placename association with possible rabbit warren sites.

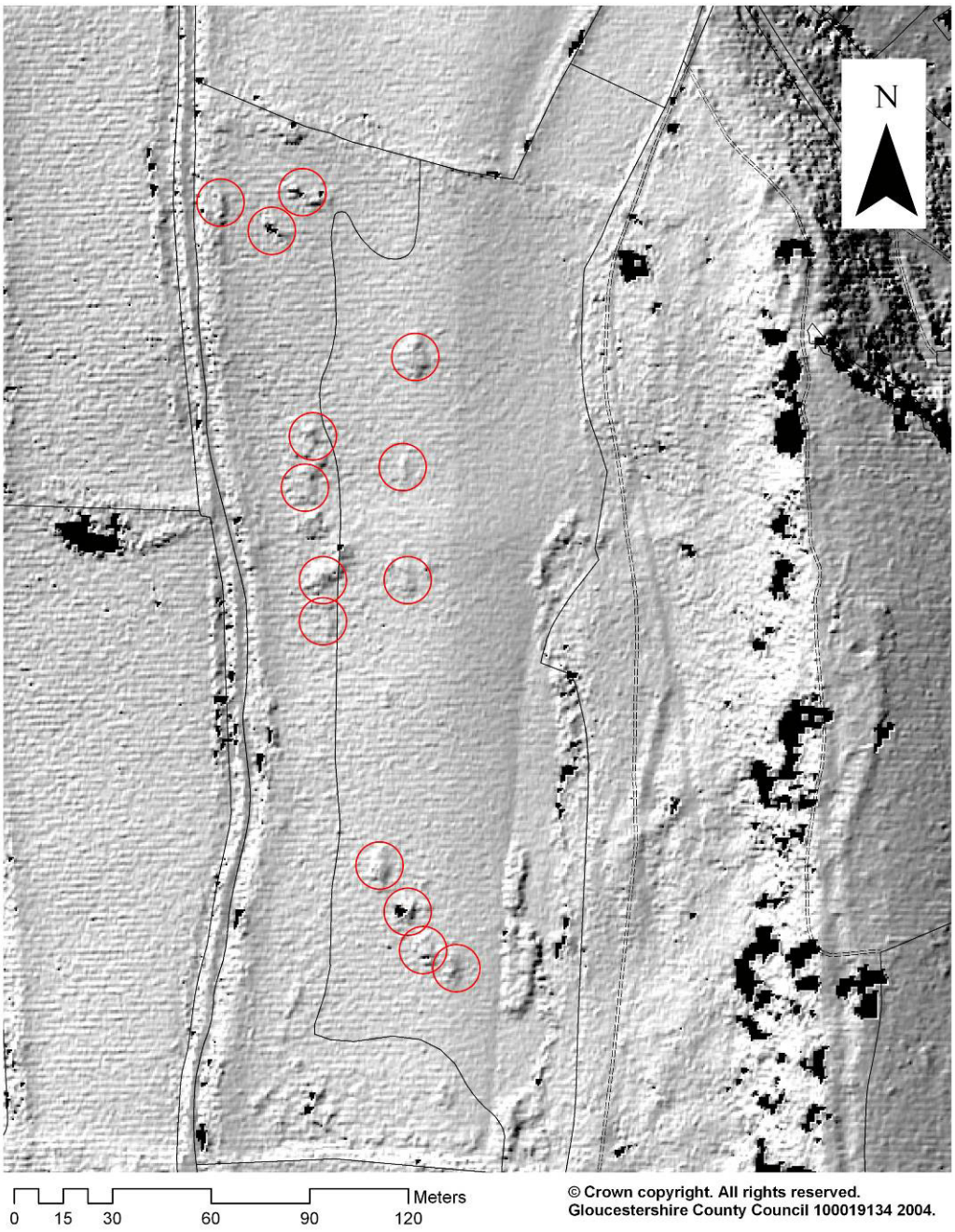

Figure 47: Possible pillow mounds so5309/01 illuminated from the northwest

3.2 Features thought less likely to be archaeologically significant

A number of features were recorded as part of the rapid transcription, which are thought unlikely to be archaeologically significant, as they appeared to correspond with modern features visible on aerial photographs. These were

- Trees or shrubs - so5312/03, so5312/04, so5410/05, so5500/16, so6203/06, so6814/01, st5598/12, st5395/09, st5396/12, st5598/06.
- Silage bales – so6713/07
- Unspecified modern activity visible on aerial photographs – so5917/03
- Upcast from construction of adjacent telecommunications pylon – so5911/02
- Forestry detritus adjacent to a track – so6213/04

3.2.1 Feature

118 sites were identified as Feature. This designation was assigned to features which could not easily be allocated a clear interpretation, or whose status was, by definition, unclear, and these are thought likely to be of limited archaeological significance.

Two of these sites may have some archaeological significance*:*

- st5496/10 – This was an area of small irregular hollows within the interior of Lancaut Iron Age Hillfort (Glos SMR 23). It probably represents post-medieval quarrying activity, but does correspond to an anomaly recorded in the 2000 geophysical survey of the site (Barker *et al.* 2000).
- so5813/09 – This is a group of parallel linear banks, which may indicate medieval or early post-medieval meadow doles

The remainder are thought likely to be post-medieval or modern features whose status could not be easily verified from the sources consulted, although six were associated with known post-medieval features*:*

- so6103/12 - Associated with the site of a Victorian rifle range Glos SMR 26138.
- so5611/03 – Rectilinear ditches, possibly drainage associated with World War Two barracks Glos SMR 22565.
- so5809/02 – Rectilinear platform possibly associated with post-medieval ponds Glos SMR 26350.
- so6005/03 – Irregular mounds possibly associated with post-medieval iron pit Glos SMR 10882.
- so6507/01 – Platform feature possibly associated with post-medieval dam and culvert Glos SMR 15194.
- so6607/01 – Terrace possibly associated with sandstone quarry Glos SMR 22957.

Four (so6418/04, so6505/04, so6520/12 and so6605/06) were vague irregular marks perhaps indicative of the edges of lidar sweeps which have caused a slight change in the texture of the hillshading, a phenomenon noted in the 2004 lidar survey of Welshbury Hill (Peter Crow, Forest Research pers. comm.)

3.2.2 Natural feature

22 features were identified which were interpreted as Natural feature. Although features in this category are thought to be natural they were recorded as they either could be interpreted as artificial features, or appeared to relate to artificial features in some way.

3.2.2.1 Swallow holes

Four areas in this category (so5500/07, so6612/19, so6712/01 and st5499/07) consisted of large sub-circular hollows. These appeared superficially to be artificial quarries, but were interpreted as possible natural swallow holes, a feature of limestone geologies (Dreghorn 1968).

The majority of these (so5500/07 and st5499/07) representing 50 individual features were found in an area of limestone geology in the southwestern part of the survey area, and can reasonably be interpreted as natural swallow holes. The remaining two (so6612/19, and so6712/01 – representing three individual features) overlay a sandstone geology and are more likely to represent artificial quarry features.

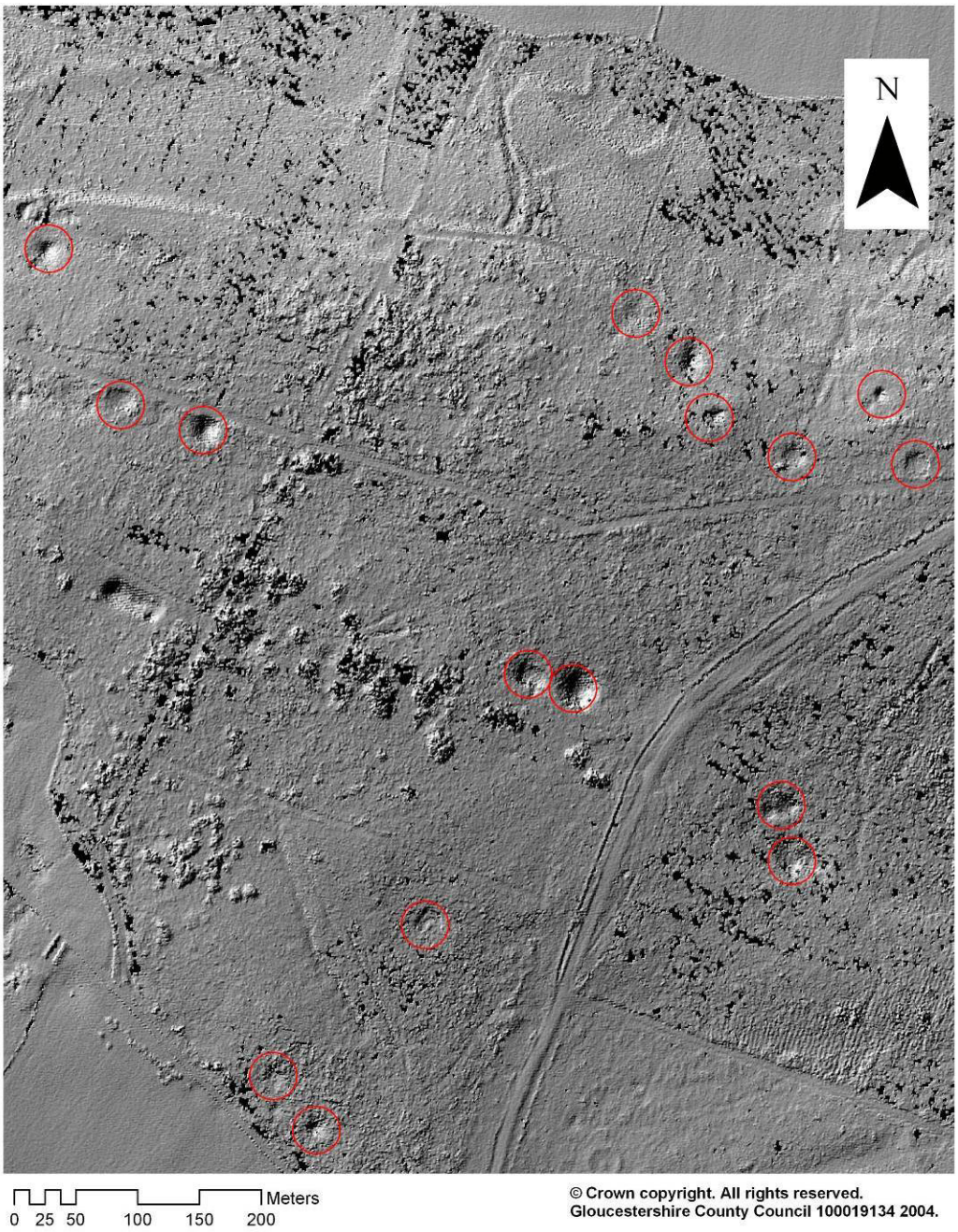

Figure 48: Possible swallow holes so5500/07, illuminated from the northwest

3.2.2.2 Natural ridges

Ten of these features (so5402/01, so5904/02, so6014/20, so6118/04, so6211/06, so6315/06, so6412/18, so6415/06, so6618/07 and st5699/23) are represented by linear, or parallel linear banks or terraces.

One of these (so5311/07) was a large curved ridge *c.* 650m long. This feature (Glos SMR 16495) was identified as part of the Offa's Dyke Survey for Management when it was recorded as 'a ridge with large conglomerate boulders … which in places appeared to be a large bank up to 4m high' (Hoyle and Vallender 1997, section 2.15.7.4). This ridge, which runs along the edge of the outcrop of Upper Old Red Sandstone/Quartz Conglomerate, is consistent with a natural formation caused by differential erosion of the parent material in this area. The ridge is sited in one of the areas where Offa's Dyke has never been recorded (Hoyle and Vallender 1997,

section 2.15) and it is a prominent landscape feature, which could have been utilised as part of Offa's Dyke by simply constructing a palisade along its summit.

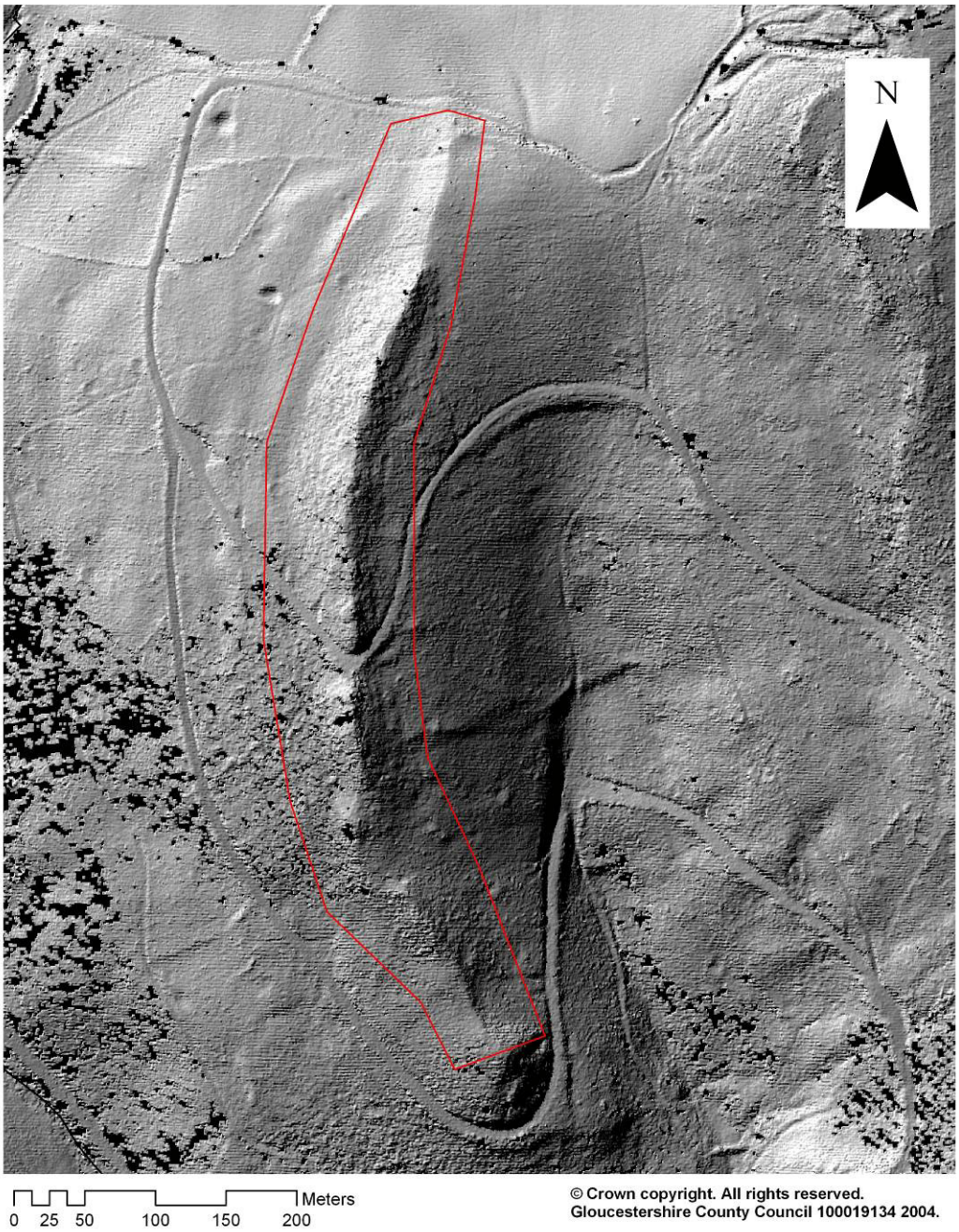

Figure 49: Natural ridge so5311/07, illuminated from the northwest

3.2.2.3 Features associated with existing SMR records

Two sites were identified which appeared to be natural features, but which could be the sites of unlocated features recorded on the Gloucestershire SMR. These are:

- So6211/15 – This natural knoll may be the possible site of Saintlow Castle Glos SMR 7404, and may also relate to the placename Turner's Tump Glos SMR 25430.
- So6616/20 – This hilltop may have been artificially modified and may be the site of circular enclosure Glos SMR 4634.

3.2.2.4 Other natural features

Four features (so6517/11, so6517/12, so6520/11 and so6611/19) consisted of hollows and may be natural drainage or the sites of backfilled quarrying.

So5813/06 consisted of two vague sub-circular mounds, each one *c.* 20m in diameter.

3.2.3 Features of little archaeological significance

The rapid transcription identified 18 features which are thought likely to be of little archaeological significance.

3.2.3.1 Garden feature

Eight sites were interpreted as 'Garden feature' (see also 3.1.1.2, and 3.1.11.1 above). These tended to consist of either rectilinear platform features (so6211/14, so6505/06, so6616/13 and so6715/09) or linear banks or terraces (so5614/09, so6605/05, so6714/10) which were sited in the gardens of private houses.

One feature (so6418/11) was a small circular mound at the end of a straight linear bank. This feature was sited in a field immediately north of a large named house (Springfields – SO64241856). Although this was interpreted as the remains of an ornamental garden feature relating to the house, quarrying is recorded in the field, and the feature corresponds to the site of what appears to be a circular pond on 19th century maps (OS 1880).

A further feature (so5401/07) is also likely to be a garden feature, but was classified as Motte and Bailey on account of its association with the putative site of an early Norman castle, Glos SMR 5088, (see 3.1.11.1 above).

3.2.3.2 Path

Three features (so6211/12, so6315/03 and so6715/08) were recorded as Paths, and are thought likely to be post-medieval or modern.

Although it was not the purpose of the rapid transcription to record features of this nature (Appendix B), these had not been recorded on the post-medieval maps consulted and this designation was assigned to enable them to be differentiated from features with greater archaeological potential.

3.2.3.3 Ponds

Three features (so5714/06, so6116/02 and so6309/06) were recorded as Ponds. None of these were on the County SMR although two (so6116/02 and so6309/06) were recorded on 19th century maps (OS 1880).

It was not the purpose of the rapid transcription to record features of this nature (Appendix B), and this designation was assigned to enable them to be differentiated from feature with greater archaeological potential.

3.2.3.4 Structure

One feature (so6203/05) was recorded as Structure. This feature appears to be a dam associated with ponds recorded on post-medieval maps (OS1925).

3.2.3.5 Water channel

Three features (so5407/01, so5704/03 and so6213/10) were recorded as Water channel. Although it was not the purpose of the rapid transcription to make a comprehensive record of features of this nature (Appendix B), these were recorded to allow them to be differentiated from features with greater archaeological potential.

3.3 Non-archaeological features

3.3.1 Pixilated areas

Pixilated areas were produced where the processing of the raw lidar point cloud data, and particularly the vegetation removal algorithm, had effectively filtered out any record of the lidar signal and created a blank space on the hillshaded images. Although two grades of pixilation (heavy and light) were recorded as part of the transcription process (Appendix B), with a few exceptions, these areas produced no records of features of possible archaeological significance. As this pixilation is a product of the way in which the raw point cloud data was processed as part of the 2004 and 2006 surveys, it is possible that a future revision of this may enable topographical features to be identified in these areas. Further research undertaken by Peter Crow of Forest Research in the spring of 2007 was targeted at investigating this issue, but the results of this were not available within the timescale allowed for the completion of this project.

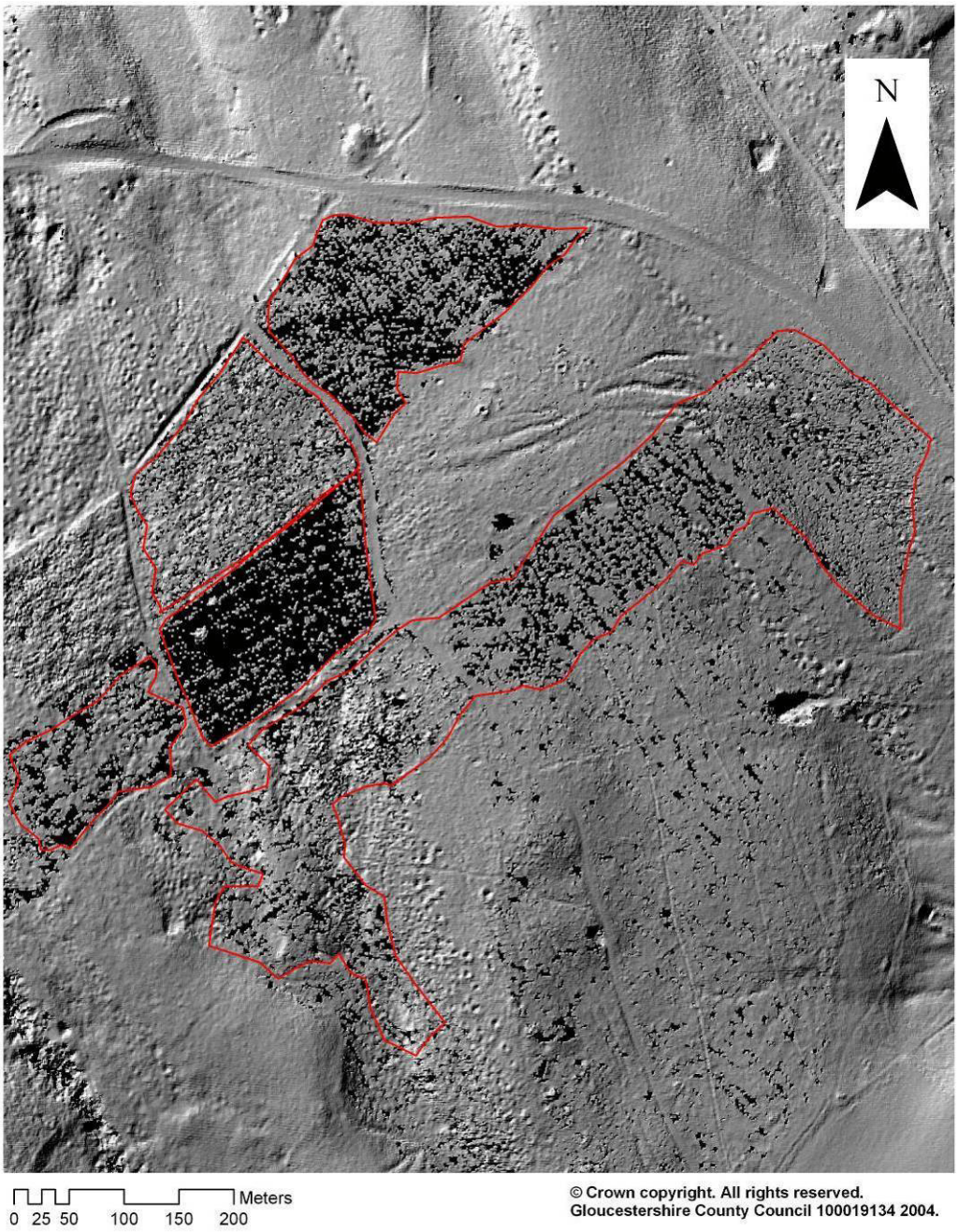

Figure 50: Heavy and light pixilation at SO6141, illuminated from the northwest

In total 325 areas of pixilation were recorded, representing a total area of 17.99km^2. This represents 7.38% of the transcribed survey area, and 15.26% of the woodland in that area. All of these were found within areas of woodland, and all were areas of confer plantation. Not all areas of conifer produced pixilation and it is likely that these areas represent particularly dense, generally young and un-thinned conifer plantations.

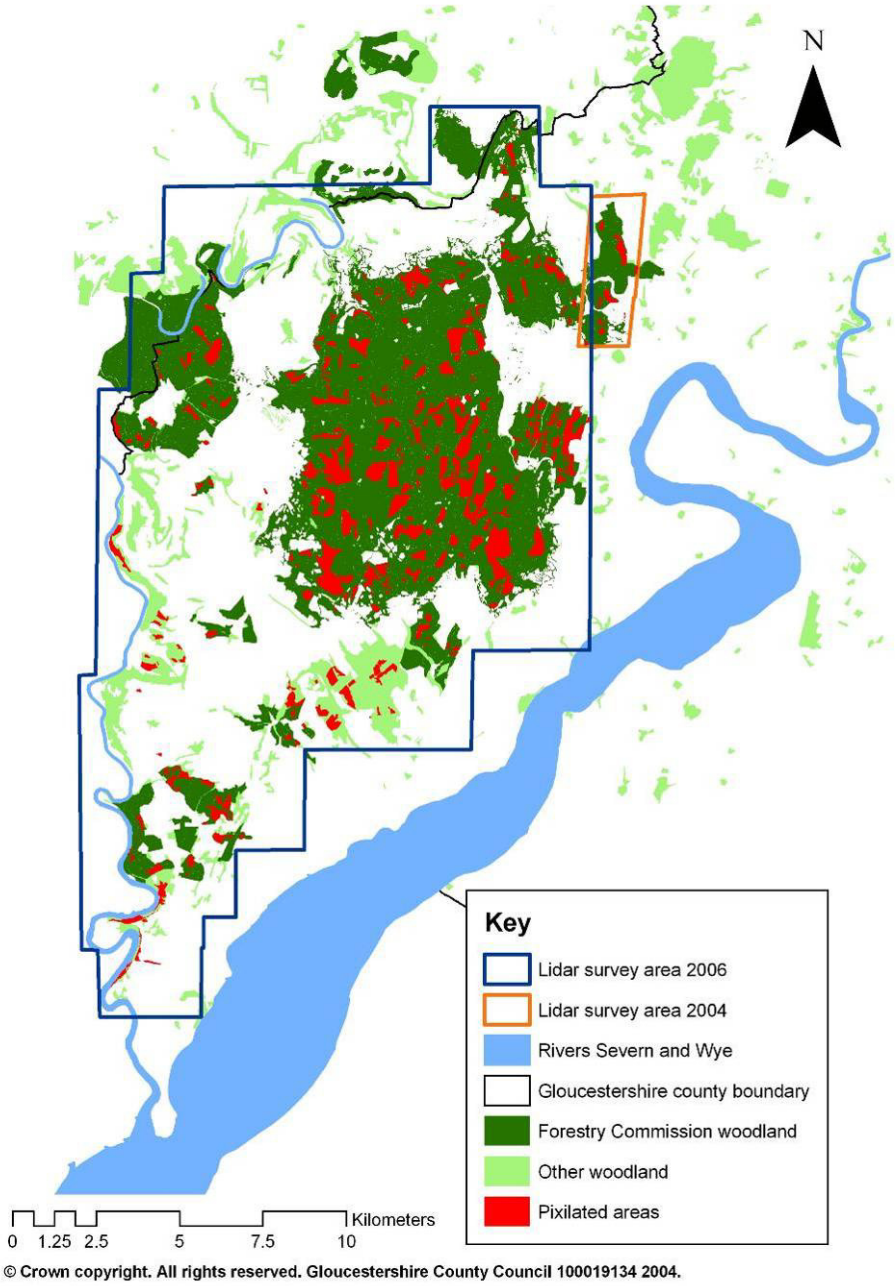

Figure 51: Pixilated areas

3.3.2 Uneven surfaces

Areas categorised as ‘Uneven surfaces’ were not pixilated (or only partly pixilated) but the hillshaded images appeared to show large area of amorphous irregularity within which individual features could not be distinguished. Unlike Pixilated areas, these were not a product of the way in which the lidar data was processed, and Uneven surfaces represented the result of laser recording actual ground surface conditions.

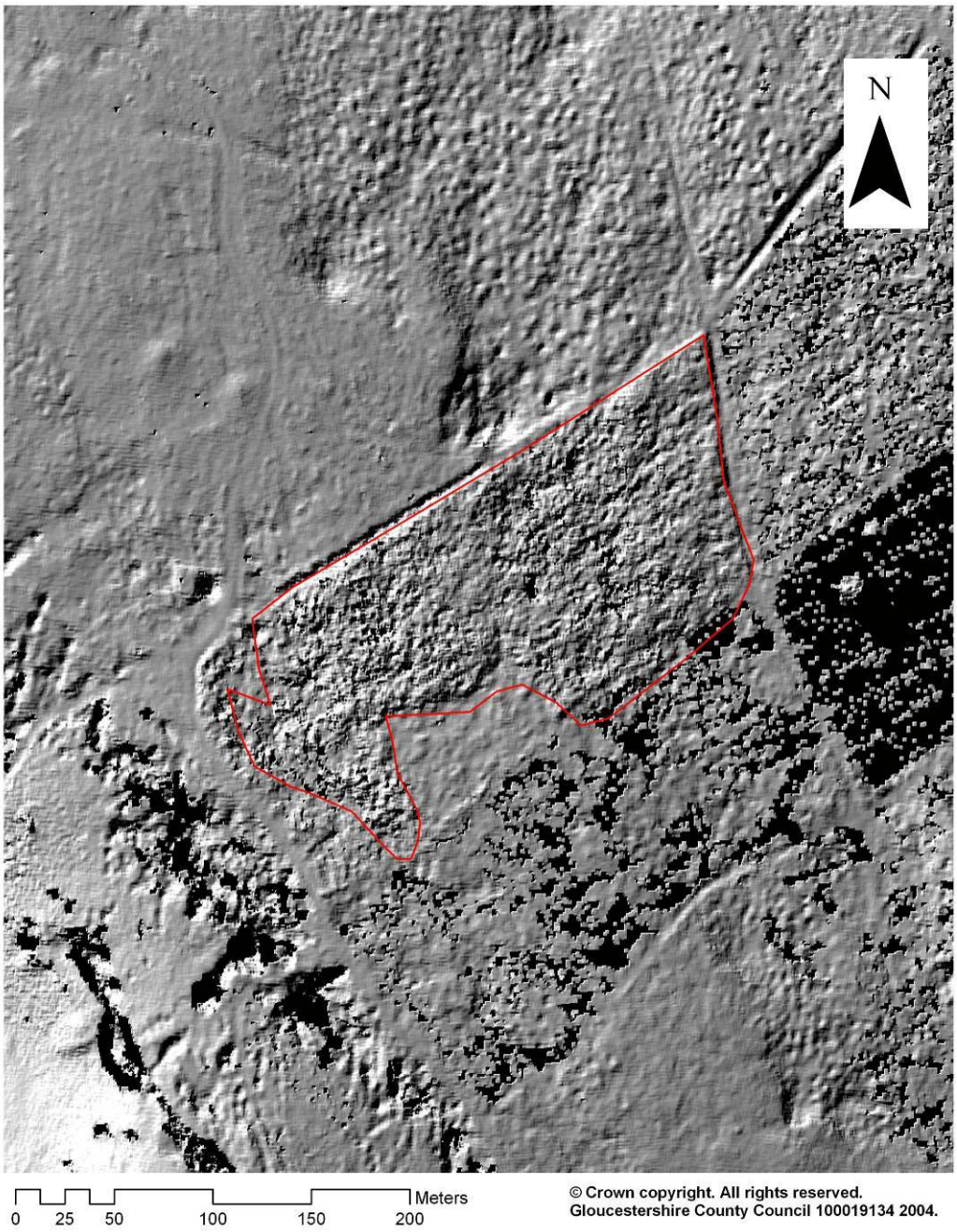

Figure 52: Uneven surface at SO6141, illuminated from the northwest

In total 114 Uneven surfaces were recorded, representing a total area of 1.99km^2. This represents 0.82% of the transcribed survey area, and 1.68% of the woodland in that area. Almost all of these were found within areas of woodland, particularly areas which had been recently clearfelled, and in general these can be interpreted as areas of dense undergrowth which has taken advantage of the increased light levels where tree canopy has been removed and which proved to be an impenetrable barrier to lidar survey's laser pulses. Outside woodland, Uneven surfaces indicated scrubland, or other unmanaged areas where undergrowth or bushes were dense enough to impede the penetration of laser pulses.

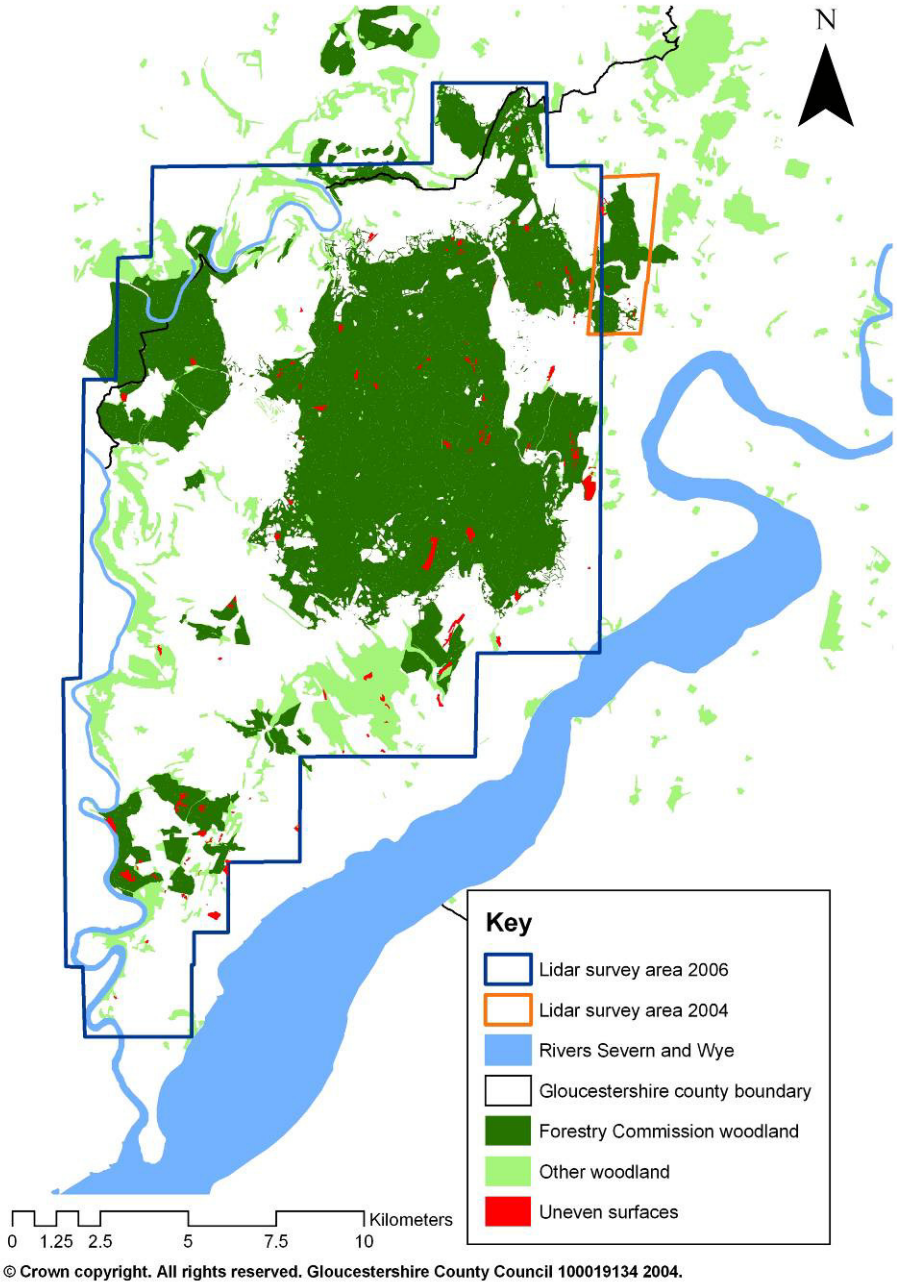

Figure 53: Uneven surfaces

3.3.3 Forestry operations

24 areas were categorised as Forestry operations and indicated features which either were, or appeared to be, similar to earthworks on the lidar hillshaded images, but could be interpreted as the result of recent Forestry activity.

Forestry operations fell into two categories:

Ploughing

These were areas of very distinct parallel and closely spaced banks and ditches, and represented earthworks created in advance of some areas of conifer plantation

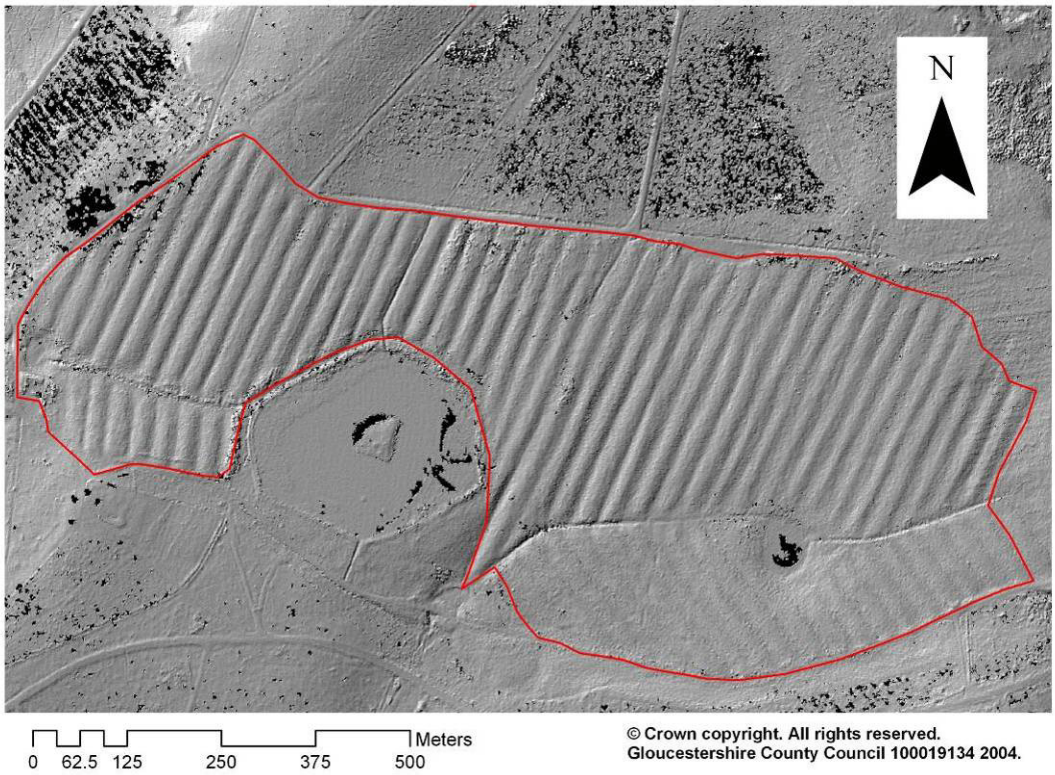

Figure 54: Forestry ploughing at SO6312, illuminated from the northwest

Brash

These consisted of less distinct and more widely spaced irregular parallel banks. They were interpreted as lines of forestry brash (small branches and foliage) which are the waste product of timber felling operations.

