

**CPAT Report No 1114**

# The Hindwell Cursus, Radnorshire

**EXCAVATION AND GEOPHYSICAL SURVEY 2011**



**THE CLWYD-POWYS ARCHAEOLOGICAL TRUST**

**CPAT Report No 1114**

# **The Hindwell Cursus, Radnorshire**

**EXCAVATION AND GEOPHYSICAL SURVEY 2011**

**N W Jones**  
January 2012

Report for Cadw

**The Clwyd-Powys Archaeological Trust**  
41 Broad Street, Welshpool, Powys, SY21 7RR  
tel (01938) 553670, fax (01938) 552179  
© CPAT 2012

cover: The September 2011 excavations looking east-north-east along the line of the cursus where it is cut by the Hindwell palisaded enclosure. Photo CPAT 3335-0015

## **CONTENTS**

- 1 INTRODUCTION
- 2 GEOPHYSICAL SURVEY
- 3 EXCAVATION
- 4 FINDS
- 5 CHARCOAL IDENTIFICATION
- 6 CHARRED PLANT REMAINS
- 7 RADIOCARBON DATING
- 8 DISCUSSION
- 9 ACKNOWLEDGEMENTS
- 10 REFERENCES

## 1 INTRODUCTION

- 1.1 The Hindwell Cursus (PRN 33109) lies in the Walton Basin of eastern Radnorshire, in an area rich in prehistoric archaeology (Fig. 3). This report presents the results of a programme of trial excavation and geophysical survey conducted during 2011, as well as a summary of previous work undertaken since 2008 with funding from Cadw as part of an on-going investigation of the cursus.
- 1.2 The presence of an unusually large cursus to the north-west of Hindwell Farm has been postulated since the mid 1990s, although the significance and scale of the monument has only become apparent in recent years. It was first photographed by J K S St Joseph in 1967 (CUCAP AST12) when cropmarks revealed two parallel ditches around 64m apart to the south of the Four Stones stone circle extending for no more than 80m. The cropmarks were recorded again by Alex Gibson in 1995 at which time it was thought that the ditches might be part of a water meadow (Gibson 1995), although a subsequent review of cropmark evidence in this area led to the tentative suggestion that they might be part of a cursus (Gibson 1996, 341).



Fig. 1 The two parallel ditches showing as cropmarks to the south of the Four Stones stone circle in 1995. Photo CPAT 95-17-17.

- 1.3 A re-examination of existing cropmark evidence for the Hindwell area in 2008 identified a number of lengths of linear ditches further to the east which followed the same alignment as those near Four Stones and appeared to extend the known limits of the cursus for at least 800m, from SO 24366050 to SO 25086087, and potentially for an additional 800m to the east-north-east as far as SO 26546155, beyond the Knobley Brook. This indicated that the round barrow at Hindwell Ash (SO 25706112) lay within the cursus. Excavations in 1992/3 had identified several enigmatic pre-barrow features dated to c. 2200-1985 cal. BC, with some evidence for structural activity and loosely associated with late Neolithic pottery (Gibson 1999a, 25). It also became apparent that a detailed geophysical survey undertaken in 1998 to investigate the Hindwell Palisaded Enclosure (Gibson 1999b) had coincidentally identified faint traces of the linear ditches, although these anomalies were too slight to warrant attention at the time.

- 1.4 In an attempt to identify a westward extension beyond the 1995 cropmarks a magnetometer survey was undertaken by CPAT in September 2008 to the south-west of Four Stones. This identified the northern ditch, extending the cursus by around 315m, although the southern ditch was not readily apparent (Jones 2009b). Trial excavations were then conducted near Four Stones, providing evidence for the form and dating of both ditches: an initial phase in 2009 investigated the southern ditch (Jones 2009b) and a second phase in 2010 examined the northern ditch (Jones 2011, 2-7). The results demonstrated the impressive size of the monument, with the southern ditch measuring 3.9m across and 1.8m deep and the northern ditch 3.8m across and up to 1.45m deep, both with steeply sloping sides and a flat base. The pattern of silting in both excavated ditch sections suggested that an accompanying bank may have been on the interior.
- 1.5 Further discoveries were made in 2011 when the near drought conditions in the spring led to the discovery of a well-defined, square terminal at the eastern end of the cursus (SO 27056183) by Toby Driver of the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW). This intensified the search for the western end which by now was thought to lie beyond the Summergil Brook, following the identification of what appeared to be a 100m-long section of the northern ditch at Crossway (SO 23676016) on the 2006 Next Perspective vertical aerial photography. This was confirmed in May of that year when trial excavations identified both ditches in an adjacent field, closer to the brook. Further magnetometry was then conducted several months later, in the fields surrounding Harpton Court. Although the results were generally disappointing, the survey has tentatively identified a terminus at the western end (SO 22875974).

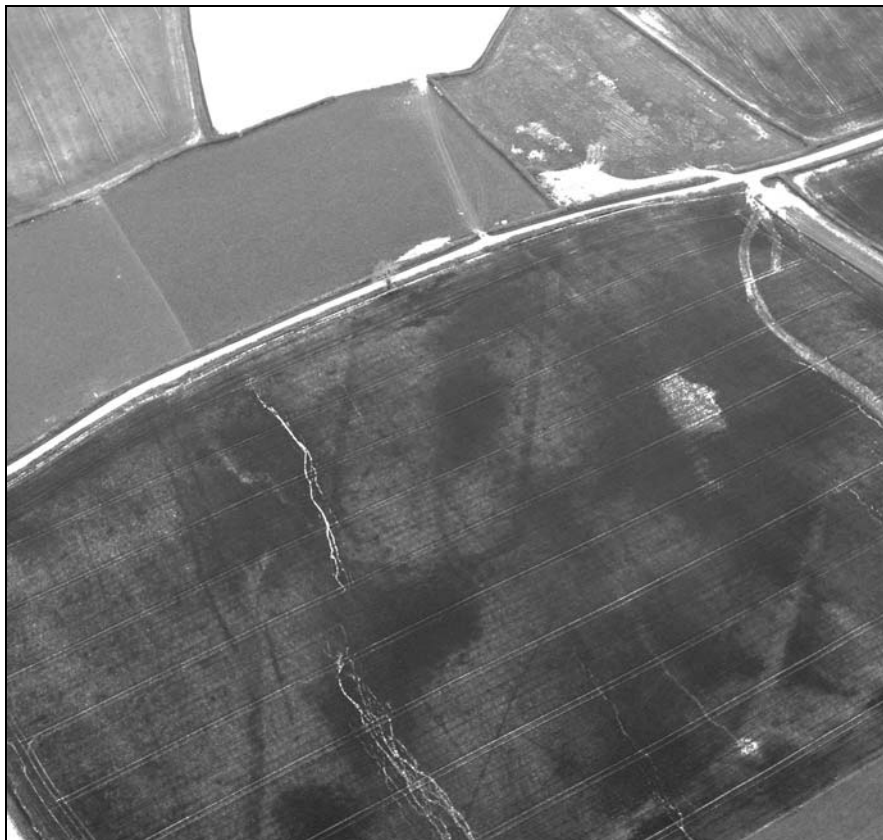
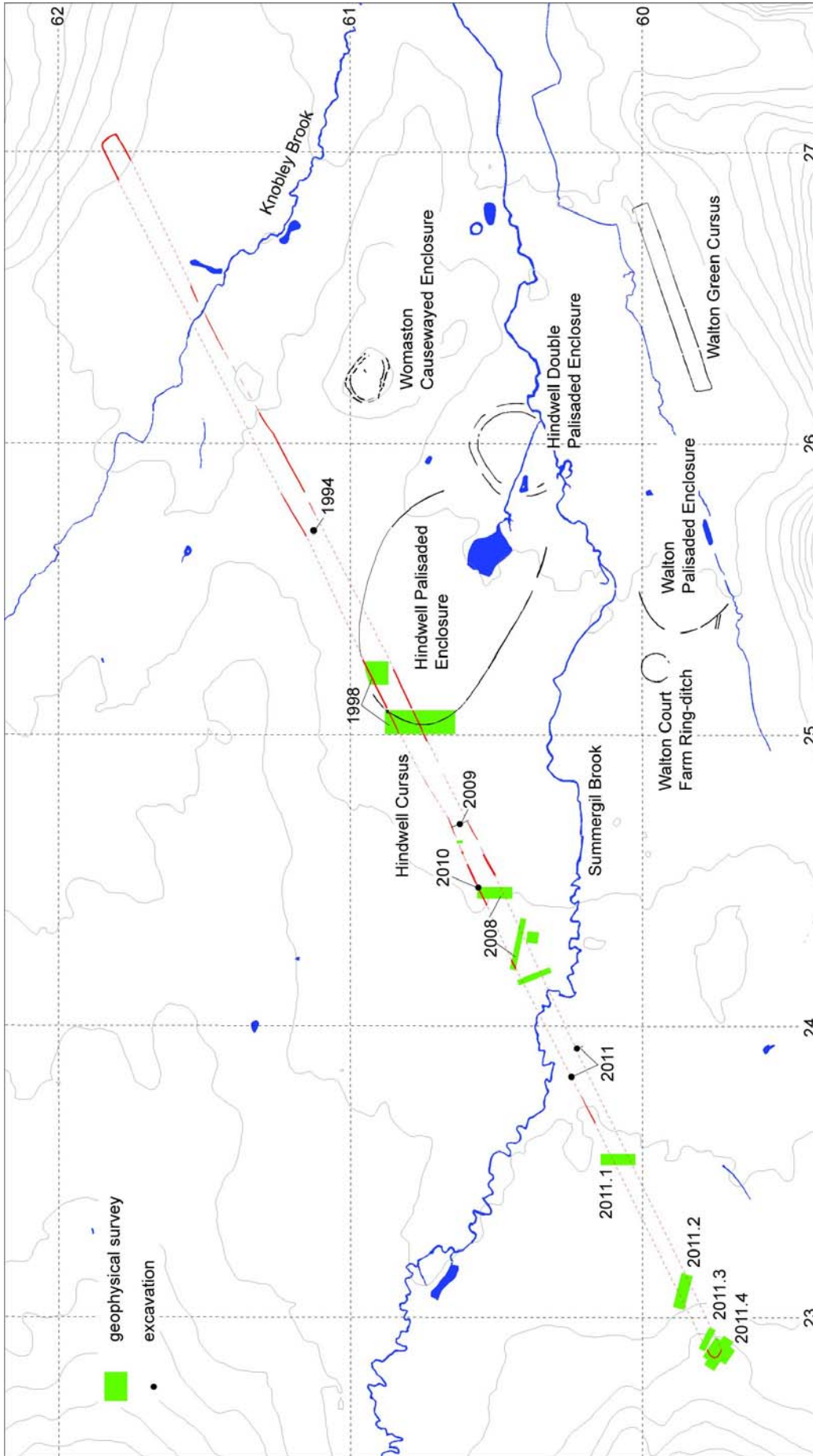


