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THORNBOROUGH NORTH HENGE, TANFIELD, NORTH YORKSHIRE

ARCHAEOLOGICAL AND ECOLOGICAL SURVEY

Ed Dennison Archaeological Services
18 Springdale Way
Beverley
East Yorkshire
HU17 8NU

NYS 8212
NYE 1805

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Ed Dennison Archaeological Services
18 Springdale Way
Beverley
East Yorkshire
HU17 8NU

On behalf of

English Heritage
23 Savile Row
London W1A 1AB

and

Mr Bourne-Arton
Tanfield Lodge Estate
West Tanfield
Ripon
North Yorkshire

THORNBOROUGH NORTH HENGE, TANFIELD, NORTH YORKSHIRE

ARCHAEOLOGICAL AND ECOLOGICAL SURVEY

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EXECUTIVE SUMMARY

In August 1994, an archaeological and ecological survey of Thornborough North Henge (at NGR SE28058005 centred) was commissioned by Peter Greenwood and Company, Land Agents to the Tanfield Lodge Estate. The project, which was grant-aided by English Heritage, was to provide sufficient information to allow an appropriate, sympathetic and coordinated management plan to be drawn up for the monument, marrying the archaeological and ecological significance of the site to the desire of the landowners to maintain a commercially-viable woodland.

Thornborough North Henge is the northern of a set of three henges which lie in flat open country on Thornborough Moor, 0.5km to the south-west of the village of Nosterfield in the parish of West Tanfield at approximately 43m AOD. The site, which is known as Camp Wood, is located on the east side of Green Lane to the north of Camp House.

Current archaeological research and an examination of aerial photographs shows that the three Thornborough henges form part of a concentration of Neolithic and Bronze Age ritual and funerary monuments. The north henge is a classic Type IIA example, comprising a bank between two ditches with opposed entrances. The majority of the monument is well preserved below a dense woodland, although most of the outer ditch has been destroyed or disturbed by agriculture, quarrying and road construction, and parts of the bank have been quarried away. Some small-scale dumping has also taken place in the inner ditch. Previous archaeological investigation is confined to the drawing of a section through the earthworks and the digging of two small test pits in the inner ditch, all in 1952 The henge is of national archaeological importance and is a Scheduled Ancient Monument

The archaeological and ecological survey was undertaken in late 1994 and 1995, with subsequent visits during 1996 and 1997 for management purposes. The earthwork survey showed that the opposed entrances of the henge were of different widths, and that the inner ditch had been constructed in short straight sections which were subsequently joined together; the bank is typically 20.5m wide and 3 2m high, and the inner ditch is on average 19m wide and 2 5m deep. The ecological survey noted that the broadleaved woodland contains both native and non-native species, with the canopy dominated by ash and sycamore, although long established, the wood is not considered to be "ancient" There is a diverse ground flora, with dog's mercury, bluebell and ivy abundant, but diversity is not sufficient to merit SSSI status. However, the wood is regionally important and is designated as a non-statutory site of nature conservation in the Hambleton Local Plan.

On the basis of the information gathered by the surveys, management recommendations in the form of detailed objectives and prescriptions are proposed, which will help to safeguard and maintain the archaeological and ecological resource, while still recognising the commercial value and visual importance of the wood The main recommendations are to fell all leaning trees and those in particularly sensitive areas, and to manage the wood as an uneven-aged high forest.

1 INTRODUCTION

1.1 Introduction to the survey

1.1.1 In August 1994, Anthony Walker and Partners were commissioned by Peter Greenwood and Company, Land Agents to the Tanfield Lodge Estate, to undertake an archaeological and ecological survey of Thornborough henge, which lies to the south-west of Nosterfield in North Yorkshire (at NGR SE28058005 centred) (see figure 1) The project was defined by a specification prepared by Anthony Walker and Partners (AWP 1994; Appendix 1), and was funded by English Heritage.

1 1 2 In April 1995 the Leeds office of Anthony Walker and Partners became Barton Howe Warren Blackledge (BHWB), and in April 1996 the archaeological section of BHWB became Ed Dennison Archaeological Services (EDAS) With the agreement of all parties, the project was transferred to EDAS for completion.

1.2 Background information

1 2.1 Thornborough North Henge is the northern of a set of three henges which lie in flat open country on Thornborough Moor, 0 5km to the south-west of the village of Nosterfield in the parish of West Tanfield at approximately 43m AOD The site, which is known as Camp Wood, is located on the east side of Green Lane to the north of Camp House.

1 2 2 The monument is circular and consists of a substantial earthwork bank and ditch overlain by a high density mixture of young broadleaved trees of moderate diversity with associated ground flora. The soil is a typical brown earth (Wick 1 Association) while the underlying solid geology is Magnesian Limestone.

1.2.3 The henge was scheduled as an Ancient Monument on 10 August 1923 and is now covered by the Ancient Monuments and Archaeological Areas Act 1979 (Monument Number NY 36a). The site is also recorded on the National Archaeological Record (SE27NE31) and the North Yorkshire County Sites and Monuments Record. Camp Wood is listed in the Hambleton District Phase 1 Habitat Survey (site 11) and some evidence of badger occupation was suggested; both badgers and their setts are protected under the 1992 Protection of Badgers Act

1.3 Extent and aims of the survey

1.3.1 The survey area was defined as being the extent of the circular henge monument, which measures approximately 220m in diameter (see figure 2).

1.3.2 As defined by the project design (AWP 1994, Appendix 1), the survey was undertaken to provide a sufficient level of information on the extent and condition of the monument to allow an appropriate, sympathetic and coordinated management plan to be drawn up, marrying the archaeological and ecological significance of the site to the desire of the landowners to maintain a commercially-viable woodland.

1.3.3 In detail, the specific aims of the project were

- to gather sufficient information to establish the extent, nature, character, condition and quality of the surviving archaeological features within the survey area,
- to gather sufficient information to establish the extent, nature, character, condition and quality of the various ecological components of the survey area,
- to provide a detailed and accurate record of the monument, both in terms of archaeological and ecological features,
- to provide a detailed management strategy for the preservation and enhancement of the archaeological deposits, where possible without detracting from the ecological or visual importance of the monument

2 ARCHAEOLOGICAL AND HISTORICAL INFORMATION

2.1 Introduction

2.1.1 As a monument class, henges have attracted a considerable amount of archaeological interest and investigation, and there are several publications which provide summaries of their date, form and function (eg Burl 1969, Wainwright 1969, Harding & Lee 1987) Darvill (1989) and Burl (1991) provide the most up-to-date accounts

2.1 2 Henges are considered to be late Neolithic/early Bronze Age earthwork enclosures, of a type generally recognised as having a "ritual" function. The nature of this function is not known, but there is little evidence to support suggestions of an astronomical purpose Henges are distinct from, but are related to, stone circles and a few henges incorporate stone circles as secondary features (eg Stonehenge). About 320 henges or henge-related sites have been identified in Britain, although a high proportion are non-henge sites with similar morphological characteristics

2.2 Henge monuments

2 2 1 A henge can be described as a roughly circular or oval-shaped earthwork enclosure, consisting of a ditch with an external bank and an internal diameter in excess of 20m, usually with either one or two entrances (Darvill 1989, 3) Currently available radiocarbon dates from material associated with the construction and primary use of henges span the period 2500 to 1700 RCYBC, the majority falling within 2100 to 1800 RCYBC. This equates to about 2800 to 2000 BC ie. the late Neolithic period.

2.2 2 The most distinctive components of a henge monument are its bank and ditch. A study of all known examples shows that the ditch can be between 2.5m and 8m wide and between 1m and 7m deep, with profiles ranging from U- to V-shaped, while the bank can be up to 5.5m high Most henges have either a single ditch or a pair of concentric ditches, in either case forming a roughly circular or oval enclosure, with either a single or two opposed entrances Detailed analysis suggests that the ditches were constructed in sections which were subsequently joined together, while the terminals can be either rounded, squared, or expanded.

2.2.3 The banks traditionally comprise piles of turf and topsoil at the core with layers of redeposited bedrock above. To date, no positive evidence for internal revetments or constructional features has been found, although it is probable that some external stone and/or timber revetment was used to support the lower parts. In some henges, the bank and ditch is separated by a level area called a berm which may be up to 6m wide.