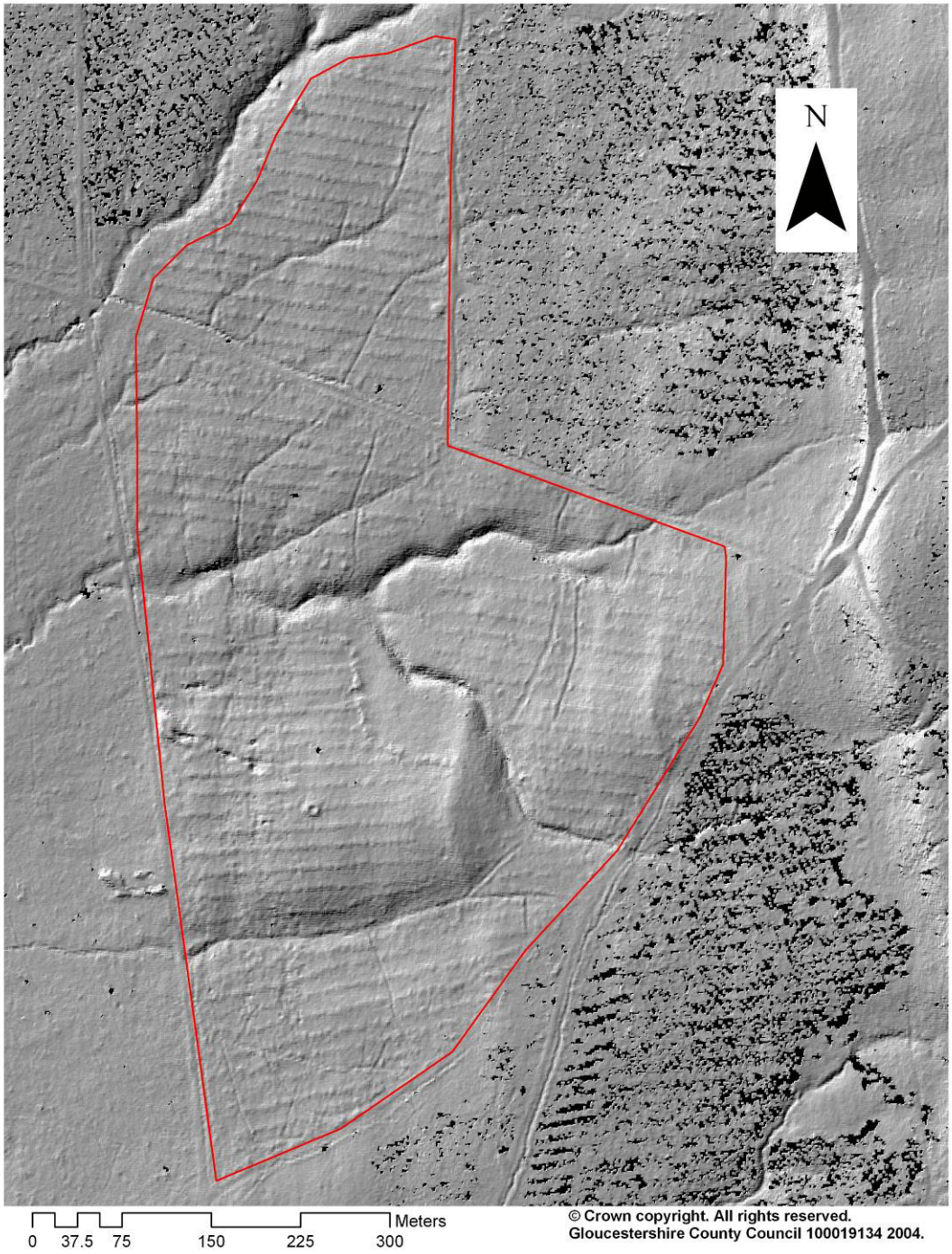

Figure 55: Forestry brash at SO6109, illuminated from the northwest

Forestry operations covered an area of 1.7km^2 (Ploughing - 1.05km^2, Brash – 0.65km^2). This represents 0.69% of the transcribed survey area, and 1.44% of the woodland in that area. All of these were within areas of woodland owned and managed by the Forestry Commission.

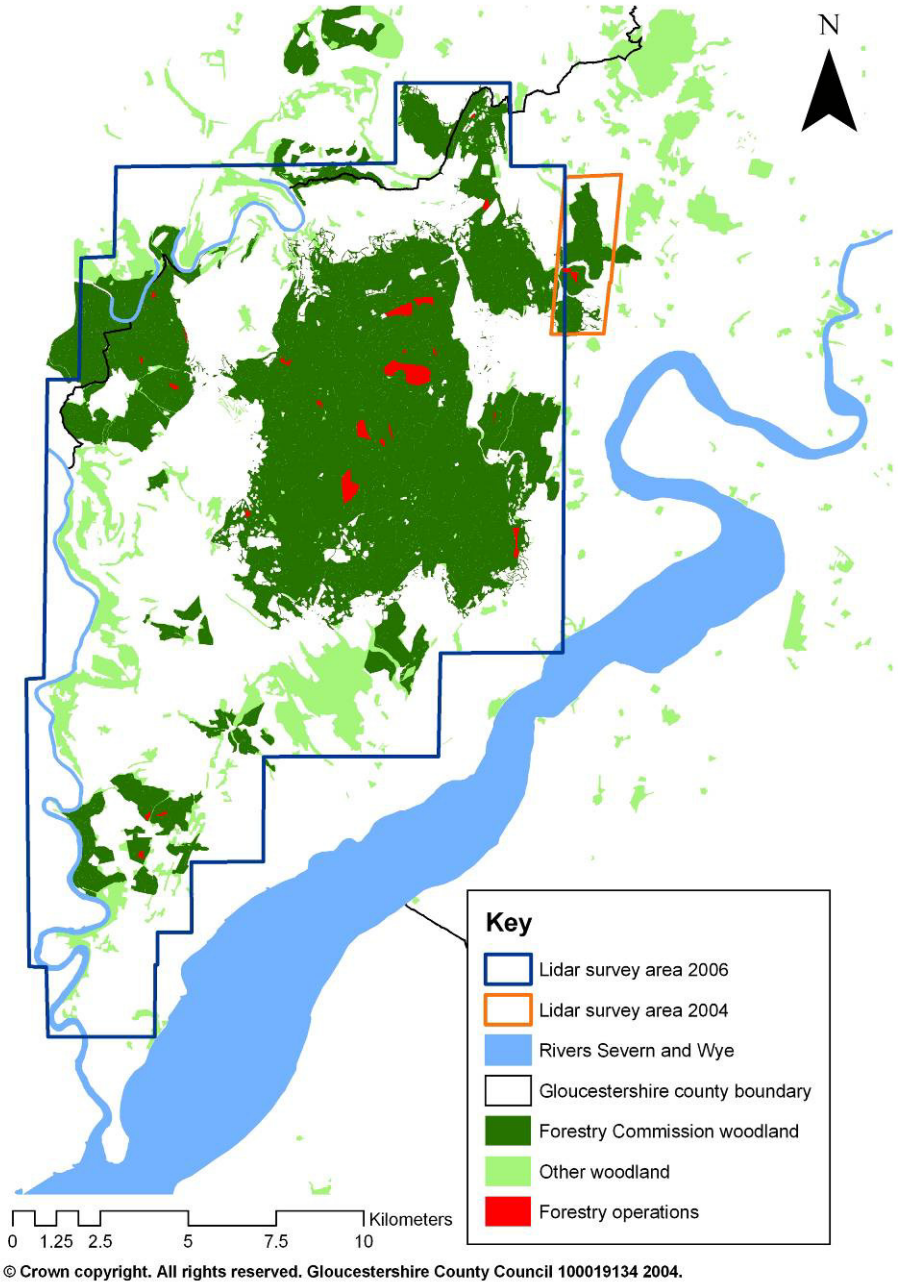

Figure 56: Forestry operations

3.3.3.1 Unrecorded forestry operations

The extensive network of drainage systems in Forestry Commission woodland was not recorded as part of the transcription process. Although it had originally been the intention to record these (see Appendix B.i), they were so widespread in the central part of the Forest of Dean that their distribution would have had no significance. These features consisted of a network of thin linear ditches which often formed parallel lines or defined small enclosures of varying degrees of regularity and were generally linked to existing watercourses into which they drained.

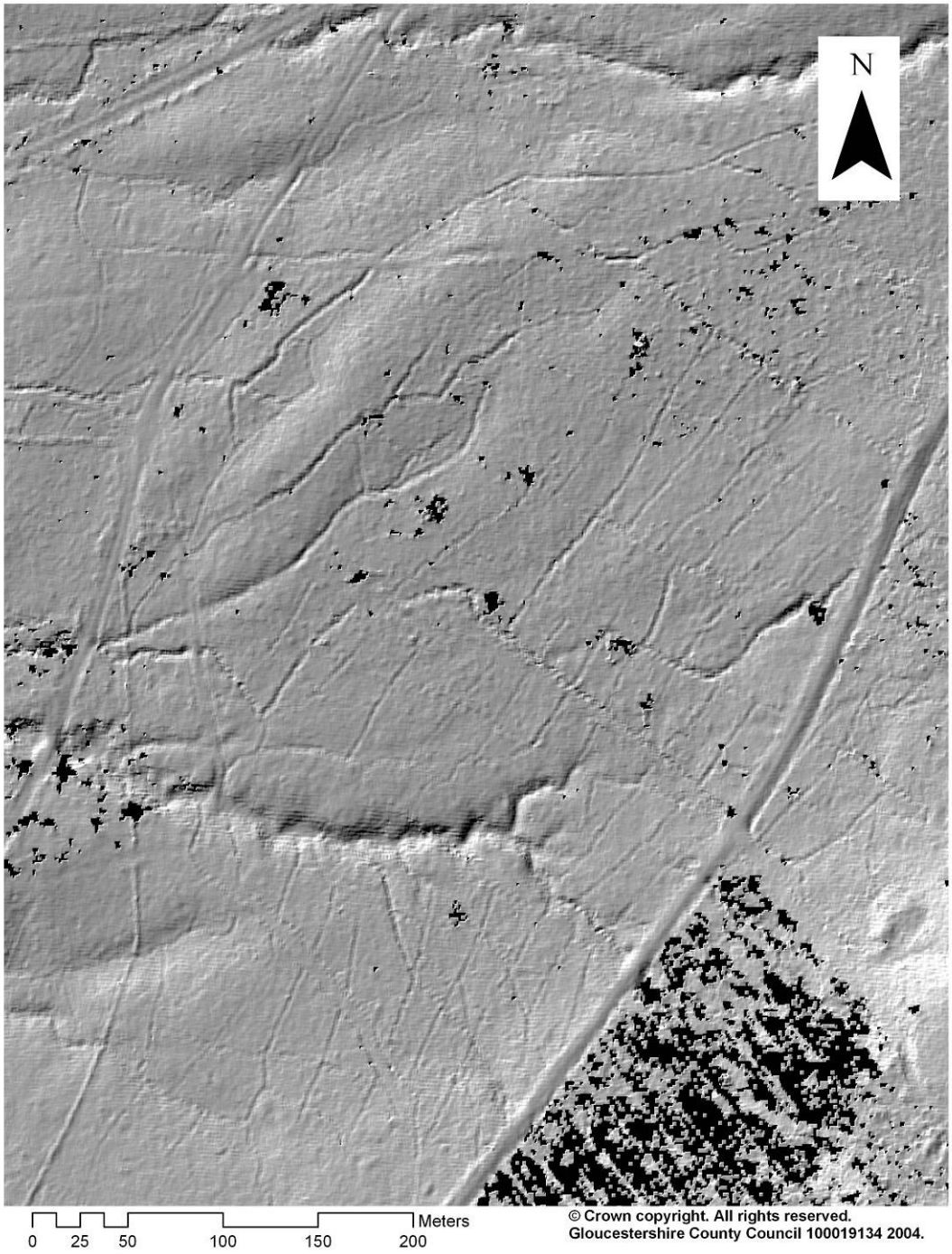

Figure 57: Forestry drainage at SO6213, illuminated from the northwest

4 Discussion of the success and limitations of the survey

4.1 Aims and objectives of the survey

The aims and objectives of the 2006 lidar survey are set out in detail in the project design (Hoyle 2006, section 5) and can be summarised as follows:

- To enhance the management of the archaeological resource in the Forest of Dean through the strategic planning and development control processes (Aim 5.1.1), and through the provision of information and advice to landowners, particularly the Forestry Commission (Aim 5.1.2).
- To develop the use of an innovative survey technique in a difficult wooded environment, where understanding of the archaeological resource is currently very limited (Aim 5.1.3).
- To advance the objectives of the Forest of Dean Archaeological Survey through the acquisition of a new dataset of archaeological information that will provide a framework for future field survey within the Forest of Dean (Aim 5.1.4).

These aims were to be achieved through the following objectives*:*

- Undertaking lidar survey of the specified area in accordance with agreed specifications (Objective 5.2.1), and processing the results of the lidar survey through the application of a vegetation removal algorithm to produce hillshaded images of the survey (Objective 5.2.2).
- Preliminary analysis of the hillshaded images to identify and characterise features of potential archaeological significance' (Objective 5.2.3), the production of a 'database of the archaeological data supported by appropriate digital mapping (Objective 5.2.4) and the preparation of a report 'identifying and characterising features of potential archaeological significance' (Objective 5.2.5).
- Augmenting existing data sets on the extent of the archaeological resource within extensive parts of the Aggregates Resource Area and the woodland in the Forest of Dean (principally the SMR) to inform 'both strategic and local decisions concerning the management of the archaeological resource' in the Forest of Dean (Objective 5.2.6).

4.2 Success of survey

4.2.1 Objectives 5.2.1 and 5.2.2

These objectives have clearly been achieved. However, although hillshaded images of the whole of the survey area have been produced (see 2.3 above), work on the refinement of both the vegetation removal algorithm and general processing of lidar data continues (Peter Crow Forest Research pers. comm.) and the raw point cloud data remains a vast reservoir of information which can be subjected to further analysis and processing.

A significant benefit from the production of the hillshaded images, which did not have a direct bearing on the rapid transcription project but was identified as part of Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 7.6), was the valuable resource which the geo-referenced lidar images are to facilitate any future fieldwork. The hillshaded images are rectified to the Ordnance Survey grid and accurate to a factor of plus or minus 0.10-0.15m (Bernard Devereux Director University of Cambridge Unit for Landscape Modelling, pers. comm.; web: Unit for Landscape Modelling.). This degree of accuracy compares favourably with that achievable by the surveying techniques used by rapid field survey in woodland undertaken as part of Stage 2 of the Forest of Dean Archaeological Survey where an

accuracy of plus or minus 6-10m was considered acceptable and could only be achieved in optimum conditions (Hoyle 2008a, Appendix C).

Hillshaded images enable the extent and location of recognised features to be simply recorded with reference to the visible features, generally by direct tracing, and no further surveying is necessary. This not only improves the accuracy of the recording but also significantly speeds up the time needed to locate, survey and record identified features, and its cost benefit cannot be overstated.

The hillshaded images also present an accurate and up to date map view of the ground surface which is often more comprehensive than the mapping available from the Ordnance Survey, particularly in areas of woodland. This has the following significant benefits for field survey*:*

- Navigation, particularly in a woodland environment where visibility is often limited and where there may be few mapped reference points, is greatly facilitated.
- Not all archaeologically significant features are necessarily visible on the hillshaded images (see Hoyle 2008a section 7.6, and 3.1.13 above) and the accurate location of these can be rapidly checked against those features, which are visible, increasing the general accuracy of the survey.
- In situations where surveying equipment such as GPS does not function (see Hoyle 2008a, section 7.3.1.2) these features can be used as accurately located 'fixed points', not visible on OS maps, greatly improving the ability to confidently record the location of identified features in this situation.

4.2.2 Objectives 5.2.3, 5.2.4 and 5.2.5

Preliminary analysis of the hillshaded images, identifying and characterising features of potential archaeological significance, was undertaken during the 2006 survey, fulfilling Objective 5.2.3. This information was added to a dedicated Access database (Appendix B) in accordance with Objective 5.2.4, and this report fulfils Objective 5.2.5.

Although these objectives have been achieved in accordance with the specification of the project design, the fulfilment of Objectives 5.2.6 is predicated by the value of the analysis of the hillshaded images. This process can only be regarded as a 'preliminary analysis' of the data (in line with Objective 5.2.3), and more detailed analysis of the available hillshaded images may have the potential to further identify significant archaeological features, particularly where the physical form of these is not yet fully understood (see 3.1.4 above), or where further developments in processing of the raw point cloud data or the vegetation removal process reveal greater detail or penetrate areas where the ground surface is currently obscured (see 3.3.1 above).

Despite these limitations, the rapid analysis did identify 2,165 features or areas, 1,702 (78%) of which are of potential archaeological significance. Superficially this number does not compare favourably the 4,160 new sites identified as part of Stage 1 of the Forest of Dean Archaeological Survey and is only comparable with the 1,799 new sites identified as part of the National Mapping programme for the Forest of Dean (Hoyle 2008b, section 3.1.1), however the following points must be borne in mind*:*

- Following both NMP and Stage 1 of the Forest of Dean Archaeological Survey, the SMR for the Forest of Dean Survey area contained disproportionate numbers of records for the post-medieval and modern periods (Hoyle 2008b, section 2.1.5). Although few of the features identified through the lidar survey can currently be dated with any degree of certainly, many have the potential to date to those earlier periods which are under-represented in the area.
- With the exception of the remains of late post-medieval industrial features, the results of both NMP and Stage 1 of the Forest of Dean Archaeological Survey were heavily biased in favour of the identification of features outside of areas of woodland. The investigation of these areas was identified as a priority for further research (Hoyle 2008b, section 4.7). Many of the features identified during rapid transcription were within woodland, including a range of undated enclosures and

other earthwork systems which have a huge potential to increase knowledge of the archaeological resource in these areas.

- Many of the new sites identified both through NMP and the documentary research undertaken as part of Stage 1 of the Forest of Dean Archaeological Survey represent additional detail to existing SMR records. The rapid transcription of the 2006 lidar data did not set out to augment existing records (Appendix B), although it was clear that a vast amount of new information on known sites was visible on the hillshaded images, and records of this nature are not included in the totals for the rapid transcription.
- Stage 1 of the Forest of Dean Archaeological Survey consisted largely of documentary research using existing historical and post-medieval map sources. These sources are frequently biased towards the identification of particular types of clearly visible features and are generally poor as a comprehensive record of earthwork features within areas of woodland (Hoyle and Vallender 1997, section 2.14.5). Similarly NMP was reliant upon the identification of features which were visible on the ground either as earthworks or cropmarks, and was particularly ineffective in areas of standing woodland. The features identified during the rapid transcription were, by definition, those which had not been identified during the earlier surveys and consequently comparison between the survey techniques based purely on numbers of features identified is not valid, as a number of features which could have been identified through lidar had already been recorded by other techniques.

Although the actual date or potential of none of these is clear at the present time, the identified lidar-detected earthworks can be crudely subdivided into the following categories based on their perceived archaeological potential (se Appendix E for feature types in each category)*:*

- Very significant
- Significant
- Less significant
- Not archaeological

The results of this subdivision are as follows*:*

Table 3: Archaeological potential of features or areas identified through lidar

Archaeological potential category	Number of identified features or areas
Very significant	297
Significant	706
Less significant	684
Not archaeological	478
Total	2165

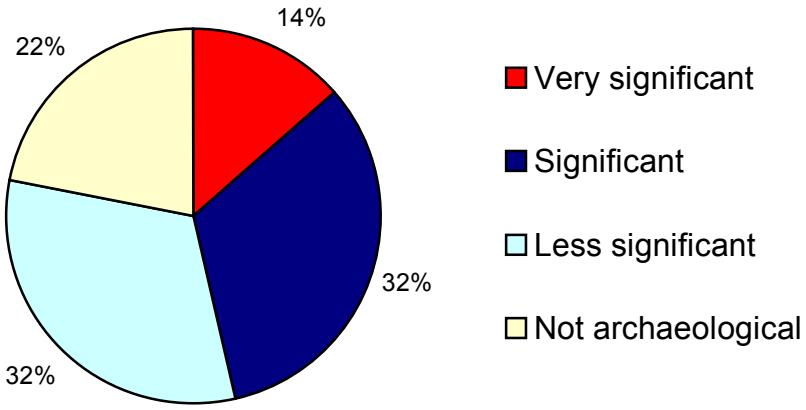

Chart 1: Potential archaeological significance of identified lidar features

It is clear that 1003 (46%) of the features, or groups of features identified as a result of the 2006 lidar survey have the potential to represent significant archaeological earthworks. A number of these, e.g. undated enclosures or earthwork systems, may represent the physical remains of landscape organisation pre-dating the woodland and could radically influence future understanding of earlier landscape and perceptions about the nature and origins of the woodland in the Forest of Dean.

Prioritisation of areas for rapid field survey (Objective 5.2.4)

Objective 5.2.4 was linked to Aim 5.1.4, which was to use the lidar data to '… provide a framework for future field survey within the Forest of Dean' (see 4.1 above.). The results of the 2006 survey have proved crucial to this aim (see 5.2 below), particularly in terms of the prioritisation of `field survey within the *c.* 118km^2 of woodland, the vast majority of which has not been subjected to any form of field survey, within the Forest of Dean.

4.3 Limitations of the survey

The 2006 lidar survey and rapid transcription have added enormously to knowledge of the potential archaeological resource within the Forest of Dean and particularly the extensive areas of woodland. The project did, however, have a number of limitations. These can be broadly divided into the following categories*:*

- Areas where the lidar data or current knowledge of the ways in which this data can be processed, was limited.
- Areas where current knowledge of the meaning of images which appear in the lidar hillshaded images was limited.
- Areas where the methodology adopted for the rapid transcription was limited.

4.3.1 Limitations as a result of data processing

A number of limitations in the hillshaded images produced from the lidar point cloud data have already been discussed as part of the report on Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 7.6), although a number of these (for example, problems associated with images illuminated from only one direction – Hoyle 2008a, section 7.6.5) were resolved by the time of the 2006 survey. An informal comparison between the hillshaded images used in the 2006 survey and the recorded distribution of features, such as charcoal platforms in areas where rapid

field survey has been undertaken (see 3.1.13 above) indicates that there are still issues surrounding the success of the hillshaded images to comprehensively identify discrete features less than *c.* 10m in diameter (see Hoyle 2008a, section 7.6.2). Although only further field validation will indicate the full extent of this, this may reflect the way the raw point cloud data is manipulated to produce the hillshaded images, rather than indicating a limitation in the data itself, and Peter Crow of Forest Research is exploring alternative manipulation options to highlight features of this type (P Crow, Forest Research pers. comm.).

The hillshaded images also produced extensive areas of pixilation in woodland (15.26%), particularly areas of dense conifer (see 3.3.1 above). This is thought to be a product of the way in which the raw data was manipulated, and particularly the application of the vegetation removal algorithm, and future manipulation of the existing point cloud data may resolve some of these issues (Peter Crow, Forest Research pers. comm.). Uneven surfaces (see 3.3.2 above) also obscured some areas within woodland. These were less extensive than pixilated areas, and as they appear to represent areas where the laser pulses were effectively blocked by dense undergrowth, this may represent an insoluble problem for lidar survey of woodland, where dense undergrowth can be expected in some areas.

4.3.2 Limitations in feature identification

The status of none of the identified lidar features is currently clear, and the issue of feature recognition has been identified as a potential problem for some site types, e.g. Possible iron working sites (see 3.1.4 above). Although these general issues should improve as further validation is undertaken, confidence in feature recognition was significantly more difficult in areas of woodland where the ground surface on the hillshaded images was noticeably less 'clean' that that outside of woodland. Vague mounds, hollows and other irregularities, commonly appear on the hillshaded images of wooded areas. These irregularities could not confidently be identified as archeologically significant earthworks and were presumed to be the result of undergrowth or other woodland detritus. This can produce the following difficulties in transcription*:*

- Where these irregularities represent undergrowth or other woodland detritus, they may obscure genuine earthwork features or skew the data manipulation in such a way that these are obscured.
- In some cases these irregularities may be misinterpreted as genuine archaeological earthwork features.
- Genuine features may appear identical to other vague and irregular features which represent woodland detritus. This phenomenon was noted as part of Stage 2 of the Forest of Dean Archaeological Survey, where these anomalies were visible on the hillshaded images and it was not possible to differentiate between those which could be matched with genuine features, and those which could not be clearly differentiated from the general 'background noise' on the hillshaded images (Hoyle 2008a, section 7.6.1).
- Some features which appear to be archaeologically significant on hillshaded images may be the result of other processes. Peter Crow of Forest Research has identified foliage covered fence line at SO58660702 which could have been interpreted as a linear earthwork on the hillshaded images. Although these particular features were not recorded as archaeologically significant due to the parameters imposed on the rapid transcription of the 2006 lidar survey, this is an indication that, without field validation, caution must be applied to any interpretation of features visible on the hillshaded lidar images, particularly those which do not form part of wider systems.

Although further refinement of the processing of lidar imagery may address this issue (B Devereux, University of Cambridge Unit for Landscape Modelling, pers. comm.), further validatory fieldwork over a wide area and in a range of woodland conditions is required to determine the extent to which this obscures or invents genuine features.

4.3.3 Limitations in the transcription methodology

4.3.3.1 Rapid transcription

The transcription methodology adopted for the bulk of the 2006 lidar survey (Levels 1 – 3) was designed for preliminary analysis of the data with the principal objective of collecting data in a form which allowed it to be used to target areas suitable for further fieldwork, and this level of transcription is considered appropriate for this.

It is, however, clear that issues surrounding the transcription of lidar data have more to do with feature recognition than the actual process of transcription. More detailed (and time consuming) transcription, such as Level 4, may have produced the data in a form (i.e. features mapped individually rather than grouped together as polygons or multipoint features) which allowed for more immediate analysis and comparison of the data, but there is no reason to think that this process would have increased the number of features identified or improved feature identification confidence at this stage.

4.3.3.2 Comparison with existing data sets

Unlike aerial photographic information it is not possible to easily distinguish clearly modern features such as field or property boundaries, modern tracks or paths, from features which may be archaeologically significant on the hillshaded images. In order to determine the status of identified lidar features it was necessary to compare them with a number of other data sets to exclude features which were already recorded on these sources (Appendix B). Although this was a necessary methodological approach to lidar transcription, it is recognised that some boundaries mapped on post-medieval map sources could coincide with the line of earlier earthworks and have gone unrecorded in the 2006 transcription.

An example of this is post-medieval Forestry Enclosure boundaries (see 3.1.7 above) which are archaeologically significant features. Many of these are mapped as boundaries on post-medieval map sources, and it is recognised that the transcription methodology adopted in 2006 did not record all features of this type which are visible on the lidar hillshaded images.

4.3.3.3 Systematic comparison with existing SMR and NMP records

Perhaps the major limitation in the transcription process adopted as part of the 2006 survey was that it only identified features which had not previously been recorded on the Gloucestershire SMR, as there was no capacity for a systematic assessment of the way in which the lidar survey augmented existing records.

Where lidar data was compared with existing SMR records, it almost invariably added greater detail, or improved mapping accuracy where they survived as earthworks. Although minor changes in mapping accuracy were not recorded as part of the 2006 rapid transcription, in some instances the extent of recognised features was extended by the lidar results to a degree which warranted transcription. Examples of this are*:*

- So5505/01 which extended the possible medieval field system Glos SMR 26163.
- So6409/03 which extended surface extraction pits Glos SMR 26021.

In other areas (e.g. Madgetts Farm Glos SMR 6033) the results of the lidar survey (so5400/04) did not only add to the extent of the recognised features, but also questioned some established interpretations of the site (see 3.1.2 above).

There can be little doubt that a more systematic comparison between the existing SMR records and the results of the 2006 lidar survey would have added greatly to an understanding of all sites which survive as earthworks.

5 Recommendations

The following recommendations are for further investigation of selected features identified as a result of the 2006 lidar survey.

5.1 Methodological approaches

5.1.1 Field validation

Validation of lidar features undertaken as part of Stage 2 of the Forest of Dean Archaeological Survey indicated that although the majority of features which appeared on the lidar hillshaded images were genuine earthworks (Hoyle 2008a, section 4), there were some instances where the status of a lidar feature was less clear (Hoyle 2008a, sections 4.3.1.5 and 4.3.1.6) or appeared to indicate a feature which was unlikely to be archaeologically significant (Hoyle 2008a, section 4.3.1.7). Similarly, limited validation following the 2006 survey has indicated that lidar cannot always differentiate between genuine earthworks and artificial features (see 4.3.2 above).

Although it is anticipated that ground truthing lidar features will become increasingly less important as more are validated, leading to greater confidence in the interpretation of hillshaded images (Hoyle 2008a, section 7.6.8), it is still considered necessary to validate features identified through lidar survey at the present time. Accordingly field validation should be the first stage in any further research into the features identified through lidar survey.

Details of field survey and recording strategies will be determined as part of detailed project designs, but will be based on specifications for rapid field survey and lidar validation set out in the report on Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 7.7).

Field validation of lidar features, through rapid field reconnaissance, can involve techniques which do not require a high level of professional expertise (Hoyle 2008a, section 3.1). Accordingly project designs should consider the potential for community involvement in future validation projects.

5.1.2 Trial excavation

Although field validation can determine whether lidar has identified a feature of genuine archaeological potential, more intensive techniques, such as trial excavation may be required to gain further information. This would include*:*

- The status of selected features, particularly any evidence for deliberate construction.
- The archaeological potential of selected features, particularly to produce evidence for date and useful palaeoenvironmental material, either as sealed deposits or within the infill of associated ditches.
- The impact which long-term tree cover and other forestry operations may have had on the archaeological survival and future potential of selected features.
- Details of feature morphology, and their relationship with other identified features and other elements of the landscape, e.g. relic trees.

Details of excavation and recording techniques will be determined as part of detailed project designs but, in the first instance, excavations should be limited to small-scale trial trenches specifically targeted at the objectives stated above. Methodologies should also be based on specifications for sample excavation for features in

woodland set out in the report on Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 7.2).

5.1.3 Palaeoenvironmental sampling

Where appropriate, palaeoenvironmental sampling should be a feature of further fieldwork on selected lidar features.

Different sampling strategies may be employed according to the perceived importance of the strata under investigation, and close attention will be given to sampling which will provide dating and environmental information. A high priority should be given to the sampling of deposits where organic materials may be preserved, and all organic samples should be subject to the appropriate specialist analysis.

Details of strategies for palaeoenvironmental sampling will be determined, before fieldwork commences, as part of detailed project designs in accordance with specifications agreed with a specialist palaeoenvironmentalist, and based on specifications for palaeoenvironmental sampling set out in the report on Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 7.8).

5.1.4 Geophysical survey

The report on Stage 2 of the Forest of Dean Archaeological Survey indicated that geophysical survey, particularly in areas of woodland, will be most effective where it forms part of an integrated approach to the investigation of sites already identified by large-scale investigation such as rapid field reconnaissance or lidar survey (Hoyle 2008a, section 7.9.2).

Although geophysical survey should be a feature of further fieldwork on lidar features, where appropriate, it should be used with caution and only where*:*

- It has the potential to answer specific questions.
- It has the potential to define details of archaeological sites which have already been identified through other types of investigation.
- There is a strong likelihood that potentially significant features are present.

Details of strategies for geophysical survey will be determined as part of detailed project designs, but will be based on specifications for geophysical survey set out in the report on Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, section 7.9).

5.1.5 Detailed topographical survey

In some instances detailed topographical survey may shed further light on features identified through lidar survey, and this technique should be part of any future validation of lidar features, where appropriate. Topographical survey will allow for detailed morphological analysis of some feature types and record relationships between earthworks and other elements of the landscape such as datable trees. Details of appropriate topographical surveys and survey methodologies will be determined as part of future project designs for field survey.

5.1.6 Surface artefact collection

Surface artefact collection can be an important tool in the further investigation of some types of potential feature in areas of cultivated land. Details of methodological approaches to this will be determined as part of future project designs for field survey, but this technique will be particularly useful for further investigation of sites which have been identified as Possible iron working sites.

5.2 Features and areas to prioritise for further survey

It will not be possible to validate all features identified by lidar, and details of further fieldwork will need to be specified as part of future project designs. Further survey should initially be targeted towards those features thought most likely to be archaeologically significant and not currently understood. The following selection criteria should be applied to prioritise features for further research*:*

5.2.1 Features in specified areas

Stage 1 of the Forest of Dean Archaeological Survey identified woodland in the Forest of Dean, the majority of which is owned and managed by the Forestry Commission (Figure 1), as the area where the archaeological resource is least understood (Hoyle 2008b, section 4.7). The Forest of Dean Archaeological Survey has already established links with the Forestry Commission, and provides them with information on archaeological sites in their ownership to facilitate better management of their archaeology. Improved understanding of the archaeological resource in Forestry Commission woodland will, therefore, have an immediate management benefit.

The purpose of the lidar survey was also to gain information about the archaeological resource in the hard rock Aggregates Resource Area of the Forest of Dean (see 4.1 above), and future research should also be aimed at those lidar features identified in this area.

5.2.2 Interpretation confidence

The 2006 lidar survey rated identified features in terms of their interpretation confidence level (Appendix B). Although there is no reason to think that those features with a Low interpretation confidence level are not archaeologically significant, it will be most efficient to target those classed as Medium or High in the first instance.

5.2.3 Feature type

Further field survey should prioritise those features which have a high potential to inform knowledge of the Forest of Dean in the Prehistoric, Romano-British and medieval periods, and particularly those which will have an impact on an understanding of changes in landuse during those periods. The following features fall into this category.

5.2.3.1 Enclosures

Although all features identified as enclosures should ideally be validated, priority should be given to the following*:*

Those enclosures which appear to be a standard type and may be medieval hunting lodges or associated with Forest administration*:*

- so5812/02
- so6205/06
- so6316/07
- so6407/01
- so6519/18
- st5499/02

The similar, but larger, enclosures in Forestry Commission land:

- so5600/08
- st5599/06

The following sub-circular enclosures whose status is currently unknown*:*

- so6012/03
- st5499/03

5.2.3.2 Possible prehistoric funerary monuments

This category should include the following small sub-circular enclosures which may indicate the sites of barrows*:*

- so5500/05
- so6816/05
- st5498/20
- st5598/02

And the small earthwork features*:*

- so5500/02
- so5500/06
- st5598/16

It should also include the three mounds associated with placenames which may suggest barrow sites*:*

- so6413/09 mound in the area of placename Legg Tump (Glos SMR 25323).
- so6707/14 mound in Barrows Field (Glos SMR 21375).
- so6708/04 mound in Bledisloe Meadow.

5.2.3.3 Linear and rectilinear earthwork systems

Although all features identified as linear and rectilinear earthwork systems should ideally be validated, as the status of none of these is clear (see 3.1.3 above) priority should be given to the following*:*

Systems which may represent the remains of post-medieval forestry activity*:*

- so6509/05
- so6013/26

Systems which may represent medieval or early post-medieval coppice enclosures*:*

- so5513/02
- so5612/02
- so6014/13
- so6205/07
- so6508/01
- so6508/03
- so6509/05
- so6510/01
- so6510/01
- so6511/08
- so6714/13
- so6716/05
- so6816/02
- so6816/03
- so6817/01
- so6818/08

Systems which may represent medieval assarting at the edges of the Royal Forest*:*

- So5907/01
- So5907/05
- So6007/01
- So6007/02
- So6105/01

- So6510/01
- So6511/08
- So6714/13
- So6716/05
- So6815/03
- So6816/02
- So6816/03
- So6817/01
- So6818/08

Systems which have no links with any possible interpretation*:*

- so5307/01
- so5406/05
- so5411/04
- so5411/06
- so5413/02
- so5413/03
- so5500/12
- so5504/03
- so5511/01
- so5511/02
- so5600/10
- so5700/08
- so5703/04
- so5705/05
- so5911/10
- so6011/09
- so6013/04
- so6013/07
- so6205/07
- so6015/05
- so6107/03
- so6115/03
- so6115/04
- so6208/05
- so6215/04
- so6304/01
- so6315/01
- so6515/01
- so6608/03
- so6608/04
- so6609/03
- so6615/02
- so6616/14
- so6709/02
- so6715/02
- so6715/03
- st5599/10
- st5698/22

5.2.3.4 Possible iron working sites

It is not possible to definitively prioritise these sites at the present time, as their form is not fully understood (see 3.1.4 above), however, the following were assigned an interpretation confidence level of Medium, and should, therefore, be prioritised for further study.