Fig. 2 Cropmarks of the eastern terminal of the Hindwell cursus photographed from the air in April 2011, viewed from the east-north-east © Crown Copyright: RCAHMW 2011-1189.

- 1.6 In a continuation of the Cadw-funded project in 2011-12 CPAT conducted further geophysical survey and trial excavations, described below, which has tentatively identified a terminal at the west-south-western end, giving a total length for the monument of 4.66km.



© Crown Copyright and database right 2011. All rights reserved. Ordnance Survey Licence number 100017916.  
© Hawlfraint y Goron a hawl data-bas 2011. Cedwir pob hawl. Rhif Trwydded Arolwg Ordnans 100017916.

Fig. 3. The Hindwell Cursus showing the location of geophysics and excavations, together with other Neolithic enclosures.

## 2 GEOPHYSICAL SURVEY 2011 by Richard Hankinson

- 2.1 The survey was conducted in four areas around Harpton Farm (Fig. 4) in September 2011, each positioned along the projected line of the cursus, in an attempt extend the known extent and perhaps identify the western terminal. Prior to the survey the northern ditch was thought to extend to SO 23676016, 120m east-north-east of survey area 1.

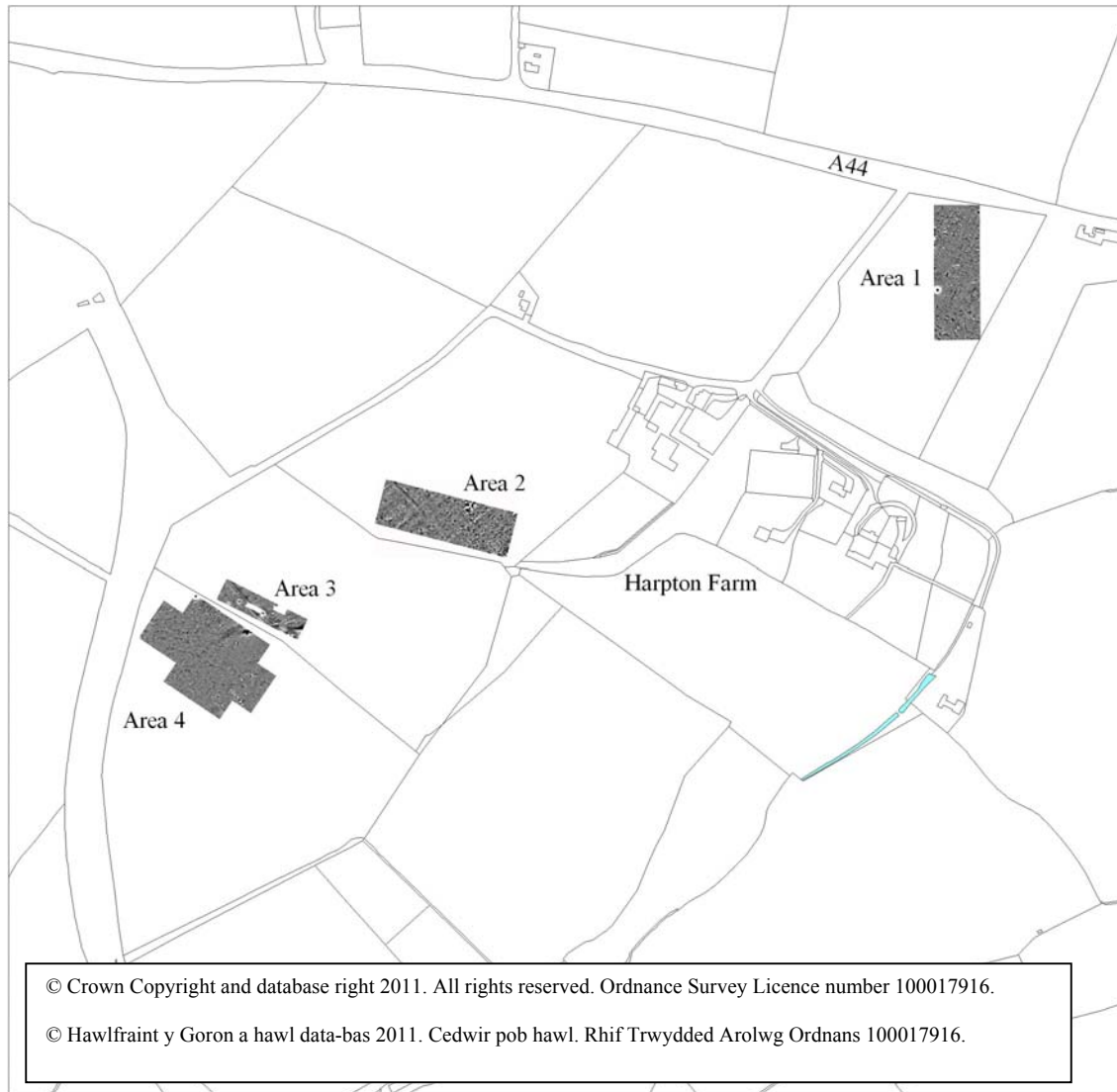


Fig. 4 Geophysical survey areas around Harpton Farm in 2011

### Methodology

- 2.2 The geophysical survey was carried out using a dual-sensor Bartington Grad 601-2 magnetic gradiometer, which is capable of detecting variations in the earth's magnetic field caused by sub-surface archaeological features. The gradiometer has an on-board data logging device which enables readings to be taken at specific time intervals, and these readings are taken along parallel traverses within a grid of known size, which allows them to be correlated with geographical locations.
- 2.3 Four individual areas were surveyed, using a series of grids each measuring 20m by 20m, with intervals between the traverses in each grid of 0.5m. The speed of each traverse was controlled

such that readings were taken every 0.25m, thereby giving a total number of 3,200 readings per 400m<sup>2</sup> grid. The readings were downloaded and processed using ArcheoSurveyor software, and a greyscale plot produced showing the features revealed. The main functions used were: *Despike* to remove the effects of near-surface iron objects, *Destripe* to remove any directional variation between traverses, and *Clip* which removes high and low readings thereby allowing fine detail to be observed in the resulting plot.

- 2.4 Each survey area was related to the Ordnance Survey National Grid by means of total station surveying and a best fit with field boundaries displayed on available modern mapping.

**Area 1** (Fig. 5)

- 2.5 The north-eastern area (0.48ha, centred at SO 23547 60082) was positioned just to the south of the A44(T) road, and located to include the site of the Harpton Signal Station (PRN 34055), a sub-square, bivallate site which known only from cropmark evidence.

