

KILBURN MOOR PLANTATION, SUTTON BANK,  
NORTH YORKSHIRE

ARCHAEOLOGICAL SURVEY OF  
20TH CENTURY MILITARY REMAINS



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## EXECUTIVE SUMMARY

In November 2011, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Mr Graham Lee, Senior Archaeological Conservation Officer of the North York Moors National Park Authority (NYMNP), to undertake a programme of archaeological survey within Kilburn Moor Plantation, on the south side of the A170 road near Sutton Bank, North Yorkshire (NGR SE 5170 8280 centred). The work was required to record a recently identified complex of presumed Second World War remains, primarily trenches and firing pits, within the plantation, prior to and after a programme of forestry operations.

The project involved the production of nine separate divorced earthwork surveys at a scale of 1:100, using traditional tape and offset techniques. These surveys were undertaken in November 2011. Once the plantation had been felled, a return visit was made in December 2012 to accurately locate the nine survey areas using EDM total station equipment.

It is difficult to accurately date and ascribe a function to the 20th century military remains identified in Kilburn Moor Plantation without further documentary and comparative research, and this might prove to be inconclusive; oral history might help if this is available. If the remains do belong to the early part of the Second World War, as seems likely from aerial photographic evidence, there are two main possibilities for their function: that they are training trenches or are defensive positions perhaps prepared in anticipation of a German invasion.

The trenches do have some features that might suggest a defensive intent. With the exception of those forming Site 1, all the trenches indicate a direction of fire to the north-east, north or north-west, i.e. towards the A170. Site 1 is located furthest to the west, and so the direction of all-round firing here might indicate that it was also meant to cover an approach up Sutton Brow or Sutton Bank. As a whole, the earthworks appear too localised to be defending any significant landmark or area, such as the Sutton Brow escarpment, but the directions of fire might indicate they were dug to facilitate a Home Guard-type attack on an enemy force moving along the adjacent A170 road.

On balance, it seems more likely that the trenches were dug for training purposes, drawing on earlier First World War experiences and perhaps designed to introduce new recruits to this form of trench warfare. The wide disparity of plan forms might suggest that the trench systems were dug to illustrate different sorts of defensive positions, such as isolated unconnected firing pits (Site 6 and possibly Site 2), linked firing pits (Sites 3, 5, 7, 9/1 and 9/2), and more complex 'redoubt-type' features (Sites 1 and 9/3). In addition, Site 9/3 shows how a natural hollow could be fortified, while Site 7 utilises a pre-existing linear ditch.

## 1 INTRODUCTION

- 1.1 In November 2011, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Mr Graham Lee, Senior Archaeological Conservation Officer of the North York Moors National Park Authority (NYMNPA), to undertake a programme of archaeological survey within Kilburn Moor Plantation, on the south side of the A170 road near Sutton Bank, North Yorkshire (NGR SE 5170 8280 centred) (see figure 1). The work was required to record a recently identified complex of presumed Second World War remains within the plantation, primarily trenches and firing pits, prior to and after a programme of forestry operations.
- 1.2 The scope of the work was defined by an EDAS methods statement (see Appendix 2), which was discussed and agreed with the NYMNPA in advance of fieldwork.

## 2 SURVEY METHODOLOGY

### Objectives of the Project

- 2.1 The objectives of the project were to:
  - to gather sufficient information to record the position and extent of the military remains, to ensure their protection from future forestry works;
  - to provide an accurate record of the remains, through drawn and photographic techniques, so that the information could be used in any future interpretation and presentation proposals.

### Archaeological Survey

- 2.2 In accordance with the agreed methods statement, three main tasks were undertaken to complete the archaeological survey work.

#### *Desk-top Assessment*

- 2.3 A brief and limited documentary search into the military remains was undertaken, using readily-available sources supplied by the NYMNPA. In the event, little material was forthcoming, and so virtually nothing is known about the military remains in the wood or even exactly when they were laid out.

#### *Topographical Earthwork Survey*

- 2.4 The remains of the 20th century military trench systems in the plantation had previously been identified by Graham Lee (NYMNPA). After an initial site visit, nine separate areas of divorced topographical measured earthwork survey were undertaken as part of the project. These comprised detailed Level 3 archaeological surveys (as defined by English Heritage (2007, 23-29)), which recorded the position and plan form of all features considered to be of archaeological and/or historic interest. Each divorced measured survey was undertaken using traditional tape and offset techniques, again following guidance produced by English Heritage (2002). The earthworks were recorded by measuring distances along and from taped baselines, and were drawn in the field at a scale of 1:100; the fieldwork was undertaken between the 13th and the 18th November 2011.

- 2.5 The resulting field surveys are presented as interpretative hachure plans using conventions analogous to those established by English Heritage (1999; 2007, 31-35). As part of the divorced surveys, the bases of trees in the immediate vicinity were sprayed with yellow marker paint, to allow the earthworks to be more easily re-located once felling had taken place. The area of each discrete group of earthworks was also defined using wooden posts, again sprayed with marker paint, to ensure that they could be identified and protected from damage during the felling process. This procedure proved to be successful, as subsequent inspection showed no evidence for tracked or wheeled vehicles passing over the earthworks.
- 2.6 Given the dense nature of the plantation at the time of the survey work, it was not possible to locate the divorced surveys accurately in relation to one another and the surrounding landscape. This was therefore done following the clear felling of the plantation, with a second survey being carried out a scale of 1:2000 using EDM total station equipment; this work followed recent guidelines produced by English Heritage (2011). Sufficient information was also gathered to allow the divorced survey areas to be readily located through the use of surviving walls, road margins and other topographical features. While the features previously recorded were being located, the opportunity was also taken to walk over the areas in between, to establish whether any other remains were visible. Although substantial piles of brash had been laid across the survey area following the felling, a small number of additional features were noted and their locations were recorded where possible using the EDM total station. The final EDM data was then integrated into the Ordnance Survey national grid by resection to points of known co-ordinates. The EDM survey work was undertaken on 12th December 2012, when the area was covered with a light dusting of snow.
- 2.7 Detailed site descriptions were subsequently prepared, which included a summary description and preliminary interpretation of the extant remains (e.g. dimensions, plan, form, function, date, sequence of development), locational information, and mention of relevant documentary, cartographic or other evidence. Where possible, each identified archaeological feature or component was also recorded using a digital camera with 10 megapixel resolution, although the quantity of vegetation prior to felling, and snow and brash after felling, made meaningful photography difficult. English Heritage photographic guidelines were followed (English Heritage 2007, 14) and each photograph was normally provided with a scale. More general digital photographs were also taken showing the landscape context of the survey area and of specific features. A total of 40 photographs were taken, and all were clearly numbered and labelled with the subject, orientation, date taken and photographer's name, with a cross reference to digital files etc (see Appendix 1).

#### *Survey Report and Archive*

- 2.8 An EDAS archive survey report was produced, covering all survey areas. This assembles and summarises the available evidence for the survey areas and investigations in an ordered form, synthesises the data, and comments on the quality and reliability of the evidence. The report also contains plans and photographs as appropriate; the former are drawn to English Heritage standards using traditional hachure techniques and are reduced to A3/A4 size.
- 2.9 A project archive, comprising paper, magnetic and plastic media, has been prepared and indexed according to the standards set by English Heritage (EDAS site code KWP 11). This was deposited with the NYMNPAs on the completion of the project.

### 3 SITE DESCRIPTIONS

#### Introduction

- 3.1 The following text provides a detailed account of the earthwork, structural and other remains recorded within each of the nine separate survey areas, based on the field records and written observations made on site. Reference should also be made to the plans and plates, and the photographic record which appears as Appendix 1; photographs are referenced in the following text in italic type and square brackets, the numbers before the stroke representing the film number and the number after indicating the frame e.g. [5/32].