Possible iron working sites*:*

- So5714/01
- So5810/03

Possible smelting waste sites*:*

- So5710/05
- So5714/06
- So5815/02
- So5915/02
- So6017/05
- So6217/01

The production of iron and charcoal are likely to have been closely related industries (Hoyle *et al.* 2004, sections 4.2.2 and 5.2.4.2) and future investigation of possible iron working sites, particularly in areas of woodland, could also target areas where charcoal platforms are most abundant.

5.2.3.5 Possible sections of Offa's Dyke

The following possible sections of Offa's Dyke were not recorded as part of the 1995 Survey for Management (Hoyle and Vallender 1997) and should, therefore be prioritised for field validation*:*

- So5401/04
- So5404/05
- So5405/04

5.2.3.6 Possible hilltop enclosures

The lidar results have reopened debate about the status of the Madgetts Farm, Tidenham (Glos SMR 6033, 26234) as a possible prehistoric hilltop enclosure and identified a possible section of earthwork relating to a recorded prehistoric enclosure at Ashberry House, Tidenham (Glos SMR 5008) (see 3.1.2 above). Field validation of these two sites is a priority and the following lidar features should be investigated*:*

- So5400/04 – Madgetts Farm, Glos SMR 6033, 26234.
- St5496/03 – Glos SMR 5008.

5.2.3.7 Possible medieval chapel sites

The lidar survey identified two possible medieval chapel sites (see 3.1.7.1 above). These two sites should be included in future field surveys*:*

- So5500/09 – Rectangular hollow in Chapel Meadow (Glos SMR 25393).
- So6513/01 – sub-rectangular platform which may be the site of an Anchorite cell (Glos SMR 6513/01).

5.2.3.8 Scowles

The analysis of the 2006 lidar survey added a number of scowle sites which it had not been possible to record during the 2004 Scowles and Associated Iron Industry Survey (see 3.1.5 above). In addition to this, the hillshaded images also allowed the recorded sites to be mapped with greater accuracy than had been possible in 2004.

It is recommended that not only should the identified Scowle sites be visited to determine their status and form but also the existing SMR mapping of scowle sites should be revised to take account of the increased accuracy available on the lidar hillshaded images.

5.2.4 Features whose status is not clear

Although the validation of features of potential archaeological significance should be seen as a priority for further fieldwork, it would be instructive to include a representative sample of those features, particularly within woodland, whose status is not clear. It is not proposed to itemise these at the present time, but priority should be given to the investigation of the status of the following*:*

- Mound features which may be the site of trees or other forest detritus (see 3.1.19 above).
- Irregular features in areas of woodland whose status is unclear (see 4.3.2 above).

5.2.5 Features which may represent post-medieval Forestry enclosure boundaries

It is recognised that the methodology used to identify lidar detected features meant that linear earthworks which may represent the remains of enclosure of Crown woodland between the late 17th and 19th centuries were not adequately recorded (see 3.1.9 above). These boundaries are a significant landscape feature of the Forest of Dean and are indicative of significant periods of woodland management, and future projects should focus on using a combination of lidar and early map and documentary sources to comprehensively record their survival.

6 References

Adkins L & Adkins RA	1982	*The Handbook of British Archaeology* Bath
Barker PP, Mercer EJF & Brookes CF	2000	A Report on a Geophysical Survey carried out at Lancaut, Gloucestershire Unpublished Geophysical survey report for Paramount Pictures
BGS	1974	Geological Survey of Great Britain (England & Wales) Solid and Drift Sheet 233, Monmouth scale 1:50,000
BGS	2004	Digital geological data (both Solid and Drift) supplied by the British Geological survey and incorporated as layers on the Gloucestershire County Council GIS
Breeze DJ	1982	*The Northern Frontiers of Roman Britain* London
Challis K	2002	Trent Valley GeoArchaeology 2002 Component 2b: Lidar Terrain Modelling York Archaeological Trust
Cross AGR	1982	*Old industrial sites in Wyedean A Gazetteer* Wyedean
Cunliffe B	1978	*Iron Age Communities in Britain* An Account of England, Scotland and Wales from the seventh century BC until the Roman conquest Revised Edition Bradford on Avon
Cunliffe B	1995	*English Heritage Book of Iron Age Britain* London
Cunliffe B & Poole C	1991	*Danebury An Iron Age Hillfort in Hampshire* Vol 4 The excavations 1979-1988: the site CBA Research Report N0 73 London
Darvill T	1987	*Prehistoric Gloucestershire* Gloucester
Devereux BJ, Amable GS, Crow P & Cliff AD	2005	The potential of airborne lidar for detection of archaeological features under woodland canopies *Antiquity* 79, 648-660

Dreghorn W	1968	*Geology Explained in the Forest of Dean and the Wye valley* Newton Abbot
Fosbroke TD	1831	Offa's Dyke, near St Briavels, Gloucester *The Gentleman's Magazine* 101 (part 2), 583
Fowler PJ	1983	*The Farming of Prehistoric Britain* 2nd edition Cambridge
Fox Sir C	1955	*Offa's Dyke* London
Fulford MG & Allen JRL	1992	Iron-making at the Chesters Villa, Woolaston, Gloucestershire Survey and Excavation 1987-91 *Britannia*, XXIII, 159-215
GCC	2007	Ancient Semi-natural Woodland information. GIS information held by Gloucestershire County Council, Environment Department.
GCCAS	2007	Gloucestershire County Council, Archaeology Service Gloucestershire Sites and Monuments Record Database and GIS information held by Gloucestershire County Council, Environment Department Archaeology Service
Getmapping.com	2000	Colour vertical aerial photographs taken in 2000 held as a layer in the Gloucestershire County Council corporate GIS.
Gwatkin G	1997	Rectified copy of East Dean Tithe Map including Cinderford, Ruspidge, Soudley and Shakemantle (1856) at scale 1:10,560 (Map no: 108)
Grant R	1991	*The Royal Forests of England* Stroud
GCRO	1792	Map of Estates of Lord Gage Gloucestershire County Record Office Document GRO PC23
Harrison B	1995	Field Systems and Demesne Farming on the Wiltshire Estates of Saint Swithun's Priory, Winchester, I248-134O *The Agricultural History Review* 43.1, 1-18

Hart CE	1945	Metes and bounds of the Forest of Dean in *Transactions of the Bristol and Gloucestershire Archaeological Society* 66, 166-207
Hart CE	1967	*Archaeology in Dean* Gloucester
Hart CE	1971	*The Industrial History of Dean* Newton Abbot
Hart CE	1995	*The Forest of Dean, A New History 1550-1818* Stroud
Herbert NM	1972	Tidenham in R B Pugh (ed) *The Victoria History of the County of Gloucestershire* X, 50-79
Herbert NM	1996a	The Forest of Dean in N M Herbert (ed) *The Victoria History of the County of Gloucestershire* V, 285-294
Herbert NM	1996b	Lydney in N M Herbert (ed) *The Victoria History of the County of Gloucestershire* V, 46-85
Herbert NM	1996c	Bounds of the Forest in N M Herbert (ed) *The Victoria History of the County of Gloucestershire* V, 295-300
Hoyle JP	2003	Chestnuts Wood, Littledean, Gloucestershire A report on archaeological desk-based data collection and field survey GCCAS unpublished report May 2003
Hoyle JP	2006	The Forest of Dean, Gloucestershire lidar survey of selected areas of woodland and the Aggregates Resource Area: Project Design. Unpublished project design for English Heritage March 2006
Hoyle JP	2008a	The Forest of Dean, Gloucestershire Stage 2: Pilot Field Survey – Project Number 2727 Unpublished report for English Heritage November 2008

Hoyle JP	2008b	The Forest of Dean, Gloucestershire Stage 1: Desk-based data collection – Project Number 2727 Unpublished report for English Heritage November 2008
Hoyle JP & Vallender J	1997	Offa's Dyke in Gloucestershire Management Survey Unpublished management survey for English Heritage June 1997
Hoyle JP, Butler L, Tait G & Wootton D	2004	The Forest of Dean Gloucestershire The Scowles and Associated Iron Industry Survey: Project Number 3342 Circulation draft of unpublished report for English Heritage March 2004
Jurica ARJ	1996	Forest Administration in *The Victoria County History of Gloucestershire* Volume 5: The Forest of Dean 354-360
Kelly DW	1996	*Charcoal and charcoal burning* Shire Publications 159
McOmish DS & Smith NA	1996	Welshbury Hillfort: A new survey by the Royal Commission on the Historical Monuments of England *Transactions of the Bristol and Gloucestershire Archaeological Society 94, 55-64*
Nicholls HG	1860	The Ancient Iron Trade of the Forest of Dean, Gloucestershire *Archaeology Journal* 17, 227-239
OS	1880	Digital facsimile of Ordnance Survey 1st Series 25' map dated to *c.* 1880 and forming a layer within the Gloucestershire County Council Geographic Information System
OS	1900	Digital facsimile of Ordnance Survey 1st Series 25' map dated to *c.* 1900 and forming a layer within the Gloucestershire County Council Geographic Information System
OS	1925	Digital facsimile of Ordnance Survey 1st Series 25' map dated to *c.* 1925 and forming a layer within the Gloucestershire County Council Geographic Information System
Playne GF	1877	On the Ancient Camps of Gloucestershire *Proceedings of the Cotteswold Naturalist's Field Club* VI, 202-246

PRO	1608	The West Part of the Plott of the Forest of Deane in The County of Glos. Taken Anno Dni 1608 and Anno Regni Jacobi Saxtoy. Bromide copy of Public Record Document held at The Wilderness Field Studies Centre, Mitcheldean (MR 879)
Rackham O	1995	*The History of the Countryside* London 1995 Edition
Salway P	1993	*The Oxford Illustrated History of Roman Britain* Quality Paperback Direct edition Frome
Scott-Garrett C	1918-1958	Ramblings of a Dean Archaeologist Notebooks of Scott-Garrett Gloucestershire County Record Office GRO D3921/II/41
Simco A	2003	Survey of Ancient Semi-natural Woodland in England: The archaeological survey in the Northamptonshire Forest District. Paper presented to Gloucestershire County Council Archaeology Service, Woodland Archaeology seminar, Cheltenham 24th June 2003 and published on the Gloucestershire County council web site http://www.gloucestershire.gov.uk/index.cfm?articleid=7205
Small F and Stoertz C (eds) Bishop S, Carpenter E and Winton H	2006	Gloucestershire, Forest of Dean NMP National Mapping Programme Report Unpublished English Heritage Research Department Report no. 28/2006
Smith N	1999	The earthwork remains of enclosure in the New Forest *Proceedings of the Hampshire Field Club Archaeological Society* 54,1-56
Taylor I	1777	Facsimile of Isaac Taylor's 1' to 1 mile map of Gloucestershire in *A Bristol and Gloucestershire Atlas* Bristol and Gloucestershire Archaeological Society 1961
Waygood G	2003	The Dean Forest Lodges, Part I *The New Regard 18*, 5-17

Waygood G 2004 The Dean Forest Lodges, Part II
The New Regard 19, 5-26

7 Acknowledgements

The author would like to acknowledge the following for their assistance throughout the project:

- Buzz Busby of English Heritage, who acted as English Heritage monitor throughout the project.
- Ed Wyer of the Cambridge Unit for Landscape Modelling who undertook the lidar survey.
- Peter Crow of Forest Research, who provided the hillshaded images used during the survey and discussed aspects of the lidar survey with the writer.
- Tim Yarnell of the Forestry Commission, who discussed aspects of the lidar survey with the writer.
- Paul Nichols of Gloucestershire County Council Archaeology Service who assisted with the lidar transcription.
- Briege Williams and Edmund Stratford of Gloucestershire County Council Archaeology Service who assisted with the production of this report.
- Jan Wills, the Gloucestershire County Archaeologist who commented on the draft of this report.

8 Abbreviations used in the text

AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
AP	Aerial Photograph
BGS	British Geological Survey
C14	Carbon 14
cm	Centimetre
DAG	Dean Archaeology Group
DSM	Digital surface model
DTM	Digital terrain model
EH	English Heritage
EDM	Electronic Distance Measurer
EN	English Nature
GCC	Gloucestershire County Council
GCCAS	Gloucestershire County Council, Archaeology Service
GCRO	Gloucestershire County Records Office
GIS	Geographic Information System
Glos SMR	Gloucestershire County Council, Sites and Monuments Record
GSIA	Gloucestershire Society for Industrial Archaeology
GPS	Global Positioning System
GWT	Gloucestershire Wildlife Trust
Ha	Hectare
km	Kilometre
Lidar	Light Detection and Ranging
m	Metre
NMP	National Mapping Programme
OS	Ordnance Survey
PRO	Public Record Office
RCZA	Rapid Coastal Zone Assessment
SAM	Scheduled Ancient Monument

SMC	Scheduled Monument Consent
SMR	Sites and Monuments Record (Gloucestershire)
SSSI	Site of Special Scientific Interest
TBGAS	Transactions of the Bristol and Gloucestershire Archaeological Society
U3A	University of the Third Age

The Forest of Dean, Gloucestershire

Lidar survey of selected areas of woodland and the Aggregates Resource Area

Project Number 4798 MAIN

Forest of Dean Archaeological Survey Stage 3A

Project Report
Volume 2: Appendices

Jon Hoyle
Gloucestershire County Council
Environment Department
Archaeology Service

November 2008

Appendix A Specification for lidar survey and production of hillshaded images

The following specification for lidar survey are based on those stated in the report on Stage 2 of the Forest of Dean Archaeological Survey (Hoyle 2008a, Appendix M) modified as a result of by further refinement of the methodology since that report was produced (Peter Crow, Forest Research pers comm.)

A.i Timing

Leaf cover and undergrowth have an adverse effect on the results of lidar survey in woodland, and consequently lidar survey was undertaken in early new year (January to March) when undergrowth is at its lowest and deciduous trees are without leaves. In exceptional circumstances a survey of this nature could be undertaken in early April, but this is not advised as undergrowth (particularly bluebells) begin to appear at this time (Peter Crow, Forest Research pers comm.)

A.ii Survey density

The surveys were undertaken at a density of 2 points per m^2 (a 0.7m resolution).

A.iii Hillshaded lidar image resolution and illumination

The Cambridge Unit for Landscape Modelling undertook this process in conjunction with Peter Crow of Forest Research.

The hillshaded lidar image resolution is a product of the processing of the raw survey data through the application of a vegetation removal algorithm to produce a post-vegetation removal Digital Terrain Model. This raw data is converted to an image through a process known as gridding, by which the x-y co-ordinates of the raw data are applied to a grid of specified cell size (e.g. 1m, 0.5m, 0.25m). The hillshaded lidar images were 'gridded' at a 0.5m resolution or less.

The Digital Terrain Model was then illuminated using a standard GIS hillshading procedure to produce hillshaded images (Devereux *et al.* 2005). The lighting of the hillshaded lidar images was designed to maximise the identification of potential features, regardless of their orientation, and also to ensure that no features were obscured by excessive shading from adjacent hill slopes.

The process of illumination and manipulation of hillshaded images is still developing (Hoyle 2006b, 7.6.5) and it may be possible to produce composite images which combine the results of illumination from eight cardinal points. A minimum requirement would be illumination from the northwest at an elevation of 25^0.

A.iv Vegetation and ground cover

Variations in canopy and undergrowth density clearly had an impact on the efficacy of the results of the lidar survey, particularly as different algorithms were required to effectively remove different densities and types of vegetative cover.

Given the mixed nature of the woodland cover in the Forest of Dean, it was not feasible to simply target a particular woodland cover type for survey, although, wherever possible, the lidar contractor was provided with data on woodland cover to enable them to make any adjustments to their calculations as appropriate.

A.v Laser pulse footprint and scan angle

The survey was undertaken with a 530m swath width on the ground and the laser used an 80 cm diameter footprint to provide maximum opportunity for penetration to the ground surface. The scan angle transcribed an arc of 15^{O}, and there was a 65% overlap between passes.

Appendix B Specifications for analysis of the data and completion of the database: Rapid transcription Levels 1 - 3

B.i Rapid transcription: Level 1

B.i.i Use of lidar images

Transcription was based on the four layers of digital hillshaded images each illuminated from a different cardinal point.

For each grid square these images were searched in the following order*:*

1. Image lit from NW
2. Image lit from NE
3. Image lit from SW
4. Image lit from SE

The basic checking of 1km squares was undertaken at a scale no greater than 1:8,000 and the digitisation was undertaken at a scale no greater than 1:3,500.

It was noted that the direction of the light source affected whether the image accurately reflected the positive or negative elements of a landscape feature. This effect is tabulated as follows*:*

Table 4: Effects of illumination on feature recognition

Direction of Light source	Numerical value of light source	Positive features appear to be…	Negative features appear to be…
NW	315	Positive	Negative
NE	45	Positive	Negative
SW	225	Negative	Positive
SE	135	Negative	Positive

Only those images which are lit from the northwest or northeast accurately reflected the true nature of an earthwork feature and transcribers needed to be mindful of this when determining whether a feature is positive or negative

B.i.ii Cross referencing with other data sets

Unlike aerial photographic information it is not possible to easily distinguish clearly modern features, such as field or property boundaries, modern tracks or paths, from features which may be archaeologically significant simply on the basis of the lidar images. In order to determine the status of identified lidar features, it was necessary to compare them with a number of other data sets.

Lidar features were cross-referenced against the following data sets, in the following order of preference*:*

1. Modern OS information
2. Post-medieval OS information
3. Geoff Gwatkin 19th century maps
4. SMR information
5. NMP information
6. Information on forestry operations held by the Forestry Commission
7. Aerial photographic information, taken in 2000, held on the *GetMapping* layer within the Gloucestershire GIS.

The following paragraphs set out the parameters for cross checking with each data set.

B.i.iii Cross checking against OS digital Mastermap data

In order to prevent the unnecessary recording and digitisation of modern features all identified features were compared with the following Mastermap information which is part of the Gloucestershire County Council, Archview GIS.*:*

Mastermap layers
- **MASTERMAP.MMLine**
  - **DESCGROUP**
  - **Building**
  - **General feature**
  - **General surface**
  - **Inland water**
  - **Path**
  - **Rail**
  - **Road or Track**
  - **Structure**
  - **Tidal Water**

These layers were turned on during the preliminary searching and feature identification process.

All other Mastermap layers were turned off – particularly the following*:* **Mastermap layers**
- **MASTERMAP.MMLine**
  - **DESCGROUP**
  - **<all other values>**
  - **Landform**
  - **Unclassified**

The principal purpose of this was to identify features which are of clearly post-medieval or modern origin and not of potential archaeological significance. If a lidar feature corresponded to a feature recorded on any of these layers – it was ignored.

There are two exceptions to this*:*
1. Boundaries which can be interpreted as post-medieval Forestry enclosure or Forest Lodge boundaries.
2. Field boundaries whose configuration suggests that they are reflecting some earlier feature. In this case they were assigned a feature number, digitised on a separate overlay, and recorded in the following way*:*
   Interpretation - BOUNDARY
   Date of feature – POST MEDIEVAL or MODERN as appropriate
   Comments – implied earlier feature.

B.i.iv Cross checking against post-medieval maps

All identified lidar features not visible on the Mastermap layers specified in Appendix above were cross-referenced against the modern 1:10,000 OS map base, all early OS maps (1800, 1900, 1925) and the scanned Geoff Gwatkin maps.

As with the cross checking against Mastermap layers, the principal purpose of this was to identify features which are of clearly post-medieval or modern origin and not of potential archaeological significance. If a lidar feature corresponded to a feature recorded on any of these layers – it was ignored.

There are two exceptions to this*:*
1. Boundaries which can be interpreted as post-medieval Forestry enclosure or Forest Lodge boundaries.

2. Field boundaries whose configuration suggests that they are reflecting some earlier feature. In this case they were assigned a feature number, digitised on a separate overlay, and recorded in the following way*:*
   Interpretation - BOUNDARY
   Date of feature – POST MEDIEVAL or MODERN as appropriate
   Comments – implied earlier feature.

Within Forestry commission woodland early OS map data and information from Geoff Gwatkin 19th century maps (with the exception of some small quarries and post-medieval Forestry enclosure boundaries) has been put on the SMR as part of Stage 1 of the Forest of Dean Archaeological Survey, and the value of checking these sources in addition to the SMR was assessed as part of the early stages of the transcription project.

Outside of Forestry Commission Woodland, only information from Geoff Gwatkin 19th century maps has been systematically added to the SMR.

B.i.v Cross checking with the SMR and NMP data.

NB it was necessary to reload SMR data each day to ensure that it was up to date. This data was found in the following file*:*
M:\LAYER_FILES\Environment\ARCHAEOLOGY\SMR\Layer Files\SMR Group Layers\SMR Searching Group Layers\All SMR (USE FOR SEARCHING).lyr

Suitable NMP layers were added to the dedicated 2006 lidar Survey MXD file which were used as the base for all searching and transcription

All identified features which did not fall into the categories outlined in Appendix B.i.iii and Appendix B.i.iv were crosschecked against the existing SMR and NMP data. As NMP data for the Forest of Dean has been added to the SMR, the initial check only needed to be against the SMR polygons.

If the lidar feature corresponded to an existing SMR record it was not digitised. It was however assigned a features number which is cross-referenced with the SMR number. At this point the NMP records were also checked against the lidar data, although, as NMP information has been added to the SMR, the need to do this was assessed at an early stage of the project.

If the lidar feature was part of an SMR record the appropriate record from the drop-down menu in the **How SMR enhanced** field was selected. Options are *SMR mapped in wrong place, SMR mapped area too small, SMR mapped area too large, lidar adds more detail to SMR record. lidar features not visible, adds nothing to SMR, lidar features visible, adds nothing to SMR, lidar features visible, SMR area same but greater detail*

If the SMR record contained an NMP element record Yes was ticked in the column headed **NMP records** and *Less detail on NMP, More detail on NMP, NMP and lidar the same*, or *NMP and lidar show different details* were selected from the drop-down menu in the column headed **NMP different from lidar**.

In some instances lidar information indicated the site of a feature which was only suggested by the SMR record of a placename or documentary reference. In these cases the SMR record would not be on the site of the lidar feature and it was not the purpose of the transcription process to search for these connections, however, if the transcriber came across connections of this type the relevant SMR number was added to the column headed **SMR record (placename/site of) which may be indicted by lidar.**

Where there was an existing SMR record the following fields in the database needed to be filled in

- UniqueID
- Recorded on SMR
- SMR Area Number
- How SMR enhanced
- NMP
- How NMP different
- Hillshaded image prefix

NB The fields headed SMR site number and SMR survey number were only used in exceptional circumstances and were designed for a possible future use of this database which may look in greater detail at some aspects of the lidar survey. Where the lidar survey was within an area in which rapid field reconnaissance has been undertaken, lidar features were cross-referenced with the SMR area number and in the first instance recorded in the same way as other SMR sites. This was reviewed as the project progressed and lidar data was individually mapped in these areas – Rapid field reconnaissance has been undertaken in the following areas*:*

- **Welshbury Woods, Blaisdon**
- **Flaxley Woods, Blaisdon**
- **Chestnuts Wood, Littledean**
- **Great Berry Wood, West Dean**
- **Cadora Woods, Newland**

B.i.vi Cross checking with the Forestry Commission

Some identified lidar features were indicative of Forestry Commission activity (see below).

These features were assigned a feature number and recorded on the project database in the column headed **Forestry activity to check**. FORESTRY OPERATIONS was selected from the drop-down menu in the **Feature type** field , and one of the following types - *ploughing, brash, drainage* or *other* was selected from the drop-down menu in the column headed **Forestry activity type**. These areas were digitised a polygon, and details sent to Ben Lennon of the Forestry Commission who was able to confirm if in his view this was a likely interpretation. If this proved to be the result of forestry activity Yes was ticked in the column headed **Forestry Activity confirmed**. If these proved not to be Forestry activity, the record was completed and features digitised in the normal way.

Where an area of Forestry operations was identified the following fields in the database were filled in

- UniqueID
- Easting
- Northing
- How mapped
- Feature type
- Forestry activity to check
- Forestry activity type
- Forestry Commission land
- landuse

B.i.vii Digitisation of identified features

All searching and digitisation processes used the dedicated 2006 lidar survey MXD file which had been customised to include all necessary layers

There are, at present, no agreed standards at which to transcribe lidar data. Discussion with Simon Crutchley of English Heritage in relation to the transcription of lidar data for the forthcoming Severn Estuary Rapid Coastal Zone Assessment has suggested that lidar data should be transcribed to standards similar to those of the National Mapping Programme (Mullin 2005, 4.7).

Transcription took the form of direct tracing of identified features onto separate dedicated layers within the existing Gloucestershire County ArchMap GIS. Features characterised separately (see below) were digitised onto separate layers within the GIS. Transcription was not undertaken at a scale greater than 1:5000, although searching and feature identification was undertaken at a scale of *c.* 1:3500 (Appendix B.vii below).

In general mapping was schematic in accordance with the standard of English Heritage Levels 1 and 2 (Bowden 1999), although, given that the results of lidar are accurate to within *c.* 0.15m (see above) the hillshaded images themselves, which now form part of the Gloucestershire GIS, are a more accurate representation of the location and form of features than transcribed lines or points and, accordingly not all recognised features were digitised individually.

Mapping will generally consisted of the following*:*

- Linear features were mapped as lines
- Discrete features less than *c.* 10 -15m across were mapped as points.
- Discrete features greater than *c.* 10-15m across were mapped as polygons.
- Groups of similar discrete features were mapped as polygons rather than individually.
- Lines of similar discrete features were mapped a multipoints if it was not appropriate to map these as polygons.

Mapping followed the following conventions*:*

B.i.viii Features mapped individually

Identified lidar features were subdivided into positive and negative features (see 2.4.2.2 above). In practice many features had both a positive and negative element. 'Rules of thumb' were applied in determining the status of identified features and are set out with each category of feature. All features were digitised on the appropriate dedicated shapefile layers called Line, Point and Polygon which were selected dependant on the way in which the feature was digitised.

The following features were individually mapped

Positive features

Positive linear features – banks

Isolated positive linear banks were individually mapped as lines on the Line layer. *Positive linear* was selected from the drop-down menu on the **Feature type** column. Where a positive bank was the main component of a linear feature it was recorded as a *Positive linear* and other elements (e.g. *negative linear*) added to the appropriate field in the feature record.

Terraces

Isolated terraces were individually mapped as lines on the Line layer. *Terrace* was selected from the drop-down menu on the **Feature Type** column. Where a terrace was the main component of a linear feature it was mapped as a *positive linear* and other elements (e.g. *negative linear*) added to the appropriate field in the feature record.

Positive linear features – banks which can be interpreted as early post-medieval Forestry enclosure or Forest Lodge boundaries

NB Some of this category of feature are mapped on Mastermap layers, modern and post-medieval OS maps and Geoff Gwatkin 19th century maps. Identification of these features was undertaken in conjunction with Historic Landscape Characterisation data (categories C6 and Y1) which was loaded onto the dedicated project MXD file.

Where thin positive linear features could be identified as a post-medieval forestry enclosure boundary, they were individually mapped as lines on the Line Layer and the category *Forestry Enclosure* selected from the drop-down menu on the Feature Type column

Small (less than c. 10-15m across) positive discrete features – small mounds

Where these were isolated discrete features (i.e. where professional judgment concluded that they could not be reasonably be placed in the same polygon as other similar features), they were mapped on the Points layer and *Positive discrete* or *Positive platform* selected from the drop-down menu on the Feature Type column. If there were associated negative features (e.g. a ditch) this information was recorded on the feature record sheet.

Large (more than c. 10-15m across) positive discrete features – large mounds e.g. spoil heaps

These were mapped on the Polygon layer, and *Positive discrete*, or *Positive platform* selected from the drop-down menu on the Feature Type column. Where there were associated negative features (e.g. a ditch) this information was recorded on the feature record sheet. Digitisation encompassed both the positive and negative elements of the feature.

Negative features

Negative linear features – ditches

Isolated negative linear banks were individually mapped as lines on the Line layer. *Negative linear* was selected from the drop-down menu on the **Feature Type** column. Where a negative feature was the main component of a linear feature it was recorded as a Negative linear and other elements (e.g. *Positive linear*) added to the appropriate field in the feature record.

Small (less than c. 10-15m across) negative discrete features – small quarries/charcoal platforms

Where these were isolated discrete features (i.e. where professional judgment concludes that they could not reasonably be placed in the same polygon as other similar features), they were mapped on a the Points layer and *Negative discrete* or *Negative platform* selected from the drop-down menu on the Feature Type column. If there were associated positive features (e.g. a bank) this information was recorded on the feature record sheet.

Large (more than c. 10-15m across) negative discrete features – large quarries

These were mapped on the Polygon layer, and *Negative discrete*, or *Negative platform* selected from the drop-down menu on the Feature Type column. If there were associated negative features (e.g. a ditch) this information was recorded on the feature record sheet. Digitisation encompassed both the negative and negative elements of the feature. Areas of amorphous quarrying which could not be easily recognised as individual discrete features or as groups of large negative features were treated as a single large negative features.

B.i.ix Features to be mapped as groups

The following features were mapped as a single polygon encompassing a group of individual features of the same type.

Groups of small negative or positive discrete features

This consisted of two or more small discrete features. Professional judgement was applied to determine whether features could reasonably be mapped individually or not. In general features closer than 10-15m were regarded as a group and there was always a presumption in favour of grouping features of this kind – lines of individual features, for example, were digitised as a long thin polygon, and described as a single feature rather than as a line of individual features. The selection criteria set out above was used to determine whether these features were regarded as positive or negative.

Groups of large negative or positive discrete features

These consisted of two or more large discrete features. Professional judgement was applied to determine whether features could reasonably be mapped individually or not. In general features closer than 10-15m were regarded as a group and there was always be a presumption in favour of grouping features of this kind. The selection criteria set out above was used to determine whether these features were regarded as positive or negative.

Groups of Linear features

Groups of linear features, either positive, negative or terrace features, which appeared to be part of a single system were not individually mapped but were recorded as a polygon. If it was thought possible that they represented the remains of a field system FIELD SYSTEM was selected from the drop-down menu in the **Feature interpretation** column and an appropriate confidence level selected.

Features which may indicate modern forestry activity

These took two forms*:*

1. Corrugated parallel lines of varying degrees of regularity and spacing which indicated ploughing undertaken in advance of planting, or lines of forest brash laid down during felling.

Figure 58: Corrugated surface probably caused by ploughing in advance of woodland planting

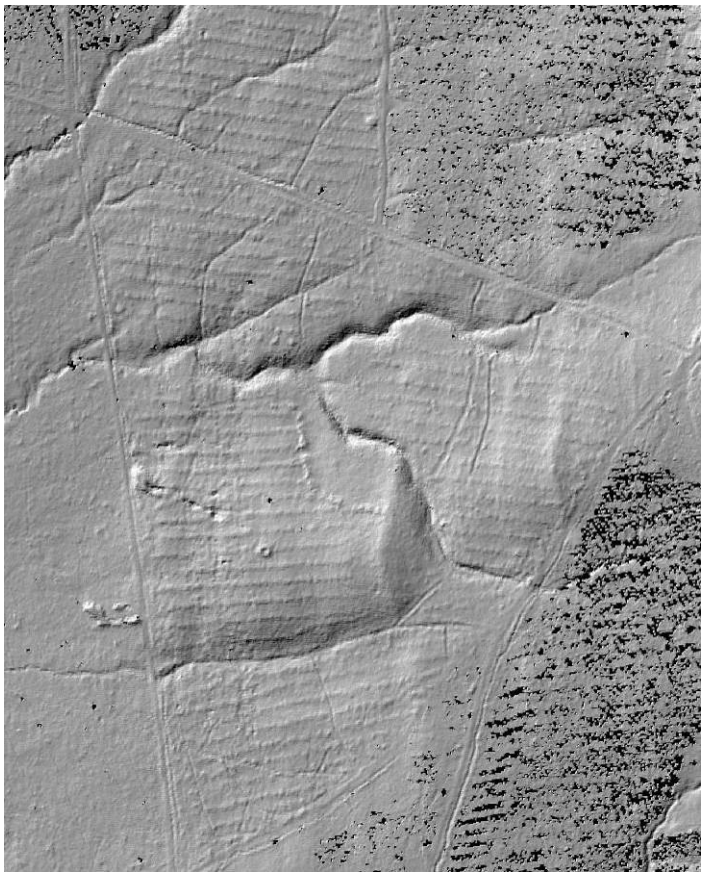

Figure 59: Corrugated lines probably caused by post-felling forestry brash

2. Small enclosures of varying degrees of regularity defined by negative linear features. These superficially appeared to be similar to prehistoric of other early field systems but could also have been indicative of Forestry Commission drainage channels. Transcribers look out for whether these appeared to link with watercourses.

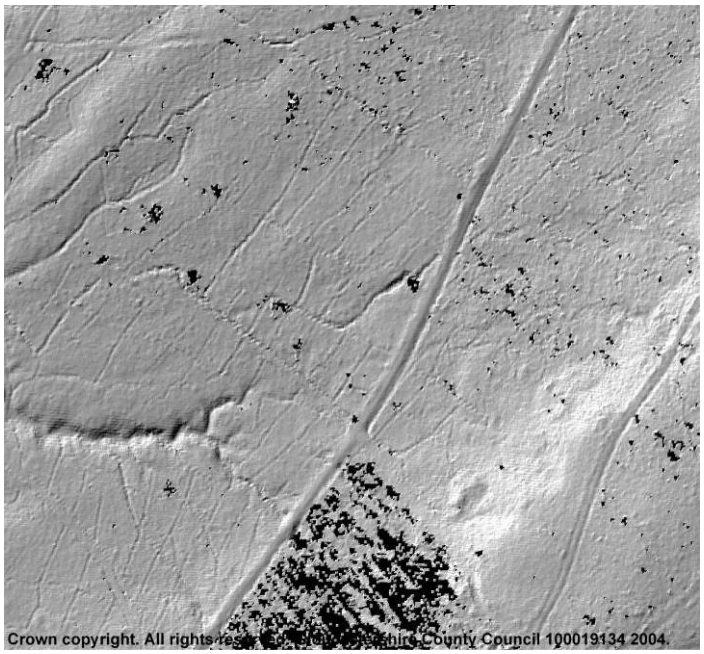

Figure 60: Linear and rectilinear features probably the result of forestry drainage operations

Features of this kind were assigned a feature number, and digitised as a polygon (Appendix B.i.vi above).

Very pixilated areas

Areas where the hillshaded images were so pixilated that it was not be possible to determine whether features were present or not were digitised as polygons on a separate dedicated layer. They were identified as a pixilated area by ticking Yes in the column headed **Pixilated area.** These areas were given a feature number but recorded as PIXILATED AREA in the **Feature interpretation** column. Not all areas of pixilation were necessarily recorded in this way and professional judgement was applied to determine whether the pixilation is significant enough to significantly obscure features. This judgement was be based on the following*:*

1. Size – although it is difficult to specify meaningful size criteria for the selection of these areas. In general areas under *c.* 1ha (100m x 100m) were not selected.
2. Adjacent features – where lidar features, or known archaeological features were recorded in the area adjacent to a pixilated area, the area was selected for recording
3. Known features - where archaeological features were already known within a pixilated area, but clearly obscured by it, this area was elected for recording.
4. Areas in which the landuse information suggested that woodland may have been recently cleared (i.e. invasive undergrowth) or young trees had been planted.

The extent to which the area is pixilated was recorded in the column headed **Pixilated area level of pixilation.**

This is a two point scale which was applied as follows*:*

light - some features may be visible through the pixilation, but likely to obscure the full range of features

heavy – impossible to determine the presence of features

Where a pixilated area was recorded the following fields in the database need to be filled in

- UniqueID
- Easting

- Northing
- How mapped
- Feature type
- Forestry activity to check
- Forestry activity type
- Forestry Commission land
- Landuse

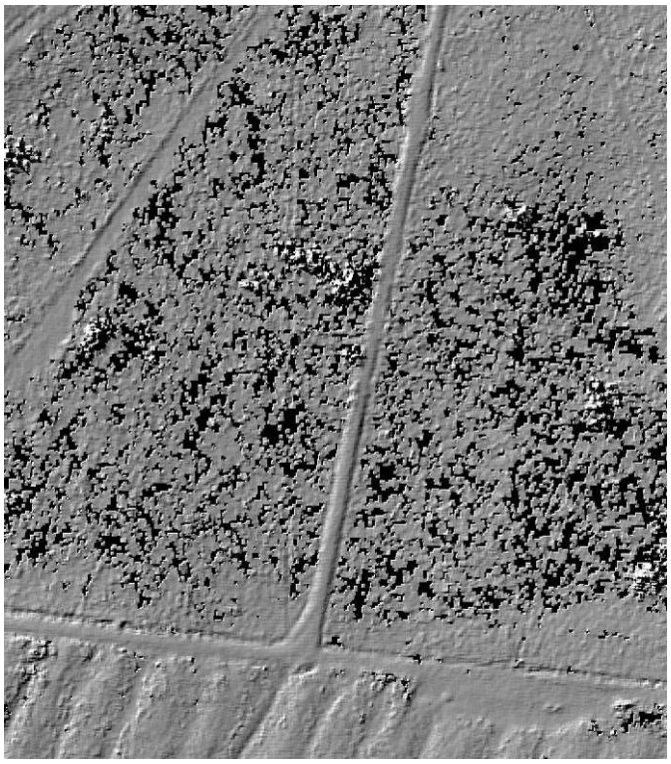

Figure 61: Pixilated area

Uneven surfaces

In some areas the hillshaded image was not pixilated (or partly pixilated) but appeared to represent a very irregular surface. These areas probably represented areas of dense undergrowth, particularly following recent felling, and were areas where lidar information may have been obscured. They were identified as an uneven surfaces by ticking Yes in the column headed **Uneven surface.** These areas were given a feature number and recorded as UNEVEN SURFACE in the **Feature interpretation** column. Not all of these areas were recorded in this way and professional judgement was applied to determine whether the area was significant enough to significantly obscure features. This judgement was be based on the following*:*

1. Size – although it was difficult to specify meaningful size criteria for the selection of these areas, areas under *c.* 1ha (100m x 100m) will be selected.
2. Adjacent features – where lidar features, or known archaeological features had been recorded in the area adjacent to an irregular area, the area was selected for recording
3. Known features - where archaeological features were already known within an irregular area, but were clearly obscured by it, this area was selected for recording.
4. Areas in which the landuse information suggested that woodland may have been recently cleared (i.e. invasive undergrowth) or young trees had been planted.

