RESEARCH DEPARTMENT REPORT SERIES no. 103-2011 ISSN 1749-8775

STONEHENGE WORLD HERITAGE SITE LANDSCAPE PROJECT
STONEHENGE CURSUS AMESBURY, WILTSHIRE

ARCHAEOLOGICAL SURVEY REPORT

Trevor Pearson and David Field

ARCHAEOLOGICAL
SURVEY AND INVESTIGATION

ENGLISH HERITAGE

This report has been prepared for use on the internet and the images within it have been down-sampled to optimise downloading and printing speeds.

Please note that as a result of this down-sampling the images are not of the highest quality and some of the fine detail may be lost. Any person wishing to obtain a high resolution copy of this report should refer to the ordering information on the following page.

Research Department Report Series 103-2011

STONEHENGE CURSUS
AMESBURY
WILTSHIRE

INVESTIGATION OF EARTHWORKS

Trevor Pearson and David Field

NGR: SU 1240 4305

ISSN 1749-8775

SUMMARY
In 2010 the Research Department of English Heritage undertook the first detailed analytical earthwork survey of the Stonehenge Cursus. Dating to the early Neolithic period, the Cursus is one of the oldest monuments in the Stonehenge World Heritage Site. The monument is defined by a bank and ditch of varying preservation which forms a rectangular enclosure around 100m wide and extending nearly 3km from Winterbourne Stoke Down in the west to King Barrow Ridge in the east.

There is possible evidence that the bank was constructed in sections and that changes in the alignment indicate attempts to relate the monument to natural features. Although a number of gaps exist, notably in Stonehenge Bottom, no definite evidence for an entrance was discovered. One view is that the monument was used as a processional routeway, providing changing views of the surrounding landscape along its length. Computer modelling of the relationship of the monument to the valley system also suggests that the monument may have been a territorial marker controlling access along the valleys to a discrete block of higher ground to the north.

CONTRIBUTORS
The survey was undertaken by Dave Field, Mark Bowden and Trevor Pearson assisted by Sharon Bishop, Andy Crispe, Deborah Cunliffe, Rachel Foster, Matthew Reynolds, Phil Sinton and John Vallender. Staff at the NMR library helped with finding published material on the Cursus. The 1:1000 survey plan was penned by Deborah Cunliffe and other illustrations were prepared for the report by Trevor Pearson. The report was researched and written by Trevor Pearson and edited by Mark Bowden and Dave Field.

ACKNOWLEDGEMENTS
The staff of the Wiltshire Heritage Museum in Devizes are thanked for allowing access to Percy Farrer's excavation archive; and the National Trust are thanksed for allowing access to the site

ARCHIVE LOCATION
The survey archive is lodged at the National Monuments Record Centre at Swindon, Wiltshire, SN2 2GZ.

DATE OF SURVEY
The survey was undertaken between January and June 2010.

CONTACT DETAILS
National Monuments Record Centre, Swindon SN2 2GZ
Trevor Pearson: Email trevor.pearson@english-heritage.org.uk

CONTENTS

LIST OF ILLUSTRATIONS

1. INTRODUCTION

The Stonehenge Cursus (NMR SU 14 SW 42) is the largest archaeological monument in the Stonehenge World Heritage Site (WHS). The almost parallel linear earthworks, set around 100m apart, extend for nearly 3km across the undulating chalk downland. It is situated in Amesbury parish apart from 80m at the west end which is in the parish of Winterbourne Stoke. Towards the east end, the northern bank forms the boundary between the parishes of Amesbury to the south and Durrington to the north for just over a kilometre. The Stonehenge Cursus (sometimes referred to as the Greater Cursus or the Amesbury Cursus) is one of two cursus monuments within the Stonehenge World Heritage site. The other is situated some 600m to the north-west of the west end of the Stonehenge Cursus and is commonly referred to as the Lesser Cursus (NMR SU 14 SW 41) as at only 400m in length it is substantially shorter than the Stonehenge Cursus. The Lesser Cursus was levelled for agriculture sometime between 1934 and 1954 and now only survives as a cropmark (RCHM 1979, 19). Compared to Stonehenge and many of the other prehistoric field monuments in the World Heritage Site, the Stonehenge Cursus has received little attention from archaeologists. There has been no extensive campaign of excavations and most depictions of the monument are based on Ordnance Survey large-scale mapping from the first half of the 20th century. With a width of between 100m and 130m, a length of nearly 3km and a perimeter defined by a single ditch and internal bank, the sheer size of the monument coupled with the apparent simplicity of form means that it has tended to be overlooked in favour of outwardly more interesting targets for archaeological investigation. However, as recent excavations by the Stonehenge Riverside Project have established, the Cursus is one of the earliest monuments in the World Heritage Site and it is among the best preserved of the 100 or so known cursus monuments in Great Britain.

Beginning in January 2010 the English Heritage Archaeological Survey and Investigation team based at Swindon undertook the first 1:1000 scale analytical earthwork survey of the site. This was part of an English Heritage project to investigate the archaeological landscape of the Stonehenge World Heritage Site and to reassess interpretations of several of the key monuments in advance of the opening of a new Visitor Centre at Stonehenge in 2013. The project also aimed to complement and support recent University-led research projects in the WHS and to inform management issues including the impact of visitor numbers and livestock on the monuments surveyed. The survey was undertaken with assistance from colleagues in other teams in the English Heritage Research Department and the National Monuments Record Centre (NMRC) and was completed in June 2010. Following the conclusion of the fieldwork, the data was added to the Archaeological Survey and Investigation (AS&I) Stonehenge Project Geographical Information System (GIS) for analysis.

While the Stonehenge Cursus was first recognised in the 18th century and the Dorset Cursus in the early 19th century it was not until the advent of aerial photography in the 1920s that many other cursus monuments were discovered, since the majority only survive as crop marks visible from the air. Limited excavation at a number of sites from the 1930s onwards established that they are Neolithic in date. The first comprehensive national study did not appear in print until 2006 and this highlighted the wide variation

in form of sites that have been classed as cursus monuments (Loveday 2006). The Stonehenge Cursus is one of the longest known, belonging to a category which the author termed 'mega cursuses' as being above 2.7km in length (Loveday 2006, 27). At the other end of the scale, Loveday's 'minor' cursus monuments are up to 150m long and are therefore difficult to distinguish on aerial photographs and through excavation from other types of prehistoric enclosure such as 'long mortuary enclosures' which also date to the Neolithic period.

Recent studies have focussed on trying to understand the relationship between cursus monuments and the wider landscape and their role in prehistoric society. It is generally accepted that they did not perform any straightforward economic or defensive function. Instead it is thought they are more likely to have had a ritual purpose, perhaps defining a route that was sacred in its own right or connecting locations that had religious or ritual importance. Attention has also focussed on exploring how the wider landscape is perceived from the interior of some cursus monuments in order to understand how the monuments were experienced in their contemporary setting.

2. GEOLOGY, TOPOGRAPHY AND LAND-USE

The Stonehenge World Heritage Site was established by UNESCO in 1986 and encompasses an area of 2600 hectares situated towards the south-east of the extensive chalk upland area known as Salisbury Plain (Young *et al.* 2009, 10). This part of Salisbury Plain is formed by a series of rounded hills no more than 150m OD in height intersected by a system of mostly broad, shallow-sided and often asymmetrical 'U' -sectioned valleys (Figure 1). The chalk rock is very porous and now most of the valleys around Stonehenge are dry or only carry streams intermittently when the water table rises after heavy rain. The direction of drainage is south towards the River Avon which for part of its course forms the east boundary of the Stonehenge World Heritage Site. The valley system is thought to have developed its present form during the last glacial when Salisbury Plain lay just beyond the southern edge of the ice cap. The frozen ground conditions impeded percolation of rain water sufficiently to enable streams to form on the surface which cut into the soft, frozen chalk bedrock to create a network of valleys.

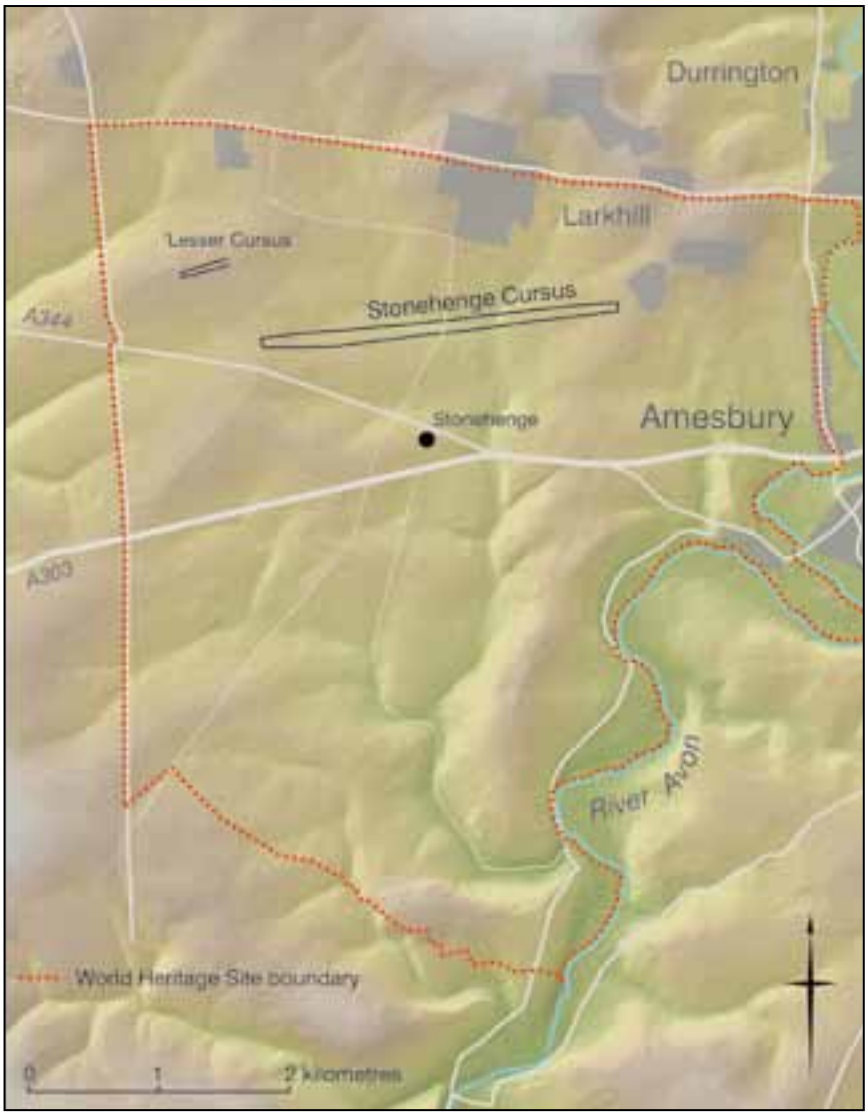

Figure 1. The location of the Stonehenge Cursus.

Sarsen boulders (also known locally as grey wethers) occur naturally on the surface and are remnants of a crust of very hard and dense siliceous sandstone formed in the Eocene period. This crust was reduced by weathering to a spread of boulders, most of which have been removed either by periglacial activity or in clearing the ground for agriculture. The chalk bedrock supports thin, easily drained topsoil which proved attractive to prehistoric farmers but which is susceptible to weathering. Periglacial processes have led to the build up of chalky drift deposits, loess and patches of Clay-with-flints above the solid rock.

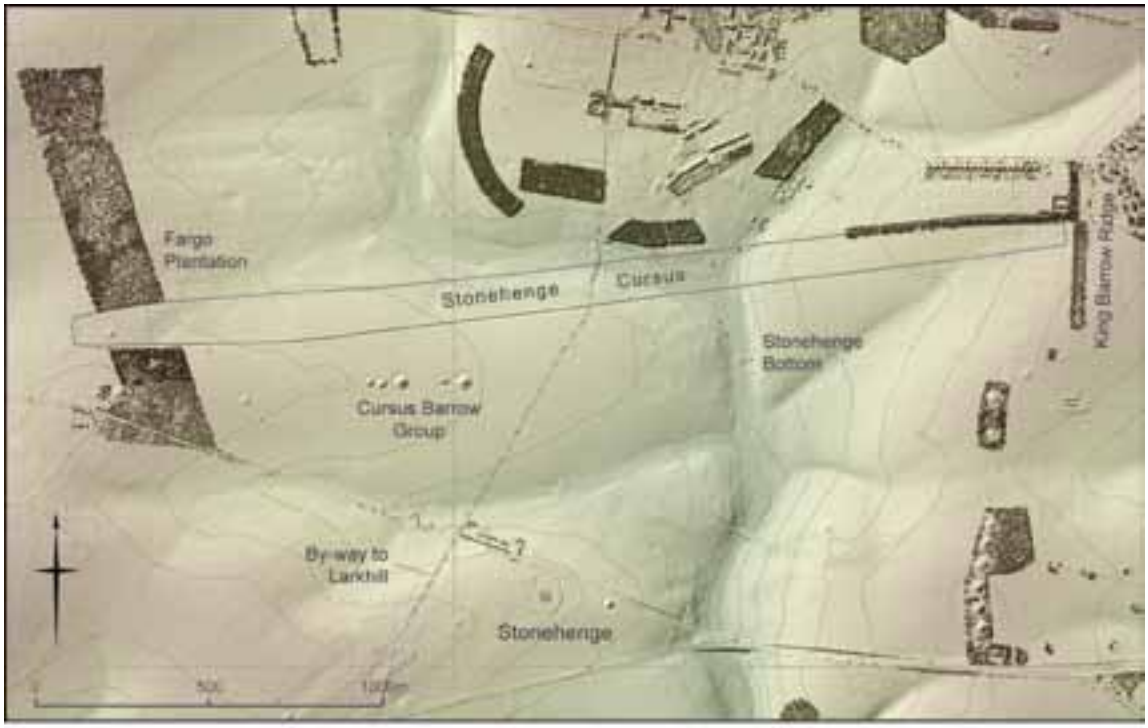

Figure 2. Hillshaded ground model showing the landscape setting of the Cursus with features mentioned in the text.

The Cursus is aligned roughly east-west between the King Barrow Ridge in the east and Winterbourne Stoke Down in the west, traversing the intervening north-south valley known as Stonehenge Bottom (Figure 2). Although this valley is now dry and is so depicted on large-scale Ordnance Survey mapping from the 1880s onwards, it may have carried a stream in the past, if only during times of heavy rainfall (Richards 1990, 211). The presence of water is indicated by the well house shown in the floor of the valley just to the south of the Cursus on the first edition 25 inch Ordnance Survey map (Ordnance Survey 1880) and may indicate a spring as locally the terms 'well' and 'spring' were used interchangeably (Field and Pearson 2010, 2). The valley widens out to the south of the Cursus and continues southwards for 4km past Stonehenge to meet the valley of the River Avon. Within the area enclosed by the Cursus, the valley divides in two northwards. The more deeply incised eastern arm heads north-east to merge into the southern flank of Durrington Down while the other broadens out to the north-west and then sweeps around to the north creating a wide hollow which is overlooked from the south by the western half of the Cursus. The farmer, Mr Ian Baxter, reports that

part of this valley was used for the disposal of rubble from the clearance of local military installations and so the present profile and shape may not exactly mirror the natural form.

An unmetalled by-way heading north to Larkhill crosses the Cursus at around its mid point above the west side of Stonehenge Bottom. To the south the track once passed through Stonehenge but was realigned to the west away from the monument in the early 20th century. Apart from this, the Cursus crosses open grassland, very similar, one imagines, to the landscape when the monument was first illustrated by William Stukeley in 1723 although there have been episodes of cultivation in the intervening period. Most of the eastern slope above Stonehenge Bottom was brought under cultivation in 1850 and is shown crossed by field boundaries on the third edition 25 inch to the mile Ordnance Survey map surveyed shortly after the First World War (Long 1876, 236; Ordnance Survey 1924). Towards the west end of the Cursus a plot of ground on Little Amesbury Cow Down was under the plough in 1771. This same plot was still under cultivation in 1823 but towards the middle of the same century was planted with trees to create part of Fargo Plantation (RCHM 1979, xvi-xviii; Richards 1990, 7). The plantation is still in existence but the portion covering the Cursus was cleared of trees before the 1983 excavation.

The military have had a major impact on the area during the last hundred years. Use of Salisbury Plain for training dates back to an initial purchase of 40,000 acres in 1897 followed by further acquisition of land in the 20th century to create what is now known as the Salisbury Plain Training area (McOmish *et al* 2002, 137: Darvill 2006, 266). It seems that military activity was widespread across the area, leading Percy Farrer to comment in 1917 about the damage done to the Cursus during the First World War (Wiltshire Heritage Museum - Goddard Notebook 32). In the same period a large encampment was built across the east end of the Cursus and was still in place in the 1920s while further military buildings encroached on the west end of the Cursus (Ordnance Survey 1924). These latter buildings remained until the 1950s by which date they had been abandoned by the military and turned into a pig farm (RCHM 1979, 15). The military were also responsible for constructing a sewage farm across the line of the Cursus in Stonehenge Bottom during the First World War, which brought about the first archaeological investigation of the Cursus when the construction of a pipe trench across the line of the Cursus was observed by Percy Farrer in 1915 (see Section 3 below). Although now disused, some of the concrete pipes still remain on the surface across the line of the Cursus.