#### Location and Setting of the Sites

- 3.2 All nine surveyed sites were located within part of Kilburn Moor Plantation, a large area of predominantly softwood plantation located at an elevation of c.295m AOD along the south side of the A170 Thirsk to Helmsley road, close to Sutton Bank and some 3km to the east of the village of Sutton-under-Whitestonecliffe (see figure 1). The plantation is crossed by the Casten and Cleave Dikes. These are both Scheduled Monuments, together with a 'tumulus' located adjacent to the north side of the west end of the Casten Dike (National Heritage List for England ref. 1012992).
- 3.3 The Cleave Dike system is the most westerly of a series of prehistoric dikes located on the Tabular Hills. The name has been given to a series of linear ditches and banks stretching north-south over a distance of 9km, running parallel to and close to the western scarp of the Hambleton Hills. The system was constructed between the Late Bronze Age and Iron Age periods to augment the natural division of the terrain by river valleys and watersheds, and it formed a prehistoric territorial boundary in an area largely given over to pastoralism. Shorter east-west earthworks linked valley heads to the main dike and so divided the region into discrete units for agricultural and social purposes. In some instances, the boundaries have remained in use to the present day.
- 3.4 The section forming the southern part of the main Cleave Dike runs north-west/south-east across the plantation for a distance of 390m (see figure 3). It is crossed 240m along its length from the north by the Casten Dike, but continues to the south-east for a further 120m. The Cleave Dike is preserved as a shallow ditch with flanking banks - the ditch is typically 4m wide and 0.5m deep, and the banks are 3m wide and 0.75m high, but it is no longer visible as an earthwork where it is crossed by the Casten Dike. This dike is aligned north-east/south-west and it extends for 550m from the edge of the scarp slope; the east end has been truncated by the A170. The dike is preserved as a prominent ditch 3.5m wide and 1m deep with a 6m wide and 1m high flanking bank to the north. Flanking the ditch to the south, a ruinous drystone wall runs along a shallow counterscarp bank.
- 3.5 The round barrow or tumulus is located immediately adjacent to the Casten Dike at a point 140m from its south-west end. This barrow is represented by an earth and stone circular mound 1.5m high and 12.5m in diameter. The ditch of the Casten Dike cuts across the northern flank of the barrow, showing that the barrow was constructed before the dike. In common with other similar round barrows on the Hambleton Hills, it is also thought to mark an early boundary.
- 3.6 It is not known precisely when Kilburn Moor Plantation was first established. It is not shown on the Ordnance Survey 1856 6" map (sheet 88, surveyed 1853), but is

depicted on the 1895 6" edition (sheet 88SE, re-surveyed in 1891); at this time, the Casten Dike formed the south-eastern edge of the plantation (see figure 2). However, it is likely that the plantation has been felled and re-planted at least once, as the area is shown as being heather moorland on an aerial photograph dating to May 1940 (see figure 6).

- 3.7 The nine surveyed sites were all located to the north-west of the Casten Dike, either side of the Cleave Dike, and were set within an area of plantation which measured 420m east-west by 150m north-south overall (see figure 3). Within this part of the plantation, the ground surface rose gently from south-west to north-east, and was crossed by a central north-south aligned ride or drive.

**Site 1** (NGR SE 51590 82905 centred) (see figure 4)

- 3.8 Site 1 lay within the westernmost of the nine divorced survey areas, located in the north-west corner of the plantation, c.70m to the south of the A170. It was the most complex of all of the earthworks recorded, and covered an area measuring a maximum of 30m east-west by 25m north-south.

- 3.9 The remains formed a single main trench with an average width of 0.8m, and an average depth of 0.5m; the sides of the trench were near vertical, although there was no indication for any former timber or other revetments. In plan, the main trench incorporated numerous right-angled or angled returns, so that it formed a many-sided defensive position, open only to the south side. Smaller spurs ran off the main trench leading to individual firing positions or pits, shielded by low flat-topped banks. These banks stood to a maximum height of 0.8m externally; the combined average surviving height from the visible base of the main trench to the top of any surrounding bank was c.1.0m.

- 3.10 The earthworks are described in a clockwise direction, starting at the south-west end of the trench. Here, there is a sub-rectangular pit (P1), measuring 2.0m long (north-south) by 1.2m wide (east-west). The main trench leaves the north end of this pit and runs west and then north-west, flanked by spread banks on either side; that to the south has a maximum width of 2.5m, but the average width is 1.5m. After several metres, the trench runs into another pit-like depression, of similar dimensions to the first (P2). It then leaves the south-east corner of the pit to follow a north-east alignment for 4.0m, before angling slightly to the east for another 4.0m; the western section has a spread bank only on the north side, which is more prominent than the bank to the immediate south-west and may indeed overlie it. At the east end of this angled section, there is another sharply defined change of angle. At this point, a short spur off the south side of the main trench appears to have lead into a narrower trench, which passes through several angled returns into a short almost north-west/south-east aligned section 4.0m long section which has a spread bank parallel to the north-east side.

- 3.11 From this sharply defined change of angle, the main trench runs east for a further 4.0m before turning more to the north-east for another 4.0m; there is a spread but prominent shallow bank on its north-west side. The main trench then takes a sharp right-angle to continue further to the south-east [2/434] (see plate 3), but the original alignment is continued to the north-east as a short spur which incorporates another pit on its east side (P3) which has a bank to the north-east. A gap between this bank and the shallow bank mentioned above might define an entrance into the trench complex.



- 3.12 From the sharp right-angle, the main trench continues south-east for a distance of 6.0m, narrowing slightly and with a regular but spread bank on the north-east side. It then returns to the east for a further 5.0m, entering a small rectangular pit or firing position (P4). This pit is located at the north-west end of a 7.0m long section of the main trench which has a crenellated or indented plan form [1/696, 1/697; 2/435] (see plate 1), protected by a spread bank on the north-east side. At the south end of this section, the main trench has another short spur running east into a rectangular pit (P5), measuring 2.5m long (north-south) by 1.0m wide (east-west).
- 3.13 The main trench continues to the south-west, where it appears to have been altered as it cuts across a southern extension. This main section runs for c.10.0m, and had a spread bank along the north side of the west end, although both the bank and trench earthworks are quite faint. The earlier southern extension has a sub-square bank along its west side, after which the trench splits into two. A short spur leads west into a small sub-square pit 1.0m long (P6) with a bank on the south side. A second spur runs east, with a bank along the north side, into a well defined rectangular pit (P7), measuring 1.6m long (north-south) by 1.0m wide (east-west) [1/698, 1/699] (see plate 2). It has an equally well-defined sub-square bank to the east side, somewhat more prominent and more regularly formed than the other banks around the majority of the trench alignment.

**Site 2** (NGR SE 51710 82915 centred) (see figure 4)

- 3.14 This site was located on the north side of the plantation, immediately to the west of the central ride/drive. It almost certainly once formed a single position with Site 6 to the east of the same drive (see below). The earthworks covered an area measuring a maximum of 18.0m east-west by 4.5m north-south, and took the form of three rectangular pits on a general north-east/south-west alignment.
- 3.15 The two westernmost pits (P1 and P2) formed a pair, linked by a narrow 5.0m long angled trench [1/700, 1/701, 1/703; 2/433] (see plate 4). Each pit is c.2.0m long by 0.8m wide, and they survive to a maximum depth of 0.9m. Both have wide spread flat-topped banks, up to 2.5m wide and 0.5m high, to their north-west sides. The single pit (P3), located 4.5m to the east, is somewhat larger, is well defined and measures 2.4m long by 1.4m wide, and up to 0.9m deep [2/429, 2/430, 2/431] (see plate 5). Short spurs leave the south and east corners, perhaps suggesting that there were once linking trenches to the east and west, as is the case with the main trench in Site 3 (see below). The pit is protected by spread banks to the north and south; that to the north is more substantial, and has a shallow V-shaped projection to its northern edge.

**Site 3** (NGR SE 51700 82800 centred) (see figure 4)

- 3.16 Site 3 was located c.170m south of the A170, immediately to the west of the central ride/drive. It almost certainly once formed a single position with Site 4 just to the east. The earthworks take the form of two outlying pits beyond the north-west end of a zig-zag plan trench, aligned generally north-west/south-east, covering an area measuring a maximum of 44.0m north-west/south-east by 11.0m north-east/south-west.
- 3.17 Of the pair of outlying pits, the western one (P1) is slightly the larger, measuring 1.8m long (north-east/south-west) by a maximum of 1.0m wide, and up to 0.8m deep [2/436]. It has a broad crescentic flat-topped bank around its west side. The

eastern pit (P2) is slightly narrower, 1.5m long (east-west) and with a spread flat-topped bank to the north side.

- 3.18 The main trench alignment has a total visible length of c.32.0m [2/437, 2/438], although it almost certainly once extended further to the south-east and may well have been infilled during the creation of the adjacent plantation drive/ride. The main trench has an average width of 1.0m and a maximum depth of 0.9m, including the height of the external bank. At the north-west end, there is a rectangular pit (P3), measuring 1.8m long (east-west) by 1.0m wide (north-south). It has a spread flat-topped bank, up to 2.5m wide and 0.9m high externally, on its north side, which projects beyond the west end of the pit. The main trench leaves the southern corner of the pit and follows a rather irregular zig-zag course on a general south-east alignment for 15m. The bank on the north-east side also continues, following a broadly parallel but more sinuous course and maintaining a width of c.2.0m. However, there is at least one section of the flattened top of the bank which is slightly raised above that on either side, while there is a complete break opposite where the main trench comes to a sharp V-point; a very low earthwork might arguably once have crossed this break, but it is much lower than the bank on either side. To the south-east of the break, a raised section of the bank has a slightly raised triangular plan, but it then continues as before.
- 3.19 At the south-east end of its zig-zag section, the main trench enters a well-preserved and well defined rectangular pit (P4), measuring 1.5m long (north-west/south-east) by 0.9m wide and 0.9m deep, with near vertical sides [1/704, 1/705] (see plate 6). The flat-topped bank to the north curves around in front of the pit, but there is again a narrow break opposite the north-east corner. The main trench leaves the southern corner of the pit and runs directly south for 2.5m before angling sharply to the south-east. Shortly after this point, a very straight spur runs 4.0m to the north-east, where it enters another well-preserved rectangular pit (P5), 2.4m long (north-west/south-east), 1.4m wide and 0.9m deep. The pit has a spread sub-rectangular bank on its north-east side, measuring c.4.0m long (north-west/south-east) by 3.5m wide, and with the flat top divided longitudinally by a shallow depression.
- 3.20 Beyond the straight spur to the pit, the main trench continues its straight south-east alignment for a further 5.5m, before again adopting a zig-zag plan. The earthwork then begins to fade but widens as it does, and it may be that the arrangement at this end was perhaps once the same as that still visible at the north-west end. A shallow spread bank runs parallel to the north-east side of this section.