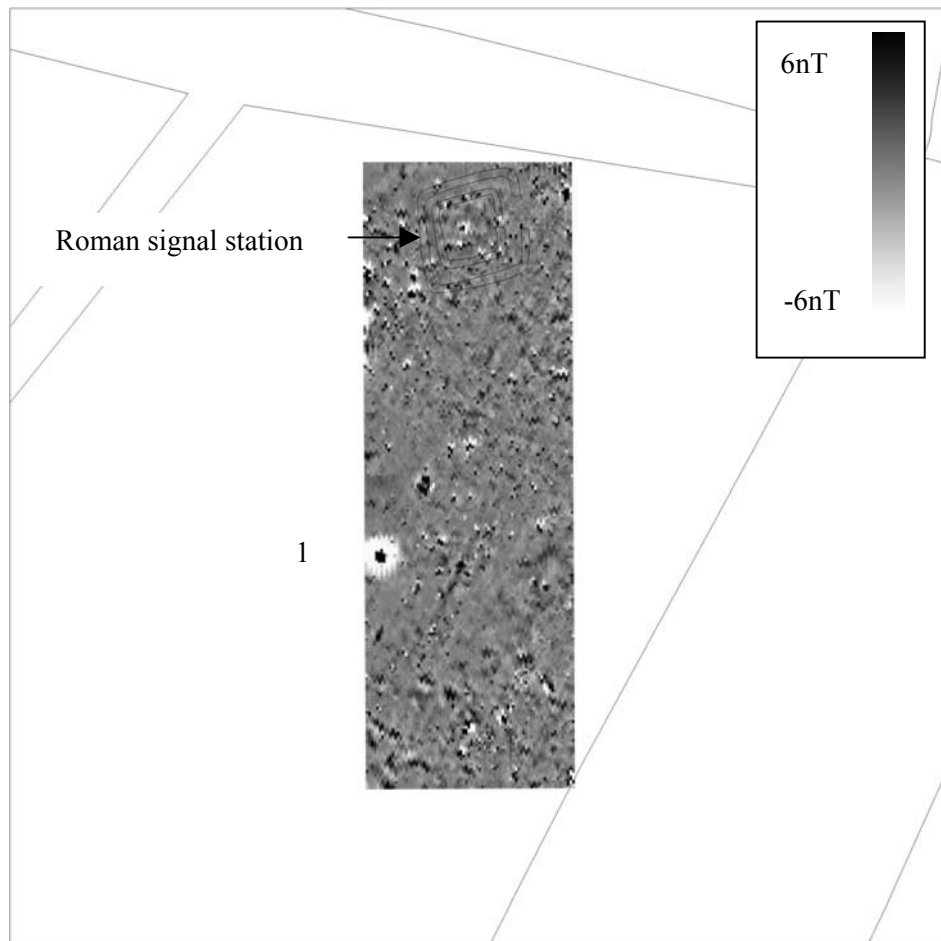


Fig. 5 Geophysics results in Area 1

- 2.6 The results were rather disappointing with no trace of either cursus ditch. Even the Roman signal station was extremely faint and would almost certainly have gone unrecognised without prior knowledge. The survey did identify a marked anomaly (1) at SO 23528 69967, which may be due to thermo-remnant magnetism from a fire, or similar cause. A series of parallel lines aligned north-north-east/south-south-west are likely to be the result of ploughing.



**Area 2** (Fig. 6)

- 2.7 This area (0.48ha, centred at SO 23092 59861) lay to the south-west of Harpton Farm and again failed to provide any evidence for the presence of the cursus ditches. Two approximately parallel anomalies (2 and 3) were identified, running respectively from SO 23133 59871 to SO 23091 59840 (2) and from SO 23083 59884 to SO 23046 59852 (3), but both appeared to define a remnant bank rather than a ditch and they were approximately 15 degrees off the alignment that would have been expected for the cursus. The only evidence of a ditch was provided by what seems to have been an old field boundary (4), running south-east from SO 23045 59894 to SO 23068 59870 and perhaps turning south-west to SO 23048 59851. As in Area 1, there were hints of parallel anomalies on a north-east/south-west alignment, which were probably caused by ploughing.