The land around Stonehenge which includes the Cursus (except for the area occupied by the sewage farm) was given to the National Trust in 1927 following a successful nationwide appeal for funds and the Trust is responsible for the management of the Cursus (Darvill 2006, 273). During the last three decades the Cursus and its immediate environs has reverted to grassland pasture and there are plans to extend the pasture across the site of the former settling ponds of the sewage farm in Stonehenge Bottom. The area is now designated as open access land and therefore the public have unrestricted access to almost all of the Cursus apart from that section in Stonehenge Bottom within the disused sewage farm.

3. HISTORY OF RESEARCH

Antiquarian Observations

The earliest published reference to the Cursus is in 'Stonehenge, a Temple Restor'd to the British Druids' by the 18th century antiquary William Stukeley (Stukeley 1740, Chapter 9). Stukeley stated that he first noticed the Cursus on 6 August 1723 and a number of sketches exist from this date. In his published account 17 years later he put forward the idea that the monument was 'designed for the horse races and games, like the Olympic, the Isthmian &c of the Greeks' and hence gave it the name cursus after the chariot racing track of ancient Rome.

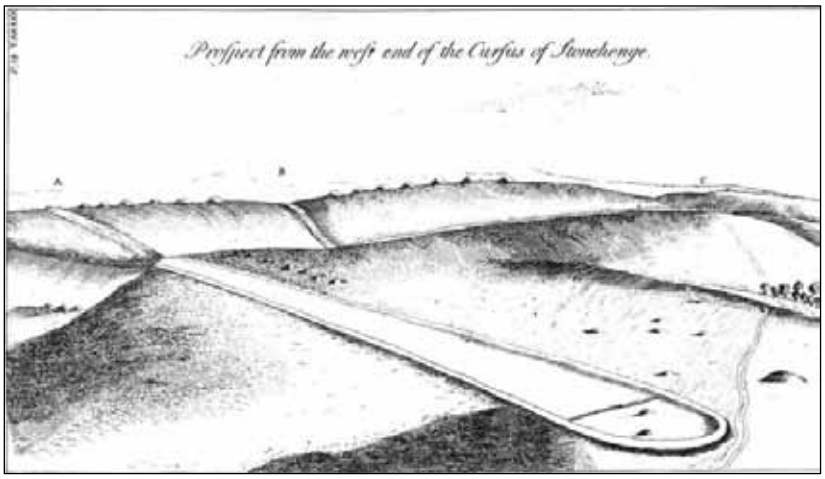

Figure 3. Stukeley's 1740 view of the west terminal of the Cursus (Stukeley 1740, plate 30).

The 1740 publication has two engraved panoramic views of the Cursus viewed from the north (plate 29) and from the west (plate 30) (Figure 3). They clearly show the open nature of the landscape at that date and indicate how much better preserved the earthwork was then compared to today. Some damage may already have occurred towards the east end of the monument since he states that the bank and ditch here were 'much obscured', a consequence, he thought, of the greater number of men and horses that would have gathered here to watch the races but which is more plausibly evidence that this part of the Cursus had been cultivated. Neither the bank nor the ditch now survive as surface features in this area.

Stukeley gives the length of the monument as 10,000 feet (3.04km) and recorded that it was defined by parallel ditches stretching between two hills (Winterbourne Stoke Down and King Barrow Ridge) and across a gentle, intermediate valley (Stonehenge Bottom). He noted that the east end of the Cursus was composed of a 'huge body of earth, a bank or long barrow' indicating that he considered the long barrow now known as Amesbury 42 marked the eastern terminal and thus matched his published view (Stukeley 1740, plate 29). Stukeley noted opposed gaps in the ditch on the north and south sides of the Cursus 'opposite to the straight part of the Stonehenge Avenue' but does not show these breaks on his published views. It seems from

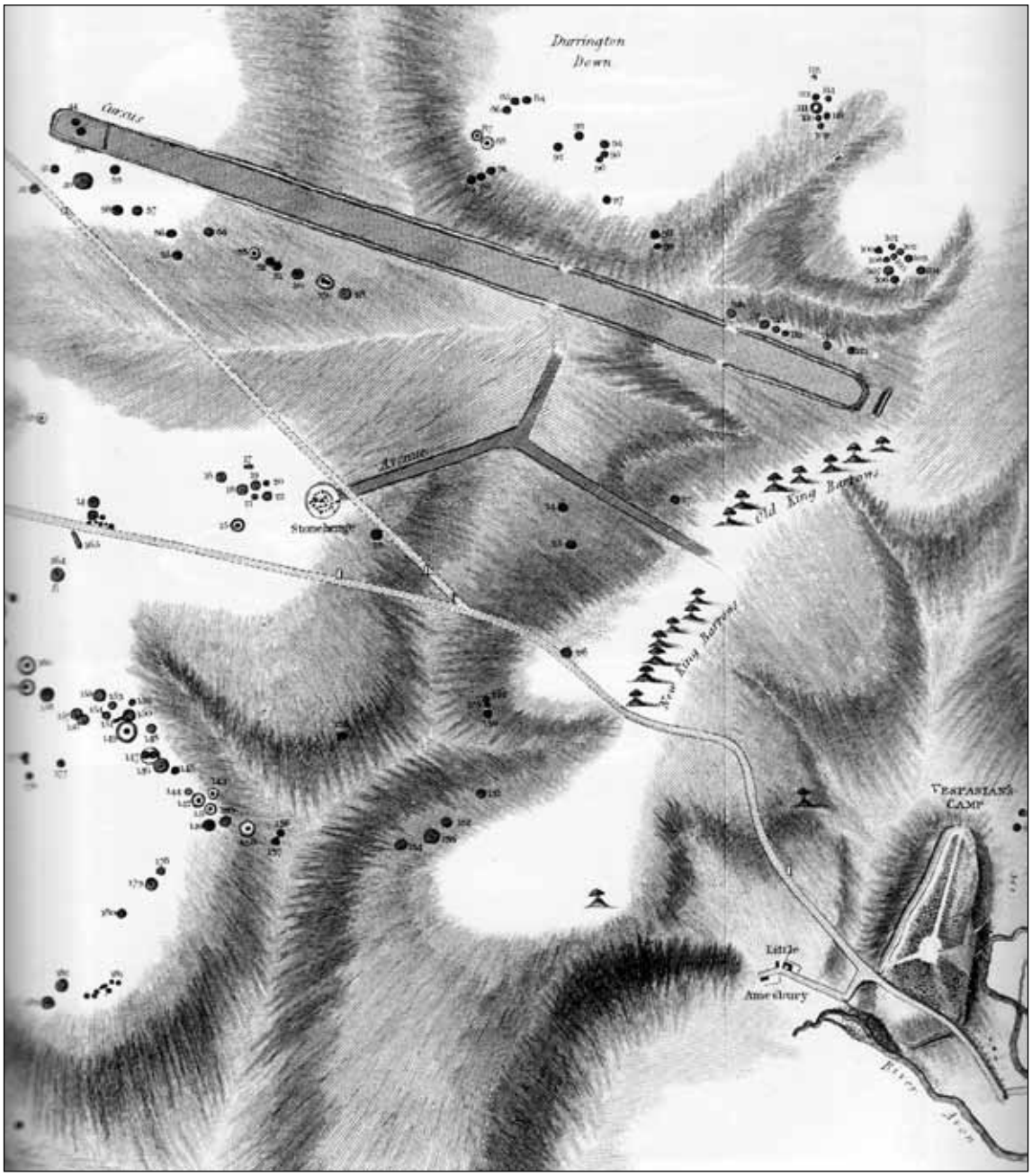

Figure 4. Colt-Hoare's 1812 plan of the Stonehenge Cursus and neighbouring monuments, surveyed by Philip Crocker (Hoare 1812 facing page 170).

Stukeley's description that these two opposed entrances were about half way between Stonehenge Bottom and the east end of the Cursus. He also described an arm of the Avenue entering the Cursus in Stonehenge Bottom implying, perhaps, another entrance here. This arm of the Avenue is now recognised as a later trackway, although the possibility of an original entrance in Stonehenge Bottom is still valid. The published view of the west end of the Cursus (Stukeley 1740, plate 30) accurately depicts a linear earthwork cutting across the Cursus close to the west terminal and two round barrows within the enclosure thus formed.

There are a number of discrepancies between Stukeley's published account and the

information contained in his field sketches, as has been previously pointed out (Loveday 2006, 16). Contrary to the published account, his field sketch correctly shows the Cursus terminating on the east some distance from the long barrow Amesbury 42 (ibid, fig. 3). He also altered his field sketch of the west terminal of the Cursus in the published engraving making it far more curved to fit the idea of a chariot racing track (ibid, fig 4). However, neither Stukeley's field sketches or the published engravings show any breaks in the perimeter to match his description of entrances towards the east end, but they do appear in very small scale on his sketch plan of Salisbury Plain, presumably compiled in the 1720s. This appears to show the opposed breaks about half way between Stonehenge Bottom and the east end of the Cursus joined on the west side by a transverse bank or ditch which is not referred to in Stukeley's published account or by any later authorities (Burl and Mortimer 2005, Plate 1). Without any other evidence the significance of the feature crossing the Cursus is difficult to explain and is not pursued any further in this report but the possibility exists that it marked the original east end of the monument and that the section of cursus to the east, ascending King Barrow Ridge, was added later.

Stukeley's sketch plan of Salisbury Plain also shows a track heading north-west from Amesbury meeting the Cursus at about the mid-point where the track divides. One arm heads due north and the other continues in a north-westerly direction to Lavington and appears to be aligned for a short distance along the south side of the Cursus. This accords with evidence recorded in the 2010 survey for the use of sections of the ditch in this area as a routeway.

Nearly a century after Stukeley's visit, the Cursus was described in some detail by the Wiltshire antiquary, Sir Richard Colt Hoare in the first volume of his History of Wiltshire published in 1812 (Hoare 1812, 157-8). He noted that the opposed entrances described by Stukeley were 638 yards (583m) west of the Amesbury 42 Barrow, placing them about half way down the slope to Stonehenge Bottom. The map by Philip Crocker entitled 'A Map of Stonehenge and its Environs' which accompanied Hoare's published account (Figure 4) shows these two gaps and a second pair of opposed gaps further west, in Stonehenge Bottom (Hoare 1812, facing p170). This is presumably the point where Stukeley thought the arm of the Avenue entered the Cursus and is where Hoare noted considerable damage caused by wheeled vehicles. Crocker's map also depicts the two round barrows within the Cursus towards the western terminal and the earthwork cutting across the Cursus as previously depicted by Stukeley (Stukeley 1740, plate 30). Hoare dug into both barrows, finding an unaccompanied cremation in the western of the two (Winterbourne 30; NMR SU 14 SW 317) and in the second (Amesbury 56; NMR SU 14 SW 14) an inhumation with a drinking cup, a child burial and a cist containing a second burial accompanied by a knife.

Non-invasive survey

The first large scale survey of the Cursus was undertaken by the Ordnance Survey after 1873 and published at a scale of 25 inches to the mile in 1880 (Ordnance Survey 1880). This and the second edition of the map revised between 1898 and 1900 shows the entire perimeter of the Cursus as a single outward facing scarp (Ordnance Survey 1901).

Although the depiction is rather schematic with no attempt to show the bank or the ditch, these two maps clearly imply that the entire Cursus was still visible on the surface in the 19th century, including the section within Fargo Plantation. By the time of the third edition 25 inch map, surveyed between 1921 and 1924 (Ordnance Survey 1924), the east terminal and a 300m length of the north side lay within a separate field and had been levelled with the construction of a road along the northern bank (Goddard Notebook 32).

The first detailed large-scale plan of part of the Cursus to be published accompanies Patricia Christie's report on her 1959 excavations at the west end of the Cursus (Christie 1963, Fig 1). The published drawing at a scale of about 1:1000 shows the earthwork remains of a bank beyond the ditch on the west side of the Cursus and labels several hollows in the area as 'shell craters' (Figure 5). Christie also mentions that the ground was surveyed by the Ministry of Works using a 'Meggar Earth Tester' for geophysical survey but no specific results of this survey are discussed in the report and no archive copy has been traced.

In the 1970s the former Royal Commission on Historical Monuments (RCHM) undertook a review of field monuments in an area of thirteen square miles around Stonehenge (37 square km) which involved a limited amount of new survey as well as investigation of aerial photographic evidence. The results, published in 1979, included a summary description of the Cursus with basic measurements and two profiles across the earthwork to the east of Fargo Plantation which at that time stretched right across the monument (RCHM 1979, 13-15). The report drew attention to the north-south aligned bank which crosses the interior of the Cursus and which at the time of the survey lay within the Plantation. It was observed that at the south end the ditch belonging to this feature appeared to cut into the Cursus bank therefore establishing that it post-dates the Cursus. The report also discounted the observations of both Stukeley and Colt Hoare that there were opposed entrances towards the east end of the Cursus, noting that aerial photographic evidence of cropmarks from the early 1920s when this part of the Cursus was under cultivation showed no breaks in the earthwork. Aerial photographs from the same period also appear to show the eastern terminal of the Cursus as a cropmark some distance to the west of the Amesbury 42 long barrow. The same feature was located by a magnetometer survey in 1987 conducted by John Gater (Richards 1990, 99). Further geophysical surveys by English Heritage took place in the same area in 1988 and 1997 in response to plans for the construction of a visitor transportation route.

English Heritage undertook both magnetometer and earth resistance surveys in 2006 and 2007 that together encompassed the western 400m of the Cursus and which were designed to inform a proposed series of excavations in the area by the Stonehenge Riverside Project. The 2006 survey started approximately 120m east of the former edge of Fargo Plantation and extended westwards for about 200m to include part of the area formerly within the plantation and southwards beyond the Cursus for nearly 200m (Payne 2007a). In 2007 the survey was continued westwards along the line of the Cursus to the field edge beyond the west terminal bank and ditch (Payne 2007b).

The 2006 survey detected numerous pit-type anomalies across the interior of the Cursus

which could be of archaeological or natural origin. Where they occur within the area that was formerly part of Fargo Plantation they could indicate the positions of uprooted trees. The 2007 survey located the position of the levelled barrow Winterbourne 30 towards the western terminal of the Cursus. There was slight indication of a bank on the outside of the Cursus ditch on both the west and south sides of the Cursus and possible traces of trenches at the west end from Christie's 1959 excavations. Other features noted by the geophysical surveys are visible on the surface.

As part of the Stonehenge Environs Project an extensive campaign of fieldwalking took place in the early 1980s in ploughed fields immediately to the north and south of the Cursus and around the west terminal (Richards 1990, 15-39). This identified concentrations of Neolithic and early Bronze Age pottery and flint in the field immediately to the north of the west end of the Cursus and adjacent to Fargo Plantation. The precise significance of these concentrations from two different periods is open to interpretation but does suggest a focus of activity in the area. Richards also drew attention to the pattern of Late Bronze Age fields surviving as earthworks in Fargo Plantation and suggested that adjacent parts of the Cursus had been incorporated into the same field system. The 2010 survey confirmed this to be the case.

The area was first recorded systematically from aerial photography in 1994-95 by the former RCHM as part of its National Mapping Project. The record was enhanced with more detailed survey work in 2001 by English Heritage as part of the Stonehenge World Heritage Site mapping project (Crutchley 2002). These two campaigns of aerial survey investigation have led to the mapping of prehistoric features including the field system noted above on the north side of the Cursus at the west end along with various 20th century military features. These are described and discussed below.

In the late 1990s Birmingham University undertook an archaeological investigation of the Stonehenge landscape using GIS for analysis coupled with visual checking of the results in the field (Exon *et al.* 2000). This novel approach focussed on investigating the landscape setting of the monument throughout prehistory and involved the use of 3D digital models of the landscape. The computer models were used to assess the inter-visibility of prehistoric sites and natural features using viewshed analysis and to determine the optimum routes between specific monuments and natural features. The results of the analysis were checked in the field and the field visits were used to record how the landscape is 'experienced' when following particular routes as, for example, the east-west route defined by the Cursus. This 'phenomenological' approach to understanding the Cursus had also been explored several years previously by Chris Tilley and Barbara Bender who published a short account of the insights gained into the landscape setting of the Cursus from walking the length of the monument (Bender 1998, 83-4). Both studies emphasised the way perception of the landscape changes along the length of the Cursus, ranging from the open views experienced on the long descent from the ridges at either end to the very limited views when crossing Stonehenge Bottom. The Birmingham University study interpreted the descent of the western ridge which gives views northwards to the heart of Salisbury Plain, as a view to the 'old world' from the number of earlier monuments visible from the Cursus while the views from the east ridge are more open to the south which the study suggested may have equated to a 'new world'.