Where an Uneven surface was identified the following fields in the database were filled in

- UniqueID
- Easting
- Northing
- How mapped
- Feature type
- Forestry activity to check
- Forestry activity type
- Forestry Commission land
- landuse

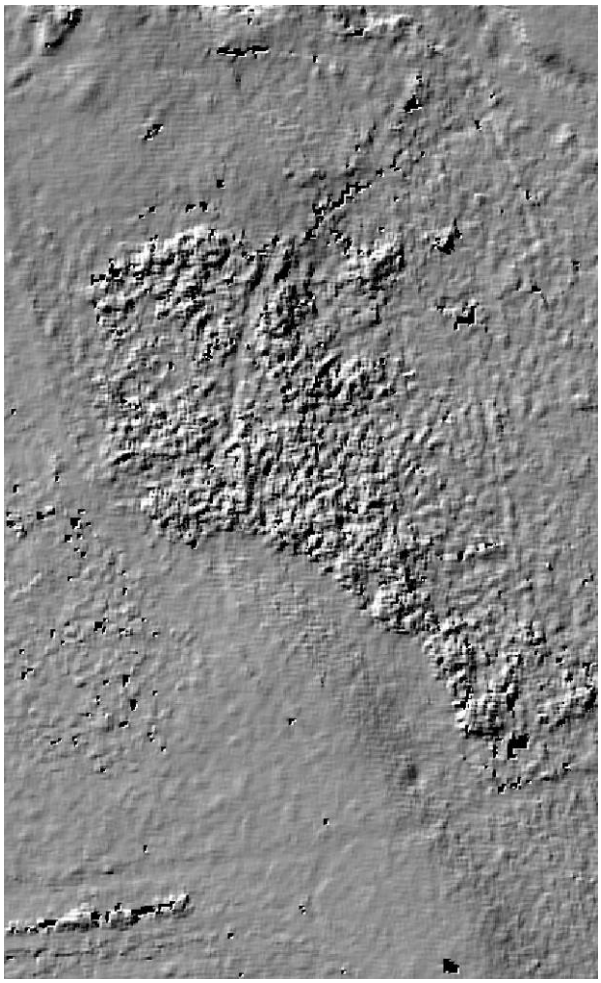

Figure 62: Uneven surface

B.i.x Features not be mapped in Level 1 transcription

The following features were not mapped or recorded as lidar features. It was necessary to determine the status of many of these by cross-referencing the lidar hillshaded images with modern or post-medieval map sources.

- Information already recorded in the Gloucestershire County SMR.
- Modern or post-medieval roads recorded on Mastermap or on modern or post-medieval maps.
- Extant watercourses and water bodies.

- Modern or post-medieval trackways recorded on Mastermap or on modern or post-medieval maps (with the exception of tramways not already on the SMR, holloways or roadways defined by parallel linear Forestry enclosure banks).
- Modern or post-medieval field boundaries recorded on Mastermap or on modern or post-medieval maps – unless their configuration suggested the site of archaeologically significant features (see 2.4.2.2 above), or related to Forestry enclosure (e.g. Forest lodge paddock or enclosure boundaries).
- Modern or post-medieval property boundaries recorded on Mastermap or on modern or post-medieval maps, unless these related either to Forestry enclosure (e.g. Forest lodge boundaries), or industrial sites not already recorded on the SMR or early map sources.

B.ii Rapid transcription: Level 2 and Revised Level 2

It was quickly noticed that full transcription as originally envisaged was too cumbersome and time consuming to be able to be undertaken within the proposed timescale of the project. Accordingly a revised methodology was proposed which concentrated on recording those features which

1. Identified new features identifiable though lidar survey
2. Allowed an assessment of the value of lidar survey in woodland to be undertaken.

Following the English heritage monitoring meeting of 31/10/2006, and the need to meet the English Heritage transcription deadline of 16/03/2007 it was decided that initial transcription need not record information which could be generated by the GIS at a later date. Accordingly Revised Level 2 transcription also excluded direct inputting of the following information*:*

- OS Grid reference.
- Forestry Commission management category.
- Hillshaded image tile name prefix.
- Landuse.

Details of the fields which were completed as part of this Revised Level 2 Transcription are set out in Appendix B.vi below, although OS grid reference and Forestry Commission management category were added to the database at the end of the transcription.

The following section identifies the revised transcription procedure. It has been set out as a complete transcription process and should be read as a stand alone document setting out Level 2 and Revised Level 2 transcription procedure.

B.ii.i Use of lidar images

It proved too time-consuming to systematically check each lidar image principally on account of the loading time on the Gloucestershire County Council GIS. Also the general value of those lit from the south, which reverse the negative and positive appearance of features (Appendix B.i.i above) proved questionable. Accordingly the following methodology was followed*:*

1. The basic image used for initial searching and transcription was that lit from the NW
2. The image lit from the NE was also consulted to check for linear features aligned along the NW/SE axis
3. Images lit from the SW and SE were not routinely consulted but were viewed where it is felt that shading obscured features visible on the other images.

The basic checking of 1km squares was undertaken at a scale no greater than 1:10,000 and the digitisation was undertaken at a scale no greater than 1:5,000.

B.ii.ii Cross referencing with other data sets

Unlike aerial photographic information it was not possible to easily distinguish clearly modern features, such as field or property boundaries, modern tracks or paths, from features which may have been archaeologically significant simply on the basis of the lidar images. In order to determine the status of identified lidar features, it was necessary to compare them with a number of other data sets.

In principal lidar features were cross-referenced against the following data sets, in the following order of preference*:*

1. Modern OS information
2. Post-medieval OS information
3. Geoff Gwatkin 19th century maps
4. SMR information
5. NMP information
6. Information on forestry operations held by the Forestry Commission

The following paragraphs set out the parameters for cross checking with each data set.

B.ii.iii Cross checking against OS digital Mastermap data

In order to prevent the unnecessary recording and digitisation of modern features all identified features were compared with the following Mastermap information which is part of the Gloucestershire County Council, Archview GIS*:*

Mastermap layers
MASTERMAP.MMLine
DESCGROUP
Building
General feature
General surface
Inland water
Path
Rail
Road or Track
Structure
Tidal Water

It was advised that these layers are turned on during the preliminary searching and feature identification process.

All other Mastermap layers were turned off – particularly the following*:* **Mastermap layers**
MASTERMAP.MMLine
DESCGROUP
<all other values>
Landform
Unclassified

The principal purpose of this was to identify features which were of clearly post-medieval or modern origin and not of potential archaeological significance. If a lidar feature corresponded to a feature recorded on any of these layers – it was ignored.

B.ii.iv Cross checking against post-medieval maps

All identified lidar features not visible on the Mastermap layers specified in Appendix B.i.iii above were cross-referenced against the modern 1:10,000 OS map base, all early OS maps (1800, 1900, 1925) and the scanned Geoff Gwatkin maps.

As with the cross checking against Mastermap layers, the principal purpose of this was to identify features which were of clearly post-medieval or modern origin and not of potential archaeological significance. If a lidar feature corresponded to a feature recorded on any of these layers – it was ignored.

B.ii.v Cross checking with the SMR and NMP data.

It was necessary to reload SMR data each day to ensure that it is up to date. This data was found in the following file*:*
M:\LAYER_FILES\Environment\ARCHAEOLOGY\SMR\Layer Files\SMR Group Layers\SMR Searching Group Layers\All SMR (USE FOR SEARCHING).lyr

Suitable NMP layers had been added to the dedicated 2006 lidar Survey MXD file which was used as the basis for all searching and transcription

All identified features which did not fall into the categories outlined in Appendix B.i.iii and Appendix B.i.iv were rapidly crosschecked against the existing SMR and NMP data. As NMP data for the Forest of Dean had been added to the SMR, the initial check only needed to be against the SMR polygons.

If the lidar feature corresponded to an existing SMR record it was only be checked to ascertain that the lidar feature was that referred to in the SMR, and was only recorded and digitised if the features visible on the lidar image were NOT the feature referred to in the SMR.

It was acceptable to use the SMR cross checking field to identify SMR numbers where similar features had been digitised in the area immediately adjacent to the existing SMR polygon – i.e. where the existing SMR polygon did not encompass all of the features of a similar type which are visible on the lidar hillshaded images, and where the recording of lidar features effectively extended the area of an SMR record.

B.ii.vi Digitisation of identified features

All searching and digitisation processes used the dedicated 2006 lidar survey MXD file which had been customised to include all necessary layers

At the time of the project there were no agreed standards for the transcription of lidar data. Discussion with Simon Crutchley of English Heritage in relation to the transcription of lidar data for the forthcoming Severn Estuary Rapid Coastal Zone Assessment suggested that lidar data was transcribed to standards similar to those of the National Mapping Programme (Mullin 2005, 4.7).

Transcription took the form of direct tracing of identified features onto separate dedicated layers within the existing Gloucestershire County ArchMap GIS. Transcription was not be undertaken at a scale greater than 1:5000 although searching and feature identification was undertaken at a scale of *c.* 1:3500 (Appendix B.vii below).

Mapping was schematic in accordance with the standard of English Heritage Levels 1 and 2 (Bowden 1999), although, given that the results of lidar are accurate to within *c.* 0.15m (see above) the hillshaded images themselves, which will form part of the Gloucestershire GIS, are a more accurate representation of the location and form of features than transcribed lines or points and, accordingly recognised features were not all individually digitised.

Mapping consisted of the following*:*

- Isolated linear features were mapped as lines
- Isolated discrete features less than *c.* 10 -15m across were mapped as points.

- Isolated discrete features greater than *c.* 10-15m across were mapped as polygons.
- Groups of similar linear and discrete features were, wherever possible mapped as polygons rather than individually.
- Dispersed groups of similar discrete features were, wherever possible mapped a multipoints where it was not appropriate to map these as polygons.

Mapping followed the following conventions*:*

B.ii.vii Features mapped as part of Level 2 and Revised Level 2 transcription

Identified lidar features were subdivided into positive and negative features (see 2.4.2.2 above). In practice many features had both a positive and negative element. 'Rules of thumb' which were applied in determining the status of identified features are set out with each category of feature. All features were digitised on the appropriate dedicated layer layers called Line, Point, Polygon and Multipoint which were selected dependant on the way in which the feature was digitised.

Wherever possible features were grouped into polygons, or multipoint features rather than individually recorded, and as a rule of thumb it was permissible to assign all similar discrete features within a single 1km square the same feature number and digitise them as a multipoint. Some isolated features were individually mapped.

Linear features

Positive linear features – banks

Positive linear banks were individually mapped as lines on the Line layer, or grouped together as polygons and mapped on the Polygon layer. *Positive linear* was selected from the drop-down menu on the **Feature type** column. Where a positive bank was the main component of a linear feature it was recorded as a *Positive linear* and other elements (e.g. *negative linear*) added to the appropriate field in the feature record.

Terraces

Terraces were either individually mapped as lines on the Line layer or grouped together as polygons and mapped on the Polygon layer. *Terrace* was selected from the drop-down menu on the **Feature Type** column. Where a terrace was the main component of a linear feature it was mapped as a *positive linear* and other elements (e.g. *negative linear*) added to the appropriate field in the feature record.

Negative linear features – ditches

Negative linear banks were either individually mapped as lines on the Line layer or grouped together as polygons and mapped on the Polygon layer. *Negative linear* was selected from the drop-down menu on the **Feature Type** column. Where a negative feature was the main component of a linear feature it was recorded as a Negative linear and other elements (e.g. *Positive linear*) added to the appropriate field in the feature record.

Groups of Linear features

Wherever possible groups of linear features, either positive, negative or terrace features, which appeared to be part of a single system were not individually mapped but recorded as a polygon. Where it was thought possible that they may represent the remains of a field system FIELD SYSTEM was selected from the drop-down menu in the **Feature interpretation** column and an appropriate confidence level selected.

Discrete features

Small (less than c. 10-15m across) positive discrete features – small mounds

Where these were isolated discrete features (i.e. where professional judgment concluded that they could not reasonably be placed in the same polygon or multipoint as other similar features), they were mapped on the Points layer, although wherever possible these were grouped together and digitised as polygons or multipoints on the Polygon of Multipoint layers. *Positive discrete* or *Positive platform* was selected from the drop-down menu on the Feature Type column. If there were associated negative features (e.g. a ditch) this information was recorded on the feature record sheet.

Small (less than c. 10-15m across) negative discrete features – evidence for surface mining, or clear charcoal burning platforms

Where these were isolated discrete features (i.e. where professional judgment concludes that they could not reasonably be placed in the same polygon as other similar features), they were mapped on the Points layer although wherever possible these were grouped together and digitised as polygons or multipoints on the Polygon of Multipoint layers. *Negative discrete* or *Negative platform* was selected from the drop-down menu on the Feature Type column. If there were associated positive features (e.g. a bank) this information was recorded on the feature record sheet.

Large (more than c. 10-15m across) positive discrete features – large mounds. Platform features

These were mapped on the Polygon layer, and *Positive discrete*, or *Positive platform* selected from the drop-down menu on the Feature Type column. If there were associated negative features (e.g. a ditch) this information was recorded on the feature record sheet. Digitisation encompassed both the positive and negative elements of the feature.

Large (more than c. 10-15m across) negative discrete features

These were mapped on the Polygon layer, and *Negative discrete*, or *Negative platform* selected from the drop-down menu on the Feature Type column. If there were associated negative features (e.g. a ditch) this information was recorded on the feature record sheet. Digitisation encompassed both the negative and negative elements of the feature. Areas of amorphous quarrying which was not easily recognised as individual discrete features or as groups of large negative features were treated as a single large negative features.

Groups of negative or positive discrete features

Wherever possible similar discrete features were grouped together as either polygons or multipoints and digitised on the appropriate layer.

B.ii.viii Other features mapped as polygons

Features which may indicate modern forestry activity

It is currently thought that these took two forms*:*

1. Corrugated parallel lines of varying degrees of regularity and spacing which can indicate ploughing undertaken in advance of planting, or lines of forest brash laid down during felling.
2. Small enclosures of varying degrees of regularity defined by negative linear features. These superficially appeared to be similar to prehistoric of other early field systems but may be indicative of Forestry Commission drainage channels.

These features were assigned a feature number and recorded on the project database in the column headed **Forestry activity to check**. FORESTRY OPERATIONS was selected from the drop-down menu in the **Feature type** field, and one of the following types - *ploughing, brash* or *other* was selected from the drop-down menu in the column headed **Forestry activity type**. These areas have been digitised as a polygon (see Figure 57 and Figure 58).

The following issues were noted during transcription

- At some scales the lidar hillshaded images appeared to give false information. This was particularly clear when viewed at 1:8000 – as sinuous 'Ridge and Furrow' appears in many areas. Transcribers needed to check images at a range of scales before features of this type were recorded.
- Areas of Forestry drainage were so common in the Forest of Dean that it was not felt necessary to record these (see Figure 59).

Where an area of Forestry operations was identified the following fields in the database were filled in

- UniqueID
- How mapped
- Feature type
- Forestry activity to check
- Forestry activity type
- Forestry Commission land

Very pixilated areas (Figure 60)

Areas where the hillshaded images were so pixilated that it was felt to not be possible to determine whether features were present or not were digitised as polygons on a separate dedicated layer. They were identified as a pixilated area by ticking Yes in the column headed **Pixilated area.** These areas were given a feature number but recorded as PIXILATED AREA in the **Feature interpretation** column. Not all areas of pixilation were necessarily recorded in this way and professional judgement was applied to determine whether the pixilation was significant enough to significantly obscure features. This judgement was based on the following*:*

1. Size – although it was difficult to specify meaningful size criteria for the selection of these areas, it was not anticipated that areas under *c.* 1ha (100m x 100m) were to be selected.
2. Adjacent features – where lidar features, or known archaeological features have been recorded in the area adjacent to a pixilated area, the area was selected for recording
3. Known features - where archaeological features are already known within a pixilated area, but are clearly obscured by it, this area was selected for recording.
4. Areas in which the landuse information suggests that woodland may have been recently cleared (i.e. invasive undergrowth) or young trees have been planted.

The extent to which the area is pixilated was recorded in the column headed **Pixilated area level of pixilation.**

This is a two-point scale which was applied as follows*:*

light - some features may be visible through the pixilation, but likely to obscure the full range of features
heavy – impossible to determine the presence of features

A rapid scanning of the lidar hillshaded images suggested that pixilation was more-or less uniform on images lit from all any direction and was a product of the raw lidar data rather than the hillshading process.

Where a pixilated area is recorded the following fields in the database were filled in

- UniqueID
- How mapped
- Feature type
- Pixilated area
- Level of pixilation
- Forestry Commission land

Uneven surfaces (Figure 61)

In some areas the hillshaded image was not pixilated (or partly pixilated) but appeared to represent a very irregular surface. These areas represented areas of dense undergrowth, particularly following recent felling, and were recorded as areas where lidar information may have been obscured. They were identified as Uneven surfaces by ticking Yes in the column headed **Uneven surface.** These areas were given a feature number but recorded as UNEVEN SURFACE in the **Feature interpretation** column. Not all of these areas were recorded in this way and professional judgement was applied to determine whether the area was significant enough to significantly obscure features. This judgement was based on the following*:*

1. Areas under *c.* 1ha (100m x 100m) were not selected for recording.
2. Adjacent features – where lidar features, or known archaeological features have been recorded in the area adjacent to an irregular area, the area was selected for recording
3. Known features - where archaeological features are already known within an irregular area, but are clearly obscured by it, this area was selected for recording.
4. Areas in which the landuse information suggests that woodland may have been recently cleared (i.e. invasive undergrowth) or young trees have been planted.

Where an Uneven surface was identified the following fields in the database were filled in

- UniqueID
- How mapped
- Feature type
- Uneven surface
- Forestry Commission land

B.ii.ix Features which were not be mapped in Level 2 and Revised Level 2 transcription

The following features were not mapped or recorded as lidar features. It was necessary to determine the status of many of these by cross-referencing the lidar hillshaded images with modern or post-medieval map sources.

- Information already recorded in the Gloucestershire County SMR.
- Modern or post-medieval roads recorded on Mastermap or on modern or post-medieval maps.
- Extant watercourses and water bodies.
- Modern or post-medieval trackways recorded on Mastermap or on modern or post-medieval maps (with the exception of tramways not already on the SMR, holloways or roadways defined by parallel linear Forestry enclosure banks).
- Modern or post-medieval field boundaries recorded on Mastermap or on modern or post-medieval maps – unless their configuration indicated the site of archaeologically significant features (see 2.4.2.2 above), or they related to Forestry enclosure (e.g. Forest lodge paddock or enclosure boundaries).
- Modern or post-medieval property boundaries recorded on Mastermap or on modern or post-medieval maps, unless these related either to Forestry enclosure (e.g. Forest lodge boundaries), or industrial sites not already recorded on the SMR or early map sources.
- Holloways which conform to modern communication routes or related to known industrial sites and obvious modern tracks through woodland even where not

recorded on post-medieval map sources. Professional judgement was applied to determine whether features of this nature may have archaeological significance.

- Areas which can be interpreted as Forestry drainage patterns
- Banks of material adjacent to modern trackways through woodland
- Small negative or positive discrete features which were not clearly identified as charcoal platforms or small quarries and may just have been irregularities in undergrowth. It was noted that some of these may represent archaeologically significant features, but fieldwork would be required to validate this and their identification is beyond the scope of this project.
- Large positive features which can be interpreted as mining spoil heaps
- Features, such as golf course earthworks, which are known to be modern whether on the SMR or not.
- Features within Urban areas. It was noted that archaeologically significant features may be visible in these areas, but their identification is beyond the scope of this project.

B.iii Level 3 Transcription

A further level of transcription was undertaken to speed up the transcription process to meet the requirements of the Aggregates Levy Sustainability Fund deadline of mid March 2007. This level of transcription was only applied to areas not owned and managed by the Forestry Commission. Details of the 1km squares in which this level of transcription were undertaken can be found in Appendix G.

Level 3 transcription was identical to the Revised Level 2 transcription with the exception that the following were not recorded*:*

- Areas of quarrying thought likely to be post-medieval in date
- Holloways or other communication routes thought likely to be post-medieval in date

B.iv Confidence levels for Levels 1, 2, Revised Level 2 and 3 transcription

A confidence level was applied to the interpretation of identified lidar features. It was recognised that these were necessarily subjective but could act as a useful device for determining which features were prioritised for further fieldwork.

A simple three-point scale was used*:*

high - this was only used where a range of indicators and professional judgement suggested that the interpretation was fairly certain.
medium - this was only used where a range of indicators and professional judgement suggested that the interpretation was likely, but needed to be tested in the field. This was mainly used as a way of differentiating levels of likelihood in features which were interpreted as possible field systems.
low - this was used where a range of indicators and professional judgement suggest that the interpretation is considered to be the most likely of a range of possibilities. This was the normal default position for the interpretation of lidar features.

B.v The database

The transcribed mapped data was supported by a database. The database is in Access format and the database fields and the information recorded in them are as follows*:*

Table 5: Database fields for Level 1 transcription

Heading	Instructions
UniqueID	One feature number was used for each digitised point polygon or line regardless of the actual number of lidar features this represents. The unique feature number was a combination of the OS area letters (lower case), the 1km grid square numbers (four digits), and the numbering system for each 1km square separated from the OS information by a forward slash. Typical unique identifying number is as follows - so6311/01, so6311/02, so6311/03
Recorded on SMR	This is a yes/no toggle field to record whether a lidar feature was already recorded on the SMR. The SMR layer was added daily to ensure it is up to date. The layer added to is *M:\LAYER_FILES\Environment\ARCHAEOLOGY\SMR\Layer Files\SMR Group Layers\SMR Searching Group Layers\All SMR (USE FOR SEARCHING).lyr*
SMR area number	Where features are already recorded on the SMR this field was used to record the existing SMR Area number. 0 was assigned if the field is not on the SMR
SMR site number	This field was only used in exceptional circumstances and is designed for a possible future use of this database which may look in greater detail at some aspects of the lidar survey. This field was left as 0 in most circumstances
SMR survey number	This field was only used in exceptional circumstances and is designed for a possible future use of this database which may look in greater detail at some aspects of the lidar survey. This field was left as 0 in most circumstances
How SMR enhanced 1 & 2	Select from the drop-down menu – There are two columns available to cover two eventualities. It was left blank if the feature is not on the SMR.
NMP records	This is a yes/no toggle field to record if the SMR record contains NMP data to assess this you will need to check the NMP layers contained on the dedicated lidar mxd.
NMP different from lidar	Select one of the following from the drop-down menu - *Less detail on NMP, More detail on NMP, NMP and lidar the same*, or *NMP and lidar show different details.* Select *not applicable* if the SMR record does not contain NMP information or the feature record does not relate to an existing SMR record.
SMR record (placename/site of) which may be indicted by lidar	This is a field to indicate if a recorded lidar feature is likely to be an SMR record known only as a placename – If this is the case the relevant SMR number was recorded in the field. If it is not the case this field was left as 0 and it is not anticipated that this field will be filled in except in exceptional circumstances
Easting of lidar feature	This was six figure as per the GIS e.g. 371073. For long linear features this represented a centre point – NGR of end points can be recorded in the **Feature description** column
Northing of lidar feature	This was six figure as per the GIS e.g. 219418 For long linear features this represented a centre point – NGR of end points can be recorded in the **Feature description** column

Heading	Instructions
Hillshaded image tile name prefix	This field was used to record the prefix of the lidar hillshaded image tile on which the feature is recorded. The relevant prefix was selected from the drop-down menu. If the feature is on two tiles, the principal tile was selected.
Individual feature/Group features	This is to indicate whether the feature number referred to a single lidar feature, e.g. a single linear of discrete feature or whether it represented a polygon encompassing a group of similar features. Select either *individual* or *group* from the drop-down menu – *individual* indicates a single feature, *group* indicates a polygon encompassing a group of features. If the feature is neither of these – e.g. it is a pixilated area or an area of possible recent forestry activity, this field was left blank
Feature type	This field was used to record the physical form of the feature as it appeared on the hillshaded image – a suitable category was selected from the drop-down menu
Secondary feature	This is a yes/no toggle to indicate if there are secondary features which are part of the lidar features being recorded
Secondary feature type - linear/discrete	This field was used to record the physical form of any secondary features as they appeared on the hillshaded image – a suitable category was selected from the drop-down menu. This field was left blank if not applicable
Feature description	This is an optional free text field to describe the lidar features - be brief and only use if this data can enhance that already recorded
How mapped -	This field is used to indicate how the feature has been digitised - Select *line, point, polygon* or *not mapped* from the drop-down menu
Interpretation	This field was used where lidar features can be interpreted. Interpretations should conform to SMR specific site types, and this was selected from the drop-down menu. NB this list is an abbreviated version of the SMR list – if an appropriate site type is not available contact JPH who will add it to the list.
Date of feature	This field was used where lidar features could be dated. Dates conformed to SMR GENERAL PERIOD dates, and dates were only assigned where this was reasonable in terms of the information we already know about the Forest of Dean. It was limited to features which we already knew existed in the form in which they are portrayed by lidar. If in any doubt as to date select UNKNOWN
Comments	This field was used to record any other information the transcribers felt was relevant but which was not covered by other fields. It is not anticipated that this field will be used often, and # was assigned to this field if there are no additional comments
Feature interpretation confidence level	This field was used to record the level of confidence which could be applied to the interpretation of a lidar feature. One of the two confidence levels (*high* and *low*) was selected from the drop-down menu. If the feature was not interpreted, *not applicable* was selected. Criteria for applying these can be found in the Methodology for lidar Transcription
Pixilated area	This is a yes/no toggle used to identify polygons which have been digitised around an area which appears sufficiently pixilated on the hillshaded images to obscure lidar features
Pixilated area – Level of pixilation	This field was used to grade the level of pixilation and is an attempt to determine the extent to which this had obscured lidar features. One of two levels (*light* and *heavy*) was selected from the drop-down menu. Criteria for this selection are set out in Methodology for the transcription of lidar data.

Heading	Instructions
Uneven surface	This is a yes/no toggle used to identify polygons which have been digitised around an area which appeared on the hillshaded images as very irregular surfaces and which may have represented undergrowth which obscures lidar features - the polygon should only encompass areas which appear on all four hillshaded images, and the smallest area was digitised.
Forestry activity to check	This is a yes/no toggle used to indicate if a feature is thought likely to have represented modern forestry activity and which has been sent to the Forestry Commission for confirmation. The criteria for selecting these areas is set out in the Methodology for the transcription of lidar data
Forestry activity type	Select *ploughing, brash* or *other* from the pick list. This field was left blank if the feature is not an area of Forestry activity.
Forestry activity confirmed	This is a yes/no toggle used to indicate if a feature has been confirmed as modern forestry activity. If the answer is no, the features was recorded and mapped in the normal way.
Forestry commission land	This is a yes/no toggle used to record whether identified features are on land owned and managed by the Forestry Commission. Information on FC landownership is available from the following GIS layer *M:\gtait\External data\Forestry Commission\components (jan 2004).lyr*
Forestry Commission management category	Details for the criteria to be used for assigning Forestry Commission management categories can be found in the following documents *S:\SMR\FOD\Forestry Commission\Management Categories\Forest Enterprise final management categories v6.doc and S:\SMR\FOD\Forestry Commission\Management Categories\FC management category site type .doc* Select the appropriate management category from the drop-down menu – leave blank if the feature is not in Forestry Commission land
Non-Forestry commission woodland	This is a yes/no toggle used to record whether identified features are within areas of woodland other than that owned and managed by the Forestry Commission. Information on the extent of woodland in the county is available from the following GIS layer *M:\gtait\External data\Forest Research\NIoWT\Gloucs_woodland.lyr*
Landuse	Information on woodland landuse is available on the following GIS layer *M:\gtait\External data\Forest Research\NIoWT\Gloucs_woodland.lyr*. This layer has been added to the lidar MXD. At this stage all woodland was recorded as WOODLAND - UNDETERMINED If the feature is not within woodland select UNKNOWN

B.vi Database fields completed as part of the Revised Level 2 and Level transcription procedure

Only the following fields were filled in for the very rapid transcription (Revised Level 2 and Level 3).

Table 6: Database fields for Levels 2 and 3 transcription

Heading	Instructions
UniqueID	One feature number was used for each digitised point polygon or line regardless of the actual number of lidar features this represents. The unique feature number was a combination of the OS area letters (lower case), the 1km grid square numbers (four digits), and the numbering system for each 1km square separated from the OS information by a forward slash. Typical unique identifying number will be as follows - so6311/01, so6311/02, so6311/03
Individual feature/Group features	This is to indicate whether the feature number referred to a single lidar feature, e.g. a single linear of discrete feature or whether it represented a polygon encompassing a group of similar features. Select either *individual* or *group* from the drop-down menu – *individual* indicates a single feature, *group* indicates a polygon or multipoint encompassing a group of features. If the feature was neither of these – e.g. it was a pixilated area or an area of possible recent forestry activity, this field was left blank
Feature type	This field was used to record the physical form of the feature as it appeared on the hillshaded image – a suitable category was selected from the drop-down menu
Secondary feature	This is a yes/no toggle used to indicate if there are secondary features which are part of the lidar features being recorded
Secondary feature type - linear/discrete	This field was used to record the physical form of any secondary features as they appeared on the hillshaded image – a suitable category was selected from the drop-down menu. This field was left blank if not applicable
Feature description	This is an optional free text field to describe the lidar features - be brief and only use if this data can enhance that already recorded
How mapped -	This field was used to indicate how the feature has been digitised - Select *line, point, polygon* or *not mapped* from the drop-down menu
Interpretation	This field was used where lidar features can be interpreted. Interpretations conformed to SMR specific site types, and this was selected from the drop-down menu. NB this list is an abbreviated version of the SMR list – if an appropriate site type is not available contact JPH who will add it to the list.
Date of feature	This field was used where lidar features could be dated. Dates conformed to SMR GENERAL PERIOD dates, and dates were only assigned where this was reasonable in terms of the information we already knew about the Forest of Dean. It was limited to features which we already knew existed in the form in which they were portrayed by lidar. If in any doubt as to date select UNKNOWN
Comments	This field was used to record any other information the transcribers felt was relevant but which was not covered by other fields. It is not anticipated that this field will be used often, and # was assigned to this field if there are no additional comments

Heading	Instructions
Feature interpretation confidence level	This field was used to record the level of confidence which was applied to the interpretation of a lidar feature. One of the two confidence levels (*high* and *low*) was selected from the drop-down menu. If the feature had not been interpreted, *not applicable* was selected. Criteria for applying these can be found in the Methodology for lidar Transcription
Pixilated area	This is a yes/no toggle used to identify polygons which have been digitised around an area which appeared sufficiently pixilated on the hillshaded images to obscure lidar features
Pixilated area – Level of pixilation	This field was used to grade the level of pixilation and was an attempt to determine the extent to which this had obscured lidar features. One of two levels (*light* and *heavy*) was selected from the drop-down menu. Criteria for this selection are set out in Methodology for the transcription of lidar data.
Uneven surface	This is a yes/no toggle used to identify polygons which had been digitised around an area which appeared on the hillshaded images as very irregular surfaces and which may have represented undergrowth which obscured lidar features - the polygon only encompassed areas which appeared on all four hillshaded images, and the smallest area was digitised.
Forestry activity to check	This is a yes/no toggle used to indicate if a feature is likely to represent modern forestry activity and which has been sent to the Forestry Commission for confirmation. The criteria for selecting these areas is set out in the Methodology for the transcription of lidar data
Forestry activity type	Select *ploughing, brash* or *other* from the pick list. This field was left blank if the feature was not an area of Forestry activity.
Forestry commission land	This is a yes/no toggle used to record whether identified features were on land owned and managed by the Forestry Commission. Information on FC landownership is available from the following GIS layer *M:\gtait\External data\Forestry Commission\components (jan 2004).lyr*

B.vii Process of transcription and digitising

Transcription and digitising followed these procedures*:*

1. 1km square at viewed scale of *c.* 1:8000 (a whole square fitted on the screen at this scale)
2. Check lidar layer lit from NW for whole of 1km square – scroll around square at scale of *c.* 1:3,500.
3. Identified features, checked against existing data sets, digitised and added to database.
4. At an appropriate scale checked the 1km square and in particular digitised features against hillshaded images lit from other cardinal points. The purpose of this was*:*
   - Checked if the features already digitised needed amending – rapid checking of this suggested that this was unlikely to be the case, but if so simply re-digitised the features in question.
   - Checked for features which were in shade on the images lit from the NW.
   - Checked for features which were not visible on images lit from the NW

   NB in Level 2 and Revised Level 2 recording it was only necessary to routinely re-check the 1km square against images lit from the NE, although images lit from other cardinal points could be checked where areas are in shade
2. Recorded any features identified as part of this process in line with normal procedure.

B.viii Database

The database is found in *S:\SMR\FOD\Stage 3\Lidar survey\2006 SURVEY DATA\DATABASE*

Each transcriber filled in their own version of this in *S:\SMR\FOD\Stage 3\Lidar survey\2006 SURVEY DATA\DATABASE\DATABASE TRANSCRIBERS COPIES*

At key points (either weekly, by Hillshaded image tile or by 5 or 10km OS grid square) copies of the completed data from all transcribers were collated into a master database in *S:\SMR\FOD\Stage 3\Lidar survey\2006 SURVEY DATA\DATABASE\DATABASE COLLATION MASTER.* The original transcriber's copies were retained and each transcriber began work on a new blank copy of the database.

A blank copy of the database is found in *S:\SMR\FOD\Stage 3\Lidar survey\2006 SURVEY DATA\DATABASE\DATABASE MASTER TO LEAVE BLANK* This was not be overwritten and was used if additional blank versions were required.

Appendix C Specifications for analysis of the data and completion of the database: More detailed transcription Level 4

C.i Introduction

The following document sets out the methodological approach to the transcription of lidar data to Level 4, a level equivalent to full NMP transcription. The purpose of this level of transcription was to compare timescale and results with the more normal Levels 2 and 3 transcription which were undertaken over the whole of the survey area, and to allow for comparison between this information and existing data already recorded on the Gloucestershire Sites and Monuments record, and by the Forest of Dean National Mapping Programme.

C.ii Area covered by this level of survey

Level 4 transcription was undertaken in the following kilometre squares*:*
SO6013 – this square was chosen as it is an area of woodland with known archaeological features
SO5400 – this square was chose as it combines both woodland and unwooded areas, and is an area known to contain archaeological features
SO5505 – This square was chosen as a typical grid square within the lidar survey area.
SO6210 - This square was chosen as a typical grid square within the lidar survey area.

C.iii Recording of features identified during the lidar survey

Features identified as part of this phase of the lidar survey were digitised on dedicated shapefiles within the Gloucestershire GIS. Each digitised feature was identified by a unique number in the following way.

- SO6013 – Numbers 1 - 49
- SO5400 – Numbers 50 – 99
- SO5505 – Numbers 100– 149
- SO6210 – Numbers 150 – 199

Basic information about each feature will be added to a dedicated Access database (Appendix C.xiv below).

C.iv Cross referencing with other data sets

Unlike Levels 1, 2 and 3 transcription information transcribed at Level 4 transcription was not compared with existing data sets with the exception of the modern OS information contained within the Mastermap layers on the Gloucestershire GIS to ensure that clearly modern features, such as field or property boundaries, modern tracks or paths, could be distinguished from features which may be archaeologically significant.

The following Mastermap layers were selected for this comparison

Mastermap layers
MASTERMAP.MMLine
DESCGROUP
Building
General feature
General surface
Inland water
Path

Rail
Road or Track
Structure
Tidal Water

C.v Digitisation of identified features

All searching and digitisation processes used the dedicated *Lidar survey 2007 – Level 4 master* MXD file which was customised to include all necessary layers

At the time of transcription there were no agreed standards at which to transcribe lidar data. Discussion with Simon Crutchley of English Heritage in relation to the transcription of lidar data for the Severn Estuary Rapid Coastal Zone Assessment suggested that lidar data should be transcribed to standards similar to those of the National Mapping Programme (Mullin 2005, 4.7).