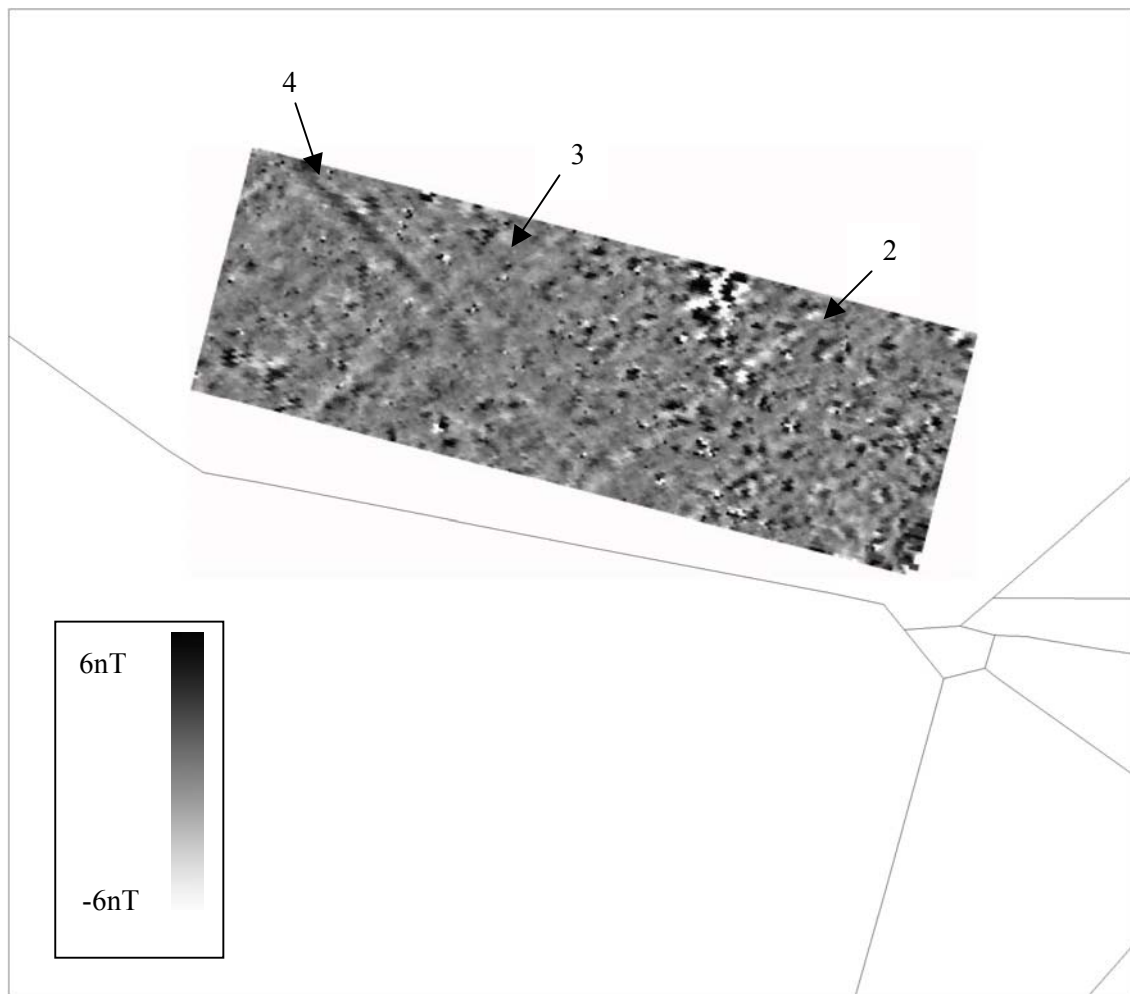
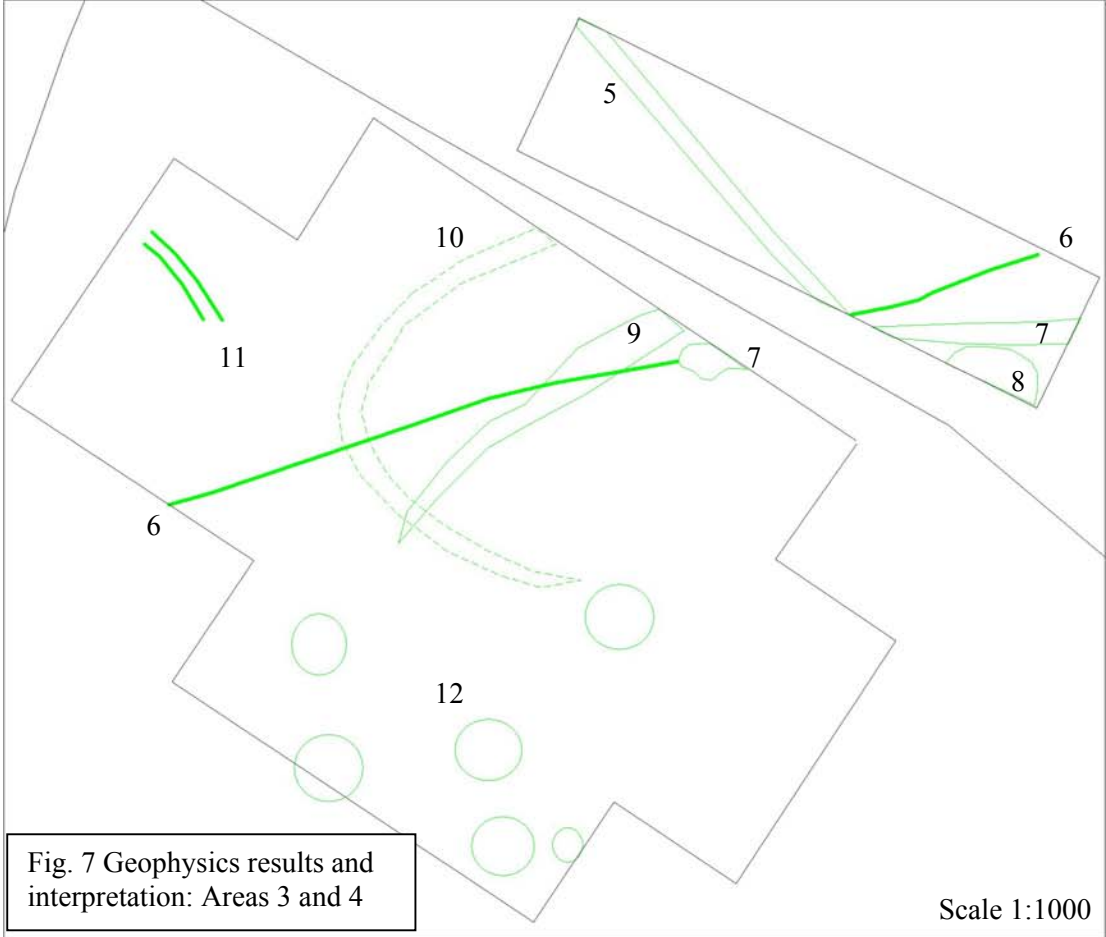
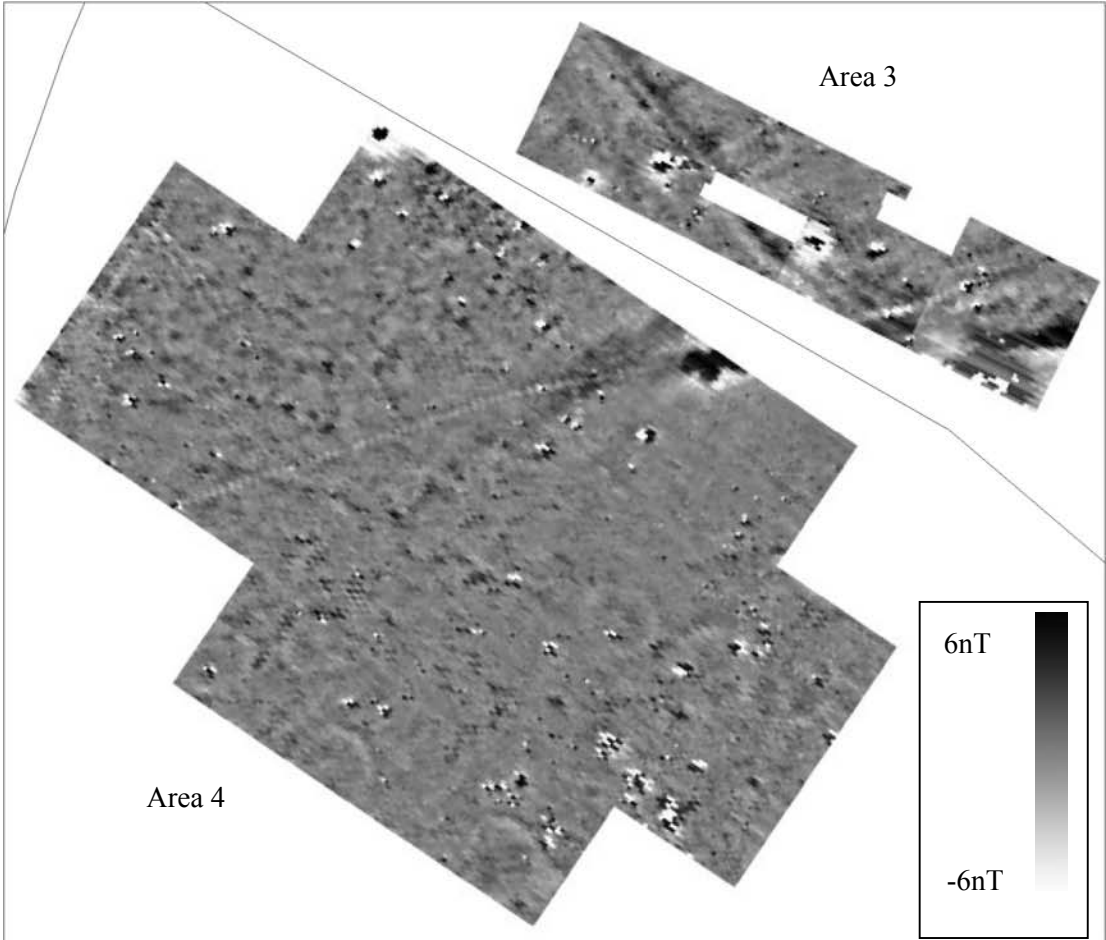


Fig. 6 Geophysics results in Area 2

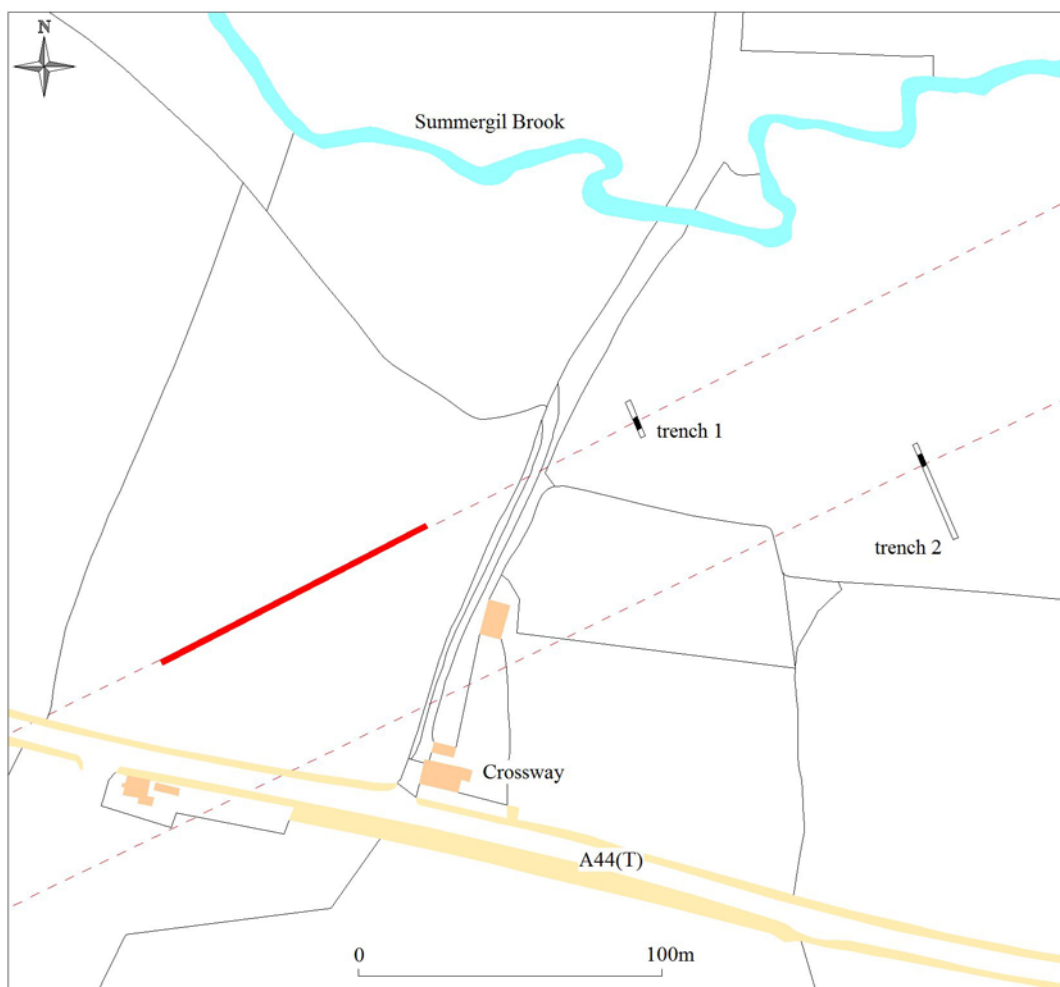
**Area 3** (Fig. 7)

- 2.8 Area 3 (0.16ha, centred at SO 2292959780) lay just on the break of slope defining the edge of a terrace near the base of the slope at the eastern end of the The Smatcher. The results were somewhat confused by the presence of a number of tree stumps and a large anomaly (8) probably caused by iron objects in the topsoil. Discernible features included a redundant field boundary (5) running between SO 2289659807 and SO 2293059768, a small drain or pipe (6) between SO 2293459766 and SO 2295859774, and a larger drainage gully (7), perhaps 2.5m wide between SO 2295459764 and SO 2293959762. Again the results produced no evidence for the cursus ditches.