The study was accompanied by a CD allowing the reader to interact with the 3D digital landscape model and animate the viewshed data via a series of software applets.

Beginning in 2010, a team led by the University of Birmingham and the Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology in Austria began a three year mapping project covering 14 square kilometres around Stonehenge. Called the Stonehenge Hidden Landscapes Project, one of the first objectives was the mapping of the Stonehenge Cursus. At the time of writing the results have yet to be formally published and therefore they are not considered in the present report.

Archaeological excavations

There is no record of any excavations along the line of the Cursus until April 1915 when Percy Farrer observed the cutting of a pipe trench across the north bank of the Cursus by the military. Described in his unpublished notes as '100 yards to the east of the well bottom' the pipe trench was presumably in Stonehenge Bottom and connected with the construction of the military sewage farm, now disused (Goddard Notebook 32). He reported observing that the ditch had a 'u'-shaped profile. He observed a second trench in July 1917, stretching right across the Cursus from north to south also in Stonehenge Bottom. His plan depicts this as placed almost centrally north of the location referred to as 'Well Bottom' and angled slightly NNE. Flint flakes and a hammer stone were found nearby close to the southern ditch. He noted a gap between the ditch and the bank on the south side of the Cursus suggesting the presence of a berm as was also later discovered in John Stone's 1947 excavation of the south side of the Cursus around 1.3km to the west.

Stone excavated a single trench across the south side of the Cursus '76 yards east of Fargo Plantation' (Stone 1948). This indicated that the bank on the inner, northern edge of the ditch was separated by a five foot wide berm and survived to a height of barely 15 inches (0.4m) but with little evidence to determine its construction. He recorded a layer of chalk rubble overlain by a deposit of 'chalk dust' within the bank. The ditch was about 1.8m wide and up to 0.75m deep with steep sides and a flat base and intersected by a narrow causeway suggesting the feature was actually cut as two separate quarry pits to provide material for the bank. A fragment of antler crown with two tines found lying on the chalk floor of the ditch indicated that the ditch had been cut using antler picks. Stone reported that there was no indication of the existence of the causeway on the surface. At the base of the ditch were two areas of flint knapping debris described as 'workshop floors' while a small fragment of stone found within the ditch fill was considered geologically similar to the bluestones forming part of the Stonehenge monument. This led Stone to undertake a field walking exercise in a ploughed field immediately to the south of the excavation area in order to search for further fragments of bluestone. He found ten pieces concentrated towards the north-west corner of the field (ie around the junction of the southern Cursus ditch and Fargo Plantation) and therefore close to the site of the excavation. Stone suggested that these fragments could indicate the existence of a monument towards the west end of the Cursus constructed of bluestone which was later dismantled and possibly reused at Stonehenge. He dated the Cursus to the Late Neolithic/early Bronze Age based on the similarity of form between the Cursus ditch and the henge ditch at Stonehenge.

In 1959, the Ministry of Works organised archaeological excavations directed by Patricia Christie in order to assess the level of preservation of the west end of the Cursus after the earthworks had been levelled as part of agricultural improvements following the Second World War (Christie 1963). At the same time Christie also investigated the site of the barrow Winterbourne 30 which had been almost levelled around the time of the First World War. Eight trenches were excavated across the west, north and south sides of the Cursus (Figure 5). The north and south sections of the Cursus ditch were found to have broadly the same profile and dimensions as the section of the south ditch investigated by Stone in 1947. However the ditch on the west side was more substantial with a depth of 2m and width of 2.75m and with a wider berm separating it from the levelled bank. A trace of a bank outside the ditch was noted on the west side but not on the north and south. Christie concluded the reason for the deeper ditch on the west side was to provide additional material for a much larger bank marking the west end of the Cursus, possibly in imitation of the long barrow mound at the east end. She also noted that the fill of the west ditch was different to that on the north and south sides of the Cursus which she interpreted as evidence that they were cut at different periods.

Prior to excavation the mound of barrow Winterbourne Stoke 30 was visible as a slight rise while slightly richer vegetation revealed the line of the encircling ditch. Excavation found nothing of the original structure of the mound though a slight rise in the natural

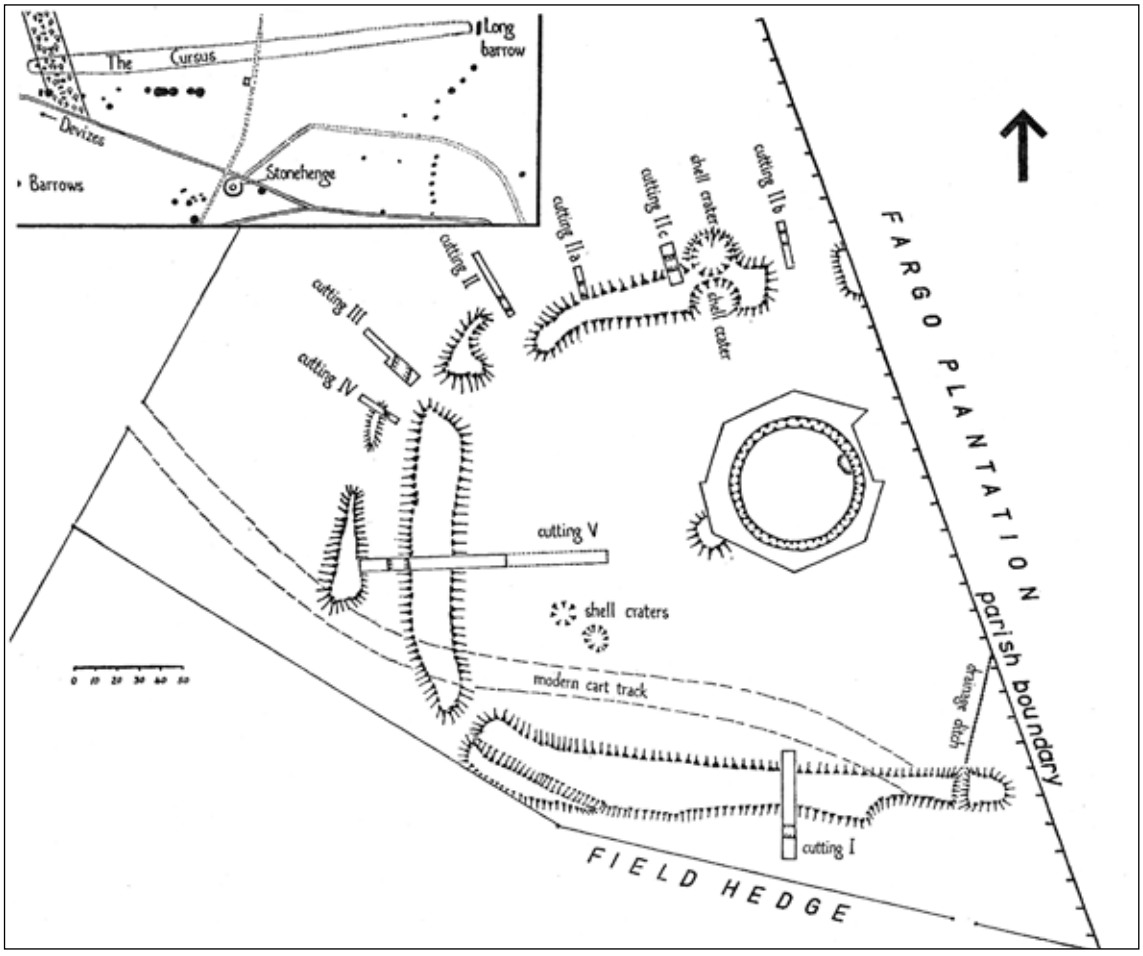

Figure 5. Christie's 1959 plan of the west end of the Stonehenge Cursus.

surface indicated where it had protected the underlying chalk from erosion. A roughly circular cremation pit at the centre of the barrow along with several stakeholes indicated the possible site of an associated shelter. The ditch encircling the mound was around 0.5-0.8m deep and just over a metre wide, and on the south-west side contained the skeleton of a child. Several accounts also refer to the discovery of the skeleton of a second infant nearby (NMR SU 14 SW 317) but no reference is made to this in Christie's report and the reference may in fact be to the child inhumation from Amesbury 56 barrow nearby. On the east side of Winterbourne Stoke 30 barrow, the ditch cut an oval-shaped hollow containing pine charcoal and calcined flints which Christie was certain was not a natural feature. She suggested it may have been contemporary with the construction of the Cursus but the suggestion has since been made that the feature might be contemporary with the early Mesolithic pits found in the area of the visitor car park at Stonehenge (Thomas *et al* 2009, 44). Iron Age and Romano-British pottery was recovered from the upper fills of the barrow ditch.

Two small trenches were excavated in 1983 by Julian Richards across the south side of the Cursus as part of the Stonehenge Environs Project (Richards 1990, 93-6). The project was begun in 1980 under the auspices of the Department of the Environment Inspectorate of Ancient Monuments in order to advance understanding of the prehistoric monuments in the landscape around Stonehenge and to provide information on preservation to allow the development of a management plan. One trench (W56a) was situated in the area formerly lying within Fargo Plantation, therefore in between Stone's 1947 trench to the east and Christie's trenches to the west. The second was excavated alongside the north-south by-way leading to Larkhill in advance of the laying of a pipe (W56b). The ditch in the first trench was 2m wide and up to 0.8m deep and had a flat bottom and therefore had broadly the same profile and dimensions as that recorded by J F S Stone in 1947. Two key differences from the 1947 section were the existence of two shallow scoops on the southern side of the ditch giving the edge a stepped profile and the absence of a berm separating the ditch from the bank. The bank here did not survive as anything more than a slightly raised area of natural chalk indicating where the bank had protected the underlying geology from erosion. The rear of the bank was marked by a 'slight negative lynchet' interpreted as possibly belonging to an episode of cultivation in the Bronze Age marked elsewhere by surface traces of a field system. The second trench excavated in 1983 (W56b) alongside the Larkhill track revealed that the ditch had broadly the same profile and dimensions as in the first trench. No dateable artefacts were recovered from either trench. As part of the same project Richards surveyed the long barrow Amesbury 42 situated some 35m beyond the east terminal of the Cursus and excavated a small trench (Trench W58) on the east side of the mound (Richards 1990, 96-109).

In 1987 Richards directed a further small excavation at the west end of the Cursus prior to the restoration of the bank using material bulldozed into the ditch in the 1950s. At the same time one of the trenches dug by Christie in 1959 was re-excavated to sample the ditch deposits (Anon 1988, 182).

The most recent excavations on the Cursus took place in 2007 and 2008 as part of the Stonehenge Riverside Project directed by Mike Parker Pearson (Parker Pearson *et al* 2008; Parker Pearson *et al* 2011; Richards *et al* 2009). In 2007, five trenches were

excavated around the western end of the Cursus; one across each of the three sides of the Cursus (Trenches 26-28) and two trenches in the interior (Trenches 36 and 38) positioned to investigate anomalies detected by geophysical survey. These anomalies proved to be of no archaeological interest and no other features of significance were found in the interior. Trenches across the ditches confirmed earlier observations that the west ditch was more substantially constructed compared to the ditches on the north and south sides, presumably indicating that the resulting bank was larger than that forming the long sides. The trench across the west ditch (Trench 26) was located at the junction with the south ditch revealing that the turn was more sharply right-angled than it appears on the surface. The excavation recovered a fragment of an antler pick from the very bottom of the ditch and therefore associated with its construction. It has been radiocarbon dated to 3630-3375 cal BC providing the first clear evidence for the original construction date of the Cursus. The 10m long trench along the south side of the Cursus (Trench 28) produced evidence that a series of small pits had been cut into the partially infilled ditch around 2500 BC, followed in the early to middle Bronze Age around 1500-2000 BC by the recutting of the ditch on the south side to give it a more 'V'-shaped profile. Environmental evidence suggests the recutting was broadly contemporary with the spread of cultivation across the local area. Excavation of the north ditch (Trench 27) found that the feature had a 'U'-shaped profile and survived to a depth of about 1m. The same trench extended into the interior to intersect the north-south aligned ditch visible on the surface and which had first been observed by Stukeley in 1723. This was found to include a palisade slot containing Late Bronze Age pottery but Parker Pearson cautioned that it may be a secondary feature and that the ditch itself could be much earlier. No relationship was found between the ditch and the north side of the Cursus as the feature ended some 2m short of the Cursus ditch.

In 2008 excavations took place at the east end of the Cursus. Trench 40 was sited within the eastern terminal of the Cursus to investigate a circular geophysical anomaly. This feature proved to be a sequence of three large root holes, possibly indicating the former position of a small grove of trees thought possibly to date to the 18th or 19th centuries. Trench 41 was sited across the east end of the Cursus. It exposed the Cursus ditch which here was wider and shallower than the ditch recorded the previous year at the west end. Nevertheless the amount of material excavated from the ditch would still have created a bank as imposing as that thought to have been constructed at the west end. The only trace of the bank noted in the interim report is the presence of a layer of coarse, chalky material in the ditch perhaps representing the eroded remains of the bank.

4. DESCRIPTION AND INTERPRETATION OF THE EARTHWORKS

Before the Cursus

The 2010 survey found no evidence of any surface features that obviously pre-date the Cursus although Mesolithic and early Neolithic activity is known in the area from excavations, artefact scatters and the earthwork remains of several early Neolithic burial mounds or long barrows. The nearest long barrow to the Cursus, Amesbury 42 on the King Barrow Ridge, probably predates the construction of the Cursus but is now barely visible as an earthwork. Aerial photographic evidence, geophysical survey and archaeological excavation in 2008 all confirm that the Cursus terminated around 35m west of the long barrow (Parker Pearson 2011, 5).

The central axis of the Cursus is aligned slightly north and south of a true east- west orientation which, as Darvill has pointed out, means that it broadly aligns with the passage of the sun across the sky at the autumn and spring equinoxes (Darvill 2006, 89). Whether this was the determining factor in the alignment of the Cursus is impossible to assess but it may be that the alignment already figured in the landscape before it was constructed. It has been suggested that the monument was laid out to follow the line between the long barrows Amesbury 42 on the King Barrow Ridge and the long barrow on Winterbourne Stoke Down about 2km west of the west end of the Cursus (Exon *et al* 2000, 47). Thomas has pointed out that the same alignment is continued further east by the position of the Cuckoo Stone and Woodhenge both of which have evidence of early Neolithic activity. This may be further evidence that the Cursus was orientated on a pre-existing alignment between locations that possessed significance in the early Neolithic (Thomas *et al* 2009, 42).

The Cursus

Landscape setting

The Cursus stretches for a distance of just over 2.7km between the rebuilt west terminal on the Winterbourne Stoke Down Ridge and the position of the east terminal as located by geophysical and aerial survey and the 2008 excavation on the King Barrow Ridge in the east (Figures 2 and 6). In reaching between these ridges the Cursus links two separate watersheds; that of the River Till to the west and the River Avon to the east whilst at the same time cutting directly across the relatively minor, though locally significant, intervening valley of Stonehenge Bottom. The terminals are intervisible but Stonehenge Bottom is hidden from view from either end of the Cursus (Figure 7).

The changing nature of the views from along the Cursus into the surrounding landscape can be demonstrated graphically using the viewshed analysis routine in the project GIS (Figures 8 and 9). From the crest of Winterbourne Stoke Down Ridge eastwards to Stonehenge Bottom the Cursus is laid out on a gentle north and north-east facing slope with an open view northwards towards Durrington Down across the broad valley that is the north-west continuation of Stonehenge Bottom. In this section it encompasses the head of a very slight combe that rises up the slope in a south-westerly section from the valley floor (Figure 18).

Although it is a minor topographic feature today it may conceivably have carried running water in the past. In the opposite direction, the view to the south is restricted because of the rising ground except for near to the south edge of the Cursus when a more distant horizon comes into view beyond the crest of the slope

In Stonehenge Bottom views out from the Cursus are restricted by rising ground to the east, west and north and to the south by a shoulder of the valley as it swings slightly to the west on its course southwards. The valley has an asymmetrical profile with a much gentler slope on the west compared to the east, presumably caused by differential erosion of the

Figure 6. Aerial photograph of the Stonehenge Cursus viewed from the west.

Figure 7. View along the Stonehenge Cursus looking west from the King Barrow Ridge with Fargo Plantation in the distance.

valley sides during the glacial period. Across the valley floor the Cursus encompasses the point where the main valley divides northwards with arms heading to the north-west and the north-east. The actual separation of the north-east and north-west valleys occurs just within the north side of the Cursus and as a consequence this side of the Cursus rises up over the slight promontory between them.