Transcription took the form of direct tracing of identified features onto separate dedicated layers within the existing Gloucestershire County ArchMap GIS. Transcription was undertaken at a scale of between *c.*1:2500 – 1:3500.

C.vi Features mapped individually

All identified lidar features were digitised as polygons. These were subdivided into positive and negative features and digitised on the appropriate dedicated shapefile layers called PosPolygon and NegPolygon.

The following features were individually mapped

Positive features

Positive linear features

All positive linear banks were individually mapped on the PosPolygon shapefile, and *Positive linear* selected from the drop-down menu on the Feature Type column.

Terraces

All terraces were individually mapped on the PosPolygon shapefile (the polygon will encompass the top and bottom of the terrace) and *Terrace* selected from the drop-down menu on the Feature Type column.

Positive discrete features

These were mapped on the PosPolygon shapefile, and *Positive discrete*, or *Positive platform* selected from the drop-down menu on the Feature Type column.

Negative features

Negative linear features

All negative linear ditches and hollows were individually mapped on the NegPolygon shapefile, and *Negative linear* selected from the drop-down menu on the Feature Type column.

Negative discrete features

These were mapped on the NegPolygon shapefile, and *Negative discrete*, or *Negative platform* selected from the drop-down menu on the Feature Type column.

C.vii Features to be recorded as groups

Although all identified features were mapped individually, groups of similar features were not individually tagged, but were assigned a single feature number within the database. Where this was the case, a single polygon encompassing a group of individual features of the same type was digitised on the MonumentPolygon shapefile and this was tagged with a single database number and description.

The following feature types fell within this category.

Groups of small negative or positive discrete features

This consisted of two or more small discrete features. Professional judgement was applied to determine whether features could reasonably be mapped individually or not. In general features closer than 10-15m were regarded as a group and there was always be a presumption in favour of grouping features of this kind.

Groups of large negative or positive discrete features

This consisted of two or more large discrete features. Professional judgement was applied to determine whether features could reasonably be mapped individually or not. In general features closer than 10-15m were regarded as a group and there was always be a presumption in favour of grouping features of this kind.

Post-medieval or military sites

Sites representing post-medieval or military sites, although consisting of features of dissimilar type were encompassed within a single polygon and assigned a single number on the database.

C.viii Ridge and Furrow

Areas of ridge and furrow were mapped as a polygon encompassing the whole group of visible features. These were digitised on the MonumentPolygon shapefile and an arrow was digitised to indicate the direction of the ridge and furrow. Details of the ridge and furrow earthworks were not individually mapped.

C.ix Features which may indicate modern forestry activity

Features of this kind were assigned a feature number, and digitised as a polygon on the AreaPolygon shapefile. The database was completed in the same way as for Levels 2 and 3 transcription.

C.x Very pixilated areas

Features of this kind were assigned a feature number, and digitised as a polygon on the AreaPolygon shapefile. The database was completed in the same way as for Levels 2 and 3 transcription.

C.xi Uneven surfaces

Features of this kind were assigned a feature number, and digitised as a polygon on the AreaPolygon shapefile. The database was completed in the same way as for Levels 2 and 3 transcription.

C.xii Features which should not be mapped

The following features were not be mapped or recorded as lidar features as part of Level 4 transcription.

- Modern or post-medieval roads recorded on Mastermap.
- Extant watercourses and water bodies.
- Modern or post-medieval trackways recorded on Mastermap.
- Modern or post-medieval field boundaries recorded on Mastermap
- Modern or post-medieval property boundaries recorded on Mastermap.

C.xiii Confidence levels

This was be applied in the same way as for Levels 2 and 3 transcription.

C.xiv The database

Only the following database fields were be filled in for level 4 transcription

Heading	Instructions
UniqueID	One unique number was assigned for each digitised feature The unique feature number were applied as follows SO6013 – Numbers 1 – 49 SO5400 – Numbers 50 – 99 SO5505 – Numbers 100– 149 SO6210 – Numbers 150 – 199
Feature type	This field is used to record the physical form of the feature as it appears on the hillshaded image – a suitable category was selected from the drop-down menu
Secondary feature	This is a yes/no toggle to indicate if there are secondary features which are part of the lidar features being recorded
Feature description	This is an optional free text field to describe the lidar features - be brief and only use if this data can enhance that already recorded
Interpretation	This field is used where lidar features can be interpreted. Interpretations should conform to SMR specific site types, and this was selected from the drop-down menu. NB this list is an abbreviated version of the SMR list – if an appropriate site type is not available contact JPH who will add it to the list. An interpretation should only be added where this is reasonable in terms of the information we already know about the Forest of Dean, and is likely to be limited to features which we already know exist in the form in which they are portrayed by lidar. If in any doubt as to interpretation select FEATURE from the drop down menu
Date of feature	This field is used where lidar features can be dated. Dates should conform to SMR GENERAL PERIOD dates, and dates should only be assigned where this is reasonable in terms of the information we already know about the Forest of Dean. It is likely to be limited to features which we already know exist in the form in which they are portrayed by lidar. If in any doubt as to date select UNKNOWN
Comments	This field was used to record any other information the transcribers feels is relevant but which is not covered by other fields. It is not anticipated that this field will be used often, and # was assigned to this field if there are no additional comments

Heading	Instructions
Feature interpretation confidence level	This field is used to record the level of confidence which can be applied to the interpretation of a lidar feature. One of the two confidence levels (*high, medium* and *low*) was selected from the drop-down menu. If the feature has not been interpreted, *not applicable* was selected. Criteria for applying these can be found in the Methodology for lidar Transcription
Pixilated area	This is a yes/no toggle to identify polygons which have been digitised around an area which appears sufficiently pixilated on the hillshaded images to obscure lidar features - the polygon should only encompass areas which are pixilated on all four hillshaded images - i.e. the smallest pixilated area was digitised.
Pixilated area – Level of pixilation	This field is used to grade the level of pixilation and is an attempt to determine the extent to which this will have obscured lidar features. One of two levels (*light* and *heavy*) was selected from the drop-down menu. Criteria for this selection are set out in Methodology for the transcription of lidar data.
Uneven surface	This is a yes/no toggle to identify polygons which have been digitised around an area which appear on the hillshaded images as very irregular surfaces and which may represent undergrowth which obscures lidar features - the polygon should only encompass areas which appear on all four hillshaded images, and the smallest area was digitised.
Forestry activity to check	This is a yes/no toggle to indicate if a feature is thought likely to represent modern forestry activity and which has been sent to the Forestry Commission for confirmation. The criteria for selecting these areas is set out in the Methodology for the transcription of lidar data
Forestry activity type	Select *ploughing, brash* or *other* from the pick list. This field was left blank if the feature is not an area of Forestry activity.
Forestry commission land	This is a yes/no toggle to record whether identified features are on land owned and managed by the Forestry Commission. Information on FC landownership is available from the following GIS layer *M:\gtait\External data\Forestry Commission\components (jan 2004).lyr*

Appendix D Specifications for access to the data

D.i Copyright and licensing

The 2006 lidar survey was jointly funded by the Forestry Commission, Gloucestershire County Council, the Forest of Dean District Council and English Heritage. The Cambridge University Unit for Landscape Modelling conducted the survey at a research cost, reflecting the nature of this study and their intention to further refine and develop methodology with funding partners and publish jointly authored papers accordingly (Peter Crow, Forest research pers. comm.).

All hillshaded imagery should be labelled:
© Forestry Commission and Gloucestershire County Council
or
© Forest Research and Gloucestershire County Council

D.ii Copyright and intellectual property rights

The Cambridge University Unit for Landscape Modelling retain copyright of the unprocessed survey data, and the digital surface and terrain models produced as a result of their processing of this data, and retain control over the release of this data to third parties, any such release also being subject to the agreement of funding partners. This data is available to all contributors for unlimited use within each organisation, but they have no automatic right to transfer or sell the data to a third party without prior consultation with the Cambridge University Unit for Landscape Modelling and other funding partners. When the data or any resulting images are published, its source (The Cambridge University Unit for Landscape Modelling) and all other funding partners must be acknowledged.

Copyright of all written, graphic, photographic, and digital records produced as a result of analysis of the hillshaded images undertaken by Gloucestershire County Council Archaeology Service is held by Gloucestershire County Council Archaeology Service.

Ordnance Survey data copyright is covered by the Local Authority Service Level Agreement and other material will be fully acknowledged and relevant copyright conditions observed.

D.iii Lidar data

The 3-dimensional point-cloud data was processed by the Cambridge University for Landscape Modelling to produce a digital surface model. The application of a vegetation removal algorithm to the point-cloud data produced a digital terrain model. This data was transferred to Forest Research are its principal curator within the funding partners.

Forest Research, in conjunction with the Cambridge University Unit for Landscape Modelling produced hill-shaded images (utilising standard GIS hill-shading software) for use in the analysis of this data. Copies of these were transferred to Gloucestershire County Council Archaeology Service and are held as part of the county SMR (see 2.3 above).

D.iv Dissemination of data to funding partners

All data will be available to all funding partners following the signing off of this report.

The format in which digital data is transferred will be agreed with project partners, although it would be preferable for this data to be transferred to funding partners as a single block of information rather than on a piecemeal basis.

Hillshaded images will also be produced in hard copy if requested, although, as with the digital data, these should be requested as a single block of information rather than on a piecemeal basis.

Requests for data transfer to funding organisation who are part of the Forestry Commission should be directed to Forest Research, whilst requests for data from English Heritage, Gloucestershire County Council and the Forest of Dean District council should be directed through Gloucestershire County Council Archaeology Service.

Appendix E Significance categories of identified features

The following table indicates the potential archaeological significance assigned to categories of features identified in the 2006 lidar survey (see 4.2.2 above).

Interpretation	Potential archaeological significance
Building Platform	Significant
Charcoal Platform	Less significant
Coal Mining Site	Less significant
Deserted Village	Significant
Earthwork	Significant
Earthwork System	Very significant
Embankment	Significant
Enclosure	Very significant
Extractive Pit	Significant
Feature	Less significant
Forestry Enclosure Boundary	Less significant
Forestry Operations	Not archaeological
Garden Feature	Not archaeological
Hill Top Enclosure	Very significant
Holloway	Significant
Possible iron working Site	Very significant
Linear Earthwork	Significant
Mine	Less significant
Mine Shaft	Less significant
Motte And Bailey	Very significant
Mound (interpretation confidence Low)	Less significant
Mound (interpretation confidence Medium or High)	Significant
Natural Feature	Less significant
Park Pale	Very significant
Path	Less significant
Pixilated Area	Not archaeological
Pond	Less significant
Quarry	Less significant
Railway Cutting	Significant
Ridge And Furrow	Less significant
Road	Significant
Scowle	Very significant
Possible slag heap	Very significant
Spoil Heap	Less significant
Structure	Less significant
Trackway	Less significant
Tramroad	Significant
Tramroad Embankment	Significant
Uneven Surface	Not archaeological
Water Channel	Less significant

Appendix F All recorded features

Unique ID	Feature description	Interpretation
so5200/01	Curved bank	Linear Earthwork
so5203/01	linear bank	Linear Earthwork
so5203/02	linear ditch, possible boundary or drainage ditch	Linear Earthwork
so5300/01	Area of irregular hollows.	Quarry
so5300/02	Thin linear bank	Linear Earthwork
so5300/03	Vague terrace	Trackway
so5300/04	Mound	Mound
so5300/05	Hollow	Quarry
so5300/06	Numerous hollows and mounds	Quarry
so5301/01	linear bank	Linear Earthwork
so5301/02	Linear ditch, boundary or possible drainage channel	Linear Earthwork
so5301/03	Short linear ditch, possible boundary or drainage ditch	Linear Earthwork
so5302/01	Short ditch sections within a small field	Feature
so5302/02	Ditch forming a probable boundary	Linear Earthwork
so5302/03	Curvilinear bank, possible boundary	Linear Earthwork
so5302/04	Terracing	Feature
so5303/01	Linear ditch, possible boundary or drainage ditch	Linear Earthwork
so5303/02	2 small terraces, possibly modern in date	Linear Earthwork
so5303/03	Terrace, probable modern date	Feature
so5303/04	2 possible linear banks, which may form the north-east and north-west sides of an enclosure	Enclosure
so5303/05	Terracing of probable modern date	Feature
so5303/06	Linear bank and possible ridge and furrow	Linear Earthwork
so5303/07	Linear bank	Linear Earthwork
so5304/01	Linear ditch, possible drainage ditch	Feature
so5304/02	Linear tracks, joining existing tracks, and probably modern in date	Trackway
so5305/01	Slight linear bank	Linear Earthwork
so5305/02	Short stretch of bank	Linear Earthwork
so5307/01	Linear banks forming part of an earthwork system	Earthwork System
so5307/02	Linear bank	Linear Earthwork
so5307/03	Linear track terraced into valley side	Trackway
so5307/04	Linear track, terraced into valley side	Trackway
so5308/01		Pixilated Area
so5308/02	Linear banks, forming probable field boundaries	Linear Earthwork
so5308/03	Linear bank, possible boundary	Linear Earthwork
so5308/04	Linear bank, continuation, to the north and south, of an existing boundary shown on the modern OS	Linear Earthwork
so5309/01	Rectangular mounds, probable pillow mounds	Mound
so5309/02	Linear bank	Linear Earthwork
so5309/03	Linear banks and ditches, continuation of a feature recorded on NMP, and mapped as SMR 26279, field system	Earthwork System
so5309/04	Linear bank	Linear Earthwork
so5309/05	Pits and mounds, continuation of SMR 26252	Extractive Pit
so5310/01	Linear banks and possible terracing	Earthwork System
so5310/02	3 probable charcoal platforms	Charcoal Burning Platform
so5310/03		Feature

Unique ID	Feature description	Interpretation
so5311/01		Pixilated Area
so5311/02		Pixilated Area
so5311/03		Charcoal Burning Platform
so5311/04		Linear Earthwork
so5311/05	Possible boundary bank, but may be natural feature	Linear Earthwork
so5311/06	Possible linear bank	Linear Earthwork
so5311/07		Natural Feature
so5312/01	Broad straight bank	Linear Earthwork
so5312/02		Charcoal Burning Platform
so5312/03	Area of small mounds	Mound
so5312/04	Small circular mound	Mound
so5400/01	Rectilinear bank	Linear Earthwork
so5400/02	Linear bank	Linear Earthwork
so5400/03		Charcoal Burning Platform
so5400/04	Complex group of liner, rectilinear, and curved banks and terraces.	Hill Top Enclosure
so5401/01	Rectilinear bank	Linear Earthwork
so5401/02	Very vague stretch of linear bank	Linear Earthwork
so5401/03		Pixilated Area
so5401/04	Very vague linear bank	Earthwork
so5401/05	Ovoid hollow	Quarry
so5401/06		Pixilated Area
so5401/07	Short stretch of terrace	Motte And Bailey
so5401/08	Three small discrete mounds	Mound
so5401/09		Quarry
so5401/10		Quarry
so5402/01	at least 2 parallel banks, possibly natural	Natural Feature
so5402/02	Probable modern platform or terrace	Feature
so5402/03	Linear sections of ditch, some of which are parallel to, and possibly contemporary with, Offa's Dyke	Earthwork
so5402/04	Linear bank	Linear Earthwork
so5402/05	2 ditches, possible boundaries	Linear Earthwork
so5402/06	Rectangular platform	Feature
so5402/07	Mound	Mound
so5403/01	Linear ditch forming a boundary, contemporary with boundaries shown on early OS maps	Linear Earthwork
so5403/02	2 parallel ditches	Linear Earthwork
so5403/03	Short bank, possible boundary, but may be landscaping associated with buildings to south	Linear Earthwork
so5403/04		Pixilated Area
so5403/05	Possible slight bank, aligned with modern field boundaries	Linear Earthwork
so5403/06	2 parallel possible banks, on same alignment as earthwork system	Linear Earthwork
so5403/07	Short section of ditch, possible boundary or track	Linear Earthwork
so5404/01		Pixilated Area
so5404/02		Pixilated Area
so5404/03	2 short linear banks	Linear Earthwork
so5404/04	Group of probable charcoal platforms	Charcoal Burning Platform
so5404/05	Irregular positive features, including a possible bank along the line of Offa's Dyke, which is not digitised on the SMR	Earthwork

Unique ID	Feature description	Interpretation
so5404/06		Pixilated Area
so5405/01		Pixilated Area
so5405/02		Pixilated Area
so5405/03		Pixilated Area
so5405/04	Short section of bank, which appears to join, and to be part of, Offa's Dyke, SMR 511	Earthwork
so5405/05	Short linear bank adjacent to River Wye and possibly associated with the river	Linear Earthwork
so5405/06	Rectangular platform *c.*23m by 16m	Building Platform
so5405/07	Curvilinear banks, possibly alongside a modern track and associated with adjacent house	Linear Earthwork
so5405/08	Linear ditch, probable track	Trackway
so5405/09	Linear bank	Linear Earthwork
so5405/10	Short linear bank	Linear Earthwork
so5406/01	Linear bank	Linear Earthwork
so5406/02	Linear bank	Linear Earthwork
so5406/03	Roughly north to south linear track, with other smaller associated tracks	Trackway
so5406/04	Possible platform or low mound	Feature
so5406/05	Linear banks forming part of an earthwork system	Earthwork System
so5406/06	Group of probable charcoal platforms	Charcoal Burning Platform
so5406/07	3 short sections of ditch, possible track or holloway	Holloway
so5406/08	Probable tracks, or old water course	Trackway
so5407/01	Linear striations, probable natural water channels	Water Channel
so5407/02	Linear bank	Linear Earthwork
so5407/03	Linear ditch	Linear Earthwork
so5407/04	Linear ditch, possible track way	Trackway
so5407/05	Linear and rectilinear banks forming part of an earthwork system	Linear Earthwork
so5408/01	Linear bank, probable continuation of SMR26263	Linear Earthwork
so5408/02	Mounds and elongated mounds, forming uneven ground	Spoil Heap
so5408/03	Mounds and hollows forming uneven ground	Mound
so5409/01	Linear bank and possible discrete mounds	Linear Earthwork
so5409/02	E-W linear bank and possible mounds	Linear Earthwork
so5409/03	Linear banks forming boundaries	Earthwork System
so5409/04	Possible low mound and adjacent depression	Mound
so5409/05	Linear banks forming an earthwork system	Earthwork System
so5409/06	Linear bank	Linear Earthwork
so5409/07	Mounds and hollows forming uneven ground, possible spoil heaps?	Spoil Heap
so5409/08	Pit, possible quarry	Quarry
so5409/09	Linear bank, continuation of field system, SMR 26279	Linear Earthwork
so5409/10	Pits and mounds forming uneven surface, probable quarrying	Quarry
so5410/01	Linear banks	Earthwork System
so5410/02	Possible bank	Linear Earthwork
so5410/03	Curved possible boundary bank, or track	Linear Earthwork
so5410/04	Slight hollows and mounds forming uneven ground, possible scowles	Quarry
so5410/05	2 mounds	Mound
so5411/01	Rectilinear pattern of banks	Earthwork System
so5411/02	Linear bank, continuation of an existing boundary	Linear Earthwork
so5411/03	Linear bank	Linear Earthwork
so5411/04	Pattern of rectilinear banks	Earthwork System

Unique ID	Feature description	Interpretation
so5411/05	Parallel linears, possible boundaries, or tracks	Linear Earthwork
so5411/06	Slight banks running *c.* E-W	Earthwork System
so5411/07		Pixilated Area
so5411/08	Short bank	Linear Earthwork
so5411/09		Pixilated Area
so5411/10	Zigzag linear bank	Linear Earthwork
so5411/11		Charcoal Burning Platform
so5411/12		Charcoal Burning Platform
so5411/13		Pixilated Area
so5412/01	Slight NE-SW linears and field boundaries (some of which appear on early OS)	Earthwork System
so5412/02	Banks forming small enclosures	Linear Earthwork
so5412/03	Triangular platform	Building Platform
so5412/04		Extractive Pit
so5412/05	Slightly curving bank	Feature
so5412/06		Uneven Surface
so5412/07	Short bank and ditch	Linear Earthwork
so5412/08	Hollow, possible quarry or surface activity	Quarry
so5413/01		Pixilated Area
so5413/02	Rectilinear system of banks	Earthwork System
so5413/03	Linear banks	Earthwork System
so5413/04		Pixilated Area
so5413/05	Two parallel banks	Linear Earthwork
so5413/06		Linear Earthwork
so5500/01	Linear terrace	Linear Earthwork
so5500/02	Circular mound	Mound
so5500/03		Quarry
so5500/04		Uneven Surface
so5500/05	Roughly circular enclosure defined by a bank. A small mound is in the centre of this feature. The enclosure is *c.* 25m in diameter.	Enclosure
so5500/06	This seems to be a small sub-circular depression (*c.* 12m across), but may be defined by low banks	Earthwork
so5500/07	Dispersed group of circular hollows	Natural Feature
so5500/08	Ovoid hollow	Quarry
so5500/09	Rectilinear platform	Building Platform
so5500/10		Pixilated Area
so5500/11		Pixilated Area
so5500/12	Large area of linear, rectilinear and curved banks and terraces.	Earthwork System
so5500/13	Irregular hollows	Quarry
so5500/14	Group of irregular and apparently shallow hollows	Quarry
so5500/15		Forestry Operations
so5500/16	Group of small dispersed, irregular mounds	Mound
so5500/17	Irregular thin bank	Linear Earthwork
so5500/18	Thin bank	Linear Earthwork
so5500/19	Thin linear bank	Linear Earthwork
so5501/01		Quarry
so5501/02		Quarry
so5501/03	Group of hollows	Quarry
so5501/04	Linear bank	Linear Earthwork

Unique ID	Feature description	Interpretation
so5501/05		Quarry
so5501/06	Hollow with some associated mounds	Quarry
so5501/07	Straight bank	Linear Earthwork
so5501/08	Group of irregular hollows	Quarry
so5501/09	Rectangular hollow with associated mound	Quarry
so5501/10	Irregular area of hollows and mounds	Quarry
so5502/01	Linear banks, possibly forming field boundaries	Linear Earthwork
so5502/02	Bank and ditch, possible old water course or track	Trackway
so5502/03	Short linear ditch, probably contemporary with existing boundaries	Linear Earthwork
so5502/04	Short linear bank	Linear Earthwork
so5503/01	Linear banks and ditches forming part of an earthwork system, some of which is shown on the tithe map	Earthwork System
so5503/02	Probable ridge and furrow	Ridge And Furrow
so5503/03	3 small rectangular mounds	Mound
so5503/04	Linear bank, probably associated with features mapped as SMR26171, and probably part of a medieval or post-medieval field system	Linear Earthwork
so5503/05	Slight linear bank	Linear Earthwork
so5503/06	Slight linear bank	Linear Earthwork
so5504/01		Pixilated Area
so5504/02		Pixilated Area
so5504/03	Probable linear banks forming field boundaries, or possibly tracks	Earthwork System
so5504/04	Linear bank	Linear Earthwork
so5504/05	Track	Trackway
so5504/06	Mound, possible spoil heap, or similarly derived industrial feature	Spoil Heap
so5505/01	Linear and rectilinear banks forming an earthwork system, most of which is shown on the tithe map	Earthwork System
so5505/02	Linear bank	Linear Earthwork
so5505/03		Extractive Pit
so5505/04	Group of oval shaped pits, possible quarries	Quarry
so5505/05	Linear bank	Linear Earthwork
so5505/06	Slight depressions, probable charcoal platform or extractive pits	Charcoal Burning Platform
so5505/07	Small section of possible ditch	Feature
so5505/08	Possible terracing, but may be natural feature	Feature
so5505/09	Linear banks forming field boundaries, with ditches to the south west forming possible boundaries or tracks	Earthwork System
so5505/10		Pixilated Area
so5505/11		Uneven Surface
so5506/01	Linear field boundaries	Earthwork System
so5506/02	Linear banks forming field boundaries	Earthwork System
so5506/03	Circular bank	Enclosure
so5506/04	Parallel banks	Linear Earthwork
so5506/05	Probable slight banks and ditches, forming field boundaries or tracks	Linear Earthwork
so5506/06	Possible circular banked feature	Feature
so5507/01	Slight linear bank, possible boundary or path	Linear Earthwork
so5507/02	Possible platform or low mound	Feature
so5507/03	Linear ditch, possible continuation of boundary	Linear Earthwork
so5508/01	Linear bank	Linear Earthwork
so5508/02	Slight circular mound	Mound
so5508/03	Linear bank and in some places ditch, probable boundary, but joins a track (shown on early OS) at south end, and may be a track	Linear Earthwork

Unique ID	Feature description	Interpretation
so5508/04	Linear bank follows line of existing bank	Linear Earthwork
so5508/05	Linear banks and ditches forming the continuation of an earthwork system recorded on NMP (SMR26295)	Earthwork System
so5508/06	Linear bank	Linear Earthwork
so5508/07	Linear bank, possible boundary	Linear Earthwork
so5508/08	Linear banks and ditches, possibly associated with field system SMR 26295	Earthwork System
so5509/01		Pixilated Area
so5509/02	Linear and rectilinear banks forming field boundaries	Earthwork System
so5509/03	Linear bank	Linear Earthwork
so5509/04		Linear Earthwork
so5509/05	Possible rectangular banked enclosure	Enclosure
so5509/06	Linear bank	Linear Earthwork
so5509/07	Mounds and hollows, probable spoil heaps and pits resulting from extraction	Spoil Heap
so5509/08	E-W linear bank with possible n-s return	Linear Earthwork
so5510/01	Series of linear banks and ditches forming boundaries and paths. These features are within SMR area 20487, medieval settlement at High Meadow Farm, and are additions to the features mapped on NMP	Earthwork System
so5510/02	Circular hollow	Extractive Pit
so5510/03	Linear bank	Linear Earthwork
so5510/04	Linear banks	Earthwork System
so5511/01	Rectilinear banks and a track	Earthwork System
so5511/02	Linear and rectilinear banks	Earthwork System
so5511/03	L-shaped bank	Linear Earthwork
so5511/04		Pixilated Area
so5511/05	Linear bank	Linear Earthwork
so5512/01	Parallel linear banks, with additional bank at a right angle	Linear Earthwork
so5512/02	Linear bank	Linear Earthwork
so5512/03	Very slight hollows and possible bank	Scowle
so5512/04	Slight banks	Scowle
so5512/05		Scowle
so5512/06		Earthwork System
so5513/01		Charcoal Burning Platform
so5513/02		Earthwork System
so5513/03	Linear hollows, forming a track or possible holloway	Holloway
so5513/04	Linear banks	Linear Earthwork
so5513/05		Pixilated Area
so5513/06		Pixilated Area
so5513/07		Forestry Operations
so5513/08	Low bank	Linear Earthwork
so5513/09	5 parallel slight banks	Linear Earthwork
so5513/10		Charcoal Burning Platform
so5513/11	Hollow	Quarry
so5514/01		Charcoal Burning Platform
so5514/02	Possible quarries or surface extraction	Extractive Pit
so5514/03		Pixilated Area
so5514/04	S-shaped track	Trackway
so5514/05		Extractive Pit
so5515/01		Forestry Operations

Unique ID	Feature description	Interpretation
so5600/01		Pixilated Area
so5600/02		Pixilated Area
so5600/03		Uneven Surface
so5600/04		Forestry Operations
so5600/05	Broad straight bank	Linear Earthwork
so5600/06	Rectilinear bank	Linear Earthwork
so5600/07	Linear bank	Linear Earthwork
so5600/08	Vague sub-rectangular enclosure defined by banks, which appears to contain at least one internal division and possibly a smaller sub-circular enclosure defined by a ditch.	Enclosure
so5600/09		Pixilated Area
so5600/10	Vague group of linear hollows and banks	Earthwork System
so5600/11		Charcoal Burning Platform
so5600/12	Area of small rectilinear enclosures which appear to contain some small mounds	Earthwork System
so5600/13	Linear terrace	Linear Earthwork
so5600/14	Group of small irregular hollows	Quarry
so5600/15	Vague pennanular ditch	Enclosure
so5600/16	Short stretch of linear bank	Linear Earthwork
so5600/17	Group of very irregular features	Feature
so5600/18	Small group of hollows	Extractive Pit
so5601/01	Slight linear ditch, possible boundary or track	Linear Earthwork
so5601/02	Linear ditch	Linear Earthwork
so5601/03	Probable banks possibly forming a rectangular enclosure	Enclosure
so5601/04	Linear bank, within SMR26232, med/post med field system	Linear Earthwork
so5602/01	Linear bank forming part of a probable field system	Linear Earthwork
so5602/02	Possible linear bank	Linear Earthwork
so5602/03	Linear and rectilinear banks making up part of a probable field system, possible continuation of so5702/01	Earthwork System
so5602/04	Bank and ditch. Ditch is alongside, and possibly contemporary with, a road	Linear Earthwork
so5603/01	Group of linear banks, running north-east to south-west	Linear Earthwork
so5603/02	Linear and rectilinear banks possibly forming part of an earthwork system	Earthwork System
so5603/03	Linear bank, parallel to existing boundaries	Linear Earthwork
so5604/01	Probable ridge and furrow within linear field banks which appear on early maps. Also a probable quarry pit in the south west corner of the field	Ridge And Furrow
so5604/02		Uneven Surface
so5604/03	Linear banks, forming field boundaries and possible ridge and furrow	Earthwork System
so5604/04	Linear bank	Linear Earthwork
so5605/01		Pixilated Area
so5605/02	Linear group of probable pits	Extractive Pit
so5605/03	Possible modern foundation trenches	Feature
so5605/04	Slight hollows within field, with more obvious pit like features in wooded area. Surface extraction/quarrying	Extractive Pit
so5605/05	Slight mound	Mound
so5605/06	Rectangular hollow	Feature
so5605/07	Linear bank	Linear Earthwork
so5606/01	Rectilinear field boundaries and mound	Earthwork System
so5606/02	Slight linear bank with possible continuation to south west	Linear Earthwork
so5606/03		Mound
so5607/01	Linear bank	Linear Earthwork

Unique ID	Feature description	Interpretation
so5607/02	Linear ditch	Linear Earthwork
so5607/03	Slight linear banks forming part of an earthwork system, within and probably associated with, registered park and garden SMR13698	Earthwork System
so5607/04	Square platform feature possible building platform, but may be landscaping from construction of modern building to the east	Building Platform
so5607/05	Slight rectangular depression, associated with farm buildings to south	Feature
so5607/06	Slight depressions, possible scowles	Quarry
so5608/01	Linear field boundaries, forming part of an earthwork system, and respecting existing boundaries	Earthwork System
so5608/02	2 mounds	Mound
so5608/03	Curvilinear ditch, probable track way	Trackway
so5608/04	Short section of bank	Linear Earthwork
so5608/05	Possible linear bank	Linear Earthwork
so5608/06	Possible linear banks and irregular discrete features	Feature
so5608/07	Linear bank, continuation of a boundary shown on maps	Linear Earthwork
so5609/01		Pixilated Area
so5609/02	Possible circular enclosure, but may be the result of extractive pit features	Feature
so5609/03		Pixilated Area
so5609/04	Linear banks possible part of an earthwork system	Earthwork System
so5609/05	2 parallel banks	Linear Earthwork
so5609/06	Linear bank	Linear Earthwork
so5609/07	Slight hollows and mounds forming uneven ground	Feature
so5609/08		Linear Earthwork
so5609/09		Linear Earthwork
so5610/01	Possible small banked enclosure	Enclosure
so5610/02	Linear banks forming a possible field system and a possible building platform to the south west	Earthwork System
so5610/03	Slight hollows, possible in filled scowles	Scowle
so5610/04	Slight bank	Linear Earthwork
so5610/05	Linear bank	Linear Earthwork
so5611/01	Slight depressions	Quarry
so5611/02	Pit like features, possible surface workings	Extractive Pit
so5611/03	Rectilinear ditches	Feature
so5611/04	Short stretch of double curving bank along the side of a probable track	Trackway
so5611/05		Linear Earthwork
so5611/06		Linear Earthwork
so5611/07	Rectilinear field boundaries	Linear Earthwork
so5611/08		Pixilated Area
so5612/01		Pixilated Area
so5612/02	Rectilinear banks	Earthwork System
so5612/03		Forestry Operations
so5612/04		Pixilated Area
so5612/05	4 tear drop shaped mounds, possible spoil heaps	Spoil Heap
so5612/06	Linear banks and short sections of linear gully	Linear Earthwork
so5612/07	Surface workings	Extractive Pit
so5612/08	Possible irregular mound and linear bank	Feature
so5612/09	Possible irregular mound and linear bank	Feature
so5612/10		Pixilated Area
so5612/11	Linear banks, mounds and uneven ground	Linear Earthwork
so5612/12		Pixilated Area

Unique ID	Feature description	Interpretation
so5612/13	Possible rectangular enclosure	Enclosure
so5613/01		Pixilated Area
so5613/02	Possible quarry pit	Quarry
so5613/03		Linear Earthwork
so5613/04		Charcoal Burning Platform
so5613/05	Bank and possible spoil heaps	Feature
so5613/06		Uneven Surface
so5613/07		Forestry Operations
so5613/08	Possible bell pits	Extractive Pit
so5614/01	Slight hollows, possible infilled pits	Feature
so5614/02	Slight hollows, possible infilled pits	Feature
so5614/03		Building Platform
so5614/04		Feature
so5614/05	2 pits	Extractive Pit
so5614/06	4 probable charcoal platforms	Charcoal Burning Platform
so5614/07	Pit and possible linear features	Feature
so5614/08	4 linear possible ditches	Linear Earthwork
so5614/09		Garden Feature
so5615/01		Pixilated Area
so5615/02	Slight rectilinear banks	Linear Earthwork
so5615/03	Slight hollows and uneven ground, possible infilled features	Feature
so5615/04		Trackway
so5615/05	Irregular curvilinear hollows, possible infilled scowles?	Scowle
so5615/06		Spoil Heap
so5616/01		Linear Earthwork
so5616/02	Curved bank	Linear Earthwork
so5616/03		Pixilated Area
so5700/01	Elongated hollow with some associated mounds	Quarry
so5700/02		Uneven Surface
so5700/03	Rectangular platform measuring *c.* 80m x 30m	Building Platform
so5700/04	Short stretch of linear bank	Linear Earthwork
so5700/05	Group of closely spaced parallel banks	Ridge And Furrow
so5700/06	Very irregular short stretch of bank	Linear Earthwork
so5700/07		Uneven Surface
so5700/08	Large area of linear and rectilinear banks and terraces.	Earthwork System
so5700/09		Charcoal Burning Platform
so5700/10	Irregular hollow	Quarry
so5700/11	Irregular hollow	Quarry
so5700/12		Uneven Surface
so5701/01	Linear bank	Linear Earthwork
so5701/02	Linear bank	Linear Earthwork
so5702/01	Linear banks forming part of an earthwork system	Earthwork System
so5702/02	Linear banks forming part of an earthwork system	Earthwork System
so5702/03	3 pits	Extractive Pit
so5702/04	4 pits possible quarries	Quarry
so5702/05	Linear banks at right angles	Linear Earthwork

Unique ID	Feature description	Interpretation
so5702/06	Short linear bank	Linear Earthwork
so5702/07	Short linear bank	Linear Earthwork
so5702/08	Linear bank	Linear Earthwork
so5702/09	2 parallel sections of linear bank which are part of an earthwork system	Earthwork System
so5702/10	Linear bank	Linear Earthwork
so5703/01	Rectilinear banks forming boundaries	Earthwork System
so5703/02	Linear bank	Linear Earthwork
so5703/03	2 ovoid hollows	Quarry
so5703/04	Linear banks	Earthwork System
so5703/05	2 probable intercutting quarry pits	Quarry
so5703/06	Slight mounds forming an uneven surface	Feature
so5703/07		Feature
so5703/08	Linear bank, continuation of feature recorded on NMP, SMR26173	Linear Earthwork
so5703/09	2 circular hollow features, probable quarry pits	Quarry
so5704/01	Linear bank	Linear Earthwork
so5704/02	Slight linear bank, parallel to a bank to the north which is on early maps	Linear Earthwork
so5704/03	Linear ditch, along line of a boundary and a stream, and probably forming part of a water course	Water Channel
so5704/04	Slight mound	Mound
so5705/01	Hollows forming uneven ground, probable extractive pits	Extractive Pit
so5705/02	3 small pits	Extractive Pit
so5705/03	Hollows forming uneven ground, probable extractive pits	Extractive Pit
so5705/04	Hollows forming uneven ground, probable extractive pits	Extractive Pit
so5705/05	Group of pits	Extractive Pit
so5705/06	Pit, probable quarry	Quarry
so5705/07	Linear bank	Linear Earthwork
so5705/08		Extractive Pit
so5705/09	Circular hollow, probable infilled pit	Extractive Pit
so5706/01	Two probable quarry pits	Quarry
so5706/02		Uneven Surface
so5706/03		Uneven Surface
so5706/04	Hollows forming uneven ground, probable quarry pits	Quarry
so5706/05	Series of short linear striations, possibly connected to mineral extraction	Feature
so5706/06	Possible infilled pit	Extractive Pit
so5707/01	Short stretch of linear bank	Linear Earthwork
so5707/02	Slight linear bank	Linear Earthwork
so5707/03	Slight bank	Linear Earthwork
so5707/04	Linear bank parallel to an existing boundary	Linear Earthwork
so5708/01		Linear Earthwork
so5708/02	Slight linear bank	Linear Earthwork
so5708/03	Rectangular platform	Building Platform
so5708/04	Slight depressions	Scowle
so5708/05	Slight depressions	Scowle
so5708/06	Shallow depressions	Scowle
so5708/07	Slight linear depression	Scowle
so5708/08	Slight depressions	Scowle
so5708/09	Trackway or field boundary	Trackway
so5709/01		Pixilated Area