**Site 4** (NGR SE 51738 82790 centred) (see figure 4)

- 3.21 This site was located c.190m south of the A170, very close to the east side of the central ride/drive. It almost certainly once formed a single position with Site 3 to the west of the same drive. The earthworks define two separate pits, on a general north-south alignment and individually aligned north-east/south-west, covering an area of 8.0m north-south by 2.5m east-west.
- 3.22 Both pits have steep, near vertical sides, and a maximum depth of 1.0m, including the height of the external banks. Both are broadly rectangular in plan, varying between 1.5m-2.2m long and 0.8m wide [1/707] (see plate 7). The northern pit (P1) has very faint traces of a short trench leaving the southern corner and running south towards the second pit. There is a spread curvilinear flat-topped bank on the north side, which appears to have a short arm running north from the main mound.

The southern pit (P2) is surrounded by a very shallow bank, and there is a slightly more prominent sub-triangular flat-topped bank to its immediate south.

**Site 5** (NGR SE 51760 82822 centred) (see figure 4)

- 3.23 Site 5 was located c.150m south of the A170, between the central ride/drive and the Cleave Dike. The earthworks represent a single predominantly east-west aligned trench probably once linking three pits, the whole has a shallow V-shape, projecting outwards slightly to the north; the site covers an area measuring 21.0m north-west/south-east by 8.0m north-east/south-west.
- 3.24 Commencing at the west end, the western pit is aligned north-east/south-west and measures 1.8m long (P1) [2/439, 2/440]. It is not clearly separate from the main body of the trench, and although this does run east on a slightly different angle; indeed, a section of the trench appears to have been deepened after the original excavation to make it the same depth as the pit, thus creating a longer angled pit 5.2m long. Both the pit and the trench have a maximum depth of 0.8m. The trench runs east to meet a central pit (P2) [2/441], which is aligned north-west/south-east and measures 2.0m long by 0.8m wide and deep. The trench then angles more to the south-east when leaving the pit, and is both wider and more poorly defined here. It may be cut through an earlier and perhaps unconnected feature to the immediate south-west, formed by a small sub-triangular depression surrounded by a low bank. The trench continues and curves south towards the eastern pit, and again, as at the west end, it may have been deepened subsequent to its original excavation [1/708]. The pit itself (P3) is aligned north-east/south-west, measuring 1.7m long by 0.8m wide overall, and has a maximum depth of 0.6m.
- 3.25 There is a spread curvilinear flat-topped bank running along the whole of the north side of the pits/trench, standing up to 0.6m high externally. Initially it is over 2.50m wide, but it narrows to 1.80m in places; it widens again slightly in front of the central pit (P2) at the point of the shallow V. At the east end of the trench, the bank curves around to the south-west and is most prominent, 0.8m high, on the south-east side of the easternmost pit (P3).

**Site 6** (NGR SE 51738 82920 centred) (see figure 5)

- 3.26 This site was located c.60m to the south of the A170, on the east side of the central ride/drive. It almost certainly once formed a single position with Site 2 to the west of the same drive. At this site, the earthworks represent four separate pits, spread along a general north-west/south-east alignment, covering an area measuring 23.0m north-west/south-east by 5.0m north-east/south-west.
- 3.27 All the pits at this site have steep, near vertical sides, and a maximum depth of 1.0m, including the height of external banks. All are broadly rectangular in plan, varying between 1.5m-2.0m long by 0.8m-1.0m wide. The north-western pit (P1) is aligned east-west, and has a spread bulbous flat-topped bank on its north side. The second pit (P2) is also aligned east-west, and has a short trench leaving its west end, which may once have continued further to the west; there is again a curving flat-topped bank on the north side, 0.5m high, perhaps overlying a lower bank at the east end. The third pit (P3) is aligned north-west/south-east, and has a spread flat-topped bank on the north-east side and a small sub-circular mound to the north-west. The fourth pit (P4), at the south-east end of the complex, is also aligned north-west/south-east and is well preserved, measuring 1.8m long by 0.8m wide [1/709; 2/426, 2/427] (see plate 8). Like Pit 2, this also has a shallow trench

running west from its western corner. However, this trench is better preserved, and can be followed for a distance of 4.0m to the west before angling to the north-west at its west end. Both pit and trench have a spread flat-topped bank running parallel to their northern sides, while the pit also has a short flat-topped bank on its southern side.

**Site 7** (NGR SE 51870 82762 centred) (see figure 5)

- 3.28 Site 7 was located c.200m south of the A170, on the line of the Cleave Dike, close to where it is crossed by the Casten Dike. The earthworks in fact partly utilise the Cleave Dike, and have disturbed its alignment. The earthworks represent a single trench with a prominent 'elbowed' or V-shaped plan, linking three pits. The whole complex is set on a east-west alignment, and it covers an area measuring 16.0m east-west by 7.0m north-south.
- 3.29 Commencing at the north-west end, there is a gap in the bank on the west side of the Cleave Dike, to the north of where the 20th century earthworks commence. This may have been deliberately created in association with the military earthworks. The dike's bank, which for much of its length is a rather spread feature, is also much more prominent and wider opposite this end of the earthworks and must have been augmented during their creation.
- 3.30 A north-west/south-east aligned pit (P1) at the north-west end of the angled trench measures 1.8m long by 1.0m wide, and has a maximum depth of 0.8m [1/710] (see plate 9). A north-south aligned straight section of trench then leaves the pit and runs south for 5.0m; it has an average width of 0.8m and an average depth of 0.5m. This section of the trench is flanked by spread flat-topped banks on both the east and west sides. At its south end, the trench returns to the east through a very sharp right-angle, to run for a further 5.0m into a second north-west/south-east aligned pit (P2), which measures 1.5m long by 0.8m wide. The trench then continues beyond this pit and runs east for a further 6.0m to enter the third north-west/south-east aligned pit; the earthworks suggest that this section of the trench may have been re-cut at some point. The third pit (P3) is placed in what would originally have been the ditch of the Cleave Dike, and it measures 1.9m long by 1.0m wide and is 0.8m deep [1/711] (see plate 10). To the immediate north of the pit, a c.4.0m section of the dike's ditch has been largely infilled; either side of this infill, the ditch is a prominent earthwork 3.4m wide and over 1.0m deep. This infilling is clearly deliberate and must be associated with the 20th century earthworks, as it required far more material than would be created by the upcast from the trench and pit alone.

**Site 8** (NGR SE 51998 82875 centred) (see figure 5)

- 3.31 This site was located some c.70m to the south of the A170, and was the easternmost of the recorded earthworks. It is located very close to the north side of the Casten Dike but, unlike Site 7, it does not appear to have impinged upon it. The earthworks represent a single trench and pit, aligned north-east/south-west, covering an area measuring 12.0m north-east/south-west by 4.0m north-west/south-east.
- 3.32 At its south-west end, the trench has a slight angled return. It is on the whole a rather faint and shallow depression compared to most of the others seen within the plantation, being 1.2m wide but only 0.25m deep [2/443]. A spread flat-topped bank, 0.3m high and c.2.0m wide, runs parallel to the north-west side. Towards the north-east end of the trench, there is a single pit measuring 1.8m long, 1.0m

wide and 0.5m deep (P1), dug into the base of the trench. Beyond this, the flat-topped bank continues for several metres but the trench itself is very faint and may have been infilled [1/713].

**Site 9** (see figure 5)

- 3.33 Site 9 was located c.100m south of the A170 in the angle between the Cleave and Casten Dikes and comprised three distinct groups of earthworks, numbered for descriptive purposes in a clockwise direction as Sites 9/1, 9/2 and 9/3; the earthworks cover an area measuring 47.0m east-west by 42.0m north-south. The three sites were surveyed together so their relationships could be shown.