Above the steep east side of Stonehenge Bottom the Cursus ascends a gradual west and south-west facing slope up to King Barrow Ridge. This section of the Cursus enjoys the widest views to the west and south but stops short of the actual crest of the ridge which means there are no views westwards from the Cursus over the Avon Valley. Towards the east end, the Cursus overlies the head of another slight combe heading south-west to Stonehenge Bottom on almost exactly the same alignment as the western section of the Avenue (Figure 19). This has led to the suggestion that this valley along with the Avenue could have been used in ritual processions towards Stonehenge before the Avenue was extended eastward to the River Avon (Parker Pearson *et al* 2011, 100). An excavation in the floor of the valley in 1981 under the auspices of the Stonehenge Environs Project found that the build-up of hillwash (colluvium) was far less than anticipated. Deposits may have been washed away by a seasonal stream flowing down the valley into Stonehenge Bottom (Richards 1990, 211).

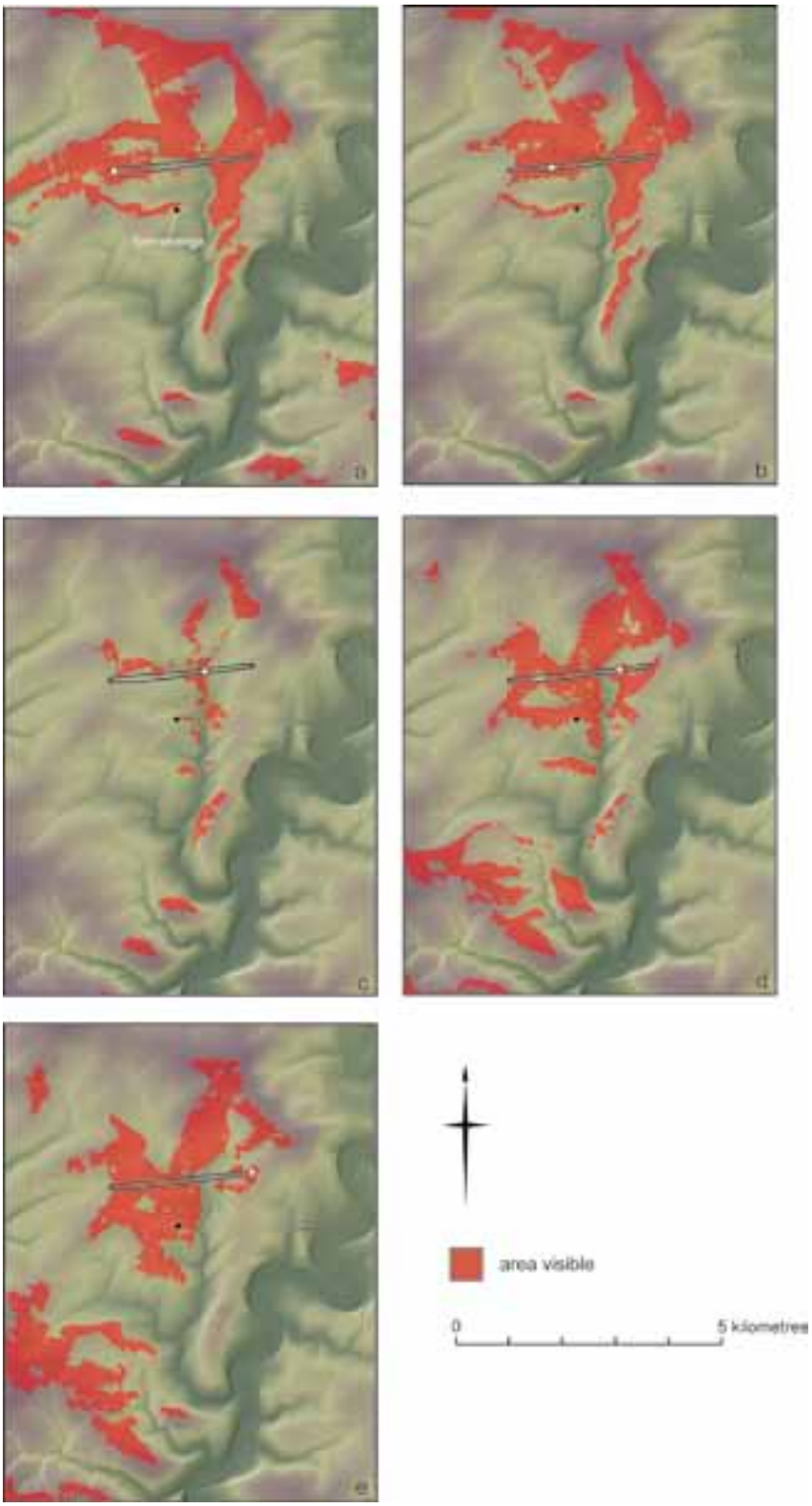

Figure 8. Maps showing the changing viewshed along the Stonehenge Cursus as modelled in ArcMap Gis software. The white dot shows the viewpoint for each particular viewshed from west (Map a) to east (Map e).

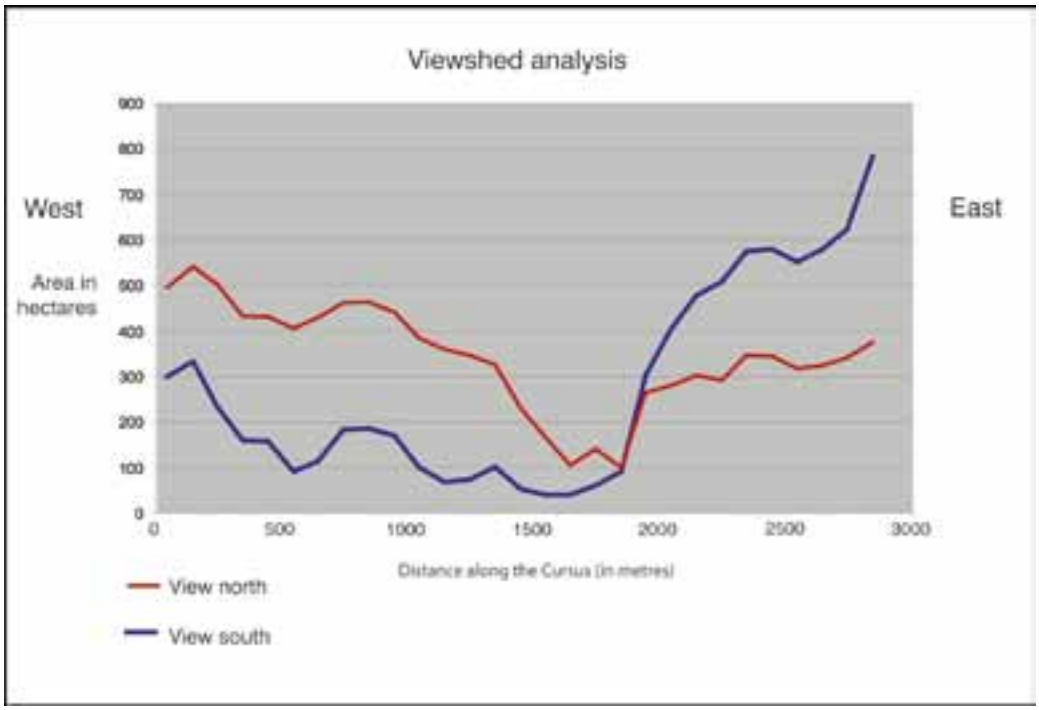

Figure 9. Graph showing the changing extent of the north and south viewshed moving from west to east along the Stonehenge Cursus.

Layout of the Cursus

The north and south sides of the Cursus are not precisely parallel. The width between the two banks varies from around 100m to nearly 130m along the length of the monument with several subtle and gradual changes in the alignment of the perimeter on both sides of the monument. (Figure 10). The most notable changes in alignment occur on the north side towards the terminals. At the west end, the north side of the Cursus turns slightly to the south approximately 200m from the west terminal at about the point where it reaches the crest of the Winterbourne Stoke Down Ridge (Figure 10, point a). Similarly in the east, the last 300m before the east terminal is aligned slightly further to the south on the summit of King Barrow Ridge (Figure 10, point b). These could be explained as minor corrections to compensate for errors in setting out, assuming that the intention was to lay out the sides as straight as possible.

The 2.2km length of the north side of the Cursus between the two points described curves slightly to the south by up to 15m, the apex of the curve occurring between 1km and 1.2km from the west end (Figure 10, point c). At about this point there is a distinct, shallow-sided hollow which is open on to the valley side to the north and looks to be a natural feature, perhaps the location of a dried-up spring (Figure 18). The feature lies just beyond the outer edge of the ditch and it is possible that the curve in the alignment was no accident but was deliberate in order to keep the natural hollow just outside the monument.

Further east, in Stonehenge Bottom, the alignment of the Cursus is such that it encompasses the point where two lesser valleys from the north-east and north-west come together to form Stonehenge Bottom (Figure 10, point d). As a consequence, the north side of the Cursus rises up on to the intervening promontory. This may be

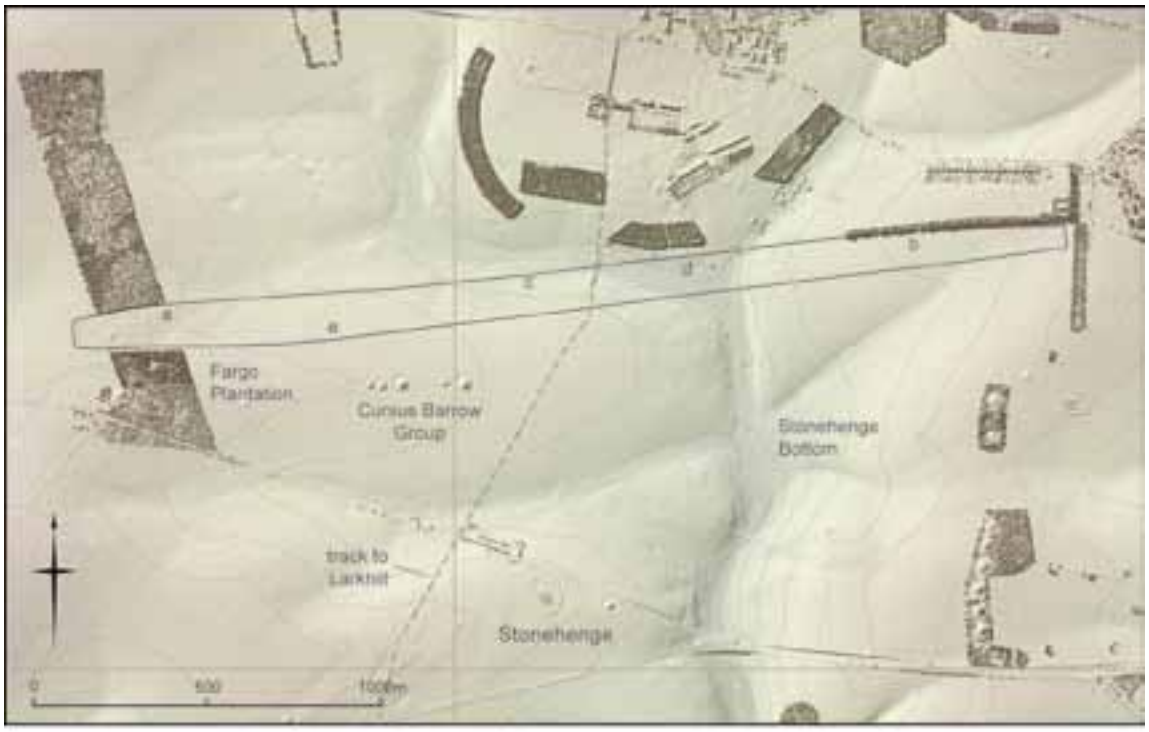

Figure 10. Map of the Stonehenge Cursus showing the main changes in the alignment of the north and south sides described in the text.

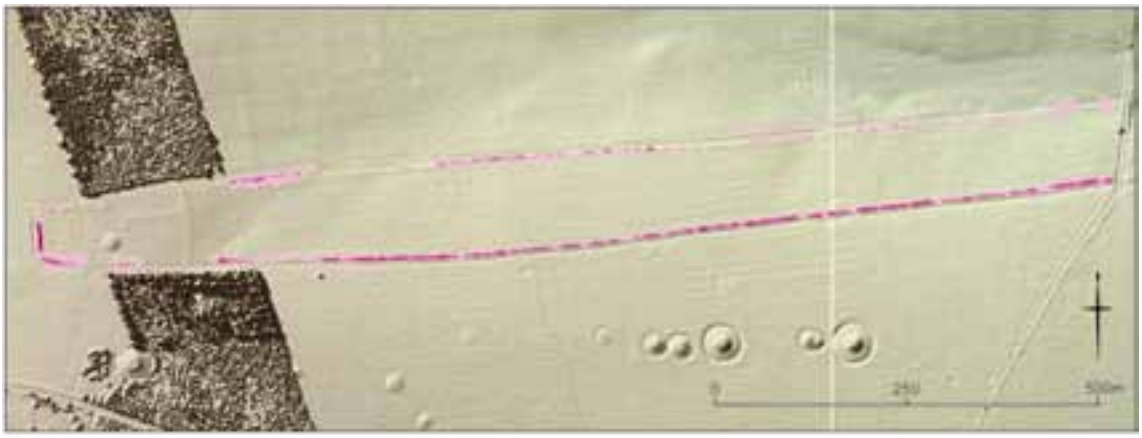

Figure 11. Ground model of the Stonehenge Cursus west of the by-way to Larkhill. The model is derived from 3D data recorded during the field survey and is coloured to show variations in the height of the bank from 0.1 to 0.5m relative to the natural ground level (darker = higher).

coincidental but is more likely to be deliberate in the light of the perceived relationship between the Cursus and the wider valley system discussed later in the report (see Section 5).

On the south side of the Cursus there is a clear, if gradual change of alignment about 500m from the west terminal, eastwards of which the Cursus is aligned slightly more to the north (Figure 10, point e). Again this subtle change in alignment may been made to correct an error in setting out, although Thomas has pointed out that the change

in direction may have been to align the southern ditch on a notch on the north side of Beacon Hill some 9.5km to the east (Thomas *et al* 2009, 51). Even so, the change in alignment also places the Cursus along a break of slope for nearly 1km eastwards to the crest of the slope above Stonehenge Bottom. As a result this side of the Cursus would have dominated the skyline when viewed from the interior, effectively blocking all views of the wider landscape to the south.

Preservation

The degree of preservation of the Cursus varies enormously along the length of the monument. The digital ground model of the section of Cursus between the west end and the by-way to Larkhill clearly emphasises the difference in the scale of the bank and ditch on the north and south sides (Figure 11). Beginning in the west on the summit of Winterbourne Stoke Down, the western terminal and 60m of the north and south sides of the Cursus were badly damaged by the military during the early decades of the 20th century, followed by levelling of the area for agriculture after the Second World War. The west terminal bank of the Cursus was reconstructed in 1987 (Anon 1988) while the external ditch at this end and the bank and ditch on the north and south sides of the Cursus survive only as very shallow earthworks. The next section of the Cursus immediately to the east of this levelled area was formerly within Fargo Plantation until the area was cleared of trees in 1983. Two roughly parallel banks with ditches cross the Cursus 190m apart and define the extent of the former plantation (Figure 15, earthworks d and e). Within this area the Cursus bank on both the north and south sides virtually disappears as a surface feature while the line of the ditch is better preserved though no more than 0.25m deep. Beyond the eastern boundary of the former plantation and for just over 1.1km as far as Stonehenge Bottom, the south bank and ditch survive as very clear earthworks, the bank attaining a maximum height of 0.5m and the ditch a depth of up to 0.5m. Along this length the bank is pitted at intervals by hollows from a combination of surface digging and animal scrapes, several of which are still active (Figure 18). Deeper and wider breaks across the bank also occur at irregular intervals and appear to be where later tracks have crossed the earthwork and which have also resulted in a slight widening and hollowing of the ditch in places. It is also possible that several of the breaks may have originated as part of the construction of the Cursus as will be discussed below. The north side of the Cursus from the edge of the former plantation to Stonehenge Bottom is less well preserved. The most dominant earthwork on the north side is a north-facing scarp defining the junction between the outer edge of the bank and the inner face of the ditch, which attains a maximum height of 0.25m. The inner edge of the bank and the outer edge of the ditch only survive intermittently as shallow earthworks.