Unique ID	Feature description	Interpretation
so5709/02	Linear bank, continuation of existing boundary, but not shown on early maps	Linear Earthwork
so5709/03	2 slight hollows	Extractive Pit
so5709/04		Pixilated Area
so5709/05	3 possible small rectangular mounds	Mound
so5709/06	Linear bank and ditch, possibly associated with SMR5609, Brecknocks Court moated site, to the south-west	Linear Earthwork
so5709/07	Slight hollows, forming uneven ground, possible quarry pits	Quarry
so5710/01	Broad linear bank	Linear Earthwork
so5710/02	Short, broad linear bank	Linear Earthwork
so5710/03	Area of irregular hollows	Scowle
so5710/04	Vague area of irregular hollows	Scowle
so5710/05	Amorphous, sub-circular mounds	Possible slag heap
so5710/06	Small circular mound	Possible slag heap
so5710/07	Circular mound with hollow in the middle	Mine Shaft
so5711/01	Vague sub-circular mound	Possible slag heap
so5712/01		Building Platform
so5713/01	Very regular grid of liner banks	Earthwork System
so5713/02	Group of amorphous hollows	Possible iron working Site
so5713/03	Vague area of amorphous mounds and hollows	Possible iron working Site
so5713/04	Area of amorphous mounds and hollows	Possible iron working Site
so5713/05		Ridge And Furrow
so5713/06	Amorphous mound and hollows	Possible iron working Site
so5713/07	Amorphous mounds and hollows	Possible iron working Site
so5713/08	Vague amorphous mounds	Possible iron working Site
so5714/01	Irregular area of amorphous mounds and hollows	Possible iron working Site
so5714/02	Area of regular banks and hollows	Possible iron working Site
so5714/03	Area of rectilinear platforms and linear gullies	Possible iron working Site
so5714/04	Vague broad linear and rectilinear banks	Earthwork System
so5714/05	Small irregular mounds	Possible slag heap
so5714/06	Large sub-circular hollow - apparently filled with water	Pond
so5714/07	Vague small amorphous mounds	Possible iron working Site
so5715/01	Very slight banks forming rectilinear boundaries within existing field and parallel with existing boundaries	Linear Earthwork
so5715/02	Curved bank and possible ditch	Tramroad Embankment
so5715/03		Linear Earthwork
so5715/04		Feature
so5715/05	Linear and curvilinear banks	Earthwork System
so5715/06	Circular hollow	Feature
so5715/07	Slight linear banks	Earthwork System
so5715/08		Trackway
so5716/01	Rectilinear field boundaries	Earthwork System
so5716/02	Linear bank	Linear Earthwork
so5800/01	Linear bank	Linear Earthwork
so5800/02		Linear Earthwork

Unique ID	Feature description	Interpretation
so5801/01	Slight linear bank, possible boundary	Linear Earthwork
so5801/02	Short linear bank	Linear Earthwork
so5801/03	Linear ditch, possible continuation of a boundary to the south	Linear Earthwork
so5801/04	Short stretch of possible bank	Linear Earthwork
so5801/05	Possible short sections of curving bank	Quarry
so5801/06	Short section of possible ditch	Linear Earthwork
so5802/01		Pixilated Area
so5802/02		Pixilated Area
so5802/03	Linear ditches, possible tracks, one may be a former river course	Trackway
so5802/04	Possible linear bank	Linear Earthwork
so5802/05	Short linear bank	Linear Earthwork
so5802/06	Ditches and banks forming probable trackways and boundaries	Trackway
so5802/07	Linear ditches, probable tracks	Trackway
so5803/01	3 pits, probable quarries	Quarry
so5803/02	Linear bank	Linear Earthwork
so5803/03		Pixilated Area
so5803/04	Linear feature, possible bank	Linear Earthwork
so5803/05	Group of 4 small mounds	Mound
so5803/06		Pixilated Area
so5803/07		Pixilated Area
so5803/08		Pixilated Area
so5803/09	Hollow, possible quarry pit	Quarry
so5803/10	Short sections of linear bank	Linear Earthwork
so5804/01	A ditch and slight possible rectangular banks, which may be a continuation of a square enclosure and associated earthworks to the north, mapped as SMR 4053	Earthwork
so5804/02	Slight banks, forming possible NE-SW ridge and furrow and possible NW-SE boundaries	Ridge And Furrow
so5804/03	Linear bank	Linear Earthwork
so5805/01	Linear and rectilinear banks and ditches, forming field boundaries	Earthwork System
so5805/02	Slight banks forming a right angle, same orientation as existing boundaries	Earthwork System
so5805/03	2 parallel linear banks	Linear Earthwork
so5805/04	Linear bank parallel to existing banks	Linear Earthwork
so5805/05	Elongated mound	Mound
so5806/01		Linear Earthwork
so5806/02		Scowle
so5807/01		Linear Earthwork
so5807/02		Pixilated Area
so5807/03		Pixilated Area
so5807/04		Feature
so5807/05	Slight depression, possible backfilled scowle?	Scowle
so5808/01	Linear bank	Linear Earthwork
so5808/02		Linear Earthwork
so5808/03	Slight linear bank	Linear Earthwork
so5808/04	Possible small square platform	Feature
so5808/05		Uneven Surface
so5808/06	Rectangular platform	Feature
so5808/07		Forestry Operations
so5808/08	Possible trackway and spoil heaps	Holloway

Unique ID	Feature description	Interpretation
so5808/09	Linear striations, possibly trackways	Feature
so5809/01		Uneven Surface
so5809/02	Possible boundary	Feature
so5809/03	Linear striations, possible trackways	Feature
so5810/01	Group of amorphous mounds	Possible slag heap
so5810/02	Irregular group of mounds and hollows	Possible iron working Site
so5810/03	Vague irregular mounds bounded partly by a linear bank	Possible iron working Site
so5810/04	Group of amorphous mounds with some hollows	Possible iron working Site
so5811/01	Mound	Mine Shaft
so5812/01	Sub-circular hollow	Mine Shaft
so5812/02	Rectilinear enclosure *c.*45m across	Enclosure
so5812/03	Line of sub-circular hollows	Quarry
so5812/04	Two sub-circular hollows one of which is within a sub-circular mound	Mine Shaft
so5812/05		Uneven Surface
so5812/06		Uneven Surface
so5812/07	Sub-circular mound with a small hollow on the top	Mine Shaft
so5812/09	Discrete sub-circular hollows	Quarry
so5812/10		Pixilated Area
so5812/11		Quarry
so5812/12	Small hollow	Quarry
so5813/01		Pixilated Area
so5813/02		Uneven Surface
so5813/03	Two mounds	Mound
so5813/04	Sub-circular hollow	Quarry
so5813/05	Group of sub-circular hollows	Quarry
so5813/06	Two mounds	Natural Feature
so5813/07	Two hollows, one sub-circular the other more linear	Quarry
so5813/08	Irregular linear hollows adjacent to a watercourse	Quarry
so5813/09	Parallel linear features	Feature
so5813/10	Large sub-circular mound	Mound
so5813/11	Sub-circular or penannular ditch	Enclosure
so5813/12	Group of large amorphous hollows	Quarry
so5813/13		Extractive Pit
so5813/14	Rectilinear platform (*c.* 45 x 25m) defined by a ditch on three sides and a modern road on the southern side	Building Platform
so5814/01	Linear and rectilinear boundaries	Earthwork System
so5814/02	Linear and rectilinear banks and terraces	Earthwork System
so5814/03		Linear Earthwork
so5814/04		Linear Earthwork
so5814/05	Rectilinear enclosure	Possible iron working Site
so5814/06	Irregular group of amorphous mounds	Possible slag heap
so5815/01	Curved bank	Linear Earthwork
so5815/02	Irregular and amorphous mounds	Possible slag heap
so5815/03	Rectilinear bank	Linear Earthwork
so5815/04	Very vague rectilinear bank	Linear Earthwork
so5816/01	Rectilinear banks	Earthwork System
so5816/02	Slight linear bank	Linear Earthwork

Unique ID	Feature description	Interpretation
so5816/03	Mound	Spoil Heap
so5816/04	Linear and rectilinear boundaries forming fields	Earthwork System
so5816/05	Platform, linear bank and possible ditch	Building Platform
so5816/06		Trackway
so5816/07		Quarry
so5816/08	Very vague group of sub-circular and amorphous mounds	Possible slag heap
so5817/01	Linear hollow	Quarry
so5817/02	Straight section of linear bank	Linear Earthwork
so5817/03	Straight linear terrace	Linear Earthwork
so5817/04	Very vague rectilinear bank/terrace	Linear Earthwork
so5902/01		Pixilated Area
so5902/02		Pixilated Area
so5902/03		Pixilated Area
so5902/04	Group of oval shaped mounds	Mound
so5902/05	Linear ditches, possible boundaries	Earthwork System
so5903/01		Pixilated Area
so5903/02	Square platform	Feature
so5903/03	Ovoid banked feature	Feature
so5903/04	Group of bell pits	Extractive Pit
so5903/05	2 short stretches of ditch, possible tracks or boundaries	Trackway
so5903/06	2 short sections of linear bank	Linear Earthwork
so5903/07		Uneven Surface
so5903/08	Slight bank	Linear Earthwork
so5904/01		Pixilated Area
so5904/02	2 parallel possible banks, may be natural features	Natural Feature
so5904/03	Mound	Mound
so5904/04	Possible mounds or banks	Mound
so5904/05	Short section of bank	Linear Earthwork
so5905/01		Linear Earthwork
so5905/02		Linear Earthwork
so5905/03		Building Platform
so5905/04	Slight linear depression and semi circular platform	Feature
so5905/05		Linear Earthwork
so5905/06	Slight mounds and depressions forming uneven ground	Feature
so5905/07		Feature
so5906/01		Pixilated Area
so5906/02	Sections of linear ditch and possible bank	Feature
so5906/03	Probable spoil heaps	Spoil Heap
so5906/04		Scowle
so5906/05	Two shallow depressions	Feature
so5907/01	Linear and rectilinear earthworks	Earthwork System
so5907/02		Pixilated Area
so5907/03		Pixilated Area
so5907/04	Earthwork, part of which forms a possible small enclosure	Feature
so5907/05	Possible linear earthworks	Earthwork System
so5908/01		Pixilated Area
so5908/02	Possible spoil heaps and workings associated with adjacent quarry	Spoil Heap
so5908/03		Feature

Unique ID	Feature description	Interpretation
so5908/04		Pixilated Area
so5908/05		Extractive Pit
so5908/06	Linear depressions, possibly tracks	Feature
so5908/07		Charcoal Burning Platform
so5909/01		Pixilated Area
so5909/02		Pixilated Area
so5909/03	Oval depression *c.*55m x 17m	Feature
so5909/04	Segments of linear feature	Holloway
so5909/05		Pixilated Area
so5909/06		Charcoal Burning Platform
so5910/01		Pixilated Area
so5910/02		Holloway
so5910/03		Holloway
so5910/04	Vague linear hollow	Holloway
so5910/05	Large area of hollows and mounds	Quarry
so5910/06	Irregular hollow with associated mounds	Quarry
so5910/07	Irregular thin, banked feature with a right angled return on its western edge. There are two possible entrances through this bank at both its western and eastern ends	Linear Earthwork
so5910/08		Charcoal Burning Platform
so5911/01		Uneven Surface
so5911/02	Two circular mounds	Mound
so5911/03		Quarry
so5911/04	Group of rectilinear banks	Earthwork
so5911/05	Group of large sub-circular hollows	Quarry
so5911/06	Thin curved bank	Forestry Enclosure Boundary
so5911/07	Irregular are of hollows and mounds	Extractive Pit
so5911/08		Pixilated Area
so5911/09		Pixilated Area
so5911/10	Very vague rectilinear banks or terraces	Earthwork System
so5911/11	Small mound	Mound
so5911/12		Uneven Surface
so5911/13	Small rectilinear hollow	Extractive Pit
so5911/14		Charcoal Burning Platform
so5912/01		Pixilated Area
so5912/02	Mound with hollow on the top	Mine Shaft
so5912/03	Small irregular hollow	Quarry
so5912/04	Small irregular hollow	Quarry
so5912/05		Uneven Surface
so5912/06	Large platform	Mine
so5912/07		Pixilated Area
so5913/01		Pixilated Area
so5913/02		Pixilated Area
so5913/03	Four sub-circular hollows	Quarry
so5913/04	Sub-circular hollow	Quarry
so5913/05		Forestry Operations

Unique ID	Feature description	Interpretation
so5913/09		Pixilated Area
so5913/10	Group of small hollows and mounds	Extractive Pit
so5913/11	A number of discrete hollows	Quarry
so5913/12	Area of hollows and mounds	Quarry
so5914/01		Pixilated Area
so5914/02	Ovoid platform feature defined by banks	Feature
so5914/03	Small circular hollows	Extractive Pit
so5914/04		Charcoal Burning Platform
so5914/05	Group of shallow hollows	Quarry
so5914/06		Uneven Surface
so5914/07	Mound	Mound
so5914/08	Line of shallow hollows	Quarry
so5914/09		Pixilated Area
so5914/10	Ovoid/rectilinear hollow	Quarry
so5914/11	Area containing a number of irregular elongated hollows many of which appear to be fairly shallow.	Quarry
so5914/12	Linear bank	Linear Earthwork
so5914/13	Linear bank	Linear Earthwork
so5914/15	Small rectilinear mound	Mound
so5915/01	Small circular feature defined by very thin banks	Feature
so5915/02	Amorphous group of mounds	Possible slag heap
so5916/01	2 parallel banks	Linear Earthwork
so5916/02	Linear banks	Earthwork System
so5916/03	Mounds and hollows forming uneven ground, possible scowles	Quarry
so5916/04		Linear Earthwork
so5917/01	Vague curved bank	Linear Earthwork
so5917/02	Straight bank	Linear Earthwork
so5917/03	Small circular mounds - widely distributed these do not form a group	Mound
so6002/01	Thin linear hollow	Linear Earthwork
so6002/02		Ridge And Furrow
so6002/03		Uneven Surface
so6002/04	Thin straight bank	Linear Earthwork
so6002/05		Charcoal Burning Platform
so6002/06	Irregular thin linear bank	Linear Earthwork
so6002/07	Four vague and short and parallel linear banks	Earthwork System
so6002/08		Charcoal Burning Platform
so6002/09	Short linear bank	Linear Earthwork
so6002/10	Short linear bank	Linear Earthwork
so6002/11	Linear bank	Linear Earthwork
so6003/01		Pixilated Area
so6003/02		Pixilated Area
so6003/03	Group of fairly regular looking mounds and hollows	Building Building Platform Building
so6003/04	Group of small circular hollows with some associated mounds	Extractive Pit
so6003/05		Charcoal Burning Platform
so6003/06	Effectively an uneven surface but seems to be largely made up of hollows and mounds	Extractive Pit

Unique ID	Feature description	Interpretation
so6004/01		Pixilated Area
so6004/02	Group of roughly parallel broad linear banks	Earthwork System
so6004/03	Group of small irregular hollows	Quarry
so6004/04		Uneven Surface
so6004/05		Pixilated Area
so6004/06		Pixilated Area
so6004/07		Pixilated Area
so6004/08		Pixilated Area
so6004/09		Pixilated Area
so6004/10	Two small circular mounds	Mound
so6004/11	Group of small hollows	Scowle
so6004/12	Area of small circular hollows	Scowle
so6004/13		Charcoal Burning Platform
so6004/14	Hollows	Scowle
so6005/01		Feature
so6005/02	Series of parallel ditches	Linear Earthwork
so6005/03	Slight mounds/irregular	Feature
so6006/01	Bank	Linear Earthwork
so6006/02	Possible rectangular depression and bank	Feature
so6006/03		Pixilated Area
so6006/04		Pixilated Area
so6006/05		Pixilated Area
so6006/06		Extractive Pit
so6006/07		Pixilated Area
so6006/08		Extractive Pit
so6007/01	Linear and rectilinear banks	Earthwork System
so6007/02	Linear banks	Earthwork System
so6007/03		Extractive Pit
so6007/04	Linear track	Holloway
so6007/05	Possible banks forming small rectangular enclosure, *c.*40 x 25m	Feature
so6007/06		Pixilated Area
so6008/01		Pixilated Area
so6008/02	Probable bell pits	Extractive Pit
so6008/03		Charcoal Burning Platform
so6009/01		Quarry
so6009/02		Extractive Pit
so6009/03		
so6009/04		Pixilated Area
so6009/05		Extractive Pit
so6009/06		Charcoal Burning Platform
so6009/07		
so6009/08		
so6009/09		Quarry
so6009/10		Feature
so6009/11		Quarry
so6009/12		

Unique ID	Feature description	Interpretation
so6009/13		
so6009/15		
so6009/16		
so6009/17	Small hollows	Extractive Pit
so6010/01	Irregular group of hollows and spoil heaps	Quarry
so6010/02	Irregular group of hollows and spoil heaps	Quarry
so6010/03	Group of negative platforms	Charcoal Burning Platform
so6010/04	Group of small negative platforms	Charcoal Burning Platform
so6010/05	Linear group irregular hollows and spoil heaps of	Quarry
so6010/06	Group of small hollows	Extractive Pit
so6010/07	Slightly sinuous bank	Linear Earthwork
so6010/08	Sinuous and possibly discontinuous bank	Linear Earthwork
so6010/09	Vague stretch of possible bank	Linear Earthwork
so6010/10	Very vague possible length of bank	Linear Earthwork
so6011/01		Pixilated Area
so6011/02		Pixilated Area
so6011/03		Pixilated Area
so6011/04	Area of irregular hollows	Quarry
so6011/05	Group of irregular hollows	Quarry
so6011/06	Group of small sub-circular negative platforms	Charcoal Burning Platform
so6011/07	C shaped trench	Feature
so6011/08	Three fairly distinct lines of surface extraction pits	Extractive Pit
so6011/09	Group of vague parallel banks	Earthwork System
so6011/10	Two small circular platforms	Charcoal Burning Platform
so6011/11	Vague west facing terrace	Linear Earthwork
so6011/12	Pennanular ditch	Feature
so6011/13	Small group of pits	Extractive Pit
so6011/14	Three small pits	Extractive Pit
so6011/15	Line of large hollows	Quarry
so6011/16		Charcoal Burning Platform
so6011/17	Group of irregular hollows and mounds	Quarry
so6011/18	Very vague and broad bank-like feature with a right angled return	Linear Earthwork
so6012/01		Pixilated Area
so6012/02		Pixilated Area
so6012/03	Sub-circular and pennanular ditch	Enclosure
so6012/04		Uneven Surface
so6012/05	Long thin linear bank	Forestry Enclosure Boundary
so6012/06	Group of circular negative platform features	Charcoal Burning Platform
so6012/07	Group of circular negative platform features	Charcoal Burning Platform
so6012/08	Straight linear bank pre-dating modern forestry track	Linear Earthwork
so6012/09	Linear hollow with some apparent spoil heaps	Quarry
so6012/10	Closely space parallel lines	Forestry Operations
so6013/01		
so6013/02		

Unique ID	Feature description	Interpretation
so6013/03	Group of 10 circular depressions/platform	Charcoal Burning Platform
so6013/04	Group of linear and rectilinear terraces and banks	Earthwork System
so6013/05		Forestry Enclosure Boundary
so6013/06		Pixilated Area
so6013/07	Area of rectilinear terraces and a negative linear feature	Earthwork System
so6013/08	Group of 6 circular negative features	Charcoal Burning Platform
so6013/09	Group of four negative platform features	Charcoal Burning Platform
so6013/10	Thin positive linear feature running from 360430 213903 to 360418 213434	Linear Earthwork
so6013/11	Positive linear feature, the southern part of which appears to become a negative linear feature, running form 360451 213368 to 360541 212781. This feature may be a southern continuation of so6013/10, and may also be part of the Earthwork System so6013/4	Linear Earthwork
so6013/12	Group of negative platform features	Charcoal Burning Platform
so6013/13	Line of 5 small mounds	Mound
so6013/14		Quarry
so6013/15	Group of 7 negative platform features	Charcoal Burning Platform
so6013/16		Pixilated Area
so6013/17	Holloway leading to a small quarry	Quarry
so6013/18	Linear terrace - southeast facing	Linear Earthwork
so6013/19	Linear terrace	Linear Earthwork
so6013/20		Quarry
so6013/21	T shaped configuration of negative linear trenches	Feature
so6013/22	Group of three negative platforms	Charcoal Burning Platform
so6013/23		Pixilated Area
so6013/24	Group of nine small circular negative features	Charcoal Burning Platform
so6013/25		
so6013/26	Parallel linear terraces approximately 50m apart	Earthwork System
so6013/27	Linear bank	Linear Earthwork
so6014/01	Three sides of a rectilinear negative feature	Linear Earthwork
so6014/02	Vague linear bank	Linear Earthwork
so6014/03	Vague linear bank	Linear Earthwork
so6014/04	Vague negative linear feature	Feature
so6014/05	Very vague negative linear feature	Feature
so6014/06	Vague negative linear feature	Feature
so6014/07	Vague negative linear feature	Feature
so6014/08		Uneven Surface
so6014/09		Linear Earthwork
so6014/10		Linear Earthwork
so6014/11		Linear Earthwork
so6014/12	Very straight positive linear feature	Linear Earthwork
so6014/13	Very vague linear and rectilinear terraces - some only visible when lit from NE	Earthwork System
so6014/14	Group of small negative hollows	Quarry
so6014/15	Liner hollow	Quarry
so6014/16	Linear terrace	Linear Earthwork
so6014/17	Vague line	Linear Earthwork

Unique ID	Feature description	Interpretation
so6014/18	Vague irregular bank	Linear Earthwork
so6014/19		Charcoal Burning Platform
so6014/20	West facing terrace	Natural Feature
so6014/21	Group of discrete sub-circular pits	Quarry
so6015/01		Pixilated Area
so6015/02	Large rectilinear platform	Building Platform
so6015/03	Area of small pits. Many of these are sub-circular, but some are more linear	Extractive Pit
so6015/04		Charcoal Burning Platform
so6015/05	Area of rectilinear terraces	Earthwork System
so6015/06	Small circular pits	Extractive Pit
so6015/07		Charcoal Burning Platform
so6015/08	Very vague linear and rectilinear terraces accompanying a linear hollow	Earthwork System
so6016/01	Group of hollows and mounds	Extractive Pit
so6016/02	Area of small hollows and mounds	Extractive Pit
so6016/03		Pixilated Area
so6016/04	Two ovoid hollows	Quarry
so6016/05	Rectilinear platform	Building Platform
so6017/01	Vague rectilinear platform defined by terraces to south west and east	Enclosure
so6017/02	Rectilinear platform	Building Platform
so6017/03	Linear terrace	Linear Earthwork
so6017/04	Group of linear and rectilinear banks and terraces	Linear Earthwork
so6017/05	Irregular polygonal feature defined by irregular banks	Possible slag heap
so6017/06	Group of very irregular mounds	Possible slag heap
so6017/07	Ovoid platform which may have a ditch defining part of its base	Enclosure
so6017/08	Rectilinear bank	Linear Earthwork
so6017/09	Ovoid hollow	Scowle
so6018/01	Short stretch of curved bank	Linear Earthwork
so6018/02	Group of vague curved and linear banks	Earthwork System
so6018/03	Triangular enclosure *c.* 75m across, defined by ditches	Enclosure
so6102/01	Linear and rectilinear banks and hollows	Earthwork System
so6102/02	Short stretches of linear bank and terracing	Earthwork System
so6102/03		Ridge And Furrow
so6102/04	Short Parallel linear banks	Earthwork System
so6102/05	Linear and rectilinear banks	Earthwork System
so6102/06		Ridge And Furrow
so6102/07		Ridge And Furrow
so6102/08		Uneven Surface
so6102/09		Pixilated Area
so6102/10		Uneven Surface
so6102/11	Linear terrace or bank	Linear Earthwork
so6102/12		Ridge And Furrow
so6102/13	Parallel linear banks	Earthwork System
so6102/14		Ridge And Furrow
so6102/15		Uneven Surface
so6102/16	Very vague broad linear banks and some negative features trending northeast southwest	Earthwork System
so6103/01		Pixilated Area

Unique ID	Feature description	Interpretation
so6103/02		Pixilated Area
so6103/03		Uneven Surface
so6103/04		Uneven Surface
so6103/05	Line of small sub-circular hollows	Scowle
so6103/06	Group of small sub-circular hollows	Scowle
so6103/07		Scowle
so6103/08		Scowle
so6103/09		Scowle
so6103/10		Scowle
so6103/11		Scowle
so6103/12	Rectilinear area defined by banks	Feature
so6103/13	Straight thin bank	Linear Earthwork
so6103/14		Charcoal Burning Platform
so6104/01	Group of circular hollows with some mounds, generally surrounding the hollows	Extractive Pit
so6104/02	Group of circular hollows with some mounds, generally surrounding the hollows	Extractive Pit
so6104/03	Vague group of circular hollows possibly with some associated mounds	Extractive Pit
so6104/04	Group of circular hollows with some mounds, generally surrounding the hollows	Extractive Pit
so6104/05	Group of circular hollows with some mounds	Extractive Pit
so6104/06	Group of circular hollows with some mounds	Extractive Pit
so6104/07	Dispersed group of circular hollows with some mounds	Extractive Pit
so6104/08	Group of small circular hollows	Extractive Pit
so6104/09	Group of small circular hollows	Extractive Pit
so6104/10		Charcoal Burning Platform
so6104/11		Extractive Pit
so6105/01	Possible rectilinear boundaries	Earthwork System
so6105/02	Parallel banks and ditches extending for c85m	Earthwork
so6105/03		Extractive Pit
so6105/04	Slight mounds/ uneven ground surface	Feature
so6105/05		Extractive Pit
so6105/06	Short linear depression	Trackway
so6105/07		Trackway
so6105/08		Linear Earthwork
so6105/09	2 parallel linears	Linear Earthwork
so6106/01		Pixilated Area
so6106/02		Pixilated Area
so6106/03		Pixilated Area
so6106/04		Pixilated Area
so6106/05		Pixilated Area
so6107/01	Terraces with possible ditched enclosure to west	Feature
so6107/02	Series of rectilinear platforms	Feature
so6107/03	Very slight linear banks	Earthwork System
so6107/04		Pixilated Area
so6107/05	Probable coal workings	Coal Mining Site
so6107/06		Pixilated Area
so6108/01		Extractive Pit
so6108/02		Pixilated Area

Unique ID	Feature description	Interpretation
so6108/03		Pixilated Area
so6108/04		Linear Earthwork
so6108/05	Large hollow	Quarry
so6109/01		Forestry Operations
so6109/02		Pixilated Area
so6109/03		Extractive Pit
so6109/04		Pixilated Area
so6109/05	Small circular mound	Mound
so6110/01		Pixilated Area
so6110/02	Group of roughly circular hollows and some spoil heaps	Mine Shaft
so6110/03	Group of small circular hollows	Extractive Pit
so6110/04	Group of small hollows with some associated spoil	Extractive Pit
so6110/05	Group of small circular hollows with some associated mounds	Extractive Pit
so6110/06	Group of small circular hollows with some associated mounds	Extractive Pit
so6110/07	Large hollow with some spoil	Quarry
so6110/08	Five small circular hollows	Extractive Pit
so6110/09		Pixilated Area
so6110/10		Pixilated Area
so6110/11	Group of small hollows with associated spoil heaps	Extractive Pit
so6110/12	Small circular platform	Charcoal Burning Platform
so6110/13	Small circular platform	Charcoal Burning Platform
so6110/14	Three small circular platforms	Charcoal Burning Platform
so6110/16	Group of small hollows with associated mounds	Extractive Pit
so6111/01		Pixilated Area
so6111/02		Pixilated Area
so6111/03		Pixilated Area
so6111/04		Pixilated Area
so6111/05	Long group of small pits and associated spoil heaps	Extractive Pit
so6111/06	Long group of small pits and associated spoil heaps	Extractive Pit
so6111/07	Group of small pits with some apparent associated spoil	Extractive Pit
so6111/08	Four small circular platforms	Charcoal Burning Platform
so6111/09		Forestry Operations
so6111/10	Very irregular pennanular bank	Feature
so6111/11	Line of small circular pits	Extractive Pit
so6111/12	Linear terracing on side of slope	Trackway
so6111/13	Short stretch of holloway	Trackway
so6111/14	Short stretch of holloway	Trackway
so6111/15	Irregular pit	Quarry
so6112/01		Pixilated Area
so6112/02		Pixilated Area
so6112/03		Pixilated Area
so6112/04		Pixilated Area
so6112/05		Pixilated Area
so6112/06		Pixilated Area
so6112/07		Pixilated Area
so6112/08		Pixilated Area

Unique ID	Feature description	Interpretation
so6112/09		Pixilated Area
so6112/10		Pixilated Area
so6112/11	Group of pits with some spoil heaps - The pits in this group are generally fairly widely dispersed	Extractive Pit
so6112/12	Thin linear bank	Linear Earthwork
so6112/13	Very vague linear bank	Linear Earthwork
so6112/14	Very vague linear bank	Linear Earthwork
so6112/15	Irregular area apparently consisting of discrete pits with some spoil mounds	Extractive Pit
so6112/16	Straight, long thin bank	Forestry Enclosure Boundary
so6112/17		Uneven Surface
so6112/18		Charcoal Burning Platform
so6112/19		Charcoal Burning Platform
so6112/20		Charcoal Burning Platform
so6112/21		Charcoal Burning Platform
so6113/01	Area of small circular pits some with clear spoil heaps	Extractive Pit
so6113/02	Thin relatively straight negative linear feature	Feature
so6113/03	Thin relatively straight negative linear feature	Feature
so6113/04	Thin relatively straight negative linear feature	Feature
so6113/05	Area of small circular negative platforms	Charcoal Burning Platform
so6113/06	Area of small circular negative platforms	Charcoal Burning Platform
so6113/07	Long thin negative linear with possible side banks in places	Feature
so6113/08	Very straight thin hollows	Trackway
so6113/09		Charcoal Burning Platform
so6114/01	Area of small mounds with some hollows	Extractive Pit
so6114/02		Pixilated Area
so6114/03	Line of small discrete mounds	Mound
so6114/04	Irregular looking surface mainly consisting of small mounds but some circular hollows	Extractive Pit
so6114/05	Short length of south facing terrace	Linear Earthwork
so6114/06		Charcoal Burning Platform
so6114/07	Bank	Embankment
so6115/01		Pixilated Area
so6115/02		Pixilated Area
so6115/03	Rectilinear terraces and linear banks	Earthwork System
so6115/04	Linear banks and terraces which appear to form a rectilinear pattern	Earthwork System
so6115/05	Group of circular pits	Extractive Pit
so6115/06	Discrete area of linear trenches	Quarry
so6115/07	Linear hollow	Quarry
so6115/08		Charcoal Burning Platform
so6115/09		Quarry
so6115/10		Charcoal Burning Platform
so6115/11	Linear bank	Linear Earthwork
so6115/12	Linear bank	Linear Earthwork
so6115/13		Pixilated Area

Unique ID	Feature description	Interpretation
so6115/14		Pixilated Area
so6116/01	Small mound	Mound
so6116/02	Sub-circular hollow	Pond
so6116/03		Uneven Surface
so6116/04	Vague 8-shaped hollow	Quarry
so6116/05	Area of small hollows	Quarry
so6116/06	Hollow	Quarry
so6116/07	Hollow with a slight holloway leading to it	Quarry
so6117/01	Group of curved, linear and rectilinear banks and terraces	Earthwork System
so6117/02	Vague linear bank	Linear Earthwork
so6117/03	Vague linear bank	Linear Earthwork
so6118/01	Group of approximately parallel and not continuous broad linear banks	Linear Earthwork
so6118/02	T shaped banks	Linear Earthwork
so6118/03	Very vague group of linear and rectilinear banks	Earthwork System
so6118/04	Vague parallel terraces	Natural Feature
so6202/01	Broad linear banks	Earthwork System
so6202/02	Parallel terraces	Earthwork System
so6203/01	Group of parallel linear banks and terraces and some rectilinear banks,	Earthwork System
so6203/02	Small circular mound	Mound
so6203/03	Group of very vague small circular hollows	Scowle
so6203/04	Straight linear bank	Linear Earthwork
so6203/05		Structure
so6203/06	Small irregular mound	Mound
so6203/07	Small mound	Mound
so6204/01	Probable bell pits or surface workings	Extractive Pit
so6204/02	Probable bell pits and surface workings	Extractive Pit
so6204/03	2 parallel banks	Linear Earthwork
so6204/04	2 parallel ditches	Trackway
so6204/05	2 parallel ditches	Trackway
so6204/06	Charcoal platforms? Or possible bell pits	Charcoal Burning Platform
so6204/07	2 linear field boundaries	Linear Earthwork
so6204/08	Small possible rectangular banked enclosure	Feature
so6204/09	Rectangular mound	Feature
so6204/10		Extractive Pit
so6204/11	Surface workings	Extractive Pit
so6204/12	Possible bank, may be natural	Earthwork
so6205/01		Pixilated Area
so6205/02		Pixilated Area
so6205/03		Pixilated Area
so6205/04	Bell pits	Extractive Pit
so6205/05		Quarry
so6205/06	Small rectangular enclosure?	Enclosure
so6205/07	Linear banks and ditches	Earthwork System
so6205/08	Probable bell pits	Extractive Pit
so6205/09		Feature
so6205/10	Probable quarry pits and spoil heaps	Quarry
so6205/11		Pixilated Area

Unique ID	Feature description	Interpretation
so6206/01		Pixilated Area
so6206/02		Building Platform
so6206/03	Rectangular hollow	Quarry
so6206/04		Pixilated Area
so6206/05		Extractive Pit
so6207/01		Pixilated Area
so6207/02		Extractive Pit
so6207/03		Pixilated Area
so6207/04	Possible charcoal platforms	Feature
so6208/01		Pixilated Area
so6208/02		Pixilated Area
so6208/03		Pixilated Area
so6208/04		Uneven Surface
so6208/05	Possible linear and rectilinear boundaries	Earthwork System
so6208/06		Feature
so6209/01		Pixilated Area
so6209/02	Possible enclosure *c.*33 x 30m	Feature
so6210/01		Pixilated Area
so6210/02		Pixilated Area
so6210/03		Pixilated Area
so6210/04		Pixilated Area
so6210/05		Forestry Operations
so6210/06	Roughly circular mound with a small depression on surface	Mine Shaft
so6210/07	Long fairly straight narrow bank	Linear Earthwork
so6210/08	Thin linear bank	Linear Earthwork
so6210/09	Thin linear bank	Linear Earthwork
so6210/10	Large irregular hollow	Quarry
so6210/11	Curved cutting	Railway Cutting
so6210/12	Curvy cutting	Railway Cutting
so6210/13		Pixilated Area
so6210/14	Line of four small mounds diminishing in size from southwest to northeast	Mound
so6210/15	Area of irregular hollows with some associated mounds	Quarry
so6210/16		Pixilated Area
so6211/01		Pixilated Area
so6211/02		Pixilated Area
so6211/03		Pixilated Area
so6211/05		Pixilated Area
so6211/06	Rectilinear southwest facing terrace	Natural Feature
so6211/07		Pixilated Area
so6211/08	Very straight linear feature	Linear Earthwork
so6211/09	Appears to be a curved embankment	Embankment
so6211/10	Short stretch of holloway	Railway Cutting
so6211/11	Parallel linear banks	Forestry Operations
so6211/12	Thin hollow	Path
so6211/13	Rectilinear mound	Spoil Heap
so6211/14	Two rectilinear platform features	Garden Feature
so6211/15	Probably a natural knoll	Natural Feature
so6212/01		Pixilated Area