2 2 4 The central portion of the henge, arguably the most important part of the monument, tends to be flat and fairly level, and either circular or oval in plan, the outline being determined by the surrounding ditch. The majority of henges contain some internal features, for examples stone circles, portal settings, standing stones, timber circles and/or burials, although not all are associated with the primary use of the monument

2.2 5 Access to the central area appears to have been via formal entrance ways through the encircling earthworks. Most sites have either a single entrance or two opposed entrances, although large monuments such as Avebury in Wiltshire have four Portal settings are known at eight sites, comprising one or more stones or posts flanking the entrance, either in the end of the banks or in the terminals of the ditch, Burl (1969, 7) suggests that these prevented the banks from spreading or acted as supports for a door or gate of some kind In general, henges with two entrances tend to be larger than those with one, and henges with two opposed entrances are often slightly asymmetrical in plan and have entrances of varying widths. For these reasons, the main axis of the henge, defined as the line through the middle of each entrance, only rarely passes through the true centre of the monument

2 2 6 The alignment of henges as defined by their entrances is highly variable, and may be determined by local topography rather than any preferred orientation. There is a slight tendency for single entrance henges to have the entrance set in the north or north-east quadrant, while sites with two entrances tend to be aligned south-east/south-south-east to north-west/north-north-west, or east-north-east/east to west-south-west/west

2 2 7 Henges can be generally classified into four main types, according to the number of entrances and ditches, as follows·

I: Single entrance, single bank and usually a single ditch circuit

IA· Single entrance, single bank and double circuit of ditches

II: Two opposed entrances, single bank and a single ditch circuit

IIA: Two opposed entrances, single bank and two or more circuits of ditches

A fifth type (Type III) can also be recognised for those sites which have more than two entrances.

2.2 8 Present dating evidence suggests that Class I henges were being built from the late 4th millennium BC to the late 3rd millennium BC, while the construction of Class II henges began about the middle of the 3rd millennium BC and continued into the 2nd millennium BC. Henges

therefore span the transition between the late Neolithic and early Bronze Age periods.

2 2 9 The original purpose and function of henge monuments is not fully understood. The arrangement of banks and ditches is taken to preclude a defensive role and, because of this and the kind of components often found within the enclosure, they are generally regarded as being ceremonial or ritual monuments. The nature of such rituals cannot at present be determined, there is insufficient evidence for burials to suggest a strong link with funerary rituals, and there is no firm evidence for any astronomical alignments in either the design of the henge or any of its component structures

2.2 10 Henges are distributed throughout England, with the notable exceptions of the south-eastern counties and the Welsh Marches, although this may be due to a lack of survey and recognition rather than a true absence There are three main concentrations of "classic" henge monuments, in the Hampshire/Dorset area, the Vale of York, and the Milfield plain in northern Northumberland Generally, henges are located below 125m OD, often beside or near springs or water courses Gravel terraces in wide flat valleys seem to be the preferred positions Pairs or small clusters of up to three henges are common, often within 0 5km of each other, and they are associated with a wide range of other contemporary monuments, mostly through stratigraphic and spatial relationships.

2 2 11 Henge groups often include different types of henge. They also frequently occur in association with a cluster of other types of prehistonc "ritual" site which may or may not be contemporary, these associated monuments can include cursus (elongated enclosures), round barrows, pit alignments and avenues There are a number of cases where avenues are clearly functionally associated with henges, and they may have been used for ritual processions. Cursus are usually earlier. Pit alignments are complex monuments which occur at different periods and which have many different functions, but some double pit-alignments could be former avenues. The general impression given by these clusters of sites is of localities which formed *foci* of ritual activity over very lengthy periods of time.

2.3 The Thornborough henges

2 3 1 Thornborough North Henge is the northernmost of a group of three classic two-entrance (Type IIA) henges, approximately arranged on a common axis which runs roughly north-west to south-east (see figure 1). They are spaced at intervals of approximately 750m (centre to centre). Three other henges, at Cana Burn, Nunwick and Hutton Moor, also lie in the general vicinity.

2.3.2 The Thornborough henges or circles form the largest element in a concentration of Neolithic and Bronze Age ritual and funerary monuments in this part of the Vale of York. A Neolithic cursus

aligned at right angles to the axis of the henges underlies the central or middle henge, and another possible cursus aligned roughly parallel to the henges, lies to the east of the north henge A double north-south pit-alignment (or pit-avenue) lies between the middle and south henges, and a single pit alignment running towards the north henge lies to the north-east Numerous round barrows, of which a few survive as earthworks, are scattered around the area. A number of other cropmark enclosures and ditches in the vicinity are likely to be domestic or agricultural sites much later in date

2 3.3 Crawford briefly described the Thornborough henges in 1927 and Clarke republished Crawford's plan in 1936 (Crawford 1927, section L, 8; Clarke 1936). Atkinson summarised all the available information in 1951, together with two similar monuments on Hutton Moor and at Cana, near Ripon (Atkinson, Piggott & Sanders 1951, 102-103) Lukis excavated some of the barrows near the circles in the 19th century (Lukis 1870), and aerial photographs of the sites were first taken between 1945 and 1952, two of these are published in Thomas's excavation report (Thomas 1955, plates 1 and 2)

2 3 4 A detailed programme of archaeological field investigation, incorporating artefact collection, earthwork survey, geophysical survey, and limited trial excavation, is currently being undertaken by Newcastle University's Department of Archaeology (previously by the University of Reading), this work is the Vale of York Neolithic Landscape Project which is supervised by Dr Jan Harding. A number of interim reports have been published (eg Harding 1994 & 1996) but to date work has been concentrated on the southern and central henges However, fieldwalking shows that there is a marked decrease of material nearer the henges, which might suggest a distinction between the ritual and domestic landscape.

2 3 5 The three Thornborough henges are very similar to each other in terms of size and morphology Each has a large internal and a small external ditch with a large bank between, separated from each ditch by a wide berm The north henge (at NGR SE28058005) is the best preserved of the three henges, under a dense cover of woodland, although the outer ditch has been disturbed by quarrying and agricultural activity; it is in fact one of the best preserved in the north of England (Harding & Lee 1987, 214) As discussed in Chapter 3 below, it has an internal diameter of approximately 90m, an external diameter of some 220m, and two opposed entrances. Two small trial pits dug in 1952 suggested a similar sequence of inner ditch fills to that recorded in the central henge (Thomas 1955, 434).

2.3.6 The central henge (at NGR SE28547946) also survives as a sub-circular earthwork, with a substantial bank. It measures approximately 238m in diameter with an internal area of approximately 83-92m diameter; the internal ditch has an average depth of 1.2m and the bank is between 0.8m and 3.5m high. The

centre has been ploughed in the past, and is now a flat grassy area. The inner ditch is visible as a cropmark on aerial photographs, and there is some slight erosion on the north side of the bank due to ploughing.

2 3 7 Small-scale excavations in 1952 established the relationship of the central henge with the underlying Neolithic cursus, and provided some evidence for the structural history of the bank and inner ditch. Some inconclusive evidence also suggested that the surface of the bank was originally coated with gypsum. Very little dating evidence was obtained, but the henge was dated to the early Bronze Age, largely on the basis of evidence for climatic change The excavator noted that the trench to investigate the interior of the henge was badly sited, and no internal features would have been identified even if they were present (Thomas 1955)

2.3.8 The banks of the southern henge (at NGR SE28957885) stand to nearly 2m high on the west side but the east side is barely visible The banks appear to be very spread, consistent with prolonged ploughing. There is a slight indication of an inner ditch In 1996 excavations on the west part of the outer ditch were undertaken by the Vale of York Neolithic Landscape Project This showed that the ditch was 3m wide, rather shallow (approximately 0.6m deep) and irregular, in marked contrast to the 17.7m wide and 2.1m deep inner ditch The outer ditch was also of two phases, and was probably dug to provide material for an hitherto unsuspected outer bank which was possibly originally 3 5m wide and of undeterminable height, with some timber uprights perhaps to emphasis an entrance (Harding 1996)

2.4 Cartographic history

2.4.1 Although not apparently specifically mentioned in any of the earlier documents, the north henge is depicted on various maps and plans from the later 18th century. Jeffrey's 1771 map of Yorkshire shows the three henges named as "Roman Camps" and depicted as circular features in an open landscape. A road runs south-east from Nosterfield and curves around the south end of the north henge as an unenclosed track, before running north-east to join what was to become the B6267 road.