The by-way to Larkhill crosses the Cursus at about the point where it starts to descend the slope to Stonehenge Bottom. Here the track is elevated on a slight causeway where it crosses the north side of the Cursus and a short length of both the bank and ditch could be preserved beneath. Immediately to the east of this section of track are the earthwork remains of an earlier alignment of the route to Larkhill beginning as a slight hollow way on the south just within the south side of the Cursus. The hollow way continues down the slope to Stonehenge Bottom and then the former track crossed the

Figure 12. Field survey plan at 1:2000 scale of the east end of the Stonehenge Cursus (reduced from 1:1000 scale original).

floor of the valley on a 70m long causeway that crosses the north side of the Cursus. This too may preserve a short length of the Cursus bank and ditch below it. Eastwards beyond the by-way, the ditch and bank on the south side of the Cursus survive as quite prominent earthworks on the slope down to Stonehenge Bottom. At one point on the slope a break in the bank is defined by a prominent rounded terminal on the west side which could indicate a possible entrance and route across the line of the Cursus. However, the ditch is continuous at this point suggesting any entrance here is unlikely to be original. Further east, across the floor of the valley, the earthworks on the south side of the Cursus are discontinuous up to the edge of the former sewage farm. On the north side of the Cursus, the bank is far more obvious than the ditch on the slope down to Stonehenge Bottom. It has a slight groove running along its crest, probably indicating the line of a recently-removed fence, and immediately behind the bank is an irregular quarry hollow of no great age. The bank disappears as a surface feature on the promontory but the ditch survives as a slight depression on the top of this feature where it appears to end with a distinct terminal. There is then a gap of just over 100m where there is no surface trace of either the bank or ditch before the ditch reappears as a shallow hollow leading up to the west boundary of the former sewage farm.

The sewage farm, constructed during the First World War on the east side of Stonehenge Bottom, straddles the line of the Cursus. The 2010 survey established that the south bank survives as an earthwork within this area but the north side of the Cursus is far less visible. The footpath that crosses the area of the sewage farm is on roughly the same alignment as the north bank of the Cursus and this may explain why the path is slightly elevated above the immediate surroundings. Beyond the east side of the sewage works, the bank and ditch on the south side survive as earthworks for a distance of 350m as the ground starts to rise at first steeply from the valley floor and then more gently up to King Barrow Ridge. From there virtually to the crest of the ridge and the east terminal of the Cursus all that survives is a single south-facing scarp which probably represents the inner edge of the ditch (Figure 12). Christie reported that in the hot summer of 1959 the ditch showed up as a cropmark in this area as it supported 'lush green grass' in contrast to the parched vegetation across the rest of the field (Christie 1963, 370).

The north side of the Cursus is far less well-preserved on the slope up to King Barrow Ridge. A single north-facing scarp is visible along the approximate line of the Cursus ditch for about 150m from the edge of the former sewage works. Further up the slope a very slight south-facing scarp may indicate the inner edge of the bank continuing on to the crest of the ridge and ending approximately around the position of the east terminal. This is presumably all that survived on the surface following the construction of the road around 1917 as mentioned by Farrer, though it is also possible that the the Cursus is slightly further to the north over the fence line and in the adjacent field. There are no surface traces of the east terminal surviving. A shallow west facing scarp recorded by the present survey on the crest of the ridge is too far to the west to be part of the Cursus terminal and is probably a much-later plough furrow or headland.

Form and Construction

The varied level of preservation means that the clearest earthwork evidence for the physical structure of the Cursus is in the 1.1km length of bank and ditch on the south side of the Cursus from the former boundary of Fargo Plantation on the west to Stonehenge Bottom in the east. In this section the bank survives as a low, rounded earthwork attaining a maximum height of 0.5m in several places and is around 10m wide. The rounded profile suggests the bank has been spread by ploughing in the recent past making it difficult to estimate what the original height might have been. In this section of the Cursus the survey recorded around 30 breaks of varying depths in the bank ranging in width from 0.5m to around 3m (Figure 18). While many of these gaps appear quite recent, caused by the passage of animals and wheeled vehicles or backfilled excavation trenches, others are much deeper, reducing the bank almost to ground level. The bank on either side of several of these more pronounced gaps is slightly higher with rounded sides intimating perhaps that bank was constructed as a series of conjoined mounds with the junctions between mounds later accentuated by the passage of livestock, people and vehicles to create the distinct breaks observed today (Figure 13).

The spread nature of the bank obscures surface evidence for the berm separating the outer edge of the bank from the ditch as revealed by the 1947 excavation (Stone 1948, 15). However, the absence of a berm in the 1983 excavation across the south side of the Cursus in Fargo Plantation (Trench W56a) showed that the feature is not continuous (Richards 1990, 93-4). A narrow shelf between the bank and the ditch exists at several points along this section but, rather than a berm, it may indicate where the bank has been partially destroyed. Parallel with the rear of the bank for over 200m are surface traces of a negative lynchet indicating ploughing of the interior up to the inside edge of the Cursus bank (Figure 18). Evidence for ploughing behind the bank was found in the 1983 excavation in this same area (Trench W56a) in the form of a slight negative lynchet associated with late Bronze Age pottery.

The ditch between the east side of the former Fargo Plantation and Stonehenge Bottom attains a maximum depth of 0.5m but is mostly quite shallow indicating it has been infilled with material eroded from the bank or brought in by ploughing. A slight step in the outer edge noted at several points could indicate the edge of a recut but this feature is more likely to indicate where later ploughing has encroached. In one short section the ditch gives the impression of being formed of a succession of slight conjoined hollows. This may be an original feature and indicate piecemeal construction, in other words a surface expression of the gang working suggested from the results of both the 1947 and 1983 excavations, or it could relate to recutting in the mid-third millenium BC as indicated by the results of the 2007 excavations (Parker Pearson 2011, 78).

Elsewhere the earthwork remains are generally too eroded to understand much more about form or construction. As described above, the bank and ditch on the north side between the edge of Fargo Plantation to Stonehenge Bottom survives nowhere near as well as on the south side. The earthworks may have suffered more erosion, perhaps through ploughing in the medieval and post-medieval periods, or be partly obscured under the accumulation of hillwash from the slope above. However the possibility also exists that the north bank and ditch were not constructed as high or as deep as on the

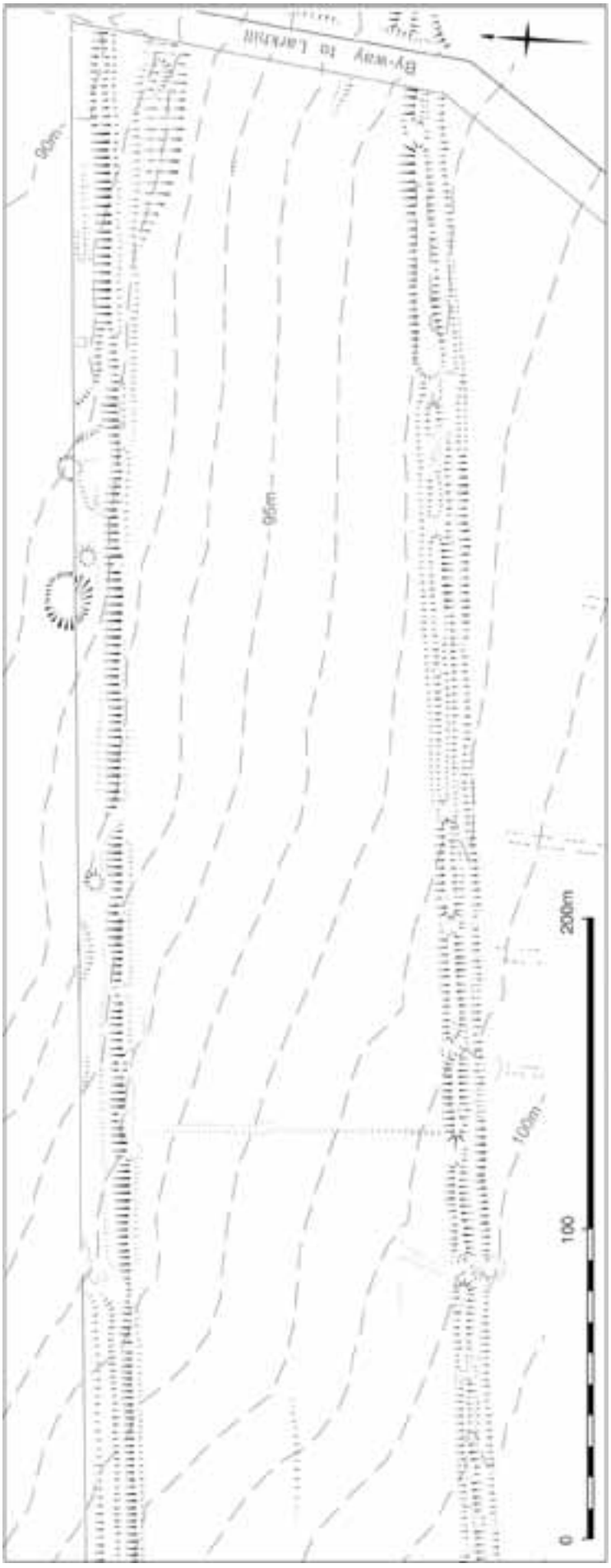

Figure 13. Field survey plan at 1:2000 scale of the middle section of the Stonehenge Cursus immediately to the west of the by-way to Larkhill showing the contrasting form of the north and south banks (reduced from 1:1000 scale original).

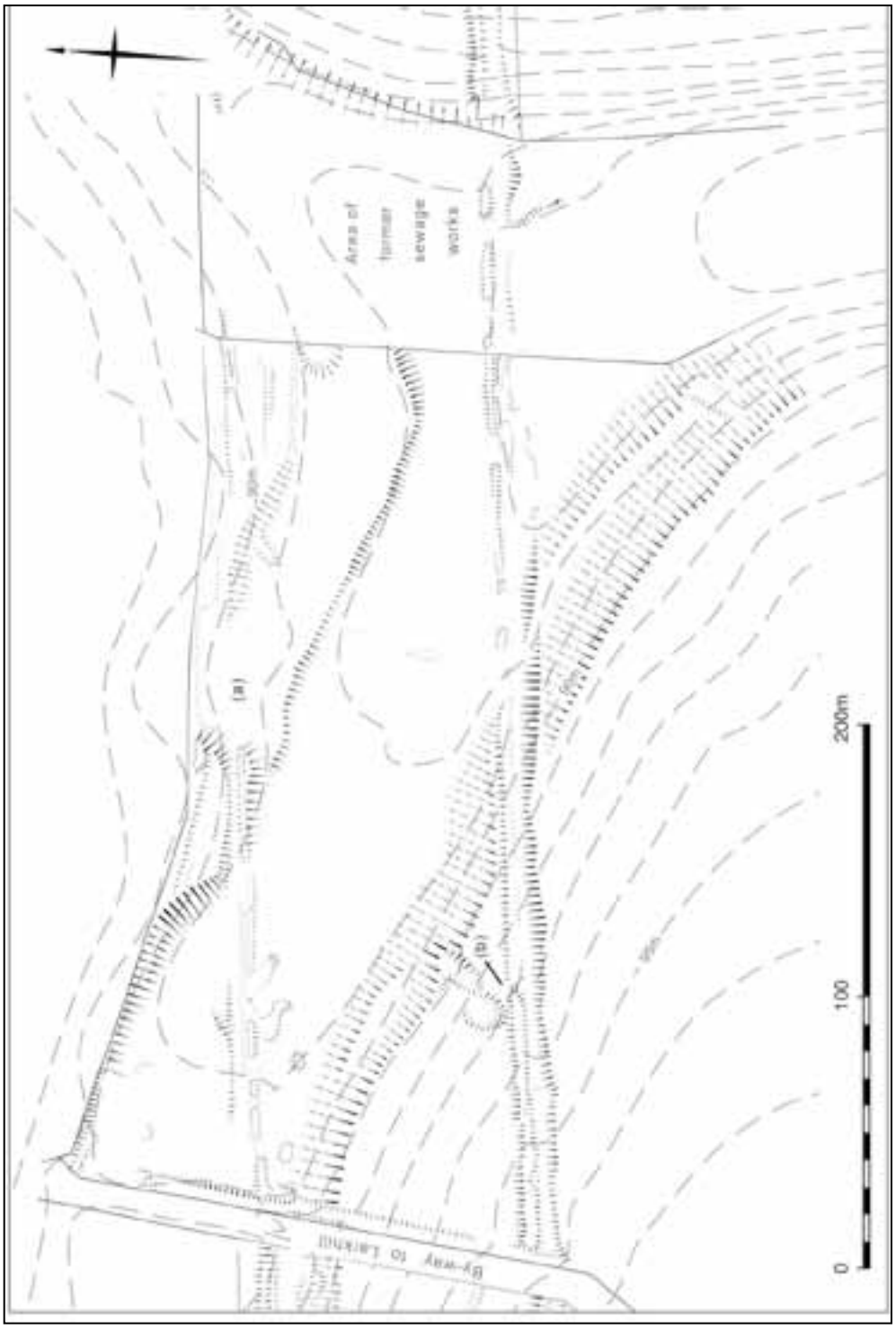

Figure 14. Field survey plan at 1:2500 scale of the Stonehenge Cursus in Stonehenge Bottom immediately to the east of the by-way to Larkhill (reduced from 1:1000 scale original).

south. It is worth noting that the Dorset Cursus has a similar difference in construction with the long, north-west side of the enclosure apparently less-massively built than the south-east side (McOmish and Tuck, 2002, 11).

The 2010 survey found no surface traces of the bank on the outside of the ditch at the west end of the Cursus as was shown on Christie's plan and hinted at by the results of the geophysical survey in 2007 (Payne 2007b). Any earthwork has been levelled by the ploughing of the adjacent field which clips the outside edge of the ditch.

The survey found no definite traces of any entrance into the Cursus but the balance of evidence suggests the most likely location for one is in Stonehenge Bottom (Figure 14). Here the north ditch disappears on the surface as it ascends the slight promontory and both it and the bank appear to end with a rounded terminal (Figure 14 point a). Neither the ditch nor the bank can be traced to the east of this point for some considerable distance lending weight to the possibility of an entrance at this point but there is an element of uncertainty as the gap may be the result of later destruction, perhaps through cultivation. There are traces of 'Celtic fields' in the vicinity. There is no equivalent break directly opposite in the south side of the Cursus, but as was noted earlier, further to the west on the slope above Stonehenge Bottom there is a gap in the bank with a prominent rounded terminal on the east side (Figure 14 point b) and this or other breaks in the bank and ditch crossing the valley floor may conceal an original entrance. The existence of these breaks on the north and south sides of the Cursus, whether original or not, probably explains why the trackway noted by Stukeley was aligned on this point.

As was mentioned earlier, the earthwork is now too poorly preserved on the slope up to King Barrow Ridge to determine the existence of the pair of opposed entrances mentioned by Stukeley and Colt Hoare. However Ordnance Survey mapping from the late 19th and early 20th century, when the earthwork was better preserved than it is today, shows it was continuous in this area and the RCHM dismissed the possibility of entrances here in their 1979 report (RCHM 1979, 14). Similarly, as the west terminal is a modern reconstruction and the east end is levelled flat there is insufficient evidence surviving on the surface to investigate if the terminal banks and ditches are secondary and that the monument was originally open at the ends for entry. However, the excavations at the west end in 1959 (Christie 1963) and at the east end in 2008 (Parker Pearson 2010) have not thrown up any evidence to suggest the terminals are anything other than contemporary with the long sides.

Later Prehistoric Features

The only visible prehistoric features which post-date the Cursus are at the west end, on Winterbourne Stoke Down Ridge and here there is also excavation evidence to consider alongside that of the earthwork remains (Figure 15). There is clear evidence that this part of the Cursus was incorporated in a 'Celtic' field system, defined by a low, spread bank about 10m wide on the east (Figure 15 earthwork a), by the Cursus on the north and south and divided into two plots by an intermediate east-west bank (Figure 15 earthwork b). There is no clear edge to the fields on the west. The bank forming the east edge of the two plots abuts the Cursus ditch on both the south and on the north and on the north continues into Fargo Plantation. The two plots are open to the west

Figure 15. Field survey plan at 1:2000 scale of the west end of the Stonehenge Cursus (reduced from 1:1000 scale original).

with no visible sign of the system continuing beyond a more-sharply defined north-south 'cross-ditch' which cuts the east-west bank between the two field plots obliquely (Figure 15 earthwork c). There is no indication of the east-west field bank continuing beyond this cross-ditch, although before it disappears it does bend slightly to the south as if heading towards a feature in this direction, possibly to connect with the north side of the Amesbury 56 barrow or the perimeter of the Winterbourne 30 barrow. This could be evidence that the barrows existed when the field system was laid out.

The two fields form part of a much wider co-axial prehistoric field system covering some 52ha recorded by aerial photography as cropmarks in fields to the north and north-west of the Cursus and which survives as earthworks within the north part of Fargo Plantation (NMR SU 14 SW 492). Traces of several other 'Celtic' field banks were noted within the

Cursus to the east but have been all but levelled by later cultivation. The field system was tentatively dated to the Late Bronze Age (Richards 1990, 279) but work on the Salisbury Plain Training Area suggested that such systems were laid out in the Middle Bronze Age (McOmish *et al* 2002, 53).

The cross-ditch which cuts obliquely across the west side of the system about 120m from the west end of the Cursus has a maximum depth of around 0.4m and width of 3.5-4m with slight traces of a bank on the west side (Figure 15 earthwork c). This latter earthwork was seemingly once much more prominent, as Hoare refers to a bank when he describes this feature rather than a ditch (Hoare 1812, 159). Stukeley also seems to show a bank rather than a ditch in both his field sketch and his published engraving (Loveday 2006, fig 4; Stukeley 1740, plate 30).