**Area 4** (Fig. 7)

- 2.9 The south-western area (0.76ha, centred at SO 22883 59740) was sited on a natural terrace. Some of the anomalies already seen in Area 3 were also observed, including the larger drainage gully (7), which appeared to end at SO 22910 59760 and the small drain or pipe (6), which continued west-south-west to at least SO 22839 59740. Two potentially significant anomalies were observed, including a possible broad, curving ditch (9), up to 5m wide, visible for approximately 50m from SO 22909 59766 to SO 22871 59735. The other anomaly (10) was rather more curved and faint, measured about 3m wide, and could either be fortuitous or represent the west-south-west end of the cursus. Its authenticity can probably only be determined by excavation. The only other features seen in the plot were a series of faint circular marks (12), that no doubt were due to the removal of tree stumps, as some were visible on the ground as shallow hollows, and some curving linear marks (11) that represented vehicle tracks, again visible as earthworks on the surface.



© Crown Copyright and database right 2011. All rights reserved. Ordnance Survey Licence number 100017916.  
© Hawlfraint y Goron a hawl data-bas 2011. Cedwir pob hawl. Rhif Trwydded Arolwg Ordnans 100017916.

Fig. 8. Location of the 2011 excavation at Crossway

### 3 TRIAL EXCAVATIONS 2011

#### Hindwell Cursus, Crossway

- 3.1 Two trenches were excavated by machine on the south side of the Summergil Brook (Fig. 7) in order to confirm the continuation of the cursus beyond the watercourse. Cropmark evidence had already tentatively suggested the continuation of the northern ditch in a field between the brook and the A44, although there was no indication of the southern ditch.
- 3.2 The northern ditch was readily located in trench 1 on the predicted alignment, following the removal of around 0.25m of topsoil and a further 0.35m of alluvium. The ditch was around 4m wide, with an upper fill consisting of firm silt with frequent charcoal flecks, from which a number of artefacts were recovered, including a flint scraper (Find 105). Excavation was limited to the investigation of the upper fill in the area of the finds. To date these are the only artefacts to have been recovered during the series of excavations investigating the cursus.
- 3.3 The southern ditch, in trench 2, proved to be more elusive, although it was eventually identified by extending the trench to the north-west. The overlying deposits consisted of around 0.25m of topsoil and up to 0.65m of stony silt, probably representing a mix of alluvium and material which had been redeposited from a natural gravel ridge immediately to the south-west. The ditch was around 4.5m wide, with an upper fill consisting of silty clay with occasional charcoal flecking. The ditch was not investigated further and no artefacts were forthcoming.
- 3.4 Whereas elsewhere the separation between the ditches is between 60m and 74m, at this point they are only 47m apart. Evidence from both trenches indicated that this part of the floodplain associated with the Summergil Brook is crossed by a number of palaeochannels which presumably predate the construction of the cursus.



Fig. 9. The northern ditch of the Hindwell Cursus near Crossway. Photo CPAT 3309-0002

### Hindwell Cursus and Palisaded Enclosure

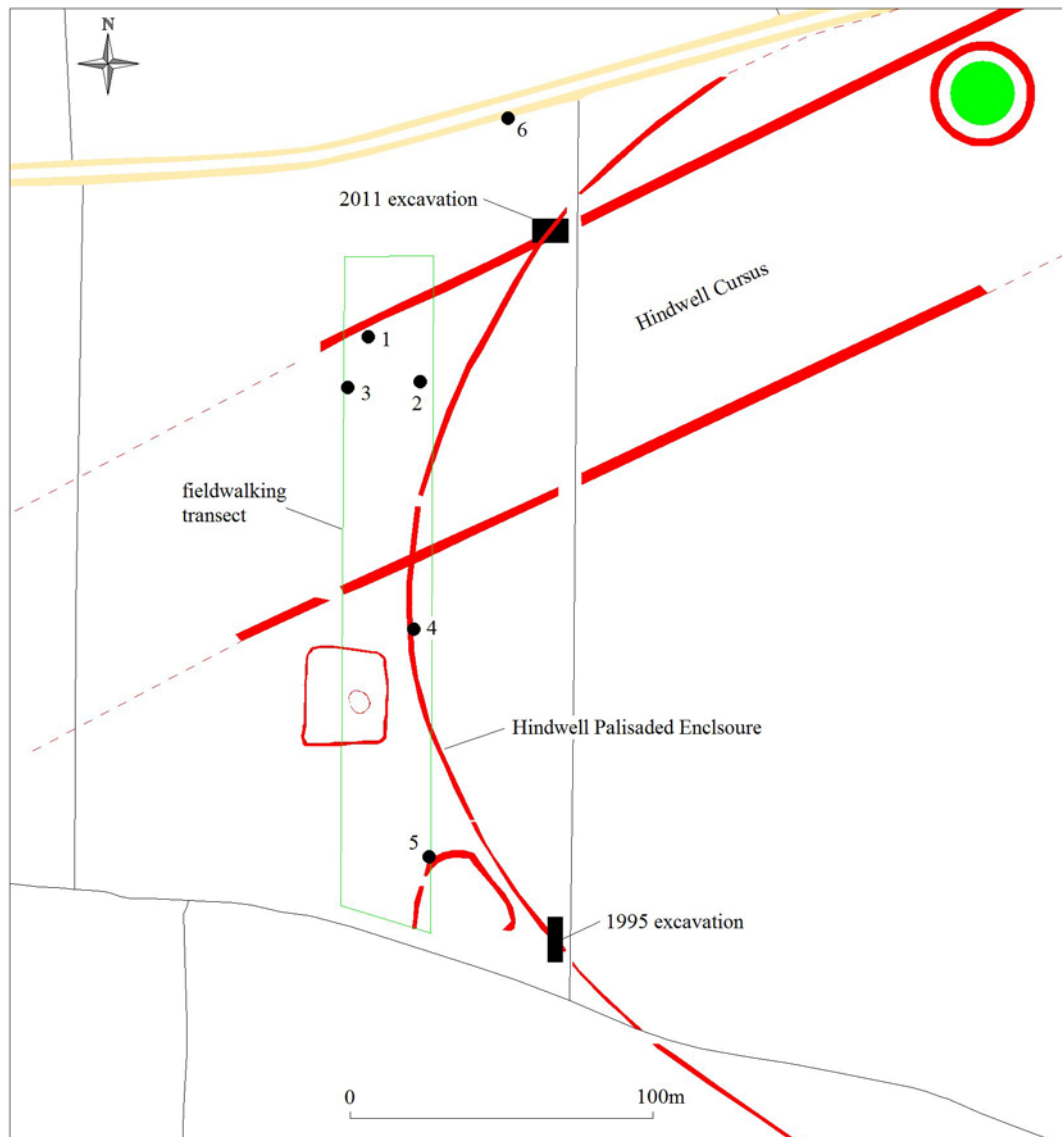
- 3.5 A small-scale excavation was conducted in September 2011 to investigate the intersection of the northern cursus ditch with the Hindwell Palisaded Enclosure (SAM Rd247) at SO 2508 6087. The excavation, which was undertaken with scheduled monument consent, provided an opportunity to demonstrate a physical relationship with a monument for which a construction date of around 2870–2470 cal. BC had already been determined.



Fig. 10 The western end of the Hindwell Palisaded Enclosure showing the intersection with the Hindwell Cursus, which shows as pale, parallel lines in the foreground © crown copyright: RCAHMW 2006-3702.

- 3.6 An area measuring 8m by 12m was excavated by machine to remove the ploughsoil, which had a depth of 0.15-0.25m. Cleaning revealed areas of undisturbed natural river gravels in the north-west and south-east corners, while elsewhere the upper fills of the cursus ditch and post pits for the palisaded enclosure were visible. Limited investigations determined that the cursus ditch, which was around 3.8m wide, had been cut by a series of contiguous post pits, the appearance of which was similar to those excavated elsewhere around the circuit of the enclosure (Gibson 1999, 14-17) and collectively formed a broad, irregular trench. From the level at which the post pits had been cut it was apparent that the ditch had either become completely silted, or had been deliberately infilled by the time the palisaded enclosure was constructed.
- 3.7 An uneven band of silty clay (07) along the inner edge of the palisade is assumed to represent gradual infilling following the in-situ decomposition of the posts, forming a series of interconnected weathering cones. A narrow, irregular band of silty gravel (06) along the north-western edge of this deposit is also assumed to be associated with the decomposition of the posts and the subsequent weathering of the packing material. It was not possible to determine the number of complete or partial post pits within the excavated area, although at least five or six could be readily identified, and previous excavations have indicated an average spacing of

around 1.5m between the 0.8m-diameter posts, centre to centre (Gibson 1999, 155). Each pit had an attendant post ramp, such that the overall width of the palisade trench was around 5.7m.