*Site 9/1* (NGR SE 51845 82882 centred)

- 3.34 These earthworks form a broadly straight-sided U-shaped trench linking three pits, open to the north, and covering a total area measuring 11.0m east-west by 8.0m north-south.
- 3.35 The western pit (P1), located at the end of the west arm of the trench, is aligned east-west, and measures 1.6m long by 0.8m wide and 0.4m deep [2/448]; it appears to have an entrance on the west side. The trench runs south-east from the south-west corner of the pit for a distance of 7.0m before angling sharply to the east - this section of the trench is 0.9m wide and 0.5m deep, and has a faint bank running parallel to the west side. The central pit (P2) is located in the centre of the south side of the trench, and is of similar dimensions to the west pit [2/449]. It has a spread bulbous flat-topped bank on the north side, measuring c.4.0m east-west by 3.0m north-south. The trench running east from the central pit is very faint, and only becomes clearly visible again where it angles back sharply to the north after a distance of 4.0m. The east section of trench is 5.5m long and aligned north-south [1/715], and a faint bank runs parallel to the east side of this section of the trench. The east end of the trench terminates in another pit (P3), which is of similar dimensions to the other two [2/451, 2/452].

*Site 9/2* (NGR SE 51862 82884 centred)

- 3.36 This site is located c.10.0m to the east of Site 9/1. The earthworks again comprise a broadly U-shaped arrangement of a trench linking three pits, open to the north, and covering an area of 12.0m east-west by 7.0m north-south; it is not as regular as Site 9/1.
- 3.37 The western pit (P1) is aligned east-west, measuring 1.5m long by 0.8m wide and 0.75m deep. It appears to have a very faint bank to the north side. The trench runs south from the south-east corner of this pit for 3.30m with a slight V-shape alignment before entering the north-west corner of the central pit. This central pit (P2) is aligned east-west, and is 2.5m long by 1.0m wide, and may have been either re-cut or provided with an internal step on the north side. It has a spread bulbous flat-topped bank on the north side, measuring c.4.0m east-west by 3.0m north-south, which occupies much of the area between the two arms of the complex. The trench leaves the east end of the central pit and runs straight and north-east for 5.0m before entering the east pit. This east pit (P3) is again aligned east-west, 3.5m long by 1.4m wide, and 0.5m deep [2/450]. It has a 0.40m high V-shaped flat-topped bank on the north side. Some 6.0m to the east, there is a very faint angled linear depression, which appears to be heading towards a large hollow or natural depression (see below), but it is not certain if this is a drain or another military earthwork.

*Site 9/3 (NGR SE 51870 82850 centred)*

- 3.38 These earthworks lie c.150.m to the south of Sites 9/1 and 9/2. They represent an irregular collection of features, covering an area extending over 36.0m east-west by 20.0m north-south. Just beyond the north-west end of the complex are two faint linear depressions that may once have been associated with it. The larger measures 2.5m across, and is aligned almost east-west - it might represent a vehicle track, but could easily result from forestry rather than military activity. The smaller depression is aligned north-west/south-east and might once have been a continuation of the rest of the earthworks in Site 9/3, but this is not clear.
- 3.39 At the west end of the complex, there is a north-west/south-east aligned pit (P1) measuring 3.5m long, 1.2m wide and 0.8m deep; this is much larger than any of the other pits seen in the plantation and is quite a prominent feature. It has two spread flat-topped banks on the north and north-east side, with a gap between. A shallow trench then runs east and south-east on a slight V-shape alignment from the east end of the pit for a distance of 10.5m, and has a spread flat-topped bank parallel to its north side. At its east end, the trench deepens and almost certainly once entered another rectangular pit (P2), probably measuring 1.8m long by 1.0m wide. The trench then angles sharply to the south and runs for a further 5.0m. It ends abruptly but appears to have been infilled, and probably originally returned through a sharp right-angle to the east, running east for a further 5.0m before entering a small rectangular pit (P3), measuring 1.0m long by 0.8m wide.
- 3.40 This pit is set on the southern edge of a shallow sub-oval depression or hollow, measuring 13.0m north-south, possibly a natural feature or the result of shallow quarrying which appears to have been modified by the military earthworks which have been set out around the edge of this depression. A well defined trench, 0.8m wide by 0.5m deep [2/447], runs south-east on a slight V-shaped alignment for 5.0m from Pit 3 before entering a further pit (P4), which is aligned north-east/south-west and is of similar dimensions to Pit 3. The trench then leaves the north end of this pit and follows a slightly curvilinear route north towards another pit (P5), which is slightly L-shaped in plan and 0.6m deep. A spread flat-topped bank 1.0m wide runs along the north side of the aforementioned trench and three pits. There is a similar but shorter bank to the east side of Pit 5, and it is probable that this once partly shielded a trench running north from this pit to another pit (P6), some 3.0m to the north; this section of trench is not well defined, and there may be some infilling to create a 1.0m wide entrance into the sub-oval depression. Pit 6 has a slightly different shape to the others, being almost square (1.0m across all four sides) and 0.4m deep, and is protected by a spread flat-topped bank which wraps around its north and east sides. Finally, an additional well-defined east-west pit (P7), 1.5m long by 1.0m wide and isolated from all of the others, can be seen dug into the north side of the depression [2/446] (see plate 11).

**Other Earthworks** (see figure 3)

- 3.41 As noted in Chapter 2 above, as part of the post-felling EDM total station survey, the opportunity was taken to walk over the areas between the previously surveyed earthworks, to establish if any other features were visible. Although substantial piles of brash had been laid across the plantation at regular intervals after felling, a small number of additional features were noted, and where possible their locations were recorded using the EDM total station, although no detailed 1:100 scale surveys were undertaken.

- 3.42 A sub-rectangular depression, of a relatively regular form, was noted on the west side of the Cleave Dike, some 90m to the south of the A170 and c.40m west of Site 9/1 (Site 10 - NGR SE 51800 82872 centred). The depression was aligned north-west/south-east, and measured c.8.0m long by 4.0m wide, and up to 0.5m deep. The sides were evenly scarped, and there was some slight disturbance to the Cleave Dike. It is not known if the earthwork had a military function or not.
- 3.43 As has already been noted above, some of the military earthworks within Site 9/3 were laid out around the edges of a sub-oval hollow or depression. In addition, there is an area containing several other such features to the north-east of Site 9/2, stretching almost as far as the A170, but none appear to have been modified in the same way as was seen at Site 9/3. Comparison with surveys of other military training areas (e.g. Dennison 2005; Dennison 2008) suggests these are unlikely to be shell holes, and are more likely to be either natural hollows or perhaps the result of former quarrying.
- 3.44 A group of six other small circular ponds or hollows are also depicted on the Ordnance Survey 6" maps (sheet 88SW - 1895 and 1913 editions), arranged in two rows of three, a short distance to the north of the 'tumulus' on the north side of the Casten Dike (see figure 2 bottom). These appear man-made and their spatial arrangement is curious, but their locations could not be identified at the time of the EDM survey work.

#### 4 DISCUSSION AND CONCLUSIONS

- 4.1 Without further documentary and comparative research, it is difficult to accurately date and ascribe a function to the 20th century military remains identified in Kilburn Moor Plantation, and indeed even this might prove to be inconclusive; oral history might help if this is available.
- 4.2 Although the recorded earthworks share some characteristics in common with First World War trench layouts, such as the traversed (V-shaped), elbowed, or crenellated or indented plan form (for example, see <http://www.worldwar1.com/tlbtw.htm#diag> for reproduction of contemporary War Office designs, and <http://www.greatwar.co.uk/research/maps/british-army-ww1-trench-maps.htm>), they lack the cohesive and layered design recorded at other First World War training complexes in Britain (e.g. Ullathorne 2006; Brown & Field 2007) and elsewhere (e.g. Friends of Camp Hughes nd). However, depending on subsequent land use, the remains of many First World War trench systems often now only partially survive, and the Kilburn Moor Plantation earthworks do bear a striking comparison with some fragments of quarter-scale training trenches recently identified at Brocton on Cannock Chase in Staffordshire (<http://www.staffspasttrack.org.uk/exhibit/chasecamps/trencheszoom.htm>), where nearby more extensive systems have also been identified (Welch 1997). Other partial remains of presumed First World War trench systems, of types similar to those recorded at Kilburn Moor, have been identified throughout the country, for example in the Oakhampton military training area in Devon (Newman 2011, 240), on Walmgate Stray in York (Pollington 2004, 16), and on the Westwood Common in Beverley (Pearson & Pollington 2005, 42-44). Interestingly, it was suggested that the latter indented trenches dated either from the First World War, or were dug during the Second World War to introduce recruits to this form of trench warfare (Pearson & Pollington 2005, 44).
- 4.3 One crucial piece of evidence relating to date, indeed, the only documentary material discovered for the Kilburn Moor complex as a whole, is a vertical aerial

photograph of the area taken in May 1940 (English Heritage Archive 10/UK/1524, supplied courtesy of the NYMNP) (see figure 6). Although not especially clear, the photograph shows that the plantation was heather moorland at this time, and areas of differential burning for the management of grouse are evident. However, also visible are a number of localised areas of disturbance showing up as white or lighter coloured material, presumably representing freshly-dug spoil. These areas bear a close correlation to the recorded earthworks, for example Sites 1, 2/6, 3, 5, 7, 8 and 9; the V-shaped trench alignment of Site 5 is particularly well shown. A small number of other areas of disturbance can also be seen, for example to the south of Site 3, and along the north side of the Casten Dike to the north-east of its junction with the Cleave Dike; Site 7 is visible here, but there is a longer linear crenellated or indented trench stretching for at least c.20m to the north-east, along the north side of the Casten Dike. This site is no longer visible on the ground, the area having been taken into a perimeter drive or ride. There are several other areas of disturbance on the south side of the Casten Dike, again to the east of the continuation of the Cleave Dike, and there is also a possible earthwork dug into the top of the tumulus in the south-west part of the survey area. On the assumption that the lighter coloured material does represent recently excavated spoil, it would suggest that the recorded earthworks in Kilburn Moor Plantation all date to the spring of 1940, and it is clear that the excavations extend further to the south, beyond the Casten Dike.