The field evidence clearly shows that the cross-ditch stops short of the Cursus ditch on the north but cuts across the Cursus ditch on the south. The 2007 excavation (Trench 27) established that the cross-ditch ends some 2m short of the north ditch of the Cursus but this is so close it must have cut into the north bank of the Cursus, now no longer surviving as a surface feature in this section (Thomas *et al* 2009, 47-48) The cross-ditch is therefore stratigraphically later than both the Cursus and the 'Celtic' field system. The fact that it cuts the bank on both the north and south sides of the Cursus suggests these earthworks were quite slight when the cross-ditch was dug. Maybe they had been eroded by the earlier phase of cultivation represented by the 'Celtic' fields or maybe the banks were never particularly high in this section.

The 2007 excavation revealed that the partially silted ditch was redefined by the digging of a palisade slot that contained Late Bronze Age pottery, indicating the first phase of the cross-ditch must be at least this date but is more likely earlier. There is no evidence of the palisade trench on the surface but the appearance of the cross-ditch is accentuated by a number of hollows dug along its length. Similar hollows occur along the line of the north and south Cursus ditches in this area and in the west terminal ditch though they are mostly too small to record at the 1:1000 scale of the 2010 survey. It is tempting to equate these surface features with the late Neolithic pits found cut into the south ditch of the Cursus in the 2007 excavations (Trench 28). However the hollows visible on the surface are generally much more crisply defined than the ditches within which they lie and are probably quite recent. They cut through the 'Celtic' field bank that overlies the north ditch and are possibly the result of tree planting and/or military activity.

The cross-ditch creates an enclosure out of the west end of the Cursus within which are situated the two Bronze Age burial mounds Winterbourne 30 and Amesbury 56. There are no clear traces of Winterbourne 30, which was levelled in the early part of the 20th century and then completely excavated by Christie in 1959. Amesbury 56 formerly lay within Fargo Plantation until the trees were cleared in 1983 and is now exposed as a prominent landscape feature standing some 1.5m high and with a diameter of around 25m. There is no surface trace of a ditch encircling the mound as found by excavation around Winterbourne 30. The summit of the mound is level apart from at the centre where there is a second slight mound overlying. It is not clear if this second mound is a separate feature or results from later damage reshaping the profile of the original mound.

The Roman and Medieval periods

The discovery of Iron Age and Romano-British pottery in the ditch of Winterbourne 30 barrow during the 1959 excavation (Christie 1963, 378) and finds of Roman samian pottery by Farrer on the surface to the north of the Cursus above Stonehenge Bottom (Goddard 32) points to activity in and around the Cursus during these periods. There are no surface remains from the Cursus or its near vicinity for settlement at this time and it is likely that the pottery finds are connected with continued cultivation of the fields overlying the west end of the Cursus or with pastoral activities (Richards 1990, 280).

The incorporation of part of the north side of the Cursus in to the parish boundary between Durrington and Amesbury suggests the Cursus was still a prominent landscape feature in early historic times. Documentary evidence indicates that the downland where the Cursus lies was largely given over to pasture in the medieval period and it is probably during this period, if not earlier, that the perimeter of the Cursus started to degrade through erosion by livestock (Darvill 2006, 246-7). There are also very slight indications of ridge and furrow in places within Cursus, particularly on the slope up to the Winterbourne Stoke Down ridge indicating that part of the Cursus was ploughed in the medieval or, more likely, the post-medieval period which may account for the differential preservation of the north and south sides of the Cursus in this area. On the south side where the bank and ditch are best preserved there is the impression that for short lengths the ditch was used as a route because in these sections the ditch appears very slightly wider and deeper and the ditch bottom seems to turn slightly towards the breaks in the bank described earlier. This is consistent with piecemeal erosion caused by the repeated movement of people and livestock across the Cursus, a process that may well date back to the medieval period if not before. As was noted earlier, Stukeley's sketch plan of Salisbury Plain appears to show that a now disused route from Amesbury to Lavington was aligned for a short distance along the south side of the Cursus and is presumably responsible for some of the erosion noted above. The discovery of wheel ruts in Trench 40 of the 2008 excavation near the east end of the Cursus has been interpreted as evidence of a possible route in the Roman period from Stonehenge to Larkhill of which other traces have been found by excavation nearby (Parker-Pearson *et al* 2011, 103-4).

The Post-medieval and Modern Periods

While much of the downland remained as sheep pasture in the 18th century there was increasing cultivation of the higher downland. Around the Cursus, the character of the landscape changed dramatically during the 19th century with the enclosure of parts of the downland to create fields for arable. The Tithe Award for Amesbury parish dated 1846 shows that the majority of the Cursus was still under pasture, but 500m at the east end was under arable and a section towards the west end in Fargo Plantation. Fargo Plantation was then quite newly established occupying a plot of ground that was under arable cultivation in 1823 and may have been cultivated as early as 1771 (RCHM 1979, xvi). William Long, writing in 1876, reported hearing that the ground from Stonehenge Bottom eastwards to the end of the Cursus was 'ploughed up about twenty-five or twenty-six years ago' which would have been around the time of the Amesbury Tithe Award (Long 1876, 236). The first and second editions of the 25 inch to the mile scale

Ordnance Survey mapping published in 1880 and 1901 respectively show the Cursus (apart from Fargo Plantation) in open ground indicating that the area formerly under cultivation at the east end had reverted to pasture (Ordnance Survey 1880 and 1901). By the early 1920s a large part of the monument east of the track to Larkhill was again divided into fields (Ordnance Survey 1924). One of the plots defined the area of the sewage farm constructed around the time of the First World War. Comparison of the same two surveys indicate that a 300m length of the bank and ditch from the north-east corner of the Cursus was levelled in this period.

West of the track to Larkhill, Ordnance Survey mapping indicates that the ground was divided into fields between the early 1920s and the mid-1930s indicating the spread of cultivation over the Winterbourne Stoke Ridge (Ordnance Survey 1924; 1939). Two of the field boundaries from this period survive as slight earthworks cutting across the interior of the Cursus on the slope up to the Winterbourne Stoke Down Ridge (Figure 18). That to the west comprises a bank with a shallow, narrow ditch on the uphill side which cuts across the line of the north cursus bank. That on the east survives as a single slight scarp confined between by the north and south banks of the Cursus. There are also slight traces of east-west plough furrows between these former field boundaries and elsewhere along the interior of the Cursus. Ploughing up to the inner edge of the bank on both the north and south sides of the Cursus has also created a slight negative lynchet along several lengths of the Cursus bank, as mentioned earlier in the report, and which excavation evidence indicates could date back to the Bronze Age (Richards 1990, 93). There are also traces of plough furrows on the exterior of the Cursus to the south which continue up to the edge of the ditch. Although it is impossible to be certain, it is likely that most of these traces of ploughing are associated with the field system described above and therefore date to the first half of the 20th century. Around 600m west of the track to Larkhill is a roughly rectangular depression just behind the south bank of the Cursus indicating the probable site of a demolished building (Figure 18). The various editions of Ordnance Survey mapping do not show any structure in this location but it is probably of no great antiquity, perhaps connected with military use of the area in the early 20th century.

Trees were planted on the crest of the Winterbourne Stoke Down Ridge across the line of the Cursus in the 1840s (Richards 1990, 7); this area is shown on the Amesbury Tithe Award map of 1846 labelled simply as 'Plantation'. It is not clear when this plantation became known as 'Fargo Plantation' but a farmstead with that name was built on the summit of Stonehenge Down nearby in 1847 (RCHM 1979, xviii). The section over the Cursus was cleared of trees in 1983 leaving the edges of the former plantation visible as two lengths of bank and ditch about 190m apart overlying the Cursus (Figure 15 earthworks d and e). There are also slight remains of a track running alongside the east edge of the former plantation where it crossed the Cursus (Figure 15 earthwork f).

Intensive military use of the area began in 1897 with the purchase of land for the Salisbury Plain Training Area and this has had a major impact on the surface remains of the Cursus, particularly at the west end as described earlier (Darvill 2006, 266). The most long-lasting military features are the remains of the sewage works in Stonehenge Bottom which was built during the First World War (Figure 14), one of two within the

Stonehenge environs, the other (now cleared) being in the combe between Stonehenge and the Normanton Barrow group. Although the main complex lies to the north of the Cursus, two disused concrete surface pipes (not recorded as part of the 2010 survey) cut across the line of the Cursus and between them define an area used for the dumping of waste and which is now heavily overgrown. Aerial photographic evidence also indicates that waste was spread widely over the slope to the south of the Cursus via a system of surface pipes. As was mentioned above, part of the south bank of the Cursus survives as an earthwork in this area but all surface traces of the rest of the Cursus have vanished.

The buildings of the military encampment known as the 'Night Camp' on Winterbourne Stoke Down Ridge abutted the south-west corner of the Cursus. Military activity associated with the camp in this period began the process of piecemeal damage to the Cursus earthworks which ended in the late 1940s with the complete levelling of the western terminal and adjacent stretches of the north and south sides. While some of the indistinct pits and hollows in this area could result from tree throws, others could be from military activity associated with the encampment. At the time of the 1959 excavation Christie thought some of the hollows at the west end of the Cursus and in the interior were shell holes and labelled them as such on her published plan (Christie 1963, 371). She also referred to slit trenches and the concrete remains of a mortar emplacement in the area of barrow Winterbourne 30 (ibid, 376) while the 2010 survey noted brick embedded in one of the hollows in this area. Attention has already been drawn to the series of hollows visible in the north and south sides of the Cursus ditch towards the west terminal and within the ditch that cuts across the west side of the 'Celtic' field system. There is no obvious explanation as to their origin. As Christie suggested, some could well be military practice trenches and in one part of the south ditch the hollows join together to give the impression of a slit trench (Figure 15 earthwork g). Similar, although much longer sections of practice trench have been mapped from aerial photography close to both the north (NMR SU SW 656) and south (NMR SU SW 668) of the Cursus and are likely to date to military training carried out during the First World War. Others, however, appear as separate discrete hollows contained within the earlier ditches could indicate the former positions of trees, perhaps from Fargo Plantation or possibly belonging to an earlier more formal planting scheme to create an eye-catcher helping to pick out the Cursus earthworks on the crest of the Winterbourne Stoke Down Ridge.

Analysis of aerial photographs for the Stonehenge World Heritage Site National Mapping Programme has also identified the probable site of a minefield about 350m to the west of the Larkhill track (NMR SU14 SW 669) beginning immediately outside the north bank of the Cursus. The minefield is visible as a concentration of small pits on an aerial photograph from 1921 and was presumably created as part of military training. No surface trace of these features now survives.

To the east of the Larkhill track on the slope up to King Barrow Ridge, the same programme of aerial photograph analysis also located the site of a 'gunpost' dating to the first half of the 20th century (NMR SU SW 667). This entry describes a slit trench surviving as an earthwork within a sub circular enclosure; however, no surface traces now survive. Ordnance Survey mapping from the 1920s and 30s shows several simple rectangular

buildings within a fenced compound within the Cursus some 550m from the east end (Ordnance Survey 1924; 1939). Two tracks connect this enclosure with military roads to the north and east suggesting these buildings had a military use. They disappeared after the Second World War and have left no definite surface traces, though two pronounced furrows in this area could indicate the site of one or more of these buildings (Figure 19).

The position of several backfilled excavation trenches is visible on the surface (Figure 18). A slight rectilinear depression aligned along the south ditch of the Cursus appears to correspond to the 2007 excavation trench T28 and slight remains also survive of the trench on the north side of the Cursus (T27) (Thomas *et al*, 2009, 46). Some 30m to the east is the possible site of Stone's 1947 excavation which cut across both the ditch and the bank and has left a slight rectilinear depression cutting at right angles across the bank and extending to the far side of the ditch (Stone 1948, Fig 1). Richard's 1983 excavation of the south side of the Cursus within the former Fargo Plantation (W56a) has left no obvious surface traces nor has Christie's 1959 excavation at the west terminal.

5. SUMMARY AND DISCUSSION

The Stonehenge Cursus is among the best preserved of the 100 or so cursus monuments known in Britain. For most of its 2.7km length the Cursus survives as an earthwork (although very ephemeral in places) preserving visible evidence of its construction and layout which has now been recorded in detail for the first time. The 2010 survey has highlighted several aspects of the construction, layout and positioning of the monument which have a bearing on previous interpretations of this site and of cursus monuments generally.

Method of Construction

The Cursus consists of a ditch with an inner bank set out to form a long, narrow rectangle. The earthworks suggest and excavations confirm that the bank is a simple dump of chalk rubble and soil excavated from the adjacent ditch. In places on the south, excavation has shown that the bank and ditch are separated by a berm although this is not now clearly distinguishable as a surface feature.

Excavation has also provided evidence that the ditches at either end (i.e. along the shorter sides) of the Cursus are wider and deeper than the ditches on the long sides and this has been interpreted as evidence that the corresponding banks must have been larger at each end and almost long-barrow- like. This difference is impossible to verify on the ground due to the destruction of both terminal banks, as is the possible existence of an exterior bank at the west end which might also partially account for why the ditch is larger here. That the Stonehenge Cursus had larger terminal banks is supported by the evidence of the better-preserved Dorset Cursus where the east and west ends of the monument (on Pentridge Down and Thickthorn Down respectively) are larger than the rest of the perimeter. Several suggestions have been put forward to account for the raised heights of the terminal banks. It may have been to prevent access at what could have been regarded as special points in the perimeter or simply to 'monumentalise' the ends of the monument. Alternatively they might have been intended for use as viewing platforms, indicating that views of the interior were restricted by nature and by design elsewhere along the length of the Cursus. With regard to the Dorset Cursus, Bradley has suggested that the eventual form of the terminal banks were designed to mimic local long barrows and this may also have been true of the east terminal of the Stonehenge Cursus which is just 40 metres from the Amesbury 42 long barrow. However, as the terminal bank is now levelled and the barrow is severely degraded it is impossible to determine how closely they resembled each other in shape, form and profile. Similarly at the west end of the Stonehenge Cursus, it is not possible now to ascertain how closely the bank resembled one of the long barrows known in the vicinity.

The survey drew attention to possible evidence for separate episodes of construction of the bank on the south side of the Cursus on the slope below Winterbourne Stoke Down Ridge. The segmented appearance of the bank is similar to the description of the central bank of the Cleaven Dyke Cursus in Perthshire, where excavation and survey between 1993 and 1996 established that it was formed by a series of conjoined mounds between 25m and 53m long giving the bank a distinct segmented appearance (Barclay

and Maxwell 1999, 99-100). This was interpreted as evidence of gang-working but with so little of the bank surviving in good condition at the Stonehenge Cursus it is now impossible to determine to what extent the form of the bank seen in this section was typical of the whole monument. Attention has been drawn to the possibility that sections of the south bank were more massively constructed than on the north. It is possible that the uneven, undulating profile seen today may be more than simply a by-product of episodic construction and could have been created deliberately to enhance the visual impact of this more massive section of bank.

The survey has not been able to positively identify an entrance. If one did exist then the most likely location is in Stonehenge Bottom where Crocker's map published by Hoare shows breaks in the bank and where the present field survey recorded significant breaks in the perimeter of the monument on both the north and south sides (Hoare 1812, facing p170). The valley makes a natural north-south route so entrances here where the Cursus crosses the valley bottom seem entirely possible. Should the valley have carried water, even if only intermittently during times of heavy rain, one or more breaks would have been needed in the banks to allow drainage to flow freely across the monument and prevent water from ponding up.