© Crown Copyright and database right 2012. All rights reserved. Ordnance Survey Licence number 100017916.  
© Hawlfraint y Goron a hawl data-bas 2012. Cedwir pob hawl. Rhif Trwydded Arolwg Ordnans 100017916.

Fig. 11 Location of the September 2011 excavation at the intersection between the northern ditch of the Hindwell Cursus and the Hindwell Palisaded Enclosure, showing the position of flints recovered during fieldwalking (nos 1-6)

- 3.8 Although no significant excavation was undertaken, the pattern of fills within the post pits suggested the manner in which they might have been excavated. Of particular significance was a band of redeposited silty clay (21) oriented along the axis of one of the pits, which was distinctly different from the silty gravel (14) which formed the fill within most of the post pits and ramps. At this point the pits had been cut through the fill of the cursus ditch, rather than into the natural gravel subsoil and it seems likely that this material was therefore derived from an adjacent pit, outside the line of the cursus. The implication is therefore that as each post pit was excavated the spoil was used to backfill the adjacent pit, which already contained an upright post.

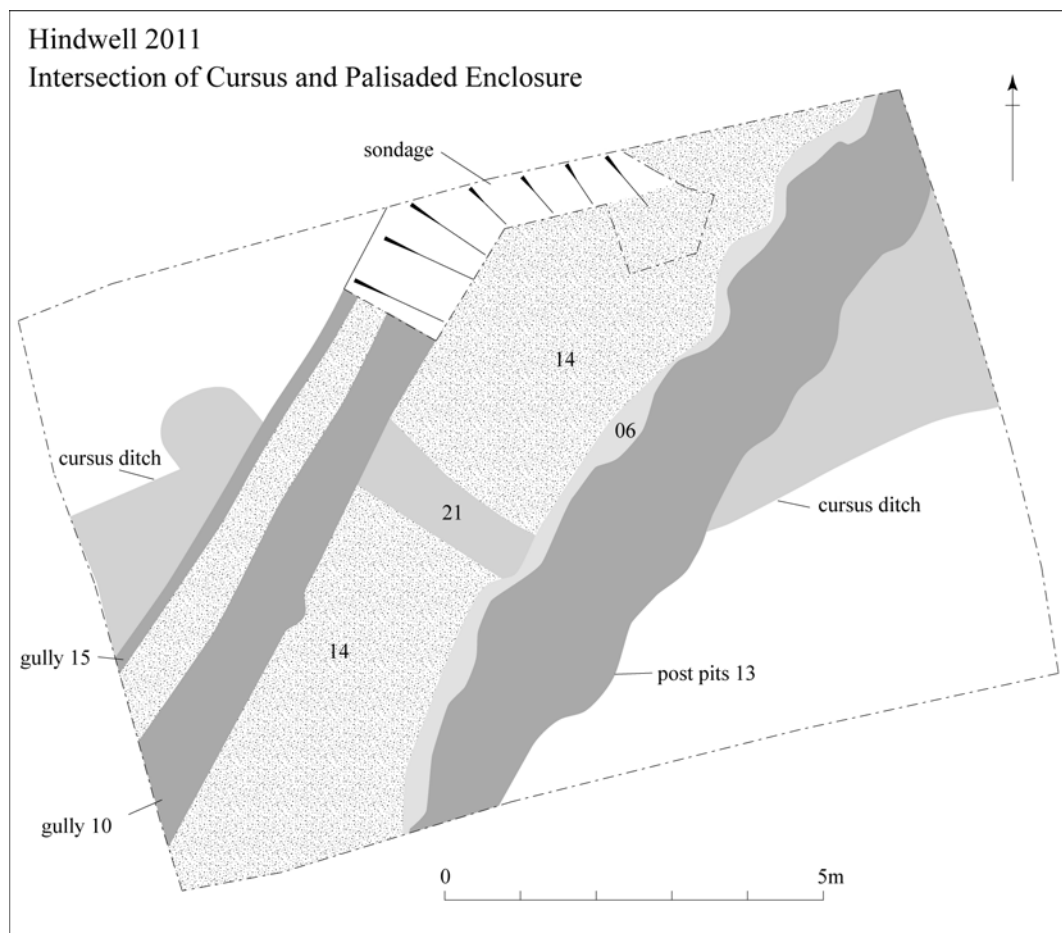


Fig. 12 Plan of the excavated area showing the palisaded enclosure cutting the upper fill of the cursus ditch

- 3.9 An unusual feature noted during the excavation was the presence of a slight 'gully' (10), around 0.7m wide and up to 0.2m deep, running along the rear edge of the post ramps, which appeared to have been cut into the fill of the ramps (14) and was infilled with fine, silty clay (11). A similar, but smaller feature (15) was also noted along the outer edge of the post ramps, which was only 0.15m wide and 50mm deep. The excavations produced no evidence to suggest the function of either feature and previous excavations do not appear to have identified anything similar. However, evidence from cropmarks and geophysical survey does indicate the presence of a gully on the outside of the perimeter at the western end but interestingly on the interior on the north-west corner. This suggests some relationship with the post ramps, since excavations have demonstrated that they are also external at the western end and internal on the north-west corner. It is possible that the larger gully has resulted from slumping of the fill, creating a linear depression towards the rear of the ramp.

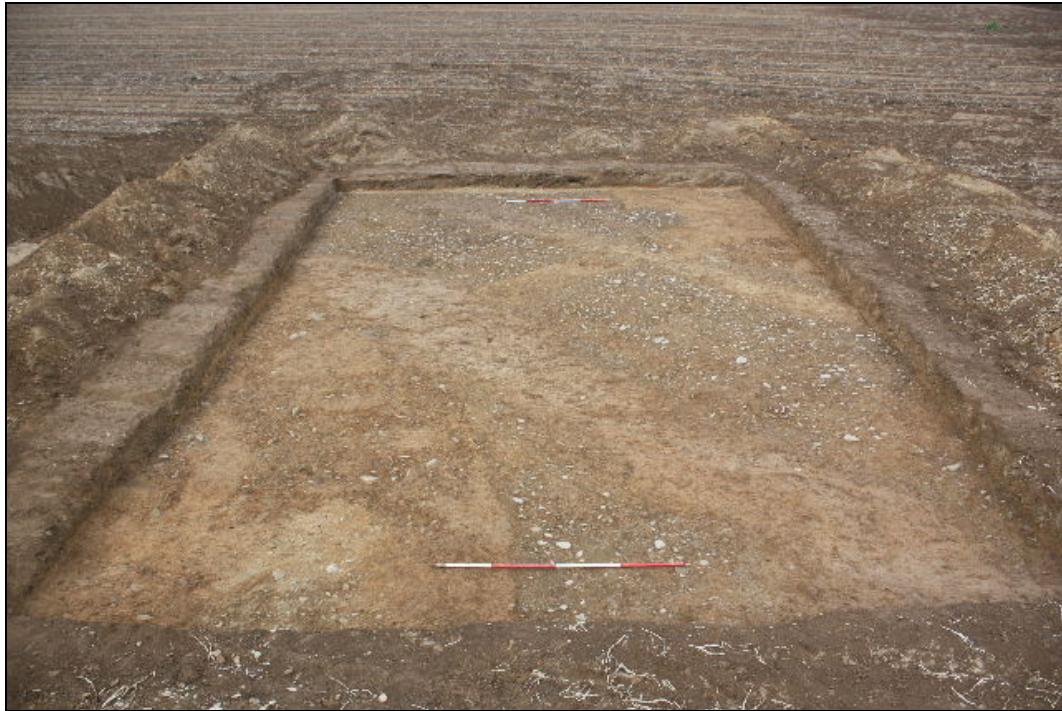


Fig. 13 The northern cursus ditch cut by the intersecting post pits of the palisaded enclosure, viewed from the east-north-east. Photo CPAT 3335-0048

#### 4 FINDS

- 4.1 The 2011 excavations at Crossway produced the first artefacts to be recovered from the cursus, albeit from the uppermost fill of the northern ditch, consisting of a sherd and several fragments of prehistoric pottery, four flints and a fragment of burnt bone. A further six flints were recovered from fieldwalking an area adjacent to and at the same time as the September 2011 excavation at the intersection of the Hindwell cursus and the Hindwell palisaded enclosure, together with one flint from the field further to the north.