- 4.4 At first glance, the recorded earthworks might appear to be a fairly disparate collection, varying greatly as they do in form, scale and complexity. Site 1 has the most obvious appearance of a defensive strongpoint, while Sites 2 and 6 were almost certainly also laid out as a single complex, as were Sites 3 and 4; both these are now split by a forestry track or ride. Of the remainder, the three parts of Site 9 appear to form a single group, whilst Site 8 is rather isolated. Site 7 makes use of a much earlier but convenient, prehistoric, earthwork, and might well be associated with a crenellated or indented length of trench just to the north-east seen on the aerial photograph. In terms of spacing, many of the earthworks or groups of earthworks are set c.130m apart (see figure 3).
- 4.5 If the recorded earthworks do belong to the early part of the Second World War, as seems likely, then there are two main possibilities for their function, namely that they are training trenches or are defensive positions perhaps prepared in anticipation of a German invasion. The fact that the trenches seem to occupy a relatively localised area probably excludes other potential military functions such as tank training trenches or anti-glider landing devices, although it is always possible that other trenches and earthworks from a wider area have since been destroyed or are, as yet, unidentified.
- 4.6 The trenches do have some features which might suggest a defensive intent. The use of three pits, slit trenches or foxholes with flat-topped spoil banks placed on the outer side to act as a support for a firing position, linked by shallow connecting trenches, is a common element to several of the sites, and the steep-sided nature of the pits and some of the trenches suggest that they must have been artificially revetted, presumably with wood. With the exception of Site 1, all indicate a direction of fire to the north-east, north or north-west, i.e. towards the A170 (see figure 3). Given that Site 1 is located furthest to the west, does the direction of all-round firing here indicate that it was also meant to cover the approach up Sutton Brow or Sutton Bank? Notwithstanding the caveats noted above, the earthworks appear too localised to be defending any significant landmark or area, such as the Sutton Brow escarpment, but the directions of fire might indicate they were dug to facilitate a Home Guard-type attack on an enemy force moving along the adjacent



A170 road. If the pre-May 1940 date is correct for the excavation of the trenches, this was before the formation of any 'stop lines' or other forms of coordinated national home defence (Lowry 2004, 11-12).

- 4.7 Taking all the admittedly limited evidence into account, it seems more likely that the trenches were dug for training purposes, drawing on earlier First World War experiences and perhaps designed to introduce new recruits to this form of trench warfare, which might have been thought realistic in the first months of 1940; the same interpretation is one suggestion for similar, but less extensive, earthworks seen on Beverley's Westwood Common (Pearson & Pollington 2005, 44). The wide disparity of plan forms might suggest that the trench systems were dug to illustrate different sorts of defensive positions - the plans include collections of isolated unconnected firing pits (Site 6 and possibly Site 2), linked firing pits (Sites 3, 5, 7, 9/1 and 9/2) and more complex 'redoubt-type' features (Sites 1 and 9/3) which have wider directions of fire. In addition, Site 9/3 shows how a natural hollow could be fortified, while Site 7 shows how to utilise a pre-existing linear ditch. However, whatever interpretation happens to be correct, there is no indication as to who might have actually dug the trenches, or where the workforce might have been based.

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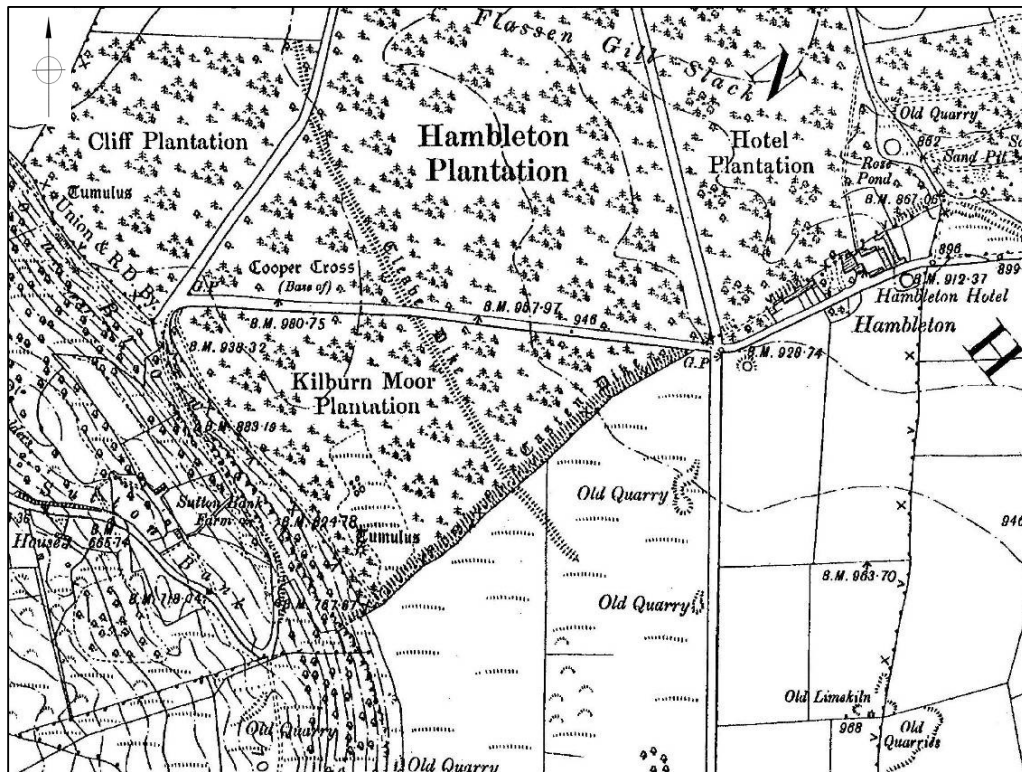
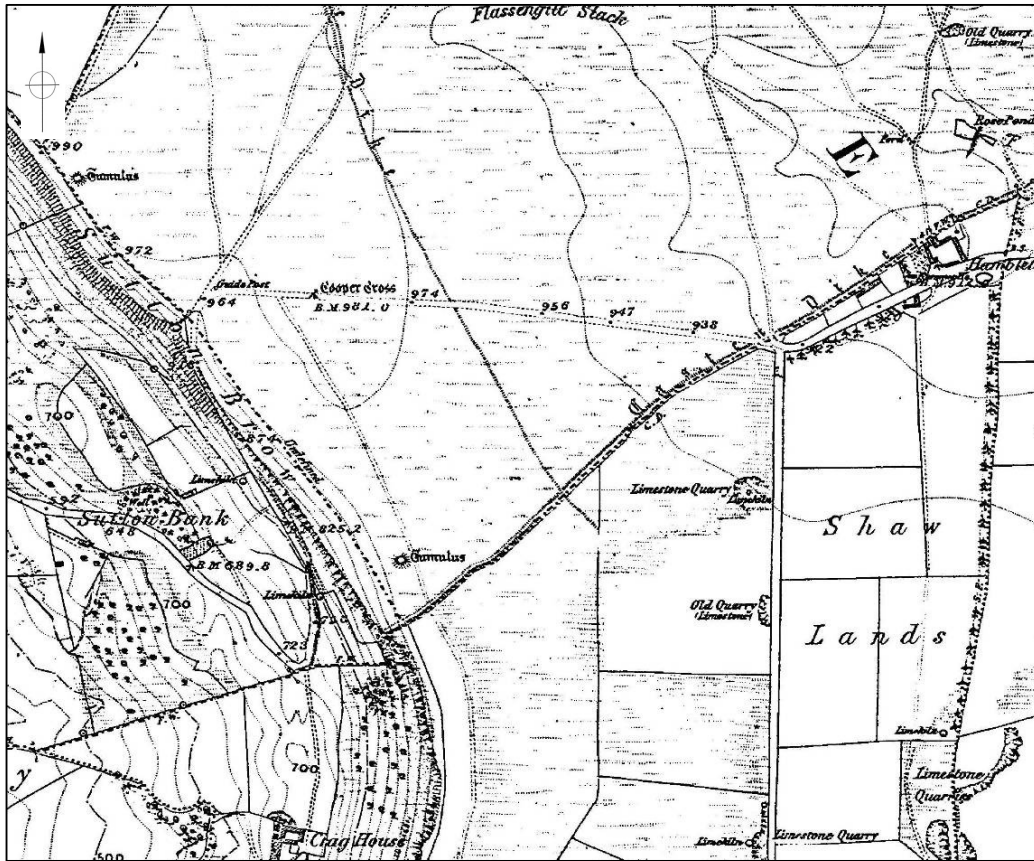
## **6 ACKNOWLEDGEMENTS**