2 4.2 The henge is shown in more detail on a map of the Lordships of East and West Tanfield and dated to 1792 (NYCRO MIC 1930/38-49) It depicts the henge as two semi-circular features on the edge of an enclosed area. It is referred to as "A Camp" and is described in the accompanying schedule as being a plantation, although no actual trees are shown on the plan.

2 4 3 In 1799 Thornborough Moor was enclosed by an Act of Parliament. The accompanying plan, which was surveyed by John Mowbray in 1796, depicts a pattern of concentric features which correspond to

the existing bank and inner ditch, no external features are shown (see figure 3a) (NYCRO QDD(I) 42 MIC 1541/350). As part of the enclosure process, a new road was constructed along the east side of the henge to Nosterfield village. This was named as "Nosterfield Road" (now Green Lane) and was to be 24 feet (7 3m) wide, and is clearly shown as clipping the outside (west) edge of the outer bank. The field containing the henge was called "Castle Field", although the henge itself was named as "Camp", and a boundary making two new fields was indicated running at right angles to Nosterfield Road, through the western part of the henge

2.4 4 In 1842 a later plan of the parish of West Tanfield depicts the henge as a wooded circular feature without subdivisions or field boundaries across it (see figure 3b) (NYCRO ZJX 10/67 MIC 1931/165-189).

2.4.5 The first accurate depiction of the earthworks appears in 1856, on the 1st edition Ordnance Survey 6" map (sheet 102). This shows a regular internal ditch and an adjacent bank divided by two opposed entrances; there appears to be no disturbance to the earthworks (see figure 3c). A second ditch, of a similar width to the inner, is shown outside the wooded enclosure, extending only around the east and south quarter There is a gap in the external ditch at the southern entrance, with another gap to the west Camp House has been built to the south by this date, and it is quite clear that Green Lane (formerly Nosterfield Road) has clipped the west side of the monument.

2.4.6 Subsequent Ordnance Survey 25" maps (sheet 102/1) similarly depict the henge, the only obvious difference being the extent of the external, outer ditch; on the 1909 edition map the south-east quadrant appears to have been infilled, while on the 1929 edition map no outer ditch is shown at all (see figure 3d) Both maps show that some slight disturbance to the east side of the outer bank. On the 1929 map the site is called "Camp Wood" for the first time, as well as "Earthen Circle" as opposed to a "Camp". Interestingly, both Ordnance Survey 25" maps show the monument as being less circular and more oval in outline, with the mner ditch being "squeezed", presumably this is a reflection of the increased scale of these maps.

3 ARCHAEOLOGICAL SURVEY

3.1 Summary of previous work

3.1 1 As noted above, the north henge is the best preserved of the three henge monuments at Thornborough It is a classic type IIA example, comprising a bank between two ditches with opposed entrances in the north-west and south-east quadrants From aerial photographs, Harding and Lee suggest that the internal diameter was approximately 69-98m while the external diameter was some 244m (Harding & Lee 1987, 214)

3 1 2 Although no large scale archaeological excavation has taken piace on the monument, two small trial pits were dug in 1952 in the inner ditch to determine the amount of silt that had accumulated, these holes were situated in the centre of the east side and at the south-east inner butt-end (Thomas 1955, 434). A section was also taken through the monument, which provides a useful reference to the modern survey (see below) In 1952 Thomas reported that the central bank was 10 feet (3.0m) high and 60 feet (18 2m) wide, and was separated from the inner ditch by a berm 40 feet (12 2m) wide The ditch was 65 feet (19 8m) wide and would have been about 10 feet (3 0m) deep originally, the two test pits were found to contain an accumulation of almost 2 feet (0.6m) of clean yellow sand covered by leaf mould Thomas also noted that the south-east entrance, which was 40 feet (12.2m) wide, had had a rough road laid across it "in modern times" No evidence for the outer ditch, either on the ground or on the aerial photographs, was noted.

3 1.3 Thomas also remarked on the irregular nature of the plan of the henge, particularly when compared to the other two circles The mner ditch was seen to be oval rather than circular, with the curve formed by a series of slightly angular segments. Thomas suggests that the two entrances were not aligned on one axis.

3 1.4 As noted in section 2 4 above, the henge has been wooded since at least 1792 (NYCRO MIC 1930/38-49); as the wood is described as a "plantation" it is presumed that the trees were deliberately planted rather than being a result of natural generation. In more recent times, the management and periodic felling of this woodland has caused some disturbance to the archaeological earthworks and the ground flora, particularly when vehicles have been manoeuvred on the sloping ground. This was particularly marked in February 1977 when the damage was reported to English Heritage by the North Yorkshire County Council's Archaeology Department (information in County SMR); some of the former vehicle tracks can be seen although they are now largely grassed over (see plate 5). English Heritage's Field Monument Wardens have also reported on some areas of dumped material in the northern quadrant and on the east side of the outer bank. Some evidence of moles, rabbits and badgers within the earthworks has also been noted.

3.2 Survey methodology

3.2 1 The earthwork survey was carried out in accordance with the project design (AWP 1994, Appendix 1), utilising EDM Nikon Total Station equipment (DTM5) with DR2 dataloggers. A total of 25 temporary survey stations were established over the survey area (see Appendix 2) and the data were integrated into the Ordnance Survey national grid by resection to points of known coordinates. The survey was levelled to heights AOD using the bench mark located in Moor Lane on the south side of one of the buildings associated with Camp House (45.90m AOD). Sufficient information was also gathered to allow the survey area to be readily located through the use of roads, field boundaries, and other topographical features

3 2 2 The survey recorded the position of all earthworks, paths and tracks, erosion scars and hollows, stone and rubble scatters, and any other features considered to be of archaeological or historic interest. The survey also recorded the position of all rubbish and other debris, as well as all the larger trees and major vegetation zones, this information was used for the ecological survey and the management prescriptions (see below). The on-site survey work took place in October and November 1994

3 2.3 The survey data were processed using Civilcad (Version 4 4) software and the resulting information was plotted at 1·500 scale A section with a vertical scale of 1 250 was also plotted The plots were then re-checked in the field as a separate operation, in February 1995, and amendments and field notes made as necessary

3 2 4 The subsequent plan is presented as an interpretative hachure drawing using conventions analogous to those used by the RCHME; figure 4 is a reduced version of the 1.500 survey This figure depicts only the original and disturbed earthworks, and does not show any of the dumped rubbish and other debris which lies within the monument, this is shown on the management drawing, figure 8. A section through the henge, taken at right angles to the main axis, appears as figure 5.

3.3 Earthwork description

3.3.1 The majority of the monument, excluding the outer ditch, is contained within an approximately circular boundary. This area is covered with a high density of young broadleaved trees of modest diversity, including oak, ash, elm and beech (see ecological survey below) (see plate 1). There is some disturbance to the bank on the western sides, and the south-west edge has been clipped by Green Lane.

3.3.2 As noted above, the henge is of a classic IIA type, comprising a bank between two ditches with opposed entrances in the north-west and south-east quadrants (see figure 4). Excluding the slight outer ditch

(see below), the henge measures 187.5m through the axis of the entrances and 185 5m at right angles to this; a projection of the line of the bank through the disturbed east side suggests that this latter dimension was onginally the same as that seen on the mam axis. In contrast to the description given by Thomas, the entrances are aligned on a single axis and it is possible (vegetation permitting) to look through the monument on that axis This axis is aligned 40 degrees west of grid north.