Function of the Cursus

Recent studies have isolated a number of possible interpretations of cursus monuments (Chapman 2005, 159; Loveday 2006, 125-6). Those of particular relevance to the present survey include:-

i) To demarcate alignments and events

ii) To link earlier monuments and routes together

iii) For processions as a route of experience

iv) To enclose a sacred space or create an arena

v) To provide a symbolic construction project – process, not product

vi) To act as boundary features

vii) To create a symbolic river

i) To demarcate alignments and events

The survey has not provided any fresh insights into why the Cursus is aligned the way it is, that is slightly north-south of a true east – west alignment. If the alignment is significant to the function of the monument then ideas previously put forward about referencing astronomical events such as the passage of the sun at the autumn and spring equinoxes would certainly bear more detailed scrutiny. However, if cursus monuments generally functioned as some form of astronomical observatory then one might anticipate a

greater degree of conformity in their size, shape and orientation than is actually the case. A more plausible interpretation of the Stonehenge Cursus is that it is aligned along the axis between the long barrow on Winterbourne Down in the west and on King Barrow Ridge (Amesbury 42) since these may have been the only two prominent man-made features in the landscape when the Cursus was constructed. That early Neolithic pits also occur on the same approximate axis further east near the Cuckoo Stone and at Woodhenge potentially extends the alignment further across the contemporary landscape (Thomas 2009, 42).

ii) To link earlier monuments and routes together

As Amesbury 42 long barrow is close to the east end of the Cursus it is plausible that the Cursus formalised a route heading towards this burial mound from the west. That the Cursus ends just down slope from the mound rather than incorporating it into the terminal or passing beyond it to the crest of the King Barrow Ridge does suggest that a deep measure of respect existed for the earlier monument when the Cursus was constructed. However, there is seemingly no evidence for any significant natural or man-made feature at the west end so if the Cursus did monumentalise an existing route heading to Amesbury 42 long barrow, it is difficult to explain why it should have started on Winterbourne Stoke Down.

iii) For processions as a route of experience

The idea that cursus monuments defined routes used for ritual purposes has been explored in a number of studies particularly in relation to the Dorset and Stonehenge cursus monuments (eg. Tilley 1994, 173-200; Bender 1998 83-4; Johnston 1999; Exon *et al.* 2000, 47-54). These accounts have drawn attention to the changing views experienced along the route of the Cursus through fieldwork sometimes supported by GIS viewshed analysis (Exon et al. 2000 47-54). In broad terms, the restricted view in all directions from the Stonehenge Cursus where it crosses Stonehenge Bottom is in stark contrast to the expansive views where it crosses the rising ground to the east and west. Across the King Barrow Ridge there are expansive views eastwards and southwards while on the Winterbourne Stoke Down Ridge the view south from the Cursus is largely hidden because of the alignment of the bank along a break of slope but in the opposite direction is open and expansive. The 2010 field investigation has brought forward evidence that the way these different views emerge may not be accidental but down to deliberate choices in the location of the monument, in how the Cursus uses natural breaks of slope and possibly in the differing heights of the banks. Consequently the idea that the Cursus was a vehicle through which the wider landscape was experienced in precise and predetermined ways has something to recommend it.

iv) To enclose a sacred space or create an arena

The very act of dividing off a large tract of land 2.7km in length and around 100m wide for no apparent practical purpose does lead to the idea that the area enclosed was in some way special or sacred but that is as far as the evidence goes. The nature of any ritual behaviour connected with the Cursus has not been demonstrated by excavation

and defies understanding. Beliefs connected with the ancestors and death may have focussed at the east end near the Amesbury 42 long barrow and Stonehenge Bottom could have been the focus of rituals connected with springs and water.

The possibility that the Cursus functioned as an arena where events or rituals enacted on the inside were viewed from the outside has some evidence to support it. While elements of the form and layout of the monument point to the manipulation of views outwards from the Cursus (as was discussed above), the views created for an audience on the outside looking toward the Cursus could have been of equal, if not more importance. For example on the slope of Winterbourne Stoke Down very little, if anything, would have been seen of events inside the Cursus viewed from the south but the interior was open to full view over a large area to the north and so could have functioned as an arena in this sector at least. Across Stonehenge Bottom views of the interior of the Cursus from the outside are mainly confined to the valley slopes immediately beyond the perimeter. On the ascent to the King Barrow Ridge the interior is widely visible from the west but is more restricted from areas immediately adjacent on the ridge. Why good views should matter at any one point though still needs to be demonstrated.

v) To act as a symbolic construction project

Suggestions that the very act of construction was the main reason for creating a cursus monument rest in ideas that society needed to consolidate through communal endevour. The survey found slight evidence in the better–preserved sections of the perimeter that the bank was originally formed by a series of conjoined mounds separated by breaks where the earthwork is lower suggesting periodic construction or construction by different groups of people. Even if this interpretation is correct, this method of construction could have been for entirely practical reasons but it still leaves open the possibility that this is evidence of ritual process with construction taking place periodically as a symbolic or ceremonial act.

vi) To act as a boundary feature

The idea that cursus monuments functioned as real or symbolic boundaries has been explored in some detail in relation to the complex of four cursus monuments at Rudston on the Yorkshire Wolds (Harding 1999). Pointing to the way the cursus monuments at Rudston create barriers to free movement along the Great Wold Valley, Harding argued that their creation may have been part of a process aimed at dividing the landscape among social groups into fixed territories. The same could be argued for the Stonehenge Cursus which cuts across the landscape for nearly 3km and blocks what may have been an important north-south route through Stonehenge Bottom. Unless there was some way through the Cursus at this point (and there may have been an entrance here, as discussed above) people and livestock using the valley-bottom route would have had to have made a substantial detour to the east or west to progress past the monument. As was mentioned above, the main direction of approach may have from the south to account for the possibility that the perimeter was more impressive on this side, at least in the section below the Winterbourne Stoke Down Ridge. In the same way, the long sides of the Dorset Cursus are more impressive as an earthwork on the south-east compared to the north-west implying, perhaps, a similar direction of approach (McOmish and Tuck 2002, 11).

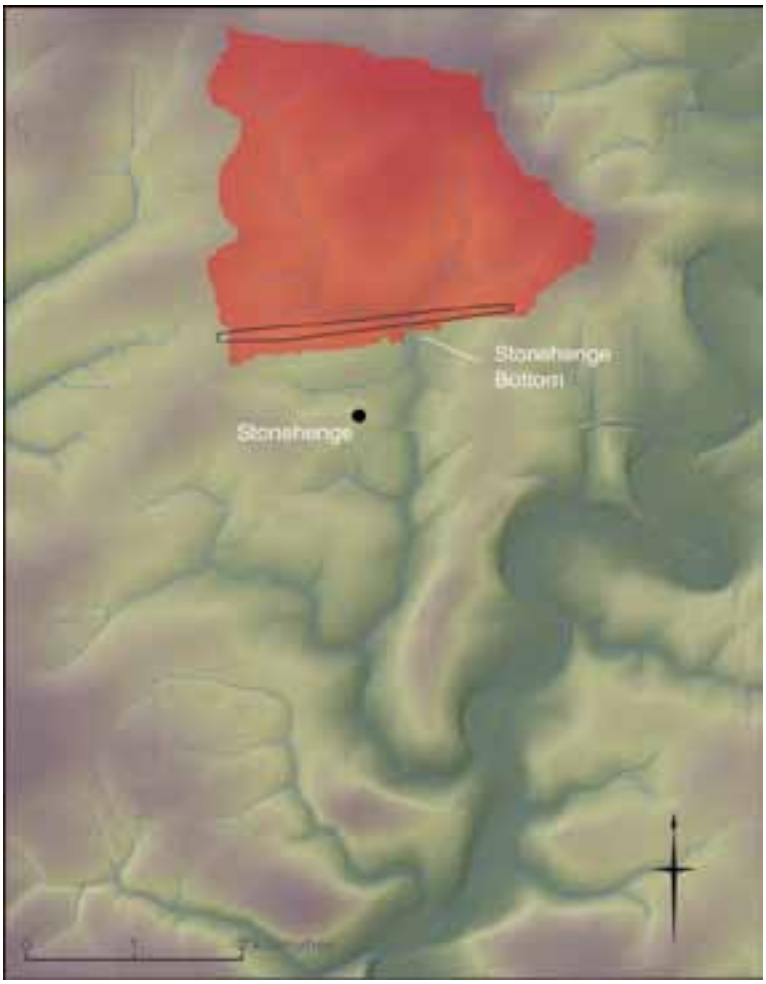

Figure 16. Drainage pattern of the Stonehenge area as modelled in ArcMap GIS software. The area coloured with a red tone shows the catchment area for the drainage crossing the Cursus in Stonehenge Bottom as modelled in ArcMap and its relationship to the overall monument.

The extent of the territory related to the Cursus (if indeed it functioned as a boundary or barrier) may be indicated by the relationship of the monument to the network of valleys in this area. The Cursus is aligned so as to just encompass the junction of the two valleys heading north-east and north-west from Stonehenge Bottom. By encompassing the point where several valleys meet in Stonehenge Bottom, the Cursus blocks a system of valley-bottom routes heading northwards which are picked out as streams in the GIS analysis of the drainage pattern. The block of land accessed from these valleys therefore appears in the GIS analysis as a catchment area and this represents the ground potentially made directly inaccessible through the construction of the Cursus and the blocking of the routes heading north from Stonehenge Bottom (Figure 16). The GIS analysis also shows that the Cursus extends just far enough to the east and west to define the southern edge of the block of land now made inaccessible. This relationship revealed by the GIS analysis does reinforce the idea of the Stonehenge Cursus as a land boundary, precisely defining the southern edge of a block of higher ground to the north.

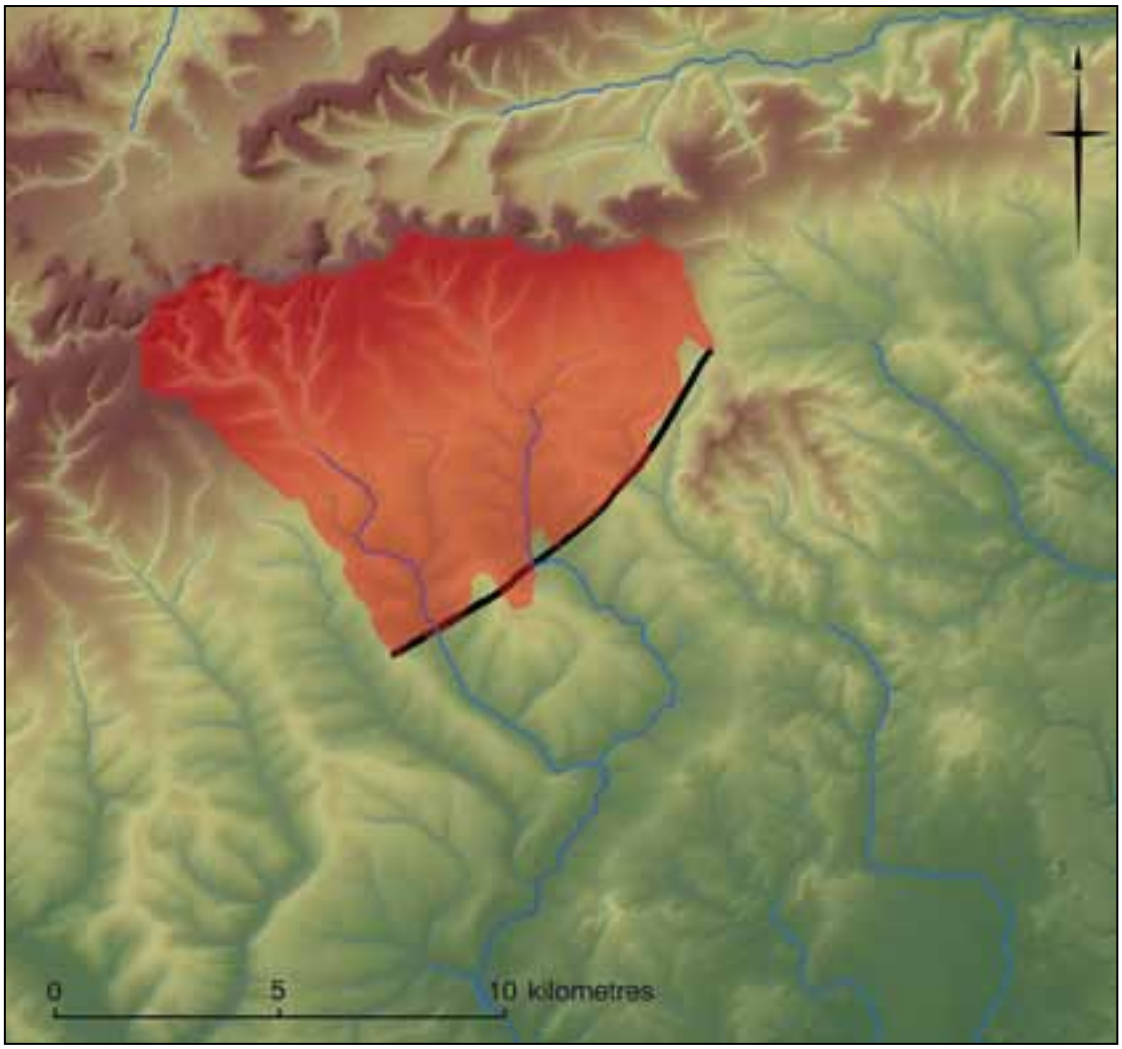

Figure 17. Drainage pattern of the area of the Dorset Cursus as modelled in ArcMap GIS software. The area coloured with a red tone shows the catchment area for the drainage crossing the Dorset Cursus as modelled in ArcMap and its relationship to the overall monument.

A similar relationship between a cursus monument and a valley system is demonstrated by GIS catchment analysis of the Dorset Cursus (Figure 17). The GIS drainage model shows that along its 10km length this monument crosses four stream valleys at right angles in a similar manner to the Stonehenge Cursus in Stonehenge Bottom. Analysis of the surface drainage at the points where the Dorset Cursus intersects these four valleys using GIS shows that the monument almost exactly defines the edge of the combined catchment areas. In this case the valleys still carry streams but again it may be the use of the valleys as route ways which is the significant point.

In both the case of the Dorset and Stonehenge Cursus monuments it is possible that the relationship with the local valley system is because of the ritual significance attached to natural springs and watercourses. The sanctity of rivers, streams and springs is well-attested in both prehistoric and historic times and has been discussed in relation to cursus monuments in several recent studies (Brophy 2000; Loveday 2006, 133-6). The observation that the east and west ends of the Stonehenge Cursus each overlies the start of a slight valley could indicate deliberate intent to bring one or more springs at

the head of each of these valleys inside the perimeter of the monument. The possible connection with water is more plainly observed in Stonehenge Bottom where the Cursus possibly overlies the meeting point of two streams flowing down the tributary valleys from the north. However, the main problem in pursuing a connection between the Stonehenge Cursus and water is that it has yet to be established if springs and streams were present at the time the monument was constructed.

vii) To create a symbolic river

The idea that cursus monuments were built to create symbolic rivers has been developed by Brophy in several articles (Brophy 1999; Brophy 2000). The idea stems from the valley-bottom or low-lying setting of a number of cursus monuments while others, such as the Dorset Cursus, cross stream valleys. As the seasonal flooding of streams and rivers could not be predicted or controlled at this period, so it is argued by Brophy that cursus monuments were built to create symbolic rivers that were entirely under human control. This line of thinking seems to have little to offer to interpretations of the Stonehenge Cursus in a comparatively dry chalkland setting. While, as Brophy points out, low-lying cursus monuments could have been emphasised in the landscape during wet periods as the ditches became water-filled, this would never have happened at the Stonehenge Cursus. However, the possibility that Stonehenge Bottom may have carried surface water or become marsh at periods means that there may have been some degree of symbolic connection between the Cursus and water, as was discussed above.

The Cursus in Later Prehistory

The evidence from recent excavations that the Stonehenge Cursus was constructed in the early Neolithic around 3630-3370 and not around 2900-2500 BC as had previously been thought, has focussed attention on the development and later use of the monument and on its relationship to other prehistoric monuments in the area. Most crucially the new date establishes that the Cursus was constructed well before the first phase of work identified at Stonehenge in around 3000 BC. Had the Cursus lost its significance by the time Stonehenge was constructed or did it continue to be venerated into the later Neolithic and Bronze Age despite the presumed ritual pre-eminence of Stonehenge?

The field evidence for the continued use of the monument into the Bronze Age is ambiguous. On the one hand incorporation of the west end of the Cursus in a field system, possibly as early as the Early Bronze Age, suggests this part of the monument had lost any ritual significance. On the other hand the number of Bronze Age burial mounds found in close relationship to the Cursus may indicate continued veneration for the monument but this evidence is not conclusive. Several burial mounds in the Cursus Barrow Group immediately to the south are aligned roughly parallel with the south side of the monument, evidence perhaps of continued veneration of the Cursus in the Bronze Age. However, it is equally possible that the observed alignment is a coincidence arising from the fact that both the barrows and the Cursus follow parallel breaks of slope. Similarly, the siting of two barrows (Winterbourne 30 and Amesbury 56) at the west end

of the Cursus within a secondary enclosure created by the cross-ditch could be evidence that this part of the monument at least continued to be venerated. However the siting of the barrows within the Cursus could be explained instead by the fact that the barrows are sited along the ridge top like many others in the area and appear to form the end of a line of five barrows that continues well to the south-east of the Cursus and is aligned on Stonehenge (Lawson 2007, 155). Turning to the cross ditch, it crucially cuts across the field system that overlies the west end of the Cursus, which appears to indicates that it was dug after the monument had ceased to be venerated.