6.1 The archaeological survey work was commissioned and funded by the North York Moors National Park Authority, and EDAS would like to thank Mr Graham Lee for initiating the project and his co-operation throughout; the provision of the 1940 aerial photograph was especially helpful. Thanks are also due to Ian Austermuhle of UPM Tilhill for allowing access to the plantation. The on-site recording was undertaken by Shaun Richardson and Richard Lamb, and the EDM survey work was undertaken by Shaun Richardson and Benchmark Surveys of Leeds. Shaun Richardson produced the fieldwork records and photographs, and a draft report. Graham Lee provided comments on the draft report, and the final version was produced by Ed Dennison, with whom the responsibility for any errors remains.



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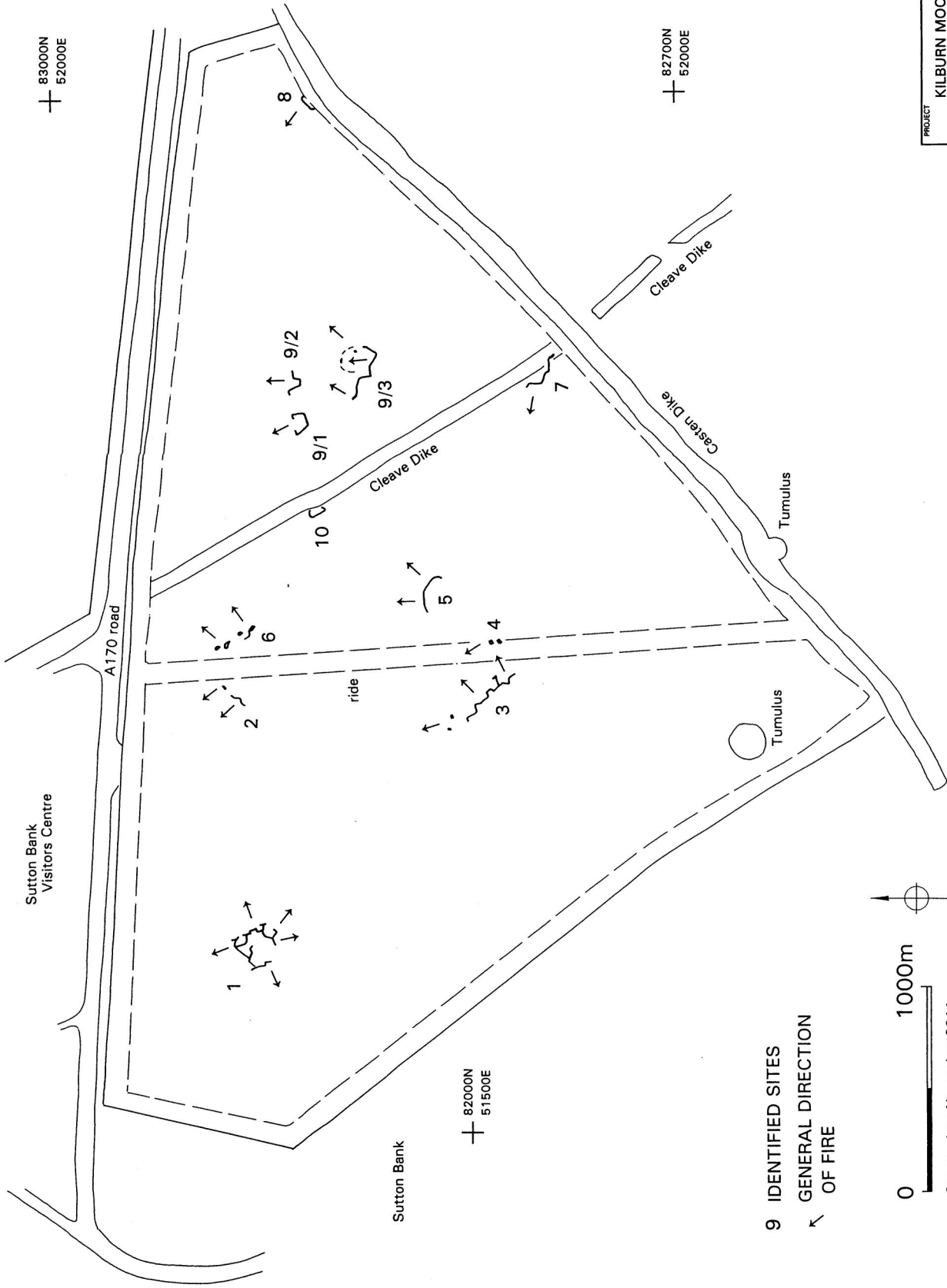
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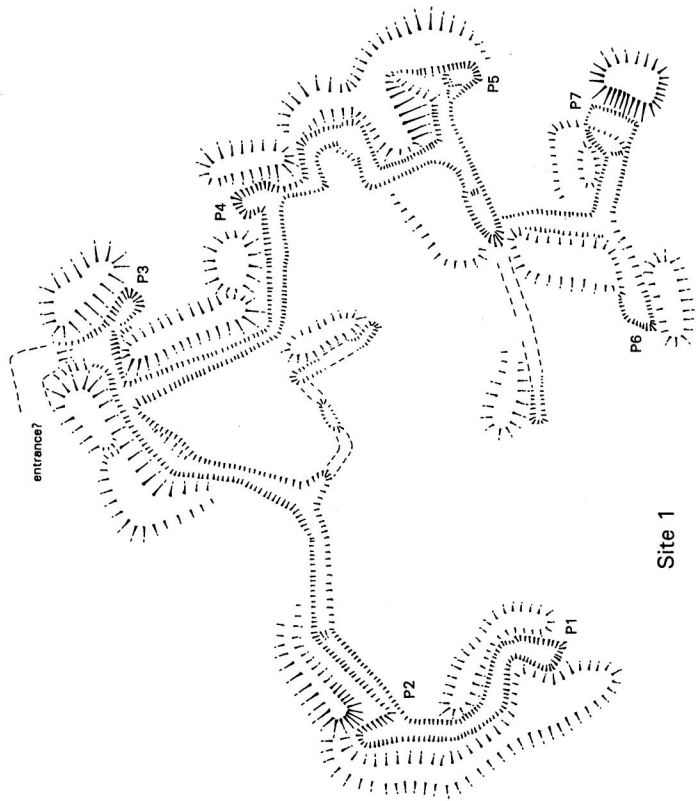
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Bottom: Ordnance Survey 1913 6" map, sheet 88SE (surveyed in 1853, revised 1910).

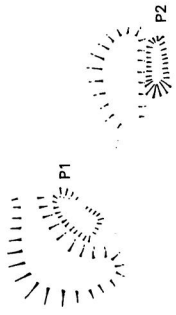
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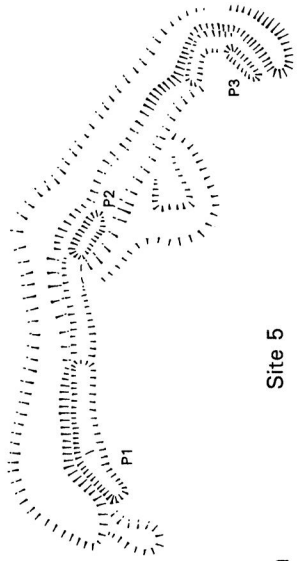
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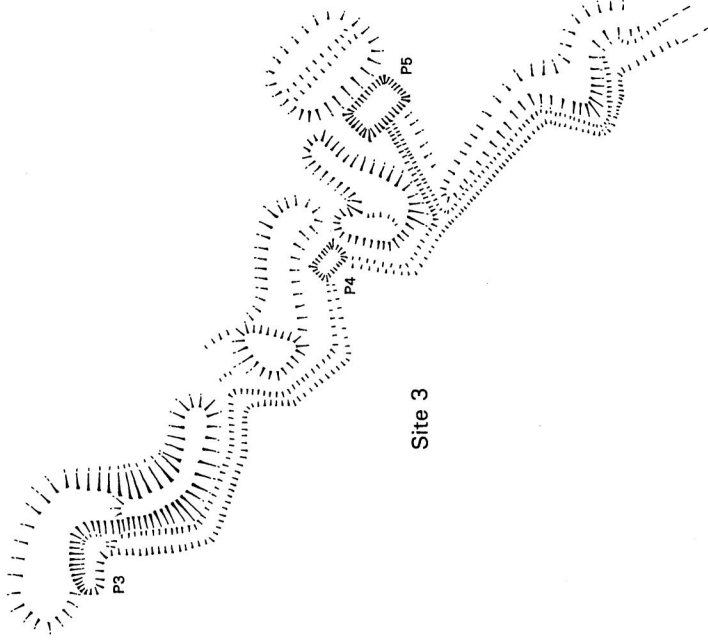
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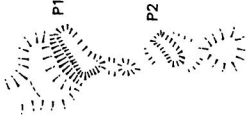
Site 2