3 3.3 The inner ditch is relatively well preserved, although there are several old tree holes in the sides as well as one or two more recent erosion scars caused by wind-blown trees (see plate 2). The north-east segment of the ditch is some 20m wide and 2.6m deep while the south-west segment is slightly less (18m wide and 2.2m deep) (see figure 5); this difference is probably due to increased slumping and accumulation of vegetation rather than any real difference in construction, and Thomas noted that the ditch would have been about 3m deep originally. There is also a slight gully on the west side of the outer bank, caused by a fallen tree and subsequent erosion, and a large fallen tree at the south end of the western section. As far as can be determined, the ends of the ditch are rounded

3 3.4 The ditch contains a quantity of dumped material and general rubbish (see figure 8) Most of this is old and rusting ironwork, which is scattered at intervals in the bottom of the ditch. The largest area is located on the west side of the south-east entrance and this appeared to be recent and fresh at the time of the survey. All other material was heavily vegetated and in some cases almost indistinguishable from the ditch bottom. Most of this rubbish seems to be agricultural in origin, and there are some rubber tyres near the north-east terminal and some empty oil drums on the outer edge of the east side of the ditch, the latter are adjacent to a large beech tree to which a makeshift swing had been attached.

3.3.5 The east section of the outer bank is largely undisturbed (see plate 3), apart from a 55m length adjacent to the north-west entrance which appears to have been quarried away. Overall, the bank is typically 20.5m wide and 3.2m high, and has a flat top of between 1m and 2m wide. Fallen trees and small areas of bare ground clearly show that the bank is made of rounded pebbles, and in some areas the vegetation cover is very thin. Once again, a considerable amount of rubbish has been deposited against and adjacent to the outer face of the bank on the east side; this material includes an old truck chassis and a rotting wooden cart. There is also a large amount of rubbish placed between the base of the bank and the fence line which, together with a pile of stones, earth and bricks towards the north, probably results from adjacent field clearance. It is noticeable that the field to the north of the henge is lower than the surface on which the bank sits, and ploughing has started to encroach on the bottom of the bank (see plate 4).

3.3 6 The outer bank on the west side of the henge is considerably disturbed, although some of the outer faces remain up to 1m high. The earthworks resemble small linear quarries and it is clear that the matenal has been removed from the inner parts of the bank; the well rounded and heavily vegetated nature of the earthworks suggest that this activity is not recent, and material may have been quarried to create the 19th century new road. Two breaks in the inner side of the bank in the east quadrant are also possibly of some age. The present access into the henge from the Green Lane passes through the north-west part of the bank, over a slight rise which has been disturbed by vehicle tracks (see plate 5).

3 3 7 The berm between the bank and ditch is virtually level and is on average 13m wide (see plate 6). An earlier track runs around the east part, at the base of the bank The interior of the henge is also flat, apart from numerous tree holes and minor erosion hollows, and is 90 5m in diameter

3 3.8 A concentnc outer ditch can also be detected, running c.12m beyond and parallel to the east section of bank In the north-east quarter it is between 0.6m and 0 8m deep and up to 25m wide, this part has clearly been ploughed in the past, and has been spread. The ditch is possibly more accurately depicted in the south-east quadrant, where it crosses a pasture field. Here it is 21m wide and up to 1 2m deep, and there is a definite 15m wide gap corresponding to the adjacent entrance. There is however, a further gap to the west but this appears to be a result of infilling, and may be partly related to the erection of a telegraph pole. No sign of the outer ditch can be seen in the arable fields to the north of the henge, although sub-surface features are likely to survive. The projected line of the ditch in the south-west quadrant would take it to the west of Green Lane but this area has been quarried, restored and landscaped, and no trace now remains

3.3.9 The two opposed entrances are formed by simple gaps in the alignment of the bank and inner ditch. However, the gaps appear to be narrower through the ditch than through the bank. At the better preserved south-east entrance, the ditch gap is 9m wide while the bank gap is 15m wide. There is some dumped modern material here, although the actual edges of the bank are undisturbed, and there is no evidence for the "rough road" noted by Thomas. The gaps through the ditch and bank at the north-west entrance are 14m wide although the bank has been disturbed by quarrying here. It was noted in section 2.2 above that opposed entrances are often of different widths.

3.3.10 Thomas remarked on the irregular nature of the plan of the henge, particularly when compared to the other two circles; he considered that the inner ditch was oval rather than circular in plan, as shown on the Ordnance Survey 1909 and 1929 25" maps (see figure 3d),

and that the curve of the ditch was formed by a series of slightly angular segments (Thomas 1955, 434) The detailed survey as shown in figure 4 shows that the former is not correct, and that the ditch is a true "circle" broken by the two entrances However, it is clear that it was dug in a number of straight sections which were subsequently linked, this is most apparent on the inside line of the ditch.

4 ECOLOGICAL SURVEY

4.1 Introduction

4 1 1 The ecological interest of the site became apparent during the initial assessment for this study. The Hambleton District of North Yorkshire has the benefit of a Phase 1 habitat survey (NCC 1987), in which the district's most valuable habitats are highlighted, and Camp Wood, which contains the henge, was included In view of this known botanical interest and the possibility of the presence of badgers, an ecological survey was earned out

4.2 Methodology

Flora

4 2 1 Available information was collected from Hambleton District Council and an initial site visit established the scope of the survey The botanical fieldwork was then undertaken in late April 1995

4 2 2 The method of data collection was designed to enable analysis using the National Vegetation Classification which has become the standard tool for vegetation recording (Rodwell 1991) Quadrats (sampled areas) were located within stands which appeared to be structurally and floristically homogenous. Woodland quadrats were approximately 25m by 25m for the canopy and shrub layer and 10m by 10m for the ground flora.

4.2.3 Plant species present were recorded on a standard sheet and their abundance within the quadrat estimated using the Domin scale, which measures percentage cover. This information was supplemented by a brief description of the stand in which the sample was located, together with details of vegetation height, total cover, slope and aspect. Plant nomenclature follows that used by Stace (1991).

4.2.4 The sample data were entered into a computer database using the *Vespan* suite of programmes The data were then subjected to analysis by *Twinspan* (Two Way INdicator SPecies ANalysis), a computer programme which performs a divisive cluster analysis on multivariate data. The aim of the analysis is to divide the data into groups of samples which are most similar to each other.

4.2.5 Once the *Twinspan* analysis was completed, all the groups produced by each of the six levels of division were analysed using *Match*, a computer programme which classifies vegetation samples into standard vegetation communities defined by the National Vegetation Classification. The programme compares the collected sample data with standard diagnostic tables for each NVC community and calculates a coefficient of similarity to each (maximum coefficient = 100).

4 2 6 In addition to the above, the earthwork survey recorded the position of all the larger trees and major vegetation zones. The trees were subsequently tagged and identified according to species to assist with the preparation of the management prescriptions. In view of the delay with the report, the pegs were eased in June 1997 to prevent damage to the trunks The ecological survey plan is presented as a reduced 1.500 scale drawing, overlain on the earthwork survey (see figure 6), while the tree survey is a reduced 1:250 scale plot (see figure 7).

Fauna

4 2 7 In view of the reported possibility that badgers may use the wood, a search for their signs was undertaken by a member of the Stokesley and Richmond Badger Protection Group in late March 1995 As badgers and their setts are fully protected by the Protection of Badgers Act 1992, it would be illegal to disturb them without a licence. Such disturbance could involve felling trees over an active sett, when ADAS would be the licensing authority, or work to prevent further damage by the animals to the scheduled earthworks, in which case English Nature would need to be contacted. In either case the appropriate authority would require adequate measures to be taken to ensure that badgers are not harmed and that no setts are disturbed between December and June, when females are pregnant or have young.

4.2 8 The badger survey involved searching the wood for.

- badger setts and determining their level of use
- regularly used pathways
- footprints
- latrines
- snuffle holes
- hairs caught eg. in fence wire
- scratching posts

4 2.9 In addition to badgers, evidence of other animals (birds and mammals) was recorded as seen during the botanical fieldwork in late April 1995. The results obtained were not intended to be comprehensive, but simply to provide an indication of the use of the wood by other wildlife.

4.3 Habitat survey

4.3.1 Fourteen samples of the wood's vegetation were recorded at the locations shown on figure 6, in order to obtain a reasonable cross-section of the wood's flora. The species recorded in each sample, and the Domin value for each, are listed in Appendix 3. The following description is based on these records, additional field notes, and the information obtained from Hambleton District Council.