##### **Prehistoric pottery** identified by Frances Lynch

- 4.2 The single body sherd has a pink outer surface, beige inner surface and a black core with some surface voids, but no decoration. This could be Late Neolithic, or possibly Early Bronze Age, but does not have the large quartz grits that would make a Mid-Late Neolithic date certain. Three small fragments were also found which were in a thin, hard, grey fabric, but these are too small to allow identification.

##### **Worked flint** by Philippa Bradley

###### *Introduction*

- 4.3 Four pieces of worked flint came from the upper fill of the Hindwell cursus and seven pieces from fieldwalking near the cursus. The majority of the flint is light brown in colour with a buff or cream cortex. There was a single possible piece of chert (Find no. 2). The flint is fairly good quality although it may have originated from superficial deposits. None of these pieces is particularly technologically or typologically diagnostic but a broad Neolithic to Bronze Age date would be appropriate.



*Description and discussion*

- 4.4 Two flakes were recovered from the upper fill of the northern cursus ditch during excavations at Crossway in 2011. One is a burnt core fragment and the other a bifacially worked piece. The latter may be a knife or arrowhead fragment. The flake core fragment has been extensively worked and has been substantially reduced.
- 4.5 Six flakes (including a possible chert flake) and a possible scraper fragment were recovered from the fieldwalking in the field known as Little Monster (Fig. 11). Several of the flakes have been hard-hammer struck. The possible scraper fragment has been burnt but a small area of retouch is just visible.
- 4.6 This small collection of flint is not closely datable but a Neolithic or Early Bronze Age date would not be out of place. The area has a notable concentration of Neolithic and Bronze Age monuments (eg, Gibson 1999c), and scatters of mostly Neolithic and Bronze Age flint have been found in the vicinity (Bradley 1999). No cultural material was recovered from previous excavations at the Hindwell cursus (Jones 2011, 4), so the present collection of flint does provide some evidence for Neolithic/early Bronze Age activity. However, the number of pieces and the lack of diagnostic forms limits their usefulness.

**5 CHARCOAL IDENTIFICATION** by Astrid E. Caseldine and Catherine J. Griffiths

- 5.1 Charcoal was recovered during the excavation of both cursus ditches in 2009 and 2010 and this was examined in order to provide material for radiocarbon dating and to gain information about woodland in the area.

**Methods**

- 5.2 The charcoal from samples that were specifically taken as charcoal samples (1003, 1004 and 1007) was washed on a 250µm sieve. Other charcoal was recovered from the processed bulk samples. The charcoal was dried then fractured to produce clean sections in three dimensions (transverse, transverse longitudinal and radial longitudinal). A Leica DMR microscope with incident light source was used to examine the charcoal. Wood identification manuals (Schoch *et al* 2004, Schweingruber 1978) and reference material were consulted to identify the charcoal. Nomenclature follows Stace (1995) and the identifications are given in Table 1.

**Results**

- 5.3 Only a small amount of identifiable charcoal was recovered from the cursus ditches and the results must therefore be treated with a degree of caution. Charcoal from both the lowest fill (28) examined and the upper fill (16) from the southern ditch was hazel (*Corylus avellana*), apart from one fragment of oak (*Quercus* sp.) from the lowest fill. Hazel from samples 1003 and 1004 gave AMS dates of 3950-3710 cal. BC and 3790-3630 cal. BC for the upper fill, respectively, while hazel from sample 1007 gave a date of 3660-3520 cal. BC for the lowest fill. Charcoal from the northern ditch was extremely scarce and the only charcoal from fill 17 was unidentifiable, but gave a date of 3910-3640 cal. BC, whilst a date of 5310-5060 cal. BC was obtained from alder (*Alnus glutinosa*) charcoal from fill 12.

**Discussion**

- 5.4 The early date from the northern ditch indicates the presence of alder in the area during the Mesolithic and must be residual within this context. The alder was probably growing on wetter ground in the area. The Neolithic charcoal could represent burning related to land clearance or waste from nearby domestic/ritual fires. If the former then this would suggest hazel scrub in the area of the site but if the latter the hazel might have been deliberately selected, in which case the assemblage may be less representative of the contemporary woodland. The low incidence of oak is of interest and suggests that it was only a minor element of the woodland in the vicinity of the

site or that it was deliberately not selected for use in fires, perhaps reserved for other uses, but again the same caveat applies as for the selection of hazel. The scarcity of wood charcoal from the ditches may indicate that methods other than burning were being employed to clear woodland or that the woodland was relatively open. There is some tentative support for this in the plant macrofossil evidence.

- 5.5 There is some charcoal evidence from other sites in the Walton Basin. Charcoal from a pit dated to the Mesolithic produced oak, hazel and gorse, reflecting woodland on drier ground compared with the alder from the cursus. The charcoal assemblage from Womaston causewayed enclosure, although slightly later in date in the Neolithic compared with that from the cursus, was also dominated by hazel (Jones 2010, 31-2). Similarly hazel was one of the dominant species in the assemblage from the Peterborough phase at Upper Ninepence, the other being hawthorn (Pomoideae) type (Johnson 1999). Although hawthorn type was not recorded in the charcoal assemblage from Hindwell, hawthorn type also includes crab apple (*Malus sylvestris*) which was recorded in the Hindwell charred plant assemblage. The total assemblage from Upper Ninepence was larger than that from either Hindwell or Womaston and the range of species greater, but again only one fragment of oak was identified. Once more shrubby species dominated the assemblage and possibly suggests secondary woodland and scrub and colonisation of abandoned ground following clearance. In contrast oak occurred in most of the pits from the Grooved Ware phase at Upper Ninepence. As at the other sites, light hazel woodland in the Hindwell area would have been easier to clear than primary oak forest and might have been significant in the location of the monument.

**Table 1 Charcoal identifications from Hindwell cursus**

Feature	North Ditch		South Ditch					Total
	102	103	1003	1004	1006	1007	1008	
<b>Sample</b>	<b>17</b>	<b>12</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>28</b>	<b>28</b>	
<b>Context</b>	<b>17</b>	<b>12</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>28</b>	<b>28</b>	
<i>Quercus</i> spp. (Oak)	-	-	-	-	-	-	1	<b>1</b>
<i>Alnus glutinosa</i> (L.) Gaertner (Alder)	-	1*	-	-	-	-	-	<b>1</b>
<i>Corylus avellana</i> L. (Hazel)	-	-	2*	5*	1	6*	4	<b>18</b>
Unidentified	1*	-	-	-	-	-	-	<b>1</b>
<b>Total</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>5</b>	<b>21</b>

\* includes charcoal used for AMS dating

## 6 CHARRED PLANT REMAINS by Astrid E. Caseldine and Catherine J. Griffiths

- 6.1 Bulk samples were taken from both the north and south cursus ditches during excavations at Hindwell. The aim was to recover charred plant remains which might provide environmental evidence and possibly evidence for human activities.

### Methods

- 6.2 The bulk samples were processed using a flotation tank. The minimum mesh size used to recover the flot was 250µm and the minimum mesh used for the residue was 500 µm. A Wild M5 stereomicroscope was used to sort and identify the material. Identification was by referral to a modern seed collection and standard reference texts (e.g. Berggren 1969, 1981, Schoch *et al* 1988, Anderberg 1994, Jacomet 2006). Nomenclature and ecological information is based on Stace 1995. The sample details and results are given in Table 1.

## Results

### *Southern cursus ditch*

- 6.3 Charred plant remains were scarce from samples obtained from the southern cursus ditch. Sample 1008, from one of the lower ditch fills (28), yielded only a few remains other than rhizome fragments but these included a hazelnut (*Corylus avellana*) shell fragment and probable apple (*Malus sylvestris*) pips. Samples 1005 and 1006 were both from the upper ditch fill (16) and again a hazelnut shell fragment was present in each of them, which was the only identifiable charred plant remain from sample 1005. Although the evidence is very slight, namely the presence of apple pips and a few rhizome fragments, sample 1006 from the lower part of the upper fill is similar to sample 1008. This appears to be consistent with the radiocarbon dating evidence which suggests that these deposits are broadly contemporary. A date of 3660-3520 cal. BC was obtained on charcoal from the lowest fill and a date of 3790-3630 cal. BC on charcoal from the lower part of the upper fill. Charcoal from slightly higher in the upper fill gave a date of 3950-3710 cal. BC but there is nothing distinctively different in the macrofossil assemblage, which comprised hazelnut shell fragments and indeterminate organic material, from the upper part of the upper fill (16) to differentiate it from the lowest fill (28), which also contained these remains, apart from a lack of apple pips. The dating evidence from the upper fill (16) seems to indicate the deposition of younger, possibly contemporary, material followed by the deposition of older material. The occurrence of the apple pips in the lower part of fill 16, but not the upper part, may support this view. The evidence is not inconsistent with the suggestion that this deposit represented deliberate infilling, but a similar sequence could be produced by natural erosion processes.