Site 5



Site 3

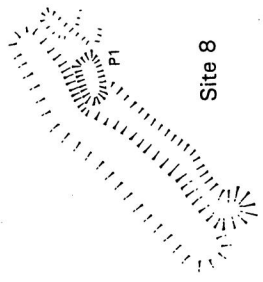
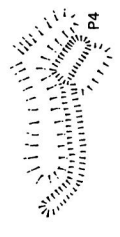
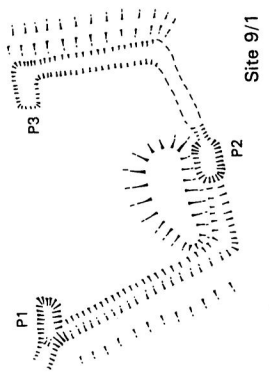
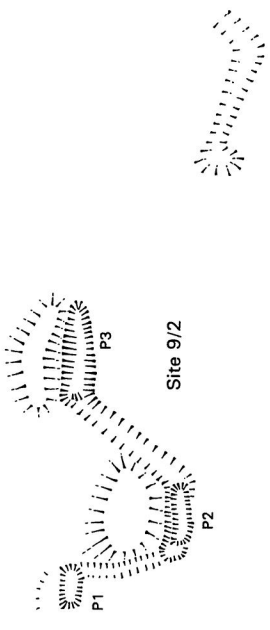


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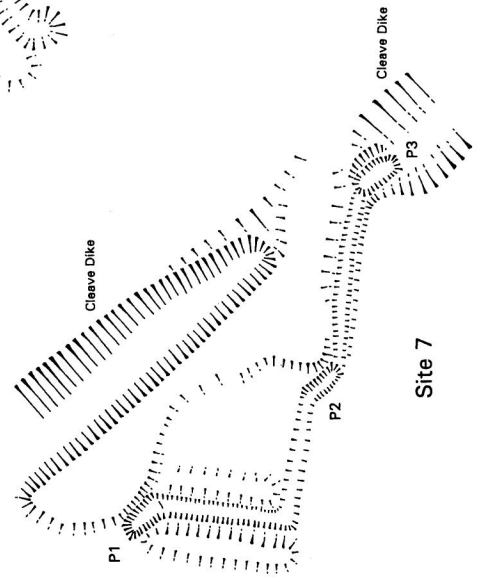
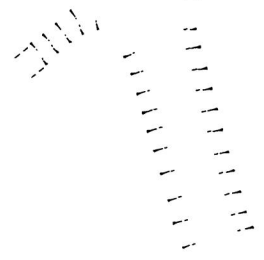


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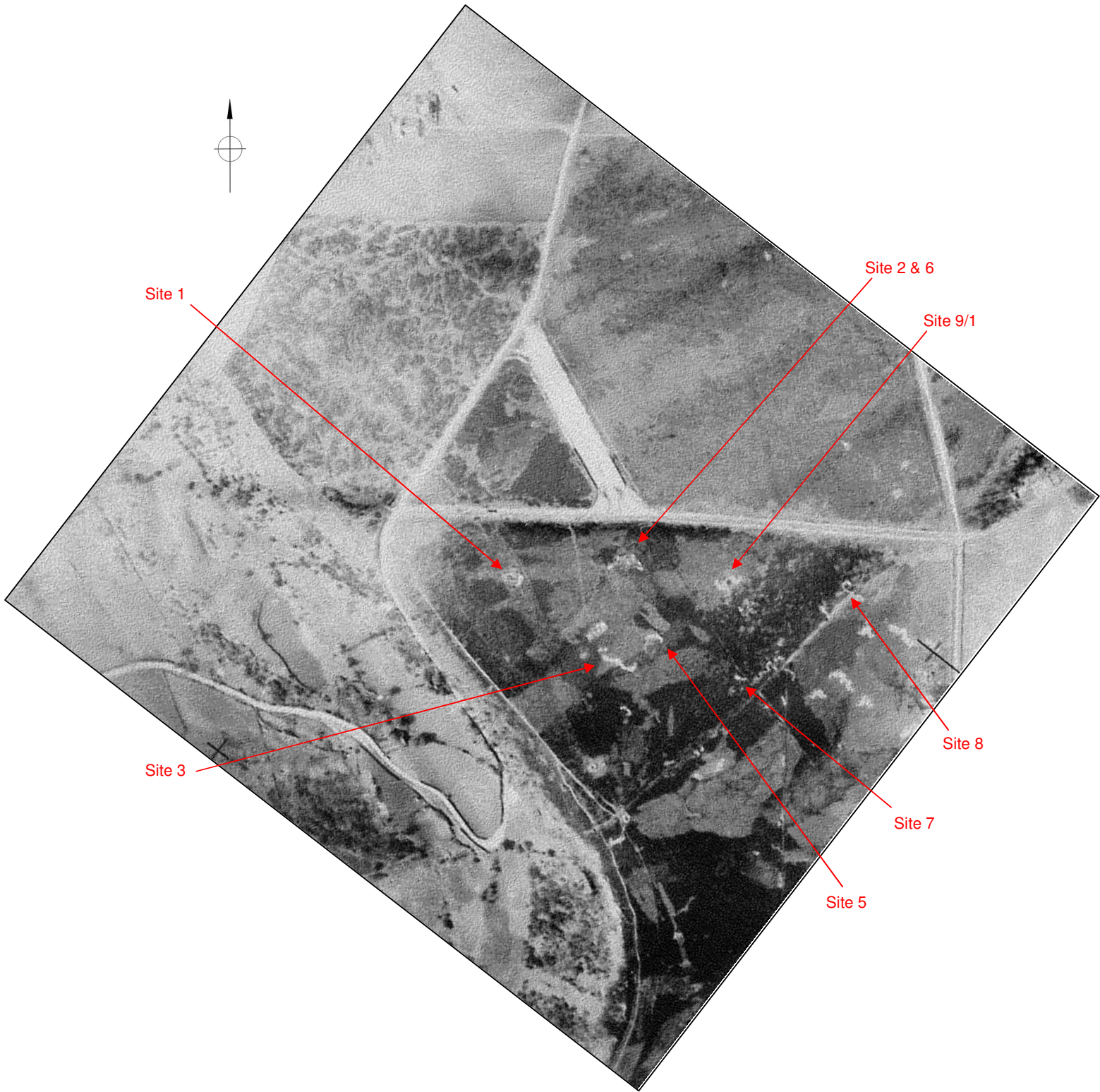
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TITLE	SITES 6 TO 9		
SCALE	AS SHOWN	DATE	JAN 2014
	EDAS	FIGURE	5



Site 9



0 Survey data November 2011 15m



Source: Aerial photograph 10/UK/1524, frame D3 dated 03/05/1940 (provided by NYMNP).

PROJECT		KILBURN MOOR PLANTATION	
TITLE		1940 AERIAL PHOTOGRAPH	
SCALE	DATE	NTS	JAN 2014
EDAS		FIGURE	6





Plate 1: Site 1, crenellated trench on E side, looking W (photo 1/697).



Plate 2: Site 1, pit 7 in SE corner, looking S (photo 1/699).



Plate 3: Site 1, north trenches from pit 3, looking W (photo 2/434).



Plate 4: Site 2, pits 1 & 2 linked by trench, looking S (photo 1/701).



Plate 5: Site 2, pit 3, looking SE (photo 2/429).



Plate 6: Site 3, pit 4, looking N (photo 1/704).



Plate 7: Site 4, pit 1, looking S (photo 1/707).



Plate 8: Site 6, pit 4, looking NW (photo 2/426).



Plate 9: Site 7, pit 1, looking S (photo 1/710).



Plate 10: Site 7, pit 3 in ditch of Cleave Dyke, looking S (photo 1/711).



Plate 11: Site 9/3, pit 7 on N edge of depression, looking E (photo 2/446).