4.3 2 The site comprises broadleaved woodland of both native and non-native tree species, with a stand of blackthorn scrub at the north-eastern edge. The canopy is dominated by ash and sycamore, both of which are present in a wide range of sizes throughout the wood However, large and medium sized ash are particularly prominent on the eastern bank, and large sycamores are concentrated in the central area and towards the southern edge. There are also a few big beech trees, and a larger number of smaller oaks and several elms. In addition, there are one or two unusually large hollies and hawthorns.

4 3 3 Gaps in the tree canopy are being filled by locally abundant regeneration of ash and sycamore from seedlings, together with some regrowth from cut stools. Elsewhere, particularly around the north-eastern section of the ditch, the saplings are accompanied by a dense growth of elder. Hawthorn is the only other common shrub species, although some dog-rose, gooseberry and currant are also present locally. Spurge laurel is quite frequent towards the western edge of the wood.

4.3.4 The hedge line along the east side of Green Lane contains the same species as are found in the wood, plus blackthorn (which is otherwise only in the scrub on the wood's eastern edge) and field maple The patch of thorn scrub also includes some elm and elder

4 3.5 The site supports a diverse ground flora over much of its area, although at the south-east edge ground disturbance (possibly resulting from previous timber extraction) has led to the introduction of some weedier species. There are also some areas where clumps of brambles have developed, possibly in response to the opening up of the tree canopy The locations of the main bramble patches, together with the disturbed ground and the principal concentrations of saplings and scrub, are shown on figure 6.

4.3.6 Dog's mercury, bluebell and ivy are abundant throughout the wood, often forming large patches Frequent companions include wood avens, herb robert, broad buckler fern, stinging nettle, cleavers, red campion, lords-and-ladies and enchanter's nightshade. Other species are more local, but may be quite abundant where they occur. For example, honeysuckle is only found in the western part of the wood, cowslip only towards the eastern and western edges, and early purple orchid only on the eastern bank (under tree 839). Ramsons occurs rarely in the ditch in the north part of the wood and sanicle is present on the level berm to the west. Violets, both common dog-violet and hairy, are also quite commonly present. Although they appear to be most abundant on the banks, they also occur elsewhere. Further details of the flora are given in Appendix 3.

Analysis

4.3.7 The fourteen samples were subjected to *Twinspan* analysis to see if the variations in flora noted above would be supported by an

objective analysis. The results are shown in Appendix 4. The resulting divisions are difficult to interpret ecologically and it seems likely that any real differences are too slight for this type of analysis to identify.

4.3 8 From subjective examination of the sample data in Appendix 3, it is however possible to distinguish minor changes in the ground flora over the wood. These appear to be related to the earthworks and to proximity to the road. The banks around the outside of the henge support the richest ground flora Cowslip and early purple orchid are only found here, while common dog-violet, hairy violet, honeysuckle, pignut and spurge laurel are more abundant here than elsewhere. The berm between the bank and inner ditch also supports a good flora which includes enchanter's nightshade and sanicle. This flora is richer towards the west

4 3.9 The ditches display some large, single-species stands of dog's mercury, bluebell and ivy. Although a little ramsons was seen here, this habitat is otherwise less species-rich. Finally, the flat central area of the henge supports a flora which is locally rather heavily shaded, but includes most of the species seen elsewhere. Common figwort was also noted here, a species which prefers damp conditions.

4 3 10 The samples in Appendix 3 were also classified using the *Match* programme, which indicated a good correlation with the National Vegetation Classification (NVC) plant community W8e ash-maple-mercury woodland. herb robert sub-community (see Appendix 4) This is the woodland type typical of moderately calcareous soils in the lowlands of Britain, in which planting of non-native species has not masked the natural flora, in this context, sycamore, beech and all conifers, except yew and juniper, are considered to be non-native since none is naturally present in this part of England. This type of woodland is important for nature conservation and is represented in several of North Yorkshire's Sites of Special Scientific Interest (SSSI).

4.3.11 There are however, several elements in the vegetation which are slightly anomalous for a woodland of this type, and they may provide clues to the wood's history. For example, hairy violet, cowslip, garlic mustard and chickweed are not normally constituents of W8e. There is also too much stinging nettle, cleavers and burdock and too little hazel (there is none) and field maple. All of this evidence suggests that either much of the wood may have originated from planting, or that its natural character has been severely affected by subsequent management regimes such as tree planting.

4.3.12 The presence of grassland species such as cowslip and hairy violet, as well as records of common knapweed and field scabious, also lends weight to an open phase in the henge's history. The other "weedy" species are all encouraged by increased nutrients and soil disturbance, some of which appears to be recent.

4.3.13 Documentary evidence shows that the woodland on the henge is certainly long-established. As noted in section 2.4 above, mixed woodland is first depicted on a map of 1842 although the enclosure award of 1792 describes the henge as plantation. However, it is not shown in the Nature Conservancy Council's Inventory of Ancient Woodlands (NCC 1987), and so it is not considered to be ancient (ie. bearing a continuous cover of trees since at least 1600) This accords quite well with the botanical evidence and leads to the conclusion that the current floristic diversity may be a product of the gradual colonisation of woodland shrub and ground flora from an older wood, possibly just a roadside strip, combined with some more typically grassland species which have survived from when the henge was open

Evaluation

4 3 14 Camp Wood is not considered to be ancient and its floristic diversity is not sufficient for it to merit SSSI status. However, it is evidently long established and has acquired many of the species commonly associated with ancient woodlands, such as early purple orchid, barren strawberry (recorded), figwort, pignut, bluebell, dog's mercury, and common dog-violet (Peterken 1974) The Hambleton District Phase 1 Survey records that only 1.24% of the land area of the district supports woodland (NCC 1987) and so this habitat, of any type or quality, is a scarce resource. Camp Wood is of relatively high quality and therefore merits the protection accorded it by its designation as a non-statutory site of Nature Conservation Value in the Hambleton District-Wide Local Plan, development will not normally be permitted which would adversely affect, directly or indirectly, such sites (Deposit Draft April 1993).

4 3 15 On the basis of this wood's diverse woodland ground flora, fairly natural structure and tree composition, and the overall scarcity of woodland in Hambleton District, Camp Wood is judged to be of district value.

4.4 Fauna

4.4 1 The badger survey revealed no evidence of badgers in the wood This was confirmed during subsequent discussion with the wood's owner, Mr. Bourne-Arton, who knew of badgers elsewhere on the Tanfield Lodge Estate.

4 4 2 There are several rabbit burrows in the wood, such as near the south-west edge, the southern edge, and the south-west edge of the inner circle (under trees 1004, 12 and 1033 respectively). Evidence of current, or at least recent, occupation was provided by occasional scrapes. It is understood that rabbit control is undertaken periodically. Other mammals noted were:

- hare (one was seen during the late April 1995 visit)
- moles (mole-hills seen)
- hedgehog (half eaten carcass seen, probably caught by a fox)
- roe deer (recorded by the Hambleton District Phase 1 Survey).

4.4.3 The following birds were seen and/or heard during the late April 1995 visit:

- blackbird
- blue tit
- carrion crow
- chaffinch
- goldfinch
- marsh or willow tit
- robin
- willow warbler
- wren
- wood pigeon

In addition, a woodpecker was heard drumming in April 1997

4.4.4 The animal species mentioned above cannot be considered to comprise an exhaustive list of the vertebrate fauna that this wood supports It is, however, unlikely that species of greater interest would have remained unnoticed, and it is probably fair to conclude that the wood supports a fauna typical of small broadleaved woodlands in an agricultural landscape The habitat is enhanced by the presence of numerous fallen trees and dead wood, which is valuable for many invertebrates Insect eating birds, such as tit species, and several species of bat are also associated with dead wood, both for the associated food supply and for the provision of suitable nesting and roosting sites The shrubby wood edge, particularly along the side the Green Lane, and the blackthorn thicket north-west of the henge, will also provide nesting sites for other bird species

5 MANAGEMENT AIMS, OBJECTIVES AND PRESCRIPTIONS

5.1 Introduction

5.1.1 Given the archaeological and ecological importance of the henge monument, a series of detailed recommendations are required to balance the potentially conflicting management issues which exist at the site. Within a series of broad management aims, a number of objectives can be determined for the site as a whole which can then be achieved through the implementation of detailed prescriptions, this staged hierarchical approach follows an established standard management procedure (Leay, Rowe & Young 1986)

5.1 2 It shouid be noted that the following aims and recommendations have been formulated on the basis of site data gathered in 1995 and 1996. As a result, some minor amendments may need to be made to some of the management prescriptions and their implementation, to take account of any recent changes in site conditions, such as additional fallen trees.