Unique ID	Feature description	Interpretation
so6212/02		Pixilated Area
so6212/03	Straight holloway, apparently with some up cast on southern side	Holloway
so6212/04	Straight section of embankment	Embankment
so6212/05	Appears to be a roughly circular mound - more distinct than many of those visible on the hillshaded images	Mound
so6212/06		Pixilated Area
so6212/07		Pixilated Area
so6212/08	Small irregular area	Extractive Pit
so6213/01		Pixilated Area
so6213/02		Pixilated Area
so6213/03		Forestry Operations
so6213/04	Line of small mounds	Mound
so6213/05	Long thin feature	Trackway
so6213/06	Group of small pits/platforms	Charcoal Burning Platform
so6213/07		Uneven Surface
so6213/08		Uneven Surface
so6213/09	Very straight thin hollow	Trackway
so6213/10	Two converging linear hollows	Water Channel
so6214/01	Group of five negative platforms	Charcoal Burning Platform
so6214/02		Pixilated Area
so6214/03	Vague group of negative discrete features	Extractive Pit
so6214/04	Areas of mounds and hollows	Extractive Pit
so6215/01		Pixilated Area
so6215/02		Pixilated Area
so6215/03		Pixilated Area
so6215/04	Vague linear banks running approximately parallel to each other	Earthwork System
so6215/05	Irregular group of pits and mounds	Extractive Pit
so6215/06	Linear bank	Linear Earthwork
so6215/07		Charcoal Burning Platform
so6215/08		Charcoal Burning Platform
so6215/09	Fairly dispersed group of hollows and mounds	Extractive Pit
so6215/10	Curved linear hollow	Holloway
so6216/01	Sub-circular hollow with associated mound.	Quarry
so6216/02	Linear bank	Linear Earthwork
so6216/03	Vague rectilinear enclosure formed by linear banks	Enclosure
so6216/04	Two small mounds	Mound
so6216/05		Pixilated Area
so6216/06		Pixilated Area
so6216/07	Mound	Mound
so6216/08	Rectilinear bank	Linear Earthwork
so6216/09		Linear Earthwork
so6216/10	Linear bank	Linear Earthwork
so6216/11	Elongated hollows on the side of a slope.	Quarry
so6216/12	Area of irregular linears hollows and mounds.	Quarry
so6217/01	Small circular mounds	Possible slag heap
so6217/02	Linear bank	Linear Earthwork
so6217/03		Linear Earthwork

Unique ID	Feature description	Interpretation
so6217/04		Linear Earthwork
so6217/05	Small oval enclosure *c.* 15m across	Feature
so6218/01	Group of linear and rectilinear banks	Earthwork System
so6218/02	Small mound	Mound
so6218/03	Vague rectilinear bank	Linear Earthwork
so6250/14		Pixilated Area
so6250/15		Pixilated Area
so6250/16	Area of hollows and mounds	Quarry
so6250/17	Group of irregular hollows and terraces	Quarry
so6250/18	Area of hollows	Quarry
so6250/19	Group of hollows	Quarry
so6250/20	Small hollows	Extractive Pit
so6302/01	Very vague linear and rectilinear banks	Earthwork System
so6302/02		Ridge And Furrow
so6303/01	Probable quarry pits	Quarry
so6303/02	Possible ridge and furrow	Ridge And Furrow
so6303/03		Uneven Surface
so6304/01	Linear banks	Earthwork System
so6304/02		Pixilated Area
so6304/03		Pixilated Area
so6304/04	Surface pits and possible spoil heaps	Extractive Pit
so6304/05		Feature
so6304/06	Possible surface workings	Extractive Pit
so6304/07	Possible linear bank	Linear Earthwork
so6304/08		Uneven Surface
so6305/01		Pixilated Area
so6305/02	Slight mounds forming uneven ground	Quarry
so6305/03	Slight mounds and hollows forming uneven ground	Mound
so6305/04		Uneven Surface
so6305/05		Uneven Surface
so6305/06	Possible L-shaped bank and ditch	Linear Earthwork
so6306/01		Feature
so6306/02		Linear Earthwork
so6306/03	Possible ditched boundary	Linear Earthwork
so6307/01		Pixilated Area
so6307/02	Probable bell pits	Extractive Pit
so6307/03	Possible terrace	Linear Earthwork
so6307/04		Pixilated Area
so6307/05		Pixilated Area
so6308/01		Uneven Surface
so6308/02		Feature
so6308/03		Extractive Pit
so6308/04		Pixilated Area
so6308/05		Pixilated Area
so6309/01		Pixilated Area
so6309/02		Pixilated Area
so6309/03		Extractive Pit
so6309/04		Pixilated Area

Unique ID	Feature description	Interpretation
so6309/05	Embankment and holloway	Tramroad
so6309/06	Rectilinear depression	Pond
so6310/01		Pixilated Area
so6310/02		Pixilated Area
so6310/03		Pixilated Area
so6310/04		Uneven Surface
so6310/05	Distinct embankment like feature	Embankment
so6310/06	Uneven surface which appears to be made up largely of discrete hollows	Extractive Pit
so6310/07	Uneven surface which appears to be made up largely of discrete hollows	Extractive Pit
so6310/08		Uneven Surface
so6310/09	Irregular group of small pits with some spoil	Extractive Pit
so6310/10		Pixilated Area
so6310/11	Short stretch of bank	Linear Earthwork
so6311/01		Pixilated Area
so6311/02		Pixilated Area
so6311/03		Pixilated Area
so6311/04		Pixilated Area
so6311/05	Small circular feature	Mine Shaft
so6311/06	Group of five negative platforms	Charcoal Burning Platform
so6311/12	Four small circular platforms	Charcoal Burning Platform
so6312/01		Pixilated Area
so6312/02		Pixilated Area
so6312/03	Irregular stretch of north facing terrace	Feature
so6312/04		Pixilated Area
so6312/05	Stretch of irregular ditch	Feature
so6313/01		Pixilated Area
so6313/02		Forestry Operations
so6313/03	D shaped configuration of linear hollows	Feature
so6313/04		Uneven Surface
so6313/05		Forestry Operations
so6313/06		Pixilated Area
so6313/07		Uneven Surface
so6313/08		Pixilated Area
so6314/01		Pixilated Area
so6314/02	Straight parallel banks and hollows	Forestry Operations
so6314/03	Two circular depressions with associated spoil mounds	Extractive Pit
so6314/04	Four circular negative platforms	Charcoal Burning Platform
so6314/05	Faint parallel lines	Forestry Operations
so6314/06	Two circular negative platforms	Charcoal Burning Platform
so6314/07	This negative linear hollow	Linear Earthwork
so6314/08	Very straight linear depression	Holloway
so6314/09	Very straight linear depression	Holloway
so6314/10		Quarry
so6314/11	Four small circular hollows some with associated spoil	Extractive Pit
so6315/01	Linear terracing running parallel to each other	Earthwork System
so6315/02	Linear hollow	Holloway

Unique ID	Feature description	Interpretation
so6315/03	Thin negative linear feature	Path
so6315/04		Pixilated Area
so6315/05	Very vague linear terrace	Linear Earthwork
so6315/06	Very vague linear terracing forming two parallel lines on side of slope	Natural Feature
so6316/01		Uneven Surface
so6316/02	Tear shaped hollow	Quarry
so6316/03		Uneven Surface
so6316/04		Pixilated Area
so6316/05		Pixilated Area
so6316/06		Uneven Surface
so6316/07	Three sides of a rectilinear enclosure defined by banks. Some hint of a surrounding ditch.	Enclosure
so6316/08		Uneven Surface
so6316/09		Pixilated Area
so6316/10	Large area of hollows and mounds	Quarry
so6316/11		Uneven Surface
so6316/12	Two sub-circular hollows	Quarry
so6316/13	Two parallel terraces	Earthwork System
so6317/01	Large sub-circular area defined by a narrow ditch. An additional ditch appears to relate to the eastern side of this feature. Some thin banks appear associated with the outer edge of the ditches in places	Earthwork
so6317/02	Irregular enclosure apparently containing some mounds	Possible iron working Site
so6317/03	T - shaped configuration of banks	Linear Earthwork
so6317/04		Linear Earthwork
so6317/05		Linear Earthwork
so6317/06	Group of large hollows	Quarry
so6317/07	Group of surface hollows	Quarry
so6317/08	Rectilinear ditch	Linear Earthwork
so6318/01	Group of linear and rectilinear banks and terraces	Earthwork System
so6405/01		Building Platform
so6405/02		Uneven Surface
so6405/03		Uneven Surface
so6405/04	Short bank	Linear Earthwork
so6405/05	Irregular bank	Linear Earthwork
so6406/01	Series of possible holloways	Holloway
so6406/02		Pixilated Area
so6406/03		Pixilated Area
so6406/04		Pixilated Area
so6407/01	Square banked enclosure, *c.*45m sq	Enclosure
so6407/02		Extractive Pit
so6407/03		Extractive Pit
so6407/04	Small enclosure containing possible pits and spoil heaps	Spoil Heap
so6408/01		Pixilated Area
so6408/02		Pixilated Area
so6408/03		Pixilated Area
so6408/04		Linear Earthwork
so6409/01		Extractive Pit
so6409/02		Pixilated Area
so6409/03		Extractive Pit

Unique ID	Feature description	Interpretation
so6409/04		Extractive Pit
so6410/01		Pixilated Area
so6410/02	Group of circular pits and some associated spoil	Extractive Pit
so6410/03	Group of circular pits and some associated spoil	Extractive Pit
so6410/04	Area of irregular pits with some spoil - these are not uniformly sub-circular	Quarry
so6410/05	Long thin linear bank	Forestry Enclosure Boundary
so6410/06	Short stretch of this linear bank	Linear Earthwork
so6410/07	Group of small sub-circular platforms	Charcoal Burning Platform
so6410/08	Roughly circular depression	Quarry
so6410/09	Small very circular mound	Mound
so6410/10	Four small circular negative platforms	Charcoal Burning Platform
so6411/01		Pixilated Area
so6411/02	Long thin straight bank, possibly with a ditch on its western side	Forestry Enclosure Boundary
so6411/03	Group of circular hollows apparently with accompanying spoil	Extractive Pit
so6411/04	Group of negative platform features	Charcoal Burning Platform
so6411/05		Extractive Pit
so6411/06		Quarry
so6411/07		Quarry
so6411/08		Quarry
so6411/09		Pixilated Area
so6411/10		Uneven Surface
so6411/11		Pixilated Area
so6411/12		Uneven Surface
so6411/13		Uneven Surface
so6411/14		Uneven Surface
so6411/15	Group of small surface pits and accompanying spoil	Extractive Pit
so6411/16	Sub-circular area defined by low banks *c.* 40m across	Enclosure
so6412/02	Area of small circular hollows, some with spoil heaps.	Extractive Pit
so6412/03	North facing terrace	Linear Earthwork
so6412/04	Irregular stretch of north facing terrace	Linear Earthwork
so6412/05	Irregular and not completely continuous negative linear feature	Holloway
so6412/06		Uneven Surface
so6412/07		Pixilated Area
so6412/08	Short straight stretch of embankment	Embankment
so6412/09	Group of circular platform features	Charcoal Burning Platform
so6412/10		Uneven Surface
so6412/11		Pixilated Area
so6412/12	Group of small circular pits with associated spoil	Extractive Pit
so6412/13	Linear area of irregular hollows	Quarry
so6412/14	Short straight stretch of holloway	Railway Cutting
so6412/15	Irregular holloway	Holloway
so6412/16	Irregular holloway	Holloway
so6412/17	Short stretch of holloway with associated side banks	Railway Cutting
so6412/18	Three linear terraces	Natural Feature
so6412/19	Group of small circular negative platform features	Charcoal Burning Platform

Unique ID	Feature description	Interpretation
so6412/20	Irregular hollow	Quarry
so6412/21	Irregular west facing terrace	Trackway
so6413/01		Pixilated Area
so6413/02		Pixilated Area
so6413/03		Pixilated Area
so6413/04		Uneven Surface
so6413/05	Negative hollows/platforms	Charcoal Burning Platform
so6413/06	Diverse group of small mounds and hollows - not close enough together to clearly indicate surface mining activity	Feature
so6413/07		Charcoal Burning Platform
so6413/08	Slightly curved east facing terrace	Linear Earthwork
so6413/09	Small discrete mound	Mound
so6413/10	Two parallel linear banks	Trackway
so6413/11	Two parallel linear banks - southern section not clear	Trackway
so6414/01		Pixilated Area
so6414/02	Short stretch of straight embankment between two areas of known railway and tramway SMR 5704 and 12704. This feature is marked as a railway embankment on the 1880 OS map	Embankment
so6414/03	Discrete mound with a slight hollow in the middle	Mine Shaft
so6414/04	Two parallel linear banks	Trackway
so6414/05	Vague rectilinear bank	Linear Earthwork
so6414/06	Vague rectilinear bank	Linear Earthwork
so6414/07	Thin linear bank	Embankment
so6414/08	Group of circular negative platforms	Charcoal Burning Platform
so6414/09		Pixilated Area
so6415/01		Pixilated Area
so6415/02	Large irregular area of pits and mounds	Extractive Pit
so6415/03		Uneven Surface
so6415/04	Small hollows, perhaps with some spoil attached	Extractive Pit
so6415/05		Pixilated Area
so6415/06	Vague linear terracing which may form two parallel lines	Natural Feature
so6416/01	Rectilinear hollow with associated mounds	Quarry
so6416/02	Sub-circular hollow	Quarry
so6416/03		Charcoal Burning Platform
so6416/04	Small circular mound	Mound
so6416/05	Rectilinear hollow	Quarry
so6416/06	Two fairly regular hollows	Quarry
so6416/07	Small circular hollows with some associated mounds	Extractive Pit
so6416/08	Large hollow with some associated mounds	Quarry
so6416/09	Large hollow	Quarry
so6417/01		Linear Earthwork
so6417/02	Area of fairly regular platforms with some boundaries	Deserted Village
so6418/01	Group of linear and rectilinear banks and terraces forming a regular rectilinear pattern	Earthwork System
so6418/02	Curving terrace	Tramroad
so6418/03	Thin linear bank	Linear Earthwork
so6418/04	Thin east facing terrace	Feature
so6418/05	Slightly curved bank	Linear Earthwork

Unique ID	Feature description	Interpretation
so6418/06	Small circular feature	Feature
so6418/07	Shallow hollows on the side of a slope	Quarry
so6418/08	Group of vague sub-circular hollows with some associated mounds	Quarry
so6418/09	Area of vague hollows	Scowle
so6418/10	Short stretch of vague bank	Linear Earthwork
so6418/11	Small mound attached to a short stretch of bank	Garden Feature
so6418/12	Elongated hollow	Quarry
so6418/13	Small hollow surrounded by apparent spoil heap	Feature
so6418/14	Small hollow surrounded by apparent spoil heap	Feature
so6418/15		Pixilated Area
so6419/01	Group of hollows	Scowle
so6419/02	Hollow	Scowle
so6419/03	Large hollow	Quarry
so6419/04	Area of small hollows	Scowle
so6420/01	Irregular terrace	Quarry
so6420/02		Pixilated Area
so6420/03		Uneven Surface
so6420/04	Group of hollows	Quarry
so6420/05		Charcoal Burning Platform
so6420/06	Two terraces	Trackway
so6420/07	Elongated negative hollow	Quarry
so6420/08		Uneven Surface
so6420/09	Group of hollows	Quarry
so6505/01		Charcoal Burning Platform
so6505/02	Very straight linear ditch	Feature
so6505/03	Very straight linear bank	Linear Earthwork
so6505/04	Vague linear mark	Feature
so6505/05	Slightly rectilinear terrace	Linear Earthwork
so6505/06	Two large rectilinear platforms	Garden Feature
so6505/07	Curvilinear bank and ditch	Linear Earthwork
so6506/01		Pixilated Area
so6506/02		Uneven Surface
so6506/03		Linear Earthwork
so6506/04	Series of probable holloways	Holloway
so6506/05	Possible series of holloways	Holloway
so6506/06		Quarry
so6507/01		Feature
so6507/02		Linear Earthwork
so6508/01	Linear and rectilinear banks	Earthwork System
so6508/02	Probable bell pits	Extractive Pit
so6508/03	Possible e-w and n-s boundaries	Earthwork System
so6508/04		Pixilated Area
so6508/05	Possible slight bank/terrace	Linear Earthwork
so6509/01		Pixilated Area
so6509/02		Pixilated Area
so6509/03		Extractive Pit
so6509/04		Charcoal Platforms

Unique ID	Feature description	Interpretation
so6509/05	Linear and rectilinear terraces and banks	Earthwork System
so6510/01	Group of predominantly parallel linear banks/terraces with some rectilinear elements	Earthwork System
so6510/02		Pixilated Area
so6510/03		Pixilated Area
so6510/04		Uneven Surface
so6510/05		Pixilated Area
so6510/06		Pixilated Area
so6510/07	Group of small circular negative platforms	Charcoal Burning Platform
so6510/08	Line of quarries following a ridge	Quarry
so6510/09	Group of small circular negative platforms	Charcoal Burning Platform
so6511/01		Pixilated Area
so6511/02		Pixilated Area
so6511/03		Pixilated Area
so6511/04		Pixilated Area
so6511/05		Pixilated Area
so6511/06		Pixilated Area
so6511/07		Pixilated Area
so6511/08	Series of linear and rectilinear banks	Earthwork System
so6511/09	Group of small circular negative platforms	Charcoal Burning Platform
so6511/10		Pixilated Area
so6511/11		Forestry Operations
so6512/01	Group of vague linear and rectilinear banks. This group seems to include a holloway	Earthwork System
so6512/02	Small circular hollows and associated mounds	Extractive Pit
so6512/03	Group of hollows	Quarry
so6512/04	Two curved linear banks	Linear Earthwork
so6512/05	Short straight stretch of bank	Linear Earthwork
so6512/06	Short straight stretch of bank	Linear Earthwork
so6512/07	Oval depression	Quarry
so6512/08	Oval depression	Quarry
so6512/09	Very vague linear bank	Linear Earthwork
so6513/01	Rectilinear platform	Building Platform
so6514/01	Two small discrete quarries	Quarry
so6514/02	Three circular hollows with associated mounds	Extractive Pit
so6514/03	Irregular hollows and mounds	Extractive Pit
so6514/04		Extractive Pit
so6515/01	Group of parallel linear terraces facing west on the side of a slope. Some of these may be linear banks.	Earthwork System
so6515/02		Charcoal Burning Platform
so6515/03		Pixilated Area
so6515/04	Discontinuous area of small pits and mounds	Extractive Pit
so6515/05		Uneven Surface
so6515/06		Pixilated Area
so6515/07	Thin linear bank	Forestry Enclosure Boundary
so6515/08	Thin linear bank	Forestry Enclosure Boundary
so6515/09	Vague irregular area which seems to consist of small hollows and mounds	Extractive Pit

Unique ID	Feature description	Interpretation
so6515/10	Large circular negative platform	Feature
so6516/01		Pixilated Area
so6516/02		Pixilated Area
so6516/03		Pixilated Area
so6516/04		Uneven Surface
so6516/05	Sub-circular hollow	Quarry
so6516/06	Small sub-circular hollow	Quarry
so6516/07	Long thin ditch	Forestry Enclosure Boundary
so6516/08		Pixilated Area
so6516/09	Group of small circular hollows and mounds	Extractive Pit
so6516/10	Small circular hollows and mounds	Extractive Pit
so6516/11	Long thin ditch	Forestry Enclosure Boundary
so6516/12	Very vague south facing terrace	Feature
so6516/13	Circular hollow	Quarry
so6516/14	Ovoid hollow	Quarry
so6516/15	Ovoid hollow	Quarry
so6516/16	Ovoid hollow	Quarry
so6517/01		Pixilated Area
so6517/02		Uneven Surface
so6517/03	Three small mounds	Mound
so6517/04	Straight holloway bounded by irregular banks	Trackway
so6517/05	Straight holloway	Holloway
so6517/07	Fairly straight hollow	Holloway
so6517/08	Regular rectilinear enclosures defined by banks and ditches	Linear Earthwork
so6517/09	Straight bank or ditch	Linear Earthwork
so6517/10		Forestry Operations
so6517/11	Large irregular hollow with some associated mounds	Natural Feature
so6517/12	Group of hollows	Natural Feature
so6517/13	Group of small mounds associated with scowles	Possible slag heap
so6517/14	Curved bank	Possible iron working Site
so6518/01		Pixilated Area
so6518/02		Pixilated Area
so6518/03	Straight linear hollow	Forestry Enclosure Boundary
so6518/04	Group of small hollows	Scowle
so6518/05	Group of hollows	Scowle
so6518/06	Vague rectilinear banks or terraces	Earthwork System
so6518/07	Group of mounds	Mound
so6518/08	Group of irregular terraces	Quarry
so6518/09	Elongated are of irregular hollows	Quarry
so6518/10	Area of vague amorphous hollows	Scowle
so6518/11	T shaped depression	Holloway
so6518/12	Linear embankment. The western end of which appears to become a cutting	Tramroad
so6518/13	Area of irregular hollows and some mounds	Quarry
so6518/14	Sub-circular hollow	Quarry
so6518/15	Large area of negative features	Scowle
so6518/16	Small crescent shaped platforms	Charcoal Burning Platform

Unique ID	Feature description	Interpretation
so6518/18	Linear hollow	Quarry
so6519/01		Pixilated Area
so6519/02		Pixilated Area
so6519/03	Irregular shallow hollow	Quarry
so6519/04	Irregular shallow hollow	Quarry
so6519/05	Rectilinear enclosure defined by linear banks	Quarry
so6519/06	Small rectilinear enclosure defined by banks.	Enclosure
so6519/07	Small rectangular mound	Feature
so6519/08	Group of small pits	Scowle
so6519/09	Area of small hollows	Scowle
so6519/10		Charcoal Burning Platform
so6519/11	Group of small hollows	Scowle
so6519/12	Large hollow with some mounds	Quarry
so6519/13	Hollows	Quarry
so6519/14	Group of circular hollows generally with associated mounds	Mine Shaft
so6519/16	Reverse S shaped linear feature	Ridge And Furrow
so6519/17		Uneven Surface
so6519/18	Rectilinear enclosure defined by ditches	Enclosure
so6519/19		Trackway
so6519/20	Group of irregular hollows	Scowle
so6520/01		Forestry Operations
so6520/02	Group of hollows	Quarry
so6520/03	Large terrace with some mounds	Quarry
so6520/04	Large negative platform with a modern house sited within it	Building Platform
so6520/05	Group of small hollows	Scowle
so6520/06	Group of large hollows	Scowle
so6520/07		Scowle
so6520/08		Scowle
so6520/09	Area of irregular hollows	Scowle
so6520/10		Charcoal Burning Platform
so6520/11	Large hollows	Natural Feature
so6520/12	Sinuous line. The quality of the lidar hillshaded image differs to either side of this line	Feature
so6520/13	Area of hollows with associated holloways	Quarry
so6520/21	Irregular terrace	Quarry
so6520/22	Two small hollows	Extractive Pit
so6605/01	Linear terrace	Linear Earthwork
so6605/02	Linear and rectilinear boundaries	Earthwork System
so6605/03		Ridge And Furrow
so6605/04	Rectilinear enclosure defined by banks and a ditch. The enclosure measures *c.* 126 x 73m	Enclosure
so6605/05	Curved linear bank	Garden Feature
so6605/06	Vague irregular mark	Feature
so6605/07	Small mounds	Mound
so6606/01	Broad rectilinear bank which may define a platform	Linear Earthwork
so6606/02	Vague short bank	Linear Earthwork
so6606/03	Vague short bank	Linear Earthwork
so6606/04	Curved linear terrace	Trackway

Unique ID	Feature description	Interpretation
so6606/05	Straight section of bank	Linear Earthwork
so6606/06		Ridge And Furrow
so6606/07	Rectilinear enclosure defined by banks. The enclosure measures *c.* 90 x 60m	Enclosure
so6606/08	Rectilinear enclosure defined by banks. The enclosure measures *c.* 80 x 56m	Enclosure
so6606/09	Linear bank	Linear Earthwork
so6606/10	Linear bank	Linear Earthwork
so6606/11		Linear Earthwork
so6607/01	Possible terrace and quarrying	Feature
so6607/02		Linear Earthwork
so6607/03		Linear Earthwork
so6607/04		Linear Earthwork
so6608/01		Forestry Operations
so6608/02		Pixilated Area
so6608/03	Possible field boundaries and track	Earthwork System
so6608/04	Probable field boundaries, one appears on tithe map	Earthwork System
so6608/05	? Circular ditch and bank	Feature
so6608/06		Linear Earthwork
so6608/07		Extractive Pit
so6609/01		Quarry
so6609/02		Feature
so6609/03	Possible rectilinear banks	Earthwork System
so6609/04		Pixilated Area
so6610/01		Pixilated Area
so6610/02		Pixilated Area
so6610/03		Pixilated Area
so6610/04		Pixilated Area
so6610/05		Pixilated Area
so6610/06	Large area of irregular hollows and mounds	Quarry
so6610/07	Area of irregular hollows and spoil heaps	Quarry
so6610/08	Area of irregular hollows and spoil heaps	Quarry
so6610/09		Pixilated Area
so6610/10	Group of irregular hollows and associated mounds	Quarry
so6610/11	Group of small negative platforms. These are not very clear	Charcoal Burning Platform
so6610/12	Not very clear group of small platforms	Charcoal Burning Platform
so6610/13	Four apparently parallel wide linear scoops	Quarry
so6610/14	Irregular group of small hollows	Extractive Pit
so6610/15	Large are containing a number of small, slightly linear or sub-circular hollows with some associated mounds	Extractive Pit
so6610/16	Sub-circular hollow	Extractive Pit
so6610/17		Uneven Surface
so6610/18		Uneven Surface
so6610/19		Uneven Surface
so6610/20		Uneven Surface
so6610/21		Uneven Surface
so6610/22	Group of small hollows which may be associated with some mounds	Extractive Pit
so6610/23	Area of fairly large hollows	Quarry
so6610/24		Uneven Surface

Unique ID	Feature description	Interpretation
so6610/25		Uneven Surface
so6611/01		Pixilated Area
so6611/02		Pixilated Area
so6611/03		Pixilated Area
so6611/04		Pixilated Area
so6611/05		Pixilated Area
so6611/06		Pixilated Area
so6611/07		Pixilated Area
so6611/08	Linear terrace	Trackway
so6611/09	Group of oval and linear hollows	Quarry
so6611/10		Uneven Surface
so6611/11	Area of irregular sub-circular pits and associated mounds	Extractive Pit
so6611/12	Area of irregular pits and associated mounds	Extractive Pit
so6611/13	Rectilinear bank	Linear Earthwork
so6611/14	Curved and rectilinear bank	Linear Earthwork
so6611/15	Vague linear bank	Linear Earthwork
so6611/16		Pixilated Area
so6611/17	Group of small platform features	Charcoal Burning Platform
so6611/18	Group of small platform features	Charcoal Burning Platform
so6611/19	Group of broad and apparently shallow parallel linear hollows	Natural Feature
so6611/20	Slightly curved linear bank	Linear Earthwork
so6612/01		Pixilated Area
so6612/02		Pixilated Area
so6612/03		Pixilated Area
so6612/04		Pixilated Area
so6612/05		Pixilated Area
so6612/06		Pixilated Area
so6612/07	Group of small platform features	Charcoal Burning Platform
so6612/08		Pixilated Area
so6612/09		Pixilated Area
so6612/10		Quarry
so6612/11		Uneven Surface
so6612/12	Straight vague linear bank	Linear Earthwork
so6612/13	Vague linear terrace	Linear Earthwork
so6612/14	Group of hollows perhaps with some associated mounds	Extractive Pit
so6612/15	Group of hollows perhaps with some associated mounds	Extractive Pit
so6612/16	Short vague linear bank	Linear Earthwork
so6612/17	Rectilinear terrace	Linear Earthwork
so6612/18		Uneven Surface
so6612/19	Two large hollows	Natural Feature
so6612/20	Group of small circular hollows	Extractive Pit
so6613/01	Irregular linear bank	Linear Earthwork
so6613/02	Very vague linear and rectilinear banks and terraces	Earthwork System
so6613/03	Two straight parallel banks	Linear Earthwork
so6613/04	Rectilinear terrace in which is a small (*c.* 20 x 14m) rectangular hollow	Building Platform
so6613/05	Group of Linear and rectilinear banks and at lest one holloway	Earthwork System

Unique ID	Feature description	Interpretation
so6613/06		Charcoal Burning Platform
so6614/01	Broad linear bank	Linear Earthwork
so6614/02	Short stretch of bank	Linear Earthwork
so6614/03	Very vague rectilinear platform - western side defined by a curving ditch	Feature
so6614/04	Area of large sub-circular hollows	Scowle
so6614/05	May be two very vague platforms or rectilinear terraces	Earthwork System
so6614/06	Long thin mound	Possible slag heap
so6614/07	Linear bank, which may consist of two banks with a hollow between them	Linear Earthwork
so6614/08		Linear Earthwork
so6614/09		Linear Earthwork
so6614/10		Linear Earthwork
so6614/11		Linear Earthwork
so6614/12	Area of vague linear and rectilinear banks	Earthwork System
so6614/13		Charcoal Burning Platform
so6614/14	Small hollows	Quarry
so6614/15	Group of small pits	Extractive Pit
so6614/16		Pixilated Area
so6614/17		Uneven Surface
so6614/18		Uneven Surface
so6615/01		Pixilated Area
so6615/02	Series of parallel terraces some of which may be low banks running east/west on level ground at the top of a steep slope. There is a hint of some north/south returns to these features.	Earthwork System
so6615/03	Linear and rectilinear banks and terraces	Earthwork System
so6615/04		Scowle
so6615/05		Scowle
so6615/06		
so6615/07	Long thin bank. This feature appears to be a negative feature for some of its length, and is not well defined in some areas	Forestry Enclosure Boundary
so6615/08	Long thin bank	Forestry Enclosure Boundary
so6615/09	Curving bank	Linear Earthwork
so6615/10		Charcoal Burning Platform
so6615/11		Uneven Surface
so6615/12		Uneven Surface
so6615/13	Irregular are of hollows and mounds	Extractive Pit
so6615/14		Pixilated Area
so6615/15	Irregular area	Scowle
so6615/16		Quarry
so6615/17	Area of terracing and pits	Scowle
so6615/18	Short bank	Linear Earthwork
so6615/19	Very vague linear bank	Linear Earthwork
so6616/01		Pixilated Area
so6616/02		Pixilated Area
so6616/03		Pixilated Area
so6616/04		Pixilated Area
so6616/05		Pixilated Area
so6616/06		Pixilated Area

Unique ID	Feature description	Interpretation
so6616/07		Pixilated Area
so6616/08	Group of terraces	Quarry
so6616/09	Two small rectilinear enclosures	Building Platform
so6616/10	Group of largely linear hollows	Quarry
so6616/11	Vague linear bank	Linear Earthwork
so6616/12		Charcoal Burning Platform
so6616/13	Rectilinear platform feature	Garden Feature
so6616/14	Two parallel liner banks	Earthwork System
so6616/15		Scowle
so6616/16		Quarry
so6616/17	Group of discrete rectilinear and oval hollows	Quarry
so6616/18	Broad bank	Linear Earthwork
so6616/19	Broad bank	Linear Earthwork
so6616/20	Possible regularisation of a natural hilltop	Natural Feature
so6616/21	Very vague linear bank	Linear Earthwork
so6616/22	Group of small hollows	Extractive Pit
so6616/23	Line of small irregular hollows culminating in a longer trench	Scowle
so6616/24	Vague linear bank	Linear Earthwork
so6617/01	Rectilinear terraces	Earthwork System
so6617/02	Rectilinear bank	Linear Earthwork
so6617/03		Linear Earthwork
so6617/04		Linear Earthwork
so6617/05		Charcoal Burning Platform
so6618/01	Curved	Linear Earthwork
so6618/02		Linear Earthwork
so6618/03	Rectilinear ditch	Linear Earthwork
so6618/04	Linear terrace	Linear Earthwork
so6618/05	Linear terrace	Linear Earthwork
so6618/06		Charcoal Burning Platform
so6618/07	Ridge	Natural Feature
so6618/08		Linear Earthwork
so6618/09	Group of broad parallel linear mounds/banks	Linear Earthwork
so6705/01		Ridge And Furrow
so6705/02	Straight linear feature	Linear Earthwork
so6705/03	Linear bank	Linear Earthwork
so6705/04		Ridge And Furrow
so6705/05	Small and very vague rectilinear enclosure bounded by banks. The enclosure measures *c.* 25 x 25m	Enclosure
so6705/06	Small circular mound	Mound
so6706/01	Vague and broad linear and rectilinear banks	Earthwork System
so6706/02	Vague and broad linear and rectilinear banks	Earthwork System
so6706/03		Ridge And Furrow
so6706/04	Small mound	Mound
so6706/05	Linear and rectilinear banks and terraces	Earthwork System
so6706/06	Small sub-rectangular mound	Mound
so6706/07		Linear Earthwork
so6706/08		Ridge And Furrow

Unique ID	Feature description	Interpretation
so6706/09	Rectilinear bank	Linear Earthwork
so6706/10	Short linear bank	Linear Earthwork
so6706/11		Charcoal Burning Platform
so6706/12		Ridge And Furrow
so6707/01	Group of irregular mounds	Uneven Surface
so6707/02		Ridge And Furrow
so6707/03		Ridge And Furrow
so6707/04	Short linear bank	Linear Earthwork
so6707/05	Curved linear bank	Linear Earthwork
so6707/06	Small circular mound	Mound
so6707/07	Rectilinear feature defined by a bank and ditch	Enclosure
so6707/08		Ridge And Furrow
so6707/09		Ridge And Furrow
so6707/10	Rectilinear bank	Linear Earthwork
so6707/11		Linear Earthwork
so6707/12	Rectilinear bank	Linear Earthwork
so6707/13		Linear Earthwork
so6707/14	Ovoid mound	Mound
so6708/01	Linear and rectilinear banks	Earthwork System
so6708/02	Rectilinear enclosure measuring *c.* 80m across. There appears to be an entrance on its eastern side	Enclosure
so6708/03	Rectilinear enclosure measuring *c.* 90m across.	Enclosure
so6708/04	Small mound	Mound
so6708/05	Small circular mound	Mound
so6708/06		Linear Earthwork
so6708/07		Ridge And Furrow
so6708/08	Linear terrace	Linear Earthwork
so6708/09		Ridge And Furrow
so6708/10		Ridge And Furrow
so6709/01		Uneven Surface
so6709/02		Earthwork System
so6710/01		Pixilated Area
so6710/02	Linear bank	Linear Earthwork
so6710/03	Vague linear bank	Linear Earthwork
so6710/04		Charcoal Burning Platform
so6710/05		Linear Earthwork
so6710/06		Linear Earthwork
so6710/07	Group of sub-circular hollows	Quarry
so6710/08	Small circular mound within a rectilinear depression	Mound
so6710/09	C shaped hollow	Quarry
so6710/10	Oval hollow	Quarry
so6710/11	Group of irregular hollows and mounds	Quarry
so6710/12		Holloway
so6710/13		Uneven Surface
so6710/14	Very vague linear bank	Linear Earthwork
so6710/15	Group of rectilinear terraces and rectilinear platforms which do not conform to boundaries recorded on post-medieval maps	Earthwork System
so6710/16		Uneven Surface

Unique ID	Feature description	Interpretation
so6710/17		Uneven Surface
so6711/01	Small rectilinear hollow apparently demarcating an enclosure	Linear Earthwork
so6711/02		Pixilated Area
so6711/03	Group of small platforms	Charcoal Burning Platform
so6711/04	Linear bank	Linear Earthwork
so6711/05	Short stretch of slight linear hollow	Linear Earthwork
so6711/06	Small circular mound. May be associated with a slight platform but not clear	Mound
so6711/07	Curved hollowly	Holloway
so6711/08	Slight linear bank	Linear Earthwork
so6712/01	Circular depression	Natural Feature
so6712/02		Linear Earthwork
so6712/03		Linear Earthwork
so6712/04	Very vague linear terrace or hollow	Linear Earthwork
so6712/05	Curved terrace	Trackway
so6712/06	Slightly curved narrow bank	Linear Earthwork
so6712/07	Two large hollows in side of slope	Quarry
so6712/08	Area of large irregular hollows	Quarry
so6712/09	Irregular mound	Mound
so6712/10	Two small mounds	Mound
so6713/01	Rectilinear enclosure bounded by banks, the westernmost of which conforms to the modern field linear earthwork pattern. The enclosure measures *c.* 90 x 45m	Enclosure
so6713/02	Linear and rectilinear banks	Earthwork System
so6713/03	Linear and rectilinear banks	Earthwork System
so6713/04	Linear bank	Linear Earthwork
so6713/05	Small sub-rectangular enclosure defined by a ditch. The enclosure measures *c.* 22m across	Feature
so6713/06	Curved linear bank	Linear Earthwork
so6713/07	Very dispersed group of small mounds	Mound
so6714/01	Three shallow hollows	Quarry
so6714/02	Small hollow	Quarry
so6714/03		Linear Earthwork
so6714/04		Linear Earthwork
so6714/05		Linear Earthwork
so6714/06	Small pits and mounds	Quarry
so6714/07		Pixilated Area
so6714/08	Group of negative linear features	Holloway
so6714/09		Quarry
so6714/10		Garden Feature
so6714/11		Uneven Surface
so6714/12		Charcoal Burning Platform
so6714/13	Linear banks and terraces	Earthwork System
so6714/14		Pixilated Area
so6714/15		Pixilated Area
so6714/16		Charcoal Burning Platform
so6714/17		Pixilated Area
so6715/01		Pixilated Area
so6715/02	Three parallel and closely spaced linear banks	Earthwork System