## **APPENDIX 1**

## APPENDIX 1: PHOTOGRAPHIC REGISTER

Film 1: Colour digital photographs taken 14th to 18th November 2011 (prior to felling)

Film 2: Colour digital photographs taken 12th December 2012 (after felling)

<i>Film</i>	<i>Frame</i>	<i>Subject</i>	<i>Scale</i>
1	696	Site 1, crenellated trench on E side, looking NE	1m
1	697	Site 1, crenellated trench on E side, looking W	1m
1	698	Site 1, pit 7 in SE corner, looking SW	1m
1	699	Site 1, pit 7 in SE corner, looking S	1m
1	700	Site 2, pits 1 & 2 linked by trench, looking S	1m
1	701	Site 2, pits 1 & 2 linked by trench, looking S	1m
1	703	Site 2, pits 1 & 2 linked by trench, looking S	1m
1	704	Site 3, pit 4, looking N	1m
1	705	Site 3, pit 4, looking N	1m
1	707	Site 4, pit 1, looking S	1m
1	708	Site 5, pit 3, looking S	1m
1	709	Site 6, pit 4, looking NW	1m
1	710	Site 7, pit 1, looking S	1m
1	711	Site 7, pit 3 in ditch of Cleave Dyke, looking S	1m
1	713	Site 8, looking SW	1m
1	715	Site 9/1, E side, looking W	1m
2	426	Site 6, pit 4, looking NW	1m
2	427	Site 6, pit 4, looking NW	1m
2	429	Site 2, pit 3, looking SE	1m
2	430	Site 2, pit 3, looking E	1m
2	431	Site 2, pit 3, looking S	1m
2	433	Site 2, trench and pit 1, looking SW	1m
2	434	Site 1, north trenches from pit 3, looking W	1m
2	435	Site 1, crenellated trench on E side, looking SW	1m
2	436	Site 3, pit 1, looking E	1m
2	437	Site 3, NW end, looking SE	1m
2	438	Site 3, NW end, looking SE	1m
2	439	Site 5, view along W trench, looking E	1m
2	440	Site 5, view along W trench, looking E	1m
2	441	Site 5, pit 2, looking W	1m
2	443	Site 8, view along trench, looking NE	1m
2	446	Site 9/3, pit 7 on N edge of depression, looking E	1m
2	447	Site 9/3, view of S trench towards pit 4, looking E	1m
2	448	Site 9/1, pit 1, looking NE	1m
2	449	Site 9/1, view along S trench towards pit 2, looking W	1m
2	450	Site 9/2, pit 3, looking W	1m
2	451	Site 9/1, pit 3 and trench, looking S	1m
2	452	Site 9/1, pit 3, looking W	1m
2	453	Typical appearance of site after felling, looking E	-
2	454	Typical appearance of site after felling, looking NW	-



1-696.JPG



1-697.JPG



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1-700.JPG



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1-704.JPG



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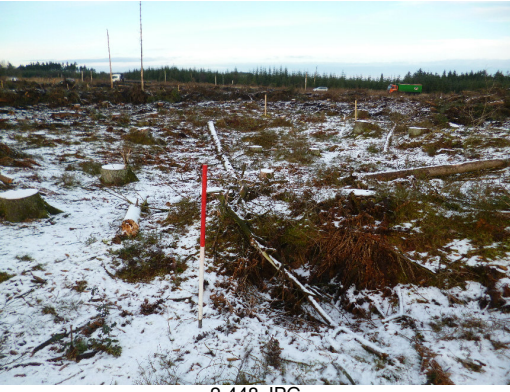
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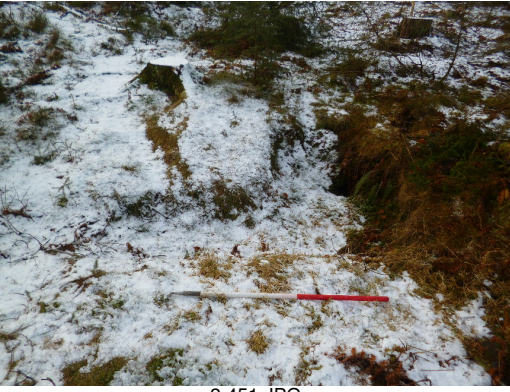
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## APPENDIX 2

## **APPENDIX 2: EDAS METHODS STATEMENT**

### **ARCHAEOLOGICAL SURVEY, KILBURN MOOR PLANTATION, NORTH YORKSHIRE**

#### **Introduction**

A programme of archaeological survey is required in Kilburn Moor Plantation (NGR SE 5170 8280), on the south side of the A170 road adjacent to the Sutton Bank Visitor Centre, to record a recently identified complex of presumed Second World War remains.

These remains comprise eight or nine discrete areas of earthworks, representing slit trenches and more complex interlinked trench systems. It is believed that these trenches were dug to either protect the adjacent Kilburn airfield from attack or were a series of practise works. Despite the area being planted with a coniferous plantation in the c.1960s, some of the earthwork remains are well preserved.

#### **Objectives**

The objectives of the project are:

- to gather sufficient information to record the position and extent of the Second World War remains, to ensure their protection from future forestry works;
- to provide an accurate record of the remains, through drawn and photographic techniques, so that the information can be used in any future interpretation and presentation proposals.

#### **Methodology**

##### *Desk-top Assessment*

A brief and limited documentary search into the Second World War remains will be undertaken. This will be confined to readily-available sources predominately supplied by the NYMNPA, and as well as any other information that might be gathered from oral history etc.

##### *Topographic Survey*

The eight or nine areas of remains will initially be marked on site by the NYMNPA archaeologist, using high visibility tape, pegs or other ground markers. A divorced measured survey of each of these areas will then be undertaken, using traditional tape and offset techniques, following guidance produced by English Heritage (e.g. Bowden, M 2002 *With Alidade and Tape: Graphical and Plan Table Survey of Archaeological Earthworks*). The earthworks will be recorded by measuring distances along and from taped baselines, set out along compass bearings or between other prominent features, e.g. field walls, forest drives, boundaries, trees etc. The earthworks will be drawn in the field at a scale of 1:100 or 1:50 (depending on the size of the complex), with more detailed surveys of specific items (e.g. a well preserved slit trench) if appropriate. Any trees that might be used for setting out will be marked at their bases, for subsequent identification after felling operations.

Once felling across the plantation has been completed, the detailed areas of survey will be re-identified and the features used to set out the taped baselines will be accurately surveyed using EDM total station equipment. This will allow the divorced surveys to be accurately located within the wood, and to the Ordnance Survey National Grid by reference to existing topographical features, wall corners etc.

##### *Photographic Survey*

A photographic record would also be made of the Second World War remains, using a digital camera with a minimum of 10 megapixel resolution. English Heritage photographic guidelines will be followed, and each photograph will be clearly numbered and labelled with the subject, orientation, date taken and photographer's name, and would be cross referenced to digital files.

## *Survey Report*

An EDAS archive survey report will be produced, which will assemble and summarise the available evidence for the site and the investigations in an ordered form, synthesise the data, and comment on the quality and reliability of the evidence. It will include a contents list, acknowledgments, executive summary, details of the survey methodology and procedures, an account of the results of the investigations, preliminary conclusions, appropriate management recommendations, recommendations for any further appropriate and/or interpretation work, and a bibliography. Appendices will include a copy of this methods statement and details of any departures from it. The survey report will also contain plans and photographs as appropriate; the former will be drawn to English Heritage standards using traditional hachure techniques and will be reduced to A3 / A4 size.

A draft report will be submitted to the NYMNPA for comment prior to the delivery of the final report. Two copies of the survey report (one bound, one unbound) would be provided to the NYMNPA, including an electronic version in pdf format. Copyright of all survey material and the report will pass to the NYMNPA on payment of final invoices.

Included in this element of the work would be the completion of appropriate OASIS record forms and short publication of the results in an appropriate journal, as necessary.

### **Resources and Programming**

The project would be overseen by EDAS, who are on the NYMNPA list of archaeological contractors, and who are also registered as an archaeological organisation with the Institute of Field Archaeologists.

The project would be undertaken by Shaun Richardson of EDAS, in conjunction with Benchmark Land Surveys. Shaun Richardson has considerable expertise in non-intrusive earthwork survey, as well as recording Second World War remains.

It is envisaged that, subject to the necessary access being secured and appropriate funding, the site survey work will be undertaken in the weeks beginning 14th and 21st November 2011 (subject to suitable weather conditions). It is proposed to have all the initial site survey completed by the end of November 2011, so as not to delay forestry operations.

### **Health and Safety, and Insurance**

EDAS would comply with the Health and Safety at Work Act of 1974 while undertaking the project. A full copy of their Health and Safety Policy is available on request.

The site is privately-owned, and EDAS would indemnify the landowner(s) in respect of their legal liability for physical injury to persons or damage to property arising on site in connection with the survey, to the extent of EDAS's Public Liability Insurance Cover (£5,000,000).

Ed Dennison, EDAS  
7th November 2011