5 1.3 The various management issues for the site were discussed by the landowner, his agent, English Heritage, and the project team in May 1997, following the production of a draft EDAS report Some of the initial recommendations were modified and amended in the light of these discussions, particularly those relating to the establishment of a coppice system of woodland management. As a result, the following aims, objectives and prescriptions have been agreed in principal

5.2 Management aims

5 2 1 Four broad management aims can be determined, reflecting the potentially conflicting issues found at the site Given this possible conflict, the aims should be accorded some degree of prioritisation, which takes into account the site's archaeological value (national), ecological value (district), landscape value (local), and economic value (local).

5 2.2 In order of pnority, the four management aims are considered to be:

1 to protect, maintain and enhance the archaeological and ecological resource of the site

2 to maintain the visual and landscape value of the site

3 to ensure, as far as possible and practicable given the above aims, some economic return from the woodland on the site

4 to increase public appreciation, awareness and enjoyment of the site

5 2.3 It is proposed that the site remains as a woodland While this may not be ideal from an archaeological point of view, it should be noted that the wood has been present on the monument for at least 150 years and additional damage to the archaeological deposits shouid only be minimal if an appropriate woodland management regime is adopted The retention and management of the site as a woodland also acknowledges its significant wildlife and landscape importance, and its economic value.

5.3 Management objectives

5.3.1 The aims for the site can be achieved through the adoption of a series of management objectives as set out below and in Table 1.

5 3.2 Objectives for Aim 1, which deals with the protection, maintenance and enhancement of the archaeological and ecological resource, can be achieved through four management objectives, as follows·

1.1 Initiate an appropriate woodland management regime

1.2 Ensure all existing and future woodland management is not damaging to the archaeological and ecological resource

1 3 Prevent potential damage and deterioration to the existing resource through the current site conditions

1 4 Maintain the archaeological and ecological resource

5 3 3 The other three aims can be achieved through four additional management objectives, as follows·

2 1 Maintain the wooded appearance of the site

3.1 Obtain an appropriate level of income from the woodland

4 1 Provide public access and consider low-key on-site interpretation facilities

4 2 Improve internal visibility

5.4 Management prescriptions

5.4.1 The various management objectives outlined above can be achieved through the implementation of a number of prescriptions. Their relationships to the objectives and aims are set out in Table 1, and it can be seen that m some cases the implementation of one prescription will help to achieve a number of the stated objectives.

5.4.2 In summary, the prescriptions are:

- fell and remove all trees at risk from windthrow

- manage the remaining woodland as an uneven-aged high forest
- manage undergrowth
- provide dead wood habitats
- minimise future ground disturbance
- prevent disturbance to birds, bats and ground flora
- remove identified rubbish
- control rabbits
- establish agricultural buffer zone
- manage public access and erect information board
- relocate telegraph poles
- mvestigate sources of grant aid
- set up after-care maintenance programme

5 4 3 It is accepted that these prescriptions as set out above and in Table 1 do not provide an ideal solution for any of the individual and specific interests The archaeological earthworks would remain partially obscured and be subject to some additional but limited root penetration, the ecological value may decrease slightly due to the loss of undergrowth and some mature trees, the wood's landscape significance could be partially reduced, and it would be managed in a less commercial manner However, the prescriptions do provide an integrated solution which limits the potential damage to all interests.

5 4 4 It could be argued that, since the preservation of the archaeological resource is by far the most important factor, the henge should be managed to maximise this with minimal attention paid to the other interests. However, it is considered that this would, in this instance, be an unnecessarily purist approach. The removal of all the trees, the grinding out of the stumps, the spraying of any regrowth, the prevention of soil erosion, and the instigation of a seeding and mowing regime, would not only be very expensive and labour-intensive, but may not prove sustainable in the long term. The current proposals should produce some, if limited, income for the owners and further study may enable a more profitable management regime to be developed which does not conflict with the site's archaeological and ecological value.

5.4.5 The following text provides some explanation of the prescriptions and an overview of the work required. The implementation and phasing of the prescriptions in covered in Chapter 6 below

Fell and remove all trees at risk from windthrow

5 4 6 Some of the most severe damage to the henge has been caused by trees falling and pulling their roots out of the ground, the most common cause of this is considered to be windthrow Trees have fallen both recently and in the past, and both fresh and vegetated tree hollows are visible within the area of the monument. Most damage is caused when those trees which are rooted into the steeply sloping sides of the bank and ditch fall; in some cases the root ball measures up to 3m in diameter and considerable amounts of bank and ditch material is disturbed and exposed for further erosion.

5 4.7 All trees which are potentially at risk from falling should therefore be felled. The highest priority for felling are those trees which are currently leaning, but may also include some larger trees which are not leaning at present but which are on a slope and may therefore be vulnerable to future windthrow. In addition, all leaning dead trees should be felled, although wherever feasible a section of stem should be left for wildlife to inhabit (see paragraph 5 4.17 below), straight dead trees are not considered to be at risk and so are excluded from felling at this stage.

5 4.8 The adoption of this prescription would help to achieve management objectives 1 3, 2.1 and 3.1

Manage woodland as uneven-aged high forest

5.4.9 Although coppice management would achieve many wildlife benefits, and would minimise the nsks of further damage to the archaeological resource from windthrow and root penetration, it would severely reduce visibility within the monument as a whole, particularly when coppice regrowth is young. In addition, the gradual replacement of the existing tall tress with coppice would reduce the important visual and landscape value of the site The comprise accepted for this site therefore, is to manage the woodland as an uneven-aged high forest. This would shade out dense undergrowth to an extent and so retain visibility within the henge, maintain its overall landscape value, and would allow for some commercial return from the wood. However, there is still the potential for windthrow, and the preservation of the archaeological features should be afforded at least as high a priority as timber production.

5 4.10 Individual trees should be selected for felling, taking into account the importance of preventing windthrow as well as size, timber quality and so on. Where gaps are created by the removal of trees, natural regeneration of tree seedlings should be accepted where it occurs, unless this threatens to change the character of the wood to one

dominated by sycamore In such cases, limited widely-spaced planting of oak and ash, probably protected with tree shelters, could be carried out.

5 4 11 The timing of the felling is not critical, although the bird breeding season (March to July inclusive) should be avoided (see paragraph 5.4.22 below) and it is important that ground conditions are appropriate to minimise any disturbance (see paragraph 5.4.20 below). Some felling could be considered at least every five years, to avoid the removal of large numbers of trees at any one time.

5 4.12 The adoption of this prescription would help to achieve management objectives 1 1, 2.1, 3 1 and 4.1.

Manage undergrowth

5.4 13 At present, visibility within the monument is moderate in winter when the ground vegetation has died down and the trees are without leaves (see plates 3 and 6). However, it becomes poor in summer. Improved visibility could be achieved by felling and removing trees, and grinding out the stumps and mowing the resultant grassy vegetation, but this would be disastrous for the site's wildlife. Alternatively, a tall, dense canopy of trees could be achieved which shaded most of the undergrowth.

5 4 14 Where gaps are created, following the felling of individual trees, visibility through the monument may not be as good as may be wished However, mowing of bramble clumps and limited herbicide use could improve the situation where this was felt to be important No financial return could be expected from these operations

5 4 15 The initial clearance of bramble clumps should avoid the bird nesting season (March to July inclusive) Thereafter, cutting should take place in summer after the main ground flora flowering season is over (by July).