The results of the 2007 excavations coupled with reassessment of the evidence from the previous excavations by Stone and by Richards have provided detail about changes to the Cursus during the Late Neolithic and Early Bronze Age to set alongside the field evidence discussed above. It emerges that the south ditch on the slope of the Winterbourne Stoke Down ridge was redefined on at least two occasions; once in the late Neolithic by the construction of pits, possibly to hold massive posts, and again in the Early Bronze Age by recutting the ditch. The field evidence is that this section of the Cursus was more impressive and therefore its visual impact could have been prolonged by the construction of a setting of posts along the line of the ditch and recutting the ditch to add fresh material to the bank. It is interesting to speculate that these changes may have been connected with the development of Stonehenge since it would have made the line of the Cursus more apparent on the side nearest to the henge monument. Without more excavation it is impossible to determine if these changes affected the entire Cursus or just the south section on the slope below Winterbourne Stoke Down Ridge. The discovery of an 'intrusive feature' cutting the north ditch of the Cursus in 2007 (Trench 27) may indicate more of the perimeter was redefined by pits and posts than just the south side on the slope below the Winterbourne Stoke Down ridge (Thomas *et al* 2009, 47). However, the field evidence points to more recent pit-digging in this section of the ditch which may explain the feature recorded in the 2007 excavation.

The Cursus in Historic Times

It is not certain when the field system overlying the west end of the Cursus ceased to be used and the area became open pasture but judging from his sketches, the monument had not suffered too much damage and was all still clearly visible when Stukeley visited in 1723. However destruction soon increased. Firstly parts of the Cursus were ploughed for arable cultivation in the later 18th and 19th centuries and then damaged through military activity with the establishment of the Salisbury Plain Training Area towards the end of the 19th century. Modern arable cultivation within the Cursus is indicated by slight traces of field boundaries and plough furrows while military activity is evident primarily in the levelling of sections of the Cursus at the west end and on the summit of King Barrow Ridge at the east end as well as by the intrusion of the now disused sewage works in Stonehenge Bottom. One set of features less-easy to explain are the sequence of hollows towards the west end of the Cursus cut into the north ditch and in the later cross-ditch. The field investigation concluded that they are unlikely to be prehistoric in date since they appear quite crisply defined on the surface in contrast to the eroded nature of the Cursus earthworks, but that they also seem too regular and evenly spaced to be simply the result of military activity or from the clearance of Fargo Plantation both

of which have left other circular depressions in this general area. Rather, the pattern of close-set hollows suggests an attempt to redefine some sections of earthwork either by digging pits or by setting posts into the ground in the recent past. One possibility is that they could belong to a phase of tree planting pre-dating Fargo Plantation and mark an effort, inspired by antiquarian zeal, to pick the Cursus out on the western skyline following its discovery in 1723 and subsequent publication (Stukeley 1740). A similar sentiment may explain the excavation evidence from 2008 for the planting of an arc of trees towards the east end of the Cursus which Parker Pearson speculated could have occurred in the 18th or 19th century to create an imitation 'Druid grove' (Parker Pearson 2011, 80).

6. REFERENCES

Anon 1988 'Excavation and Fieldwork in Wiltshire 1987' *Wiltshire Archaeological & Natural History Society Magazine* **82**, 176-182

Barclay, A and Harding, J 1999 (eds) *Pathways and Ceremonies: the cursus monuments of Britain and Ireland* Neolithic Studies Group Seminar Papers 4, Oxford: Oxbow Books

Barclay, G and Maxwell, G 1999 'The Cleaven Dyke: a summary account of survey and excavation 1993-96' in Barclay, A and Harding, J 1999 (eds) *Pathways and Ceremonies: the cursus monuments of Britain and Ireland* Neolithic Studies Group Seminar Papers 4, 98-106 Oxford: Oxbow Books

Bender, B 1998 *Stonehenge: Making space* Oxford: Berg

Bradley 1986, *The Dorset Cursus: The Archaeology of the Enigmatic* Council for British Archaeology Group 12

Brophy, K 1999, 'Seeing the cursus as a symbolic river' *British Archaeology,* **44**

Brophy, K 2000 'Water coincidence: Cursus monuments and rivers' in Ritchie, A (ed) *Neolithic Orkney in its European context* Cambridge: MacDonald Institute 59-70

Burl, A and Mortimer, N 2005 (eds) *Stukeley's Stonehenge: an unpublished manuscript 1721-1724* New Haven and London: Yale University Press

Chapman, H 2005 'Rethinking the cursus problem – investigating the Neolithic landscape archaeology of Rudston, East Yorkshire, UK using GIS' *Proceedings of the Prehistoric Society*, **71**, 159-70

Christie, P.M. 1963, The Stonehenge Cursus *Wiltshire Archaeological and Natural History Magazine* **58**, 370-82

Crutchley 2002 *Stonehenge World Heritage Site Mapping Project: management report* Aerial Survey Report Series AER/14/2002 EH: Swindon

Darvill, T 2006 Stonehenge. The Biography of a Landscape Tempus.Stroud

Exon, S; Gaffney, V; Woodward, A and Yorston, R 2000 *Stonehenge Landscapes: journeys through real-and-imagined worlds* Oxford: Archaeopress

Field, D and Pearson, T 2010 'Stonehenge, Amesbury, Wiltshire' *Research Department report Series 109-2010* Swindon: English Heritage

Harding, J 1999 'Pathways to new realms: cursus monuments and symbolic territories' in Barclay, A and Harding, J (eds) *Pathways and Ceremonies: the cursus monuments of Britain and Ireland* Neolithc Studies Group Seminar Papers 4, 30-38 Oxford: Oxbow Books

Hoare, R C 1812 *The Ancient History of Wiltshire. Volume One* London: William Miller (reprinted 1975 Wakefield: EP Publishing)

Johnston, R 1999 'An empty path? Processions, memories and the Dorset cursus' in Barclay, A and Harding, J (eds) *Pathways and Ceremonies: the cursus monuments of Britain and Ireland* Neolithc Studies Group Seminar Papers 4, 39-48 Oxford: Oxbow Books

Lawson, A 2007 *Chalkland: an archaeology of Stonehenge and its region* Salisbury: Hobnob Press

Long, W 1876 'Stonehenge and its barrows' *Wiltshire Archaeological and Natural History Magazine* **16**, 1-244

Loveday, R 2006 *Inscribed across the landscape: the Cursus monuments of Great Britain* Stroud: Tempus

McOmish, D; Field, D and Brown, G 2002 *The field archaeology of the Salisbury Plain Training Area* London: English Heritage

McOmish, D and Tuck, C 2002 'The Dorset Cursus, Dorset' Archaeological Investigation report series AI/10/2002 Swindon: English Heritage

Ordnance Survey 1880 *County Series 25 inch, Wiltshire Sheet LIV. 10 and 11. Surveyed 1873-80* Southampton: Ordnance Survey

Ordnance Survey 1901 *County Series 25 inch, Wiltshire Sheet LIV. 10 and 11. Revised 1898-1900* Southampton: Ordnance Survey

Ordnance Survey 1924 *County Series 25 inch, Wiltshire Sheet LIV. 10 and 11. Revised 1921-24* Southampton: Ordnance Survey

Ordnance Survey 1939 *County Series 25 inch, Wiltshire Sheet LIV. 10 and 11. Revised 1936-39* Southampton: Ordnance Survey

Parker-Pearson, M; Pollard, J; Richards, C; Thomas, J; Tilley, C and Welham, K 2008 *The Stonehenge Riverside Project 2007: Interim Report*

Parker-Pearson, M; Allen, M; Bayer, O; Chan, B; French, C; Garwood, P; Nunn, B; Pitts, M; Pollard, J; Pullen, B; Richards, C; Richards, J; Robinson, D; Rylatt, J; Shaw, D; Teather, A; and Thomas, J 2011 *The Stonehenge Riverside Project 2008: Interim Report*

Payne, A and White, D 1988 'Stonehenge Cursus, Wiltshire: report on magnetometer survey at the east end of the cursus' *Ancient Monuments Laboratory Report 174/88* Portsmouth: English Heritage

Payne, A 2007a 'Stonehenge Riverside Project, West Amesbury and Greater Cursus, Wiltshire : Report on Geophysical Surveys, July 2006' *Ancient Monuments Laboratory*

Report 41/2007 Portsmouth: English Heritage

Payne, A 2007b 'Stonehenge Greater Cursus, Western Terminal, Wiltshire : Report on Geophysical Surveys, May and June 2007' *Ancient Monuments Laboratory Report 61/2007* Portsmouth: English Heritage

Richards, J 1990 *The Stonehenge Environs Project* London: English Heritage

Royal Commission on Historical Monuments (RCHM) 1979 *Stonehenge and its Environs* Edinburgh: Edinburgh University Press

Stone, JFS 1948 'The Stonehenge Cursus and its Affinties' *Archaeological Journal* **104**, 7-19

Stukeley, W 1740 *Stonehenge: a temple restor'd to the British druids* London: W Innys and R Manby

Thomas, J (et. al.) 2009 'The date of the Greater Stonehenge Cursus' *Antiquity* **83**, 40-53

Tilley, C 1994 *A phenomenology of landscape* London: Berg.

Young, C; Chadburn, A and Bedu, I 2009 *Stonehenge World Heritage Site Management Plan* London: English Heritage

Unpublished sources

Wiltshire Heritage Museum

Goddard Notebook 32 – *Stonehenge Cursus* Unpublished correspondence, notes and site plan from Percy Farrer 1915 and 1917 excavations

7. SURVEY METHODOLOGY

The survey used Trimble R8-2 GNSS receivers linked to a single on-site base station fixed on to the Ordnance Survey National Grid using the Trimble VRS network to access the Ordnance Survey system of active stations (OSNet). Recent tests of this system indicate that the methodology used to fix the base station is likely to achieve an 'rms' accuracy of better than 10-20mm in plan and 15-30mm in height.

In addition to the standard method of depicting measured slopes by hachure which is used for analytical purposes (Figures 12-15), a digital terrain model was produced to supplement and enhance interpretation of the western half of the Cursus in order to demonstrate the varying preservation of the Cursus bank and ditch (Figure 11). While such ground models provide an image with immediate visual appeal and which can be used in a range of computer-based applications, their creation is not often a central component in the interpretation and analysis of earthwork sites. This is because analysis rests upon careful observation and recording of individual earthworks and their inter-relationships and the results are represented far more clearly and succinctly by a hachured plan.

In areas of complex or subtle earthworks detail was supplied using standard graphical techniques of offset and radiation from a temporary network of pegs previously located with GNSS Receivers and plotted on to polyester drawing film at the elected scale of 1:1000 for use in the field. The Digital Terrain Model was interpolated from a TIN created in ArcView 3D Analyst software from 3D point data captured during the field survey.

The processed and georeferenced survey data was loaded for analysis into Esri's ArcView 9.1 software using the 3D Analyst and Spatial Analyst extensions along with height data at 5m intervals downloaded from the Next Perspectives Geostore under the PGA2 agreement and 1m resolution surface Lidar data from the Environment Agency (© Environment Agency copyright 2008. All rights reserved).

The survey plan was completed at 1: 1000 scale using pen and ink on plastic drawing film. Additional report illustrations were prepared using ArcView 9.1 and Adobe CS4 software. The report was prepared for publication using Adobe InDesign software.

The survey data has been archived in compliance with English Heritage RADF guidelines and deposited at the NMR. The GIS data will be archived as part of the Stonehenge Project GIS to GEMINI metadata standards in compliance with English Heritage RADF guidelines and deposited at the NMR.

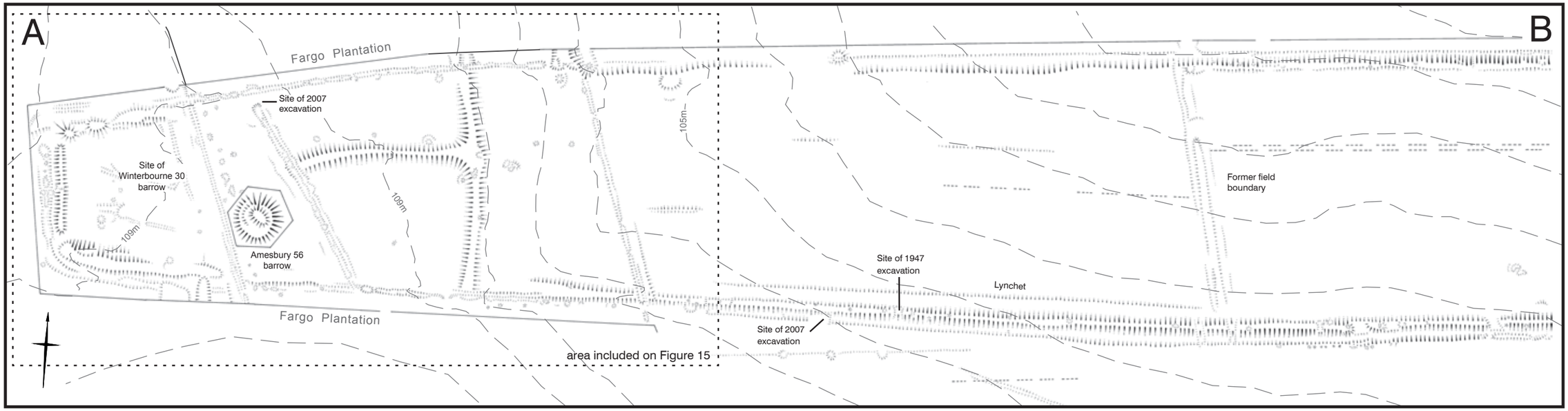

Figure 18. English Heritage survey plan of the west section of the Stonehenge Cursus reduced from 1:1000 original.

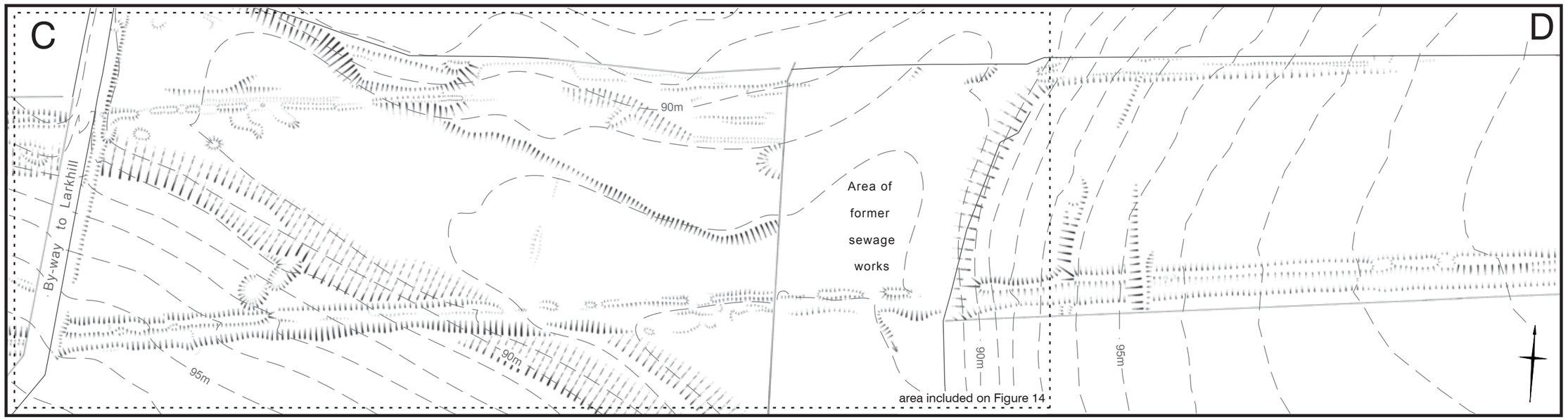

Figure 19. English Heritage survey plan of the east section of the Stonehenge Cursus reduced from 1:1000 original.






ENGLISH HERITAGE RESEARCH DEPARTMENT

English Heritage undertakes and commissions research into the historic environment, and the issues that affect its condition and survival, in order to provide the understanding necessary for informed policy and decision making, for sustainable management, and to promote the widest access, appreciation and enjoyment of our heritage.

The Research Department provides English Heritage with this capacity in the fields of buildings history, archaeology, and landscape history. It brings together seven teams with complementary investigative and analytical skills to provide integrated research expertise across the range of the historic environment. These are:

* *Aerial Survey and Investigation*
* *Archaeological Projects (excavation)*
* *Archaeological Science*
* *Archaeological Survey and Investigation (landscape analysis)*
* *Architectural Investigation*
* *Imaging, Graphics and Survey (including measured and metric survey, and photography)*
* *Survey of London*

The Research Department undertakes a wide range of investigative and analytical projects, and provides quality assurance and management support for externally-commissioned research. We aim for innovative work of the highest quality which will set agendas and standards for the historic environment sector. In support of this, and to build capacity and promote best practice in the sector, we also publish guidance and provide advice and training. We support outreach and education activities and build these in to our projects and programmes wherever possible.

We make the results of our work available through the Research Department Report Series, and through journal publications and monographs. Our publication Research News, which appears three times a year, aims to keep our partners within and outside English Heritage up-to-date with our projects and activities. A full list of Research Department Reports, with abstracts and information on how to obtain copies, may be found on www.english-heritage.org.uk/researchreports

For further information visit www.english-heritage.org.uk

ENGLISH HERITAGE