### *Northern cursus ditch*

- 6.4 Charred plant remains were also generally scarce from the northern ditch. Only a few stem and rhizome fragments were recovered from the primary fills, a fine silt (22) and gravel in a silty clay matrix (21). However, a sample (107) from one of the layers (15) interpreted as representing a period of rapid weathering after deposition of the primary fills, produced a relatively large number of stem and rhizome fragments, a vetch (*Vicia* sp.) and a cinquefoil (*Potentilla* sp.) seed and three fragments of acorn shell. In contrast, another sample (108) from the same silty clay layer failed to produce anything apart from a trace of charcoal. This layer was eroded from the northern side of the ditch. A similar silty clay layer (19) on the southern side of the ditch yielded a few stem and rhizome fragments. A date of 3910-3640 cal. BC was obtained on charcoal from an erosion layer above this. Rhizome fragments and indeterminate remains were obtained from the remaining two samples (101, 104) which were from a period of more gradual accumulation of silty clay (12). A date of 5310-5060 cal. BC on charcoal from this layer indicates that all or some of this deposit consists of older material.

### *Discussion*

- 6.5 Although there has been much debate about the relative importance of wild plant foods as compared with cereals, there is general agreement that the collection of wild plant foodstuffs played an important role in the diet of Neolithic peoples (Jones and Rowley-Conwy 2006; Jones 2000; Robinson 2000; Monk 2000; and Moffett *et al.* 1989). The occurrence of hazelnuts and apple pips at Hindwell is therefore in keeping with the evidence from many other Neolithic sites in Britain, including Wales. In contrast the evidence for the use of acorns is much scarcer in Britain and Northwestern Europe, especially for the early and middle Neolithic (Out 2010), and they were possibly not a staple food at this time (they are more common on Late Neolithic, Bronze Age and Iron Age sites). Acorns have a high nutritional value, comparable to that of cereals (Deforce *et al.* 2009), but tannin gives them a bitter taste and some kind of processing is usually undertaken to make them more palatable, either roasting or leaching (Out 2010). The way they were used and processed would have influenced their preservation and hence their representation in the archaeobotanical record. Ethnographic studies demonstrate they can be eaten raw or lightly roasted as a snack, made into acorn bread, cooked as a soup or porridge-like mush (Mason 1995, Mason and Nesbitt 2009). They might also have been used primarily as animal fodder which would have left little trace in the archaeobotanical record.

- 6.6 The low concentration of remains makes it difficult to evaluate whether they resulted from ceremonial burning in the area, the disposal of everyday domestic waste or simply clearance activity in the area. The absence of cereal tends to support the last interpretation but, as Jones and Rowley-Conwy (2006) have suggested, it is just as likely that wild plants were viewed as ‘special’ foods as everyday foods and that both these and cultivated cereals were, on occasion, used in ceremonies. The occurrence of stems and rhizomes in the samples could reflect local *in situ* burning, or tinder, associated with a domestic or ritual fire or burning associated with clearance activity. The scarcity of wood charcoal, along with grass, vetch and cinquefoil remains, perhaps suggests an open landscape or at least open woodland. Alternatively the low amounts of charcoal could indicate that fire was not employed in clearance activity. Indeed, in general there tends to be a reduction in microscopic charcoal in pollen diagrams at the beginning of the Neolithic compared with the Mesolithic, suggesting a reduction in fire activity. However, the evidence from Hindwell is from small-scale excavations and the archaeobotanical results might not be representative of activities associated with the monument or taking place in the area.
- 6.7 Other archaeobotanical evidence from the local area includes charred plant remains from pits dating to the Peterborough phase at Upper Ninepence (Caseldine and Barrow 1999). Here hazelnut fragments were present in much greater quantities and there was some evidence for cereal, namely emmer and possibly bread wheat, and a possible acorn cupule. A few poorly preserved cereal grains and one hazelnut fragment have also been found at Womaston causewayed enclosure (Jones 2010, 32-4), which has yielded similar dates to those at the Hindwell cursus. All the sites have produced the ubiquitous hazelnuts but the evidence from Hindwell differs in the absence of cereal and the presence of apple. Rhizomes and stem fragments are common to all three sites and a number of other later Neolithic and early Bronze Age sites in the Walton Basin (Caseldine 1999) and suggest a predominantly grassland environment, at least in the immediate area of the sites

**Table 1 Charred plant remains from Hindwell Cursus.**

Sample	North Ditch							South Ditch			Habitat Preference	
	101	104	106	107	108	109	110	111	1005	1006		1008
Context	12	12	19	15	15	21	21	22	16	16	28	
Volume (litres)	28.5	25.5	5	3	8.5	11	7	3	30	30	10	
<i>Quercus</i> sp. (Oak) nut shell frags.	-	-	-	3	-	-	-	-	-	-	-	
<i>Corylus avellana</i> L. (Hazel) nut shell frags.	-	-	-	-	-	-	-	-	1	1	1	W
cf. <i>Malus sylvestris</i> (L.) Miller (Crab apple)	-	-	-	-	-	-	-	-	-	2	6	W
<i>Potentilla</i> sp. (Cinquefoils)	-	-	-	1	-	-	-	-	-	-	-	G, H, M, W <sub>o</sub>
<i>Vicia</i> sp. (Vetches)	-	-	-	1	-	-	-	-	-	-	-	G, W,
Poaceae (Grass)	-	-	-	-	-	-	-	-	-	-	-	G, H, M, W
Stem frags.	-	-	2	>70	-	>5	>10	-	-	-	-	
Rhizome - frags.	6	-	4	11	-	1	-	7	-	3	21	
Organic indet. - frags.	-	-	-	-	-	-	-	-	-	1	-	8
Indet. frags	-	3	-	-	-	-	-	-	-	-	-	-

Habitat preferences: G = grassland; H = heath; M = marshes, fens, bogs; W = woods, hedgerows, scrub; o = open.

**7 RADIOCARBON DATING**

7.1 Five samples of charcoal were submitted to SUERC in East Kilbride for AMS dating, three from the southern ditch and two from the northern ditch.

***Northern ditch***

SUERC-34209

Find 102, context 17

Material: unidentified charcoal

Conventional radiocarbon age: 4955±40 BP

Calibrated results at 68.2% probability: 3780-3660 BC

Calibrated results at 95.4% probability: 3910-3640 BC

SUERC-34213

Find 103, context 12

Material: Alnus charcoal

Conventional radiocarbon age: 6225±35 BP

Calibrated results at 68.2% probability: 5300-5070 BC

Calibrated results at 95.4% probability: 5310-5060 BC

***Southern ditch***

SUERC-24618

Find 1003, context 16

Corylus charcoal

Conventional radiocarbon age: 5030±35 BP

Calibrated results at 68.2% probability: 3940-3770 BC

Calibrated results at 95.4% probability: 3950-3710 BC

SUERC-24834

Find 1004, context 16

Corylus charcoal

Conventional radiocarbon age: 4900±45 BP

Calibrated results at 68.2% probability: 3710-3640 BC

Calibrated results at 95.4% probability: 3790-3630 BC

SUERC-24619

Find 1007, context 15

Corylus charcoal

Conventional radiocarbon age: 4815±35 BP

Calibrated results at 68.2% probability: 3650-3530 BC

Calibrated results at 95.4% probability: 3660-3520 BC

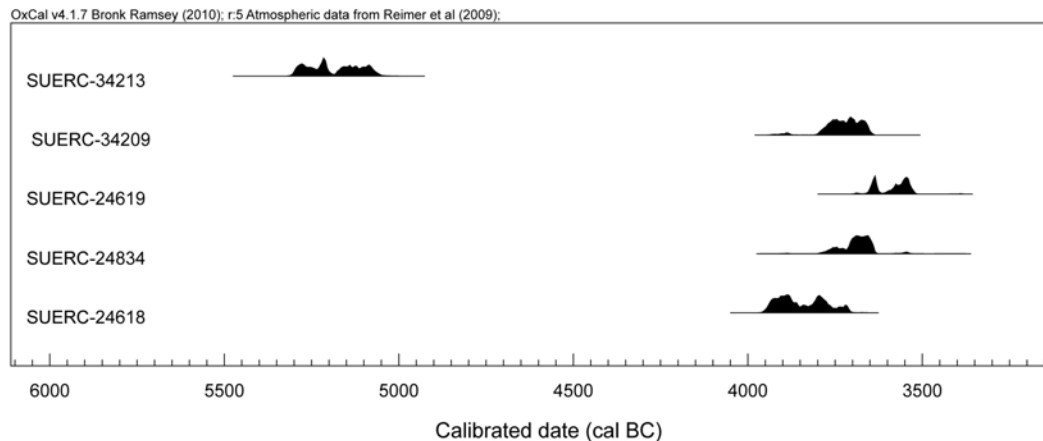


Fig. 14 Calibrated radiocarbon dates from the Hindwell Cursus

## 8 DISCUSSION

- 8.1 The evidence now suggests that the cursus could have a total length of 4.66km, crossing the full width of the Walton Basin from the eastern slopes