5.4.16 The adoption of this prescription would help to achieve management objectives 1 1, 2.1 and 4.1.

Provide dead wood habitats

5.4.17 Dead wood is an extremely valuable habitat for woodland wildlife which is sadly rare in many woods. Fallen dead wood should be left *in situ* wherever possible. To avoid the risk of windthrow, leaning dead trees shouid be felled (see paragraph 5.4 7 above). However, in some cases, removal of branches may be sufficient to render them stable (as in pollarding). Even where the mam stem is leaning, as much as possible should be left uncut, to retain some standing dead wood.

5 4 18 The adoption of this prescnption would help to achieve management objective 1.2.

Minimise ground disturbance

5.4.19 Both the felling of trees and their extraction have considerable potential to cause ground disturbance to archaeological earthworks and the deposits beneath them. Care should be taken to fell trees away from the earthworks as far as possible and to prevent any disturbance to their roots. Trees on banks should not cause any problems if they are felled downhill while those in ditches may need to be felled uphill. In some cases, the provision of a round straw bale to cushion their fall may be appropriate.

5 4 20 The extraction of timber shouid ideally take place when the ground is either dry or frozen. Since neither can be guaranteed, brash should in any case be placed on extraction routes Consideration should be given to the use of vehicle(s) with low ground pressure tyres, or even extraction by horse. Extraction routes should be designed to remain on level ground as far as possible (such as the berm, central area or surrounding fields), with extra brash possibly sandwiched with straw provided where it is necessary to run across any sensitive features These brash and straw mats should be removed afterwards, since leaving this material to rot down would encourage the growth of such species as nettles and cleavers

5 4 21 The adoption of this prescription would help to achieve management objective 1.2

Prevent disturbance to birds, bats and ground flora

5 4 22 Tree felling should be avoided from March to July inclusive, to avoid disturbing breeding birds and to limit damage to the ground flora. To prevent damage to the spurge laurel, an uncommon small scrub which looks rather like rhododendron, trees should be felled away from them as far as possible; these shrubs are found near the western edge of the monument.

5 4 23 Trees with holes, cracks or other evidence of rot, in stems of at least 30cm diameter, should be felled in September in case any are used as bat roosts. All species of bat are specially protected and known roosts must not be disturbed until English Nature's advice has been sought. Felling trees with potential for bat roosts in September minimises the risk of inadvertent disturbance.

5.4.24 The adoption of this prescnption would help to achieve management objective 1.2.

Remove identified rubbish

5 4 25 The earthwork survey identified a considerable amount of rubbish around and within the monument as a whole (see figure 8). Most of this lies within the inner ditch and comprises items of rusting scrap metal Some old rubber tyres were also observed, as well as some oil drums On the outer side of the bank in the south-east quadrant there is an old truck chassis with a wooden truck bed further north. It is clear from the amount of vegetation on these items that they have been on the site for some time, and that recent dumping is rare.

5 4.26 All these items need to be cleared away, preferably by hand so as to minimise any damage to the surrounding vegetation and underlying archaeological deposits. It is accepted that the truck chassis is more problematic, but this could be lifted via the adjacent field, thus reducmg any potential damage to the earthworks from machinery.

5 4 27 If possible, and only if no damage to underlying features will occur, the dump of modern rubbish in the south-west entrance should also be removed, together with other isolated piles of recent field clearance stones and household bricks Once again, this material should be lifted by hand and can be removed from the site via the adjacent fields.

5 4 28 The adoption of this prescription would help to achieve management objectives 1.3 and 4.2.

Rabbit control

5 4 29 Rabbits have caused localised damage to the site by digging burrows Whilst this is not severe at present, periodic control ensuring minimal ground disturbance should contmue to ensure future damage is minimised. The adoption of this prescription would help to achieve management objective 1.3.

Establish agricultural buffer zone

5 4 30 The earthwork survey also noted that the earthworks which make up the outer ditch in the north-east quadrant lie within an area of arable cultivation. It is clear from the profile of the ditch that this part of the monument has been and is continuing to be ploughed, despite the fact that it lies just within the area of the scheduled ancient monument. This agricultural activity takes place right against the base of the outer bank on the north-east side, with the result that some degradation and undercutting of the bank is occurring.

5 4.31 In order to prevent any further deterioration to both the bank and the outer ditch, a curvilinear buffer zone should be established around this side of the monument, at a distance of 50m from the outside of the bank. This area should be excluded from future arable cultivation, and if possible put down to grass.

5 4.32 The buffer zone should also extend south-west to cover the other identified and presumed sections of the outer ditch Although this area is currently under pasture, the establishment of the buffer zone will ensure protection to the monument should arable cultivation be resumed at some point in the future. It is not proposed to extend the buffer zone to the north-west and west quadrants as these areas are considered to be already either badly damaged or totally destroyed

5 4.33 The adoption of this prescription would help to achieve management objective 1 3.

Manage public access and erect information board

5 4 34 There is some minor unauthorised public access to the site at present, apparently mainly for dog walking and playing on a swing This use, particularly the former, is not particularly damaging In order to increase public awareness and appreciation of the site, the erection of a small and appropriately designed information board could be considered, and if appropriate placed near the unofficial entrance to the site This action might also increase understanding of the site, and might deter acts of vandalism and dumping

5.4 35 The numbers of people who currently and are likely to visit the monument are thought to be low, and so the issues of visitor erosion are considered not to be high Intensive management of access routes is therefore seen as unnecessary and the provision of specifically mown paths largely inappropriate An exception however, is the provision of an accessible path circling the monument on the flat berm between the bank and ditch (see plate 6), to discourage visitors from using the steeper slopes. It might also be useful to repair or renew the existing wooden fence along the east side of Green Lane, and provide a stile or kissing gate at the main entry point. The provision of public access might also be a condition of any grant aid (see paragraph 5.4.40 below).

5.4 36 There is one aspect of woodland management which would benefit from some public access. Deer, hares and rabbits can cause damage to seedling trees by browsing. The presence of people and dogs will reduce the opportunities for uninterrupted browsing and may discourage deer in particular from using the wood In the circumstances, this is considered to be beneficial.

5 4.37 The adoption of this prescription would help to achieve management objective 4.1.

Relocation of telegraph poles

5.4.38 At present, there are three wooden telegraph poles located on the presumed alignment of the outer ditch (see figure 4). These are visually distracting from the monument as a whole, and their relocation further away would be beneficial. If this done, the

removal of the poles will need to be undertaken with care, to prevent any undue damage to the underlying archaeological deposits associated with the ditch.

5 4 39 The adoption of this prescription would help to achieve management objectives 2 1 and 4 2.

Investigate sources of grant aid

5.4.40 It is accepted that the proposed system of woodland management may involve cutting trees at an uneconomic stage of their growth Although the felling of the windthrow trees proposed above should provide a reasonable financial return, management thereafter may not cover its costs

5 4 41 In order to cover the uneconomic elements of management, such as undergrowth control, it is recommended that alternative sources of income be investigated These might include management agreements with English Heritage and/or the Forestry Authority's Woodland Grant Scheme These possibilities should be discussed with the appropriate authorities at the earliest opportunity.

5 4 42 The adoption of this prescription would help to achieve management objective 3.1

After-care monitoring and maintenance programme

5 4 43 Following the commencement of all or any of the above management works, an after-care monitoring and maintenance programme should be set up. This will ensure that the work meets the specific objectives and that it takes into account all known constraints and other criteria. An early start to this monitoring will also forestall any unforeseen problems.

5 4 44 The site also needs to be periodically monitored over time to ensure that the existing, conserved and/or managed archaeological and ecological resource is maintained, and that the condition of the site and/or features within it do not deteriorate Checks should be made for any soil erosion resulting from a loss of tree cover, the encroachment of vegetation needs to be checked to ensure that new growth does not cause damage to the site, and areas of previously cut wood and cleared vegetation need to be monitored for re-growth.

5.4.45 Finally, it is important to ensure that, if the after-care monitoring identifies any particular problems, such as a deterioration to the wildlife habitats or the archaeological earthworks, there is a suitable mechanism which can inform and influence existing and future management regimes. This might, for example, involve the extension or curtailing of some tree felling depending on the perceived impact on the other interests. The various methodologies suggested above should minimise the risks of soil disturbance, but if soil erosion starts

to occur, limited seeding with native, shade-tolerant grass(es) to bind the slopes might need to be considered.