Unique ID	Feature description	Interpretation
so6715/03	Very vague banks or terracing	Earthwork System
so6715/04		Charcoal Burning Platform
so6715/07		Charcoal Burning Platform
so6715/08	Long thin bank. The northern part of this feature appears more like a ditch	Path
so6715/09	Large rectilinear platform	Garden Feature
so6715/10		Pixilated Area
so6715/11		Linear Earthwork
so6715/12	Linear and rectilinear banks and terraces	Earthwork System
so6715/13		Linear Earthwork
so6715/14		Forestry Operations
so6715/15		Uneven Surface
so6715/16		Charcoal Burning Platform
so6715/17	Area of banks and terraces	Earthwork
so6715/18		Pixilated Area
so6716/01	Rectilinear bank/terrace	Linear Earthwork
so6716/02	Short linear terrace	Trackway
so6716/04		Charcoal Burning Platform
so6716/05	Very vague parallel linear banks or terraces	Earthwork System
so6716/06	Linear and rectilinear banks	Earthwork System
so6717/01	Rectilinear platform.	Building Platform
so6717/02	Straight bank.	Linear Earthwork
so6717/03	Linear and rectilinear banks s	Earthwork System
so6717/04	Parallel linear banks	Earthwork System
so6717/05	Very straight linear bank	Feature
so6717/06		Uneven Surface
so6717/07		Uneven Surface
so6717/08		Charcoal Burning Platform
so6718/01	Vague linear and rectilinear banks and possible holloway	Linear Earthwork
so6718/02		Charcoal Burning Platform
so6718/04	Linear bank	Linear Earthwork
so6814/01	Three irregular circular mounds	Mound
so6814/02	Possible rectilinear enclosure formed by ditches - the northern arm of this postulated enclosure is not visible	Enclosure
so6814/03	Straight corrugations	Ridge And Furrow
so6814/04	Linear terrace	Linear Earthwork
so6814/05	Very straight narrow bank	Linear Earthwork
so6814/06	Broad rectilinear ditch	Linear Earthwork
so6814/07		Uneven Surface
so6814/08		Uneven Surface
so6814/09	Curved ditch	Linear Earthwork
so6814/10		Pixilated Area
so6814/11		Uneven Surface
so6814/12		Uneven Surface
so6814/13	Narrow straight corrugations	Ridge And Furrow
so6814/14	Linear bank	Linear Earthwork
so6814/15	Linear ditch	Linear Earthwork

Unique ID	Feature description	Interpretation
so6814/16	Parallel narrow ditches	Feature
so6814/17		Charcoal Burning Platform
so6815/01		Pixilated Area
so6815/02	Linear banks and possible ditch	Linear Earthwork
so6815/03	Linear and rectilinear banks forming earthwork system	Earthwork System
so6816/01		Pixilated Area
so6816/02	Linear and rectilinear banks and ditches forming an earthwork system	Earthwork System
so6816/03	Linear and rectilinear banks forming an earthwork system	Earthwork System
so6816/04	Possible linear banks forming an earthwork system	Earthwork System
so6816/05	Oval/D shaped enclosure defined mainly by a ditch	Enclosure
so6816/06		Charcoal Burning Platform
so6816/07	Vague linear terrace	Linear Earthwork
so6817/01	Linear and rectilinear banks and ditches, forming an earthwork system	Earthwork System
so6817/02		Pixilated Area
so6817/03		Pixilated Area
so6818/01	Square platform, *c.*85m sq, with bank on west side and smaller additional banks	Feature
so6818/02	Parallel linear banks and ditches, possible ridge and furrow	Ridge And Furrow
so6818/03	Possible linear bank	Linear Earthwork
so6818/04	Slight linear ditch	Linear Earthwork
so6818/05	Pattern of linear/rectilinear slight ditches, possibly forming field boundaries, or drainage	Earthwork System
so6818/06	2 parallel banks	Linear Earthwork
so6818/07	Linear ditch, or possible track	Linear Earthwork
so6818/08	Linear banks and ditches forming a probable field system	Earthwork System
so6818/09	Linear bank	Linear Earthwork
so6818/10	Linear and rectilinear banks, forming a probable field system	Earthwork System
so6818/11	Linear ditch	Linear Earthwork
so6916/01		Pixilated Area
so6917/01	Linear bank	Linear Earthwork
so6917/02	Linear bank	Linear Earthwork
so6918/01	Linear bank	Linear Earthwork
st5296/01	Series of linear and rectilinear banks and terraces	Earthwork System
st5394/01	Linear bank	Road
st5394/02	Vague broad banks and terraces which seem to form a linear and rectilinear pattern	Earthwork System
st5394/04	Very straight thin linear bank	Feature
st5394/05	Very vague linear terrace	Linear Earthwork
st5394/06		Uneven Surface
st5395/01		Pixilated Area
st5395/02		Pixilated Area
st5395/03		Pixilated Area
st5395/04	Area of generally fairly thin linear banks and terraces	Earthwork System
st5395/05	Small rectilinear platform measuring *c.* 13 x 8m	Building Platform
st5395/06	Linear terrace	Linear Earthwork
st5395/07	Broad parallel linear banks separated by narrow ditches	Ridge And Furrow
st5395/08		Pixilated Area
st5395/09	Small irregular mound	Mound
st5395/10		Uneven Surface

Unique ID	Feature description	Interpretation
st5396/01	Linear and rectilinear banks and terraces	Earthwork System
st5396/02	Parallel terraces	Earthwork System
st5396/03	Three small circular mounds	Mound
st5396/04		Pixilated Area
st5398/01		Charcoal Burning Platform
st5398/02	Curving terrace down the face of a slope	Trackway
st5398/03		Pixilated Area
st5398/04		Pixilated Area
st5398/05		Pixilated Area
st5399/01		Uneven Surface
st5399/02	Area of large amorphous mounds and hollows	Quarry
st5494/01	Zigzag shaped linear bank	Linear Earthwork
st5494/02	Curved linear bank	Linear Earthwork
st5494/03	T shaped linear bank	Linear Earthwork
st5494/04	Vague linear and rectilinear banks and terraces	Earthwork System
st5494/05	Vague and occasionally feint linear and rectilinear banks	Earthwork System
st5494/06	Linear and rectilinear banks	Earthwork System
st5495/01	Linear and rectilinear banks and terraces	Deserted Village
st5495/02	Vague and generally irregular linear and rectilinear banks and terraces	Deserted Village
st5495/03	Linear and rectilinear banks	Earthwork System
st5495/04	Linear and rectilinear banks	Earthwork System
st5495/05		Pixilated Area
st5495/06		Pixilated Area
st5495/07	Small rectilinear platform	Building Platform
st5495/08	Large rectilinear mound measuring *c.* 50 x 15m	Feature
st5496/01		Pixilated Area
st5496/02		Uneven Surface
st5496/03	Curved bank and ditch	Hill Top Enclosure
st5496/04	Curved bank	Linear Earthwork
st5496/05	X shaped configuration of two broad irregular banks	Earthwork System
st5496/06	Broad linear bank and three shorter, narrower banks at right angles to it	Earthwork System
st5496/07	Rectilinear bank	Linear Earthwork
st5496/08	Curved linear bank	Linear Earthwork
st5496/09	Rectilinear bank	Linear Earthwork
st5496/10	Group of small irregular hollows	Feature
st5496/11		Pixilated Area
st5496/12	Small circular mound	Mound
st5496/13	Two fairly large mounds	Mine Shaft
st5496/14	Parallel terraces/banks running across a field.	Ridge And Furrow
st5496/15	Small rectangular platform	Building Platform
st5496/16	Vague sub-rectangular mound	Mound
st5497/01		Pixilated Area
st5497/02		Pixilated Area
st5498/01	Dispersed group of hollows of varying sizes, including a large linear hollow	Quarry
st5498/02	Straight section of thin linear hollow	Linear Earthwork
st5498/03	Slightly curvy bank	Linear Earthwork
st5498/04	Small mound	Mound

Unique ID	Feature description	Interpretation
st5498/05	Group of parallel linear terraces or banks on the side of a steep slope	Feature
st5498/06	Linear bank	Linear Earthwork
st5498/07	Short stretch of bank	Linear Earthwork
st5498/08	Circular hollow	Quarry
st5498/09	Short stretch of bank	Linear Earthwork
st5498/10		Uneven Surface
st5498/11	Short stretch of bank	Linear Earthwork
st5498/12	Short stretch of bank	Linear Earthwork
st5498/13		Pixilated Area
st5498/14	Sub-circular hollow	Quarry
st5498/15	Sub-circular hollow	Quarry
st5498/16		Uneven Surface
st5498/17		Pixilated Area
st5498/18		Uneven Surface
st5498/19		Uneven Surface
st5498/20	Small oval enclosure (*c.* 30m across) defined by vague banks	Enclosure
st5499/01	Bank	Linear Earthwork
st5499/02	Rectilinear enclosure defined by banks. This enclosure appears to have at least one internal division	Enclosure
st5499/03	Vague sub-circular enclosure (*c.* 85m across) apparently defined by banks	Enclosure
st5499/04	Group of small pits	Extractive Pit
st5499/05	Terraces and banks forming linear, parallel and rectilinear patterns	Earthwork System
st5499/06	Elongated hollow	Quarry
st5499/07	Dispersed Circular hollows	Natural Feature
st5499/08		Pixilated Area
st5499/09		Pixilated Area
st5499/10	Group of large sub-circular hollows	Quarry
st5499/11	Very thin, slight bank like feature	Trackway
st5594/01	Broad bank	Linear Earthwork
st5594/02	Curved hollow	Trackway
st5594/03	Linear and rectilinear banks and terraces	Earthwork System
st5594/04	Very feint rectilinear banks	Earthwork System
st5594/05	Feint curved linear bank	Linear Earthwork
st5594/06	Small rectilinear terrace defined by a ditch	Building Platform
st5594/07	Short stretch of bank	Linear Earthwork
st5594/08		Ridge And Furrow
st5595/01	Large sinuous bank, which hairpins to eh west at its southern end to form a west facing terrace	Trackway
st5595/02	Short bank	Linear Earthwork
st5595/03		Ridge And Furrow
st5595/04	Vague linear terrace	Linear Earthwork
st5595/05	Rectilinear bank	Linear Earthwork
st5596/01	Feint broad linear and rectilinear banks. Some of these appear to take the form of parallel banks, but this may partly be determined by the light source orientation	Earthwork System
st5596/02	Very feint linear banks	Earthwork System
st5596/03	Parallel linear banks with some broad banks running at right angles to the main groups	Earthwork System
st5597/01	Linear bank	Ridge And Furrow
st5597/02		Uneven Surface

Unique ID	Feature description	Interpretation
st5597/03	Small curved bank - roughly circular measuring *c.* 8m across	Feature
st5597/04	Four small circular mounds	Mound
st5597/05	Sub-rectangular enclosure defined by a ditch and some banks	Enclosure
st5597/06	Small sub-circular mound, apparently with a hole in the middle	Mound
st5597/07	Group of irregular terraces	Earthwork
st5597/08	Straight linear bank	Linear Earthwork
st5598/01	Large circular hollow	Quarry
st5598/02	Very circular/penannular enclosure defined by thin banks. *c.* 30m across	Enclosure
st5598/03	Very straight section of linear hollow	Trackway
st5598/04		Pixilated Area
st5598/05	Sub-circular hollow	Quarry
st5598/06	Group of amorphous hollows	Quarry
st5598/07	Amorphous hollow	Quarry
st5598/08	Very vague and irregular linear terraces	Feature
st5598/09		Pixilated Area
st5598/10		Uneven Surface
st5598/11	D shaped bank	Earthwork
st5598/12	Group of small mounds	Mound
st5598/13	Sub-circular hollow	Quarry
st5598/14	Sub-circular hollow	Quarry
st5598/15	Sub-circular hollow	Quarry
st5598/16	Group of small mounds	Mound
st5598/17	Irregular sub-circular hollow	Quarry
st5598/18		Quarry
st5598/19	Oval hollow	Quarry
st5598/20		Uneven Surface
st5599/01		Quarry
st5599/02	Vague linear bank	Linear Earthwork
st5599/03	Vague linear bank	Linear Earthwork
st5599/04		Forestry Operations
st5599/05	Vague stretch of bank	Linear Earthwork
st5599/06	Rectilinear enclosure with at least one internal compartment defined by banks. The whole enclosure measures *c.* 120x75m	Enclosure
st5599/07	Group of irregular hollows and holloways	Quarry
st5599/08	Curved linear bank	Park Pale
st5599/09	Curving linear bank	Park Pale
st5599/10	Group of parallel banks generally trending northeast - southwest	Earthwork System
st5599/11	Large sub-circular hollows	Quarry
st5599/12	Large sub-circular hollow	Quarry
st5599/13	Large elongated hollow	Quarry
st5599/14	Group of irregular hollows	Quarry
st5599/15	Irregular hollow	Quarry
st5599/16	Small mound	Mound
st5599/17		Uneven Surface
st5599/18	Two sub-circular hollows	Quarry
st5599/19	Very small rectilinear feature	Feature
st5697/01	Broad bank	Linear Earthwork
st5697/02		Uneven Surface

Unique ID	Feature description	Interpretation
st5697/03	Group of not very regular broad linear, curved and rectilinear banks	Earthwork System
st5697/04	Straight section of bank, the southern part of which becomes a ditch	Linear Earthwork
st5697/05	Vague and irregular board linear and rectilinear banks	Earthwork System
st5697/06	Vague parallel linear banks	Ridge And Furrow
st5697/07		Uneven Surface
st5698/01	Sort bank	Linear Earthwork
st5698/02	Curved bank	Linear Earthwork
st5698/03	Dispersed group of vague linear and rectilinear banks and terraces.	Earthwork System
st5698/04		Quarry
st5698/05	Irregular hollow	Quarry
st5698/06	Vague hollows	Quarry
st5698/07		Linear Earthwork
st5698/08	Rectilinear bank. The actual return is slightly obscured on the lidar image.	Linear Earthwork
st5698/09	Short stretch of bank.	Linear Earthwork
st5698/10	Short stretch of bank.	Linear Earthwork
st5698/11	Straight terrace between existing field boundaries.	Linear Earthwork
st5698/12		Uneven Surface
st5698/13		Charcoal Burning Platform
st5698/14	Vague rectilinear enclosure defined by banks. This feature appears to measure *c.* 50m x *c.* 25m.	Enclosure
st5698/15	Short stretch of linear terrace.	Linear Earthwork
st5698/16	Sub-circular hollow	Quarry
st5698/17	Sub-circular hollow with associated mound.	Quarry
st5698/18	Elongated hollow.	Quarry
st5698/19	Sub-circular hollow.	Quarry
st5698/20		Uneven Surface
st5698/21		Uneven Surface
st5698/22	Group of linear and rectilinear banks	Earthwork System
st5698/23	Elongated hollow.	Quarry
st5698/24	Irregular hollow.	Quarry
st5698/25	Irregular hollow	Quarry
st5698/26	Hollow	Quarry
st5698/27	Dispersed group of hollows and mounds	Quarry
st5698/28	Rectilinear mound	Feature
st5698/29		Uneven Surface
st5698/30		Quarry
st5699/01		Pixilated Area
st5699/02		Uneven Surface
st5699/03		Pixilated Area
st5699/04		Quarry
st5699/05		Quarry
st5699/06		Quarry
st5699/07		Quarry
st5699/08		Quarry
st5699/09	Curved bank	Linear Earthwork
st5699/10	Short straight stretch of bank	Linear Earthwork
st5699/11		Quarry
st5699/12		Quarry

Unique ID	Feature description	Interpretation
st5699/13		Uneven Surface
st5699/14		Uneven Surface
st5699/15		Ridge And Furrow
st5699/16		Quarry
st5699/17		Quarry
st5699/18		Pixilated Area
st5699/19		Pixilated Area
st5699/20		Pixilated Area
st5699/21	Very vague rectilinear enclosure defined by banks. The enclosure measures *c.* 120m x 60m	Enclosure
st5699/22		Quarry
st5699/23	Vague linear bank	Natural Feature
st5699/24		Quarry
st5699/25		Quarry
st5699/26		Quarry
st5699/27		Uneven Surface
st5699/28	Dispersed group of small mounds	Mound
st5699/29	Small oval enclosure	Enclosure
st5699/30	Dispersed linear features all running approximately north/south.	Ridge And Furrow
st5799/01	Large dispersed group of linear and rectilinear banks and terraces	Earthwork System
st5799/02		Uneven Surface
st5799/03	Thin linear bank	Linear Earthwork
st5799/04		Pixilated Area
st5799/05	Liner and rectilinear banks	Earthwork System
st5799/06	Area of vague linear and rectilinear features, bounded on the south by a substantial curved bank	Earthwork System
st5899/01		Ridge And Furrow
st5899/02		Ridge And Furrow
st5899/03	Rectilinear bank	Linear Earthwork
st5899/04	Small rectilinear platform	Building Platform
st5899/05	Vague parallel linear banks	Deserted Village
st5899/06	Rectilinear bank	Linear Earthwork
st5899/07	Broad rectilinear bank. If this formed an enclosure it would encompass an area of c125m x 152m	Enclosure
st5899/08	Straight linear bank	Linear Earthwork
st5899/09	Fairly widely spaced parallel banks and ditches	Ridge And Furrow
st5899/10	Ague widely spaced corrugation	Ridge And Furrow
st5899/11	Short stretch of linear bank	Linear Earthwork
st5899/12	Parallel broad linear banks	Ridge And Furrow
st5899/13	Straight narrow hollow	Linear Earthwork
st5899/14	Vague parallel terraces	Ridge And Furrow
st5899/15		Uneven Surface

Appendix G Transcription levels for each 1km square

1km OS grid square	Transcription level
S O 5 2 0 0	Revised Level 2
S O 5 2 0 1	Out of county no transcription
S O 5 2 0 2	Out of county no transcription
S O 5 2 0 3	Level 3
S O 5 3 0 0	Revised Level 2
S O 5 3 0 1	Level 3
S O 5 3 0 2	Level 3
S O 5 3 0 3	Level 3
S O 5 3 0 4	Level 3
S O 5 3 0 5	Level 3
S O 5 3 0 6	Out of county no transcription
S O 5 3 0 7	Level 3
S O 5 3 0 8	Level 3
S O 5 3 0 9	Revised Level 2
S O 5 3 1 0	Revised Level 2
S O 5 3 1 1	Revised Level 2
S O 5 3 1 2	Level 3
S O 5 4 0 0	Revised Level 2
S O 5 4 0 1	Revised Level 2
S O 5 4 0 2	Level 3
S O 5 4 0 3	Level 3
S O 5 4 0 4	Level 3
S O 5 4 0 5	Level 3
S O 5 4 0 6	Level 3
S O 5 4 0 7	Level 3
S O 5 4 0 8	Level 3
S O 5 4 0 9	Revised Level 2
S O 5 4 1 0	Revised Level 2
S O 5 4 1 1	Revised Level 2
S O 5 4 1 2	Revised Level 2
S O 5 4 1 3	Revised Level 2
S O 5 4 1 4	Out of county no transcription
S O 5 4 1 5	Out of county no transcription
S O 5 5 0 0	Revised Level 2
S O 5 5 0 1	Revised Level 2
S O 5 5 0 2	Level 3
S O 5 5 0 3	Level 3
S O 5 5 0 4	Level 3
S O 5 5 0 5	Revised Level 2
S O 5 5 0 6	Revised Level 2
S O 5 5 0 7	Level 3
S O 5 5 0 8	Level 3
S O 5 5 0 9	Revised Level 2
S O 5 5 1 0	Revised Level 2
S O 5 5 1 1	Revised Level 2
S O 5 5 1 2	Revised Level 2
S O 5 5 1 3	Revised Level 2
S O 5 5 1 4	Revised Level 2
S O 5 5 1 5	Revised Level 2
S O 5 5 1 6	Out of county no transcription
S O 5 6 0 0	Revised Level 2
S O 5 6 0 1	Level 3
S O 5 6 0 2	Level 3
S O 5 6 0 3	Level 3
S O 5 6 0 4	Level 3
S O 5 6 0 5	Revised Level 2
S O 5 6 0 6	Revised Level 2
S O 5 6 0 7	Level 3
S O 5 6 0 8	Revised Level 2
S O 5 6 0 9	Revised Level 2
S O 5 6 1 0	Revised Level 2
S O 5 6 1 1	Revised Level 2

1km OS grid square	Transcription level
S O 5 6 1 2	Revised Level 2
S O 5 6 1 3	Revised Level 2
S O 5 6 1 4	Revised Level 2
S O 5 6 1 5	Revised Level 2
S O 5 6 1 6	Level 3
S O 5 7 0 0	Revised Level 2
S O 5 7 0 1	Level 3
S O 5 7 0 2	Revised Level 2
S O 5 7 0 3	Revised Level 2
S O 5 7 0 4	Level 3
S O 5 7 0 5	Revised Level 2
S O 5 7 0 6	Revised Level 2
S O 5 7 0 7	Level 3
S O 5 7 0 8	Revised Level 2
S O 5 7 0 9	Revised Level 2
S O 5 7 1 0	Level 3
S O 5 7 1 1	Revised Level 2
S O 5 7 1 2	Revised Level 2
S O 5 7 1 3	Level 3
S O 5 7 1 4	Level 3
S O 5 7 1 5	Revised Level 2
S O 5 7 1 6	Revised Level 2
S O 5 8 0 0	Level 3
S O 5 8 0 1	Revised Level 2
S O 5 8 0 2	Revised Level 2
S O 5 8 0 3	Revised Level 2
S O 5 8 0 4	Level 3
S O 5 8 0 5	Level 3
S O 5 8 0 6	Revised Level 2
S O 5 8 0 7	Revised Level 2
S O 5 8 0 8	Revised Level 2
S O 5 8 0 9	Revised Level 2
S O 5 8 1 0	Level 3
S O 5 8 1 1	Level 3
S O 5 8 1 2	Revised Level 2
S O 5 8 1 3	Revised Level 2
S O 5 8 1 4	Level 3
S O 5 8 1 5	Level 3
S O 5 8 1 6	Revised Level 2
S O 5 8 1 7	Level 3
S O 5 8 1 8	Out of county no transcription
S O 5 8 1 9	Out of county no transcription
S O 5 9 0 1	Revised Level 2
S O 5 9 0 2	Revised Level 2
S O 5 9 0 3	Revised Level 2
S O 5 9 0 4	Level 3
S O 5 9 0 5	Revised Level 2
S O 5 9 0 6	Revised Level 2
S O 5 9 0 7	Revised Level 2
S O 5 9 0 8	Revised Level 2
S O 5 9 0 9	Revised Level 2
S O 5 9 1 0	Revised Level 2
S O 5 9 1 1	Revised Level 2
S O 5 9 1 2	Revised Level 2
S O 5 9 1 3	Revised Level 2
S O 5 9 1 4	Revised Level 2
S O 5 9 1 5	Level 3
S O 5 9 1 6	Revised Level 2
S O 5 9 1 7	Level 3
S O 5 9 1 8	Out of county no transcription
S O 5 9 1 9	Out of county no transcription
S O 6 0 0 2	Level 3
S O 6 0 0 3	Level 3
S O 6 0 0 4	Level 3
S O 6 0 0 5	Revised Level 2
S O 6 0 0 6	Revised Level 2
S O 6 0 0 7	Level 2

1km OS grid square	Transcription level
S O 6 0 0 8	Level 2
S O 6 0 0 9	Level 1
S O 6 0 1 0	Revised Level 2
S O 6 0 1 1	Revised Level 2
S O 6 0 1 2	Revised Level 2
S O 6 0 1 3	Level 1
S O 6 0 1 4	Level 2
S O 6 0 1 5	Revised Level 2
S O 6 0 1 6	Revised Level 2
S O 6 0 1 7	Level 3
S O 6 0 1 8	Level 3
S O 6 0 1 9	Out of county no transcription
S O 6 1 0 2	Level 3
S O 6 1 0 3	Level 3
S O 6 1 0 4	Level 3
S O 6 1 0 5	Revised Level 2
S O 6 1 0 6	Revised Level 2
S O 6 1 0 7	Level 2
S O 6 1 0 8	Level 2
S O 6 1 0 9	Level 2
S O 6 1 1 0	Revised Level 2
S O 6 1 1 1	Revised Level 2
S O 6 1 1 2	Revised Level 2
S O 6 1 1 3	Revised Level 2
S O 6 1 1 4	Revised Level 2
S O 6 1 1 5	Revised Level 2
S O 6 1 1 6	Revised Level 2
S O 6 1 1 7	Level 3
S O 6 1 1 8	Level 3
S O 6 1 1 9	Out of county no transcription
S O 6 2 0 2	Level 3
S O 6 2 0 3	Level 3
S O 6 2 0 4	Revised Level 2
S O 6 2 0 5	Revised Level 2
S O 6 2 0 6	Revised Level 2
S O 6 2 0 7	Level 2
S O 6 2 0 8	Level 2
S O 6 2 0 9	Level 2
S O 6 2 1 0	Revised Level 2
S O 6 2 1 1	Revised Level 2
S O 6 2 1 2	Revised Level 2
S O 6 2 1 3	Revised Level 2
S O 6 2 1 4	Revised Level 2
S O 6 2 1 5	Revised Level 2
S O 6 2 1 6	Revised Level 2
S O 6 2 1 7	Level 3
S O 6 2 1 8	Level 3
S O 6 2 1 9	Out of county no transcription
S O 6 3 0 2	Level 3
S O 6 3 0 3	Revised Level 2
S O 6 3 0 4	Revised Level 2
S O 6 3 0 5	Revised Level 2
S O 6 3 0 6	Revised Level 2
S O 6 3 0 7	Revised Level 2
S O 6 3 0 8	Level 2
S O 6 3 0 9	Level 2
S O 6 3 1 0	Revised Level 2
S O 6 3 1 1	Revised Level 2
S O 6 3 1 2	Revised Level 2
S O 6 3 1 3	Revised Level 2
S O 6 3 1 4	Revised Level 2
S O 6 3 1 5	Revised Level 2
S O 6 3 1 6	Revised Level 2
S O 6 3 1 7	Level 3
S O 6 3 1 8	Level 3
S O 6 3 1 9	Out of county no transcription
S O 6 3 2 0	Out of county no transcription

1km OS grid square	Transcription level
S O 6 4 0 5	Revised Level 2
S O 6 4 0 6	Revised Level 2
S O 6 4 0 7	Revised Level 2
S O 6 4 0 8	Level 2
S O 6 4 0 9	Level 2
S O 6 4 1 0	Revised Level 2
S O 6 4 1 1	Revised Level 2
S O 6 4 1 2	Revised Level 2
S O 6 4 1 3	Revised Level 2
S O 6 4 1 4	Revised Level 2
S O 6 4 1 5	Revised Level 2
S O 6 4 1 6	Revised Level 2
S O 6 4 1 7	Level 3
S O 6 4 1 8	Revised Level 2
S O 6 4 1 9	Revised Level 2
S O 6 4 2 0	Revised Level 2
S O 6 5 0 5	Level 3
S O 6 5 0 6	Revised Level 2
S O 6 5 0 7	Revised Level 2
S O 6 5 0 8	Level 2
S O 6 5 0 9	Level 2
S O 6 5 1 0	Revised Level 2
S O 6 5 1 1	Revised Level 2
S O 6 5 1 2	Revised Level 2
S O 6 5 1 3	Level 3
S O 6 5 1 4	Revised Level 2
S O 6 5 1 5	Revised Level 2
S O 6 5 1 6	Revised Level 2
S O 6 5 1 7	Revised Level 2
S O 6 5 1 8	Revised Level 2
S O 6 5 1 9	Revised Level 2
S O 6 5 2 0	Revised Level 2
S O 6 6 0 5	Level 3
S O 6 6 0 6	Level 3
S O 6 6 0 7	Revised Level 2
S O 6 6 0 8	Level 2
S O 6 6 0 9	Level 2
S O 6 6 1 0	Revised Level 2
S O 6 6 1 1	Revised Level 2
S O 6 6 1 2	Revised Level 2
S O 6 6 1 3	Level 3
S O 6 6 1 4	Revised Level 2
S O 6 6 1 5	Revised Level 2
S O 6 6 1 6	Revised Level 2
S O 6 6 1 7	Level 3
S O 6 6 1 8	Level 3
S O 6 6 1 9	Level 3
S O 6 7 0 5	Level 3
S O 6 7 0 6	Level 3
S O 6 7 0 7	Level 3
S O 6 7 0 8	Level 3
S O 6 7 0 9	Level 2
S O 6 7 1 0	Revised Level 2
S O 6 7 1 1	Revised Level 2
S O 6 7 1 2	Revised Level 2
S O 6 7 1 3	Revised Level 2
S O 6 7 1 4	Level 3
S O 6 7 1 4	Level 3
S O 6 7 1 5	Revised Level 2
S O 6 7 1 5	Level 3
S O 6 7 1 6	Level 3
S O 6 7 1 6	Level 3
S O 6 7 1 7	Level 3
S O 6 7 1 7	Level 3
S O 6 7 1 8	Level 3
S O 6 7 1 8	Level 3
S O 6 8 1 4	Level 3

1km OS grid square	Transcription level
S O 6 8 1 5	Level 3
S O 6 8 1 6	Level 3
S O 6 8 1 7	Level 3
S O 6 8 1 8	Level 3
S O 6 8 1 9	Level 3
S O 6 9 1 6	Level 3
S O 6 9 1 7	Level 3
S T 5 2 9 6	Level 3
S T 5 2 9 7	Out of county no transcription
S T 5 2 9 8	Out of county no transcription
S T 5 2 9 9	Out of county no transcription
S T 5 3 9 4	Level 3
S T 5 3 9 5	Level 3
S T 5 3 9 6	Level 3
S T 5 3 9 7	Out of county no transcription
S T 5 3 9 8	Revised Level 2
S T 5 3 9 9	Revised Level 2
S T 5 4 9 4	Level 3
S T 5 4 9 5	Level 3
S T 5 4 9 6	Level 3
S T 5 4 9 7	Level 3
S T 5 4 9 8	Revised Level 2
S T 5 4 9 9	Revised Level 2
S T 5 5 9 4	Level 3
S T 5 5 9 5	Level 3
S T 5 5 9 6	Level 3
S T 5 5 9 7	Level 3
S T 5 5 9 8	Revised Level 2
S T 5 5 9 9	Revised Level 2
S T 5 6 9 7	Level 3
S T 5 6 9 8	Revised Level 2
S T 5 6 9 9	Revised Level 2
S T 5 7 9 9	Revised Level 2
S T 5 8 9 9	Level 3

Appendix H Recorded Coppice

Date recorded	name	Parish	acres	earthworks on lidar	ref	Other
1634	Morestocke			so6014/13	Hart 1995,68	c. 250m NW of Mireystock (also lidar at Great berry Wood so6115/04 *c.* 500+m NE
1656	?	?	16		Hart 1995,108	location unknown
1656	Within Sir John Winter's Park	Lydney?	8	No earthworks on lidar	Hart 1995,109	Lydney Park (SO6040103712)?
1656	Owley Grove	?	10		Hart 1995,109	location unknown
1656	?	?	?		Hart 1995,110	location unknown
1656	Abotts Wood near Suttons Mills	?	3	so6510/01	Hart 1995,110	Abott's Wood, Soudley?
1656	Abinghall Grove	Abinghall	50	No earthworks on lidar	Hart 1995,109	Abenhall Grove (SO6773717517)
1656	Wilkwood	Abinghall	6	No earthworks on lidar	Hart 1995,109	Wilk Wood (SO6730818202)
1656	?	Abinghall	5		Hart 1995,109	location unknown
1656	Longhope	Abinghall	20		Hart 1995,109	location unknown
1656	Hay Grove	Awre	40		Hart 1995,109	location unknown
1656	?	Awre	0.5		Hart 1995,109	location unknown
1656	?	Awre	3		Hart 1995,110	location unknown
1656	?	Awre	3		Hart 1995,110	location unknown
1656	?	Awre	2		Hart 1995,110	location unknown
1656	?	Awre	1		Hart 1995,110	location unknown
1656	?	Awre	1		Hart 1995,110	location unknown
1656	?	Bicknour	2		Hart 1995,108	location unknown
1656	Stowfield Grove	Bicknour	20		Hart 1995,108	location unknown
1656	?	Bicknour	10		Hart 1995,108	location unknown

Date recorded	name	Parish	acres	earthworks on lidar	ref	Other
1656	The Copes	Bicknour	60		Hart 1995,108	location unknown
1656	Brookes Head	Bicknour	5		Hart 1995,110	location unknown
1656	4 unnamed groves	Bicknour	16		Hart 1995,111	location unknown
1656	?	Flaxley	10		Hart 1995,109	location unknown
1656	Part of Flaxley Woods	Flaxley	1000	so6816/02, so6816/03, so6817/01, so6818/08, so6716/05	Hart 1995,109	
1656	Comly Grove	Flaxley	8		Hart 1995,109	location unknown
1656	?	Flaxley	2		Hart 1995,111	location unknown
1656	?	Flaxley	6		Hart 1995,110	location unknown
1656	Nockalls	Mitchel Deane	2		Hart 1995,109	location unknown - NOT Knockalls near Staunton Coleford
1656	Baker land Grove	Mitchel Deane	1		Hart 1995,109	location unknown
1656	Harpe Grove	Mitchel Deane	7	Linear so6618/05	Hart 1995,109	harp Grove
1656	Sturns Grove	Mitchel Deane	10		Hart 1995,109	location unknown
1656	Barn Hill coppice	Mitchel Deane	1		Hart 1995,109	location unknown
1656	Lower Furnace Grove	Newland	20	No earthworks on lidar	Hart 1995,108	Furnace Grove SO5391210608)
1656	?	Newland	6		Hart 1995,108	location unknown
1656	?	Newland	4		Hart 1995,108	location unknown
1656	?	Newland	10		Hart 1995,108	location unknown
1656	?	Newland	12		Hart 1995,108	location unknown
1656	The Great Grove	Newland	20		Hart 1995,109	location unknown
1656	The Shraves	Newland	10		Hart 1995,109	location unknown
1656	?	Newland	8		Hart 1995,110	location unknown
1656	Lords Land Grove	Newland	5	No earthworks on lidar	Hart 1995,110	Lords Grove English Bicknor (SO5789716411), or Lords Grove, Monmouthshire (SO5300210968)

Date recorded	name	Parish	acres	earthworks on lidar	ref	Other
1656	?	Newland	20		Hart 1995,110	location unknown
1656	?	Newland	8		Hart 1995,110	location unknown
1656	?	Newland	10		Hart 1995,110	location unknown
1656	2 unnamed groves	Newland	8		Hart 1995,110	location unknown
1656	4 unnamed groves	Newland	9		Hart 1995,110	location unknown
1656	?	Newland	1.5		Hart 1995,110	location unknown
1656	?	Newland	1		Hart 1995,110	location unknown
1656	?	Newland	1		Hart 1995,110	location unknown
1656	?	Newland	1.5		Hart 1995,110	location unknown
1656	?	Newland	1		Hart 1995,110	location unknown
1656	Bircham	Newland	8	No earthworks on lidar	Hart 1995,110	Bircham Wood (SO5610809807)
1656	?	Newland	1.5		Hart 1995,111	location unknown
1656	?	Newland	1.5		Hart 1995,111	location unknown
1656	Dingle Grove and Ashtredge Grove	Newland	5	No earthworks on lidar	Hart 1995,111	Astridge Wood (SO5484408569) NOT Dingle Wood Staunton
1656	?	Newland	1.5		Hart 1995,111	location unknown
1656	?	Newland	3		Hart 1995,111	location unknown
1656	?	Newland	14		Hart 1995,108	location unknown
1656	?	Newland	7		Hart 1995,109	location unknown
1656	?	Newland	10		Hart 1995,110	location unknown
1656	16 unnamed groves	Newland, Stanton, St Briavels	73		Hart 1995,110	location unknown
1656	?	Newnham	10		Hart 1995,109	location unknown
1656	Retford Grove	Ruardean	4		Hart 1995,108	location unknown
1656	?	Ruerdeane	1		Hart 1995,108	location unknown

Date recorded	name	Parish	acres	earthworks on lidar	ref	Other
1656	Calshere near Bishop wood Furnace	Ruerdeane	?		Hart 1995,108	location unknown
1656	?	Ruerdeane	1.5		Hart 1995,108	location unknown
1656	?	Ruerdeane	1.5		Hart 1995,108	location unknown
1656	Winnel and Blake Grove	Stanton	10	so5612/02, so5513/02	Hart 1995,110	Blakes Wood, Staunton
1656	Rickinghill, Wyshill and Fruce Grove	St Briavels	30	No earthworks on lidar	Hart 1995,109	Wyeseal Wood (SO5451006140)
1656	?	St Briavels	20		Hart 1995,109	location unknown
1656	Rodmore Grove	St Briavels	30	No earthworks on lidar	Hart 1995,109	Rodmore Grove (SO5869903214)
1656	?	St Briavels	3		Hart 1995,111	location unknown
1656	?	St Briavels?	?		Hart 1995,109	Owned by people from Wilsbury
1656	Bungeps Grove	Stanton	40	No earthworks on lidar	Hart 1995,108	Bunjups Wood, Staunton (SO5375311434)
1656	Upper Furnace Grove	Stanton	20		Hart 1995,108	location unknown
1656	Ellens Redding	Stanton	5	so5612/02	Hart 1995,110	Ellis Redding Wood, Coleford, or Redding Enclosure Staunton?
1656	?	Stanton	?		Hart 1995,110	
Early Elizabethan	Chestnuts			so6714/13	VCH V, 362	
Early Elizabethan	Bradley hill, Soudley			so6508/01, so6508/03, so6509/05, so6510/01, so6511/08	VCH V, 362	so6510/01 is recorded as Soudley Copse in 19th century (Gwatkin 1997)

Date recorded	name	Parish	acres	earthworks on lidar	ref	Other
Early Elizabethan	Kidnalls			so6205/07	VCH V, 362	