5 4 46 The adoption of this prescription would help to achieve management objective 1.4.

6 IMPLEMENTATION AND PHASING

6.1 Introduction

6.1.1 Although greatly assisting with the preservation of the archaeological deposits, undertaking all the management prescriptions outlined above at once would have a significant visual impact and could have a damaging effect on the ecological resource of the wood The phasing of the prescriptions would reduce these impacts, and would ensure that the most urgent work is carried out first

6.1.2 Accordingly, the prescriptions are divided into three phases It is recommended that Phase 1 works can carried out in the first three years of the management plan, with Phase 1(a) works being preceded by Phase 1(b) works Phase 2 works are proposed for years 4 to 6 while Phase 3 covers the proposed long term management of the site, once the initial remedial action is complete.

6.1.3 Table 2 outlines the management prescriptions, together with details of their implementation and phasing Some prescriptions, such as the minimisation of ground disturbance, the protection of naturally regenerating tree seedlings, the prevention of disturbance to birds, bats and ground flora, the provision of dead wood habitats, and the management of the undergrowth, cannot be allocated to particular phases, as these works will be applicable through the whole management cycle

6.2 Phase 1 works

6 2 1 The first priority is considered to be the felling and removal of all trees which seem likely to fall over. Within the Phase 1 timescale, the work can be divided into two elements, Phase 1(a) dealing with all leaning trees and those in archaeologically sensitive locations while Phase 1(b) involves assessing those larger trees which are not leaning at the moment, but which are on a slope and may therefore be vulnerable to future windthrow. Phase 1(a) and (b) trees have been provisionally identified and are listed in Appendix 5, while Phase 1(a) trees are shown on figure 8. In addition, all leaning dead trees should be felled in this phase, although wherever feasible a section of stem should be left standing

6 2 2 Some 200 live trees are proposed for felling in Phase 1(a) and a further 70 should be considered for Phase 1(b). It is recognised that this will have a major impact on the wood, both in terms of its wildlife and landscape importance. However, the measures described above are designed to minimise the impact on wildlife and the trees remaining will filter views of the felling to some extent.

6.2.3 Other prescriptions also assigned for Phase 1 action include the removal of identified rubbish, the management of undergrowth, the

provision of improved access, the creation of the agricultural buffer zone, and the discussions concerning the provision of grant aid.

6.3 Phase 2 works

6 3.1 Phase 2 involves assessing all of the biggest trees remaining on the monument, with a view to felling any which seem at risk from windthrow. It is also during this phase that woodland management to achieve the uneven-aged high forest with a high density canopy should commence The precise timing and frequency of the thinning and felling operations could be guided by marketing opportunities, provided that this does not compromise the overall objectives of wind-firmness and a high canopy.

6.3.2 Other Phase 2 works involve the management of public access and the erection of the information board, the control of the rabbits if appropriate, the relocation of the telegraph poles, and the establishment of the after-care monitoring programme, although monitoring of the effects of Phase 1 tree felling should start before this.

6.4 Phase 3 works

6 4 1 By Phase 3 the remedial work to remove tress at risk from windthrow, the management of undergrowth and rabbits, and the removal of rubbish should be either complete or under control The site's management for the long term should be considered and, if appropriate, a revised management plan produced and implemented

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8 4 The final report was produced by Ed Dennison of EDAS after comments from English Heritage and Mr Bourne-Arton. Despite all the assistance mentioned above, any errors or inconsistences in the report remain the responsibility of Ed Dennison

TABLE 1: MANAGEMENT AIMS, OBJECTIVES AND PRESCRIPTIONS

Aim	Objectives	Prescriptions
1 Protect, maintain and enhance the archaeological and ecological resource	1 1 Initiate appropriate woodland management regime	Manage woodland as uneven-aged high forest Manage undergrowth
	1 2 Ensure all existing and future woodland management is not damaging to archaeological and ecological resource	Minimise ground disturbance Prevent disturbance to birds, bats and ground flora Provide dead wood habitats Set up after-care monitoring programme
	1 3 Prevent potential damage and deterioration to existing resource through current site conditions	Fell and remove trees at risk from windthrow Remove identified rubbish Control rabbits Establish agricultural buffer zone
	1 4 Maintain archaeological and ecological resource	Set up after-care monitoring and maintenance programme
2 Maintain visual and landscape value	2 1 Maintain the wooded appearance of the site	Fell and remove trees at risk from windthrow Manage woodland as uneven-aged high forest Manage undergrowth Relocate telegraph pole
3 Ensure economic return	3 1 Obtain an appropriate level of income from the woodland	Fell and remove trees at risk from windthrow Manage woodland as uneven-aged high forest Investigate sources of grant aid
4 Increase public appreciation and awareness	4 1 Provide public access and consider low-key interpretation	Manage public access Consider erecting information board
	4.2 Improve internal visibility	Manage woodland as uneven-aged high forest Manage undergrowth Remove identified rubbish Relocate telegraph pole

TABLE 2: MANAGEMENT PRESCRIPTIONS, IMPLEMENTATION AND PHASING

Phase 1: years 1 to 3, with Phase 1(a) before Phase 1(b)
Phase 2 years 4 to 6
Phase 3: long-term
* work to be carried out
(*) work to be carried out if required

Prescription	Implementation	Phase		
		1	2	3
Fell and remove all trees at risk from windthrow	1 Fell all trees in imminent danger of falling, ie all leaning trees and any trees in locations which are particularly archaeologically sensitive	(a)	(*)	(*)
	2 Assess for felling all vertical trees with a diameter of at least 15cm (at 1 5m) which are growing on or adjacent to a slope Fell all those at risk from windthrow	(b)		
	3 Assess for felling all remaining large trees (30cm diameter and above) Fell all those at risk from windthrow		*	
Manage the remaining woodland as an uneven-aged high forest	1 Fell selected trees which do not detract from the maintenance of a windfirm woodland with a high dense canopy, and are marketable where possible Repeat at five year intervals or less		*	*
	2 Select suitable natural regeneration or plant oak or ash in canopy gaps, protecting with tree shelters where appropriate	*	*	*
Manage undergrowth	1 Cut and clear bramble patches or other ground vegetation, using hand tools, hand operated mower, or power scythe Work to be carried out annually unless adequate control achieved with biennial or triennial cutting	*	*	*
	2 Localised or spot treatment with an approved herbicide, in accordance with the manufacturer's instructions, to eradicate particular plants (eg brambles) in locations which are particularly archaeologically sensitive. Take care to avoid non-target ground flora Work to be carried out as required	*	*	*
Provide dead wood habitats	Leave fallen dead wood and some standing stems	*	*	*
Minimise future ground disturbance	1 Fell away from earthworks and use straw bales where appropriate.	*	*	*
	2 Remove timber when ground is dry or frozen, or use brash to protect ground surface Use low pressure tyred vehicles Use level ground for extraction routes	*	*	*

Prevent disturbance to birds, bats and ground flora	Avoid felling from March to July inclusive Fell away from area of spurge laurel Check for presence of bats, if likely fell in September	*	*	*
Remove identified rubbish	Remove all litter and dumped material by hand Use level ground for extraction routes	*		
Control rabbits	Control rabbits using an approved method which does not mvolve digging or other ground disturbance, apart from lightly stopping up entrances Ensure before work starts that no non-target species are in residence Work to be carried out as required to prevent fresh excavations	*	(*)	*
Establish agricultural buffer zone	Create arable-free zone around north-east, east, south and south-west sides of monument	*		
Manage public access and erect mformation board	1 Mow path around berm and move fallen logs to one side 2 Consider providing a vandal-proof interpretation board at the western edge of the site, which illustrates and describes the key features and requests that visitors keep to the mam paths 3 Possibly erect fence and stile	* (*)	* (*)	*
Relocate telegraph poles	Discussions with the appropriate authorities		*	
Investigate sources of grant aid	Discussions with the appropnate authorities	*		
Set up after-care monitoring programme	Monitor site conditions and successes or failure of objectives, and act accordingly	*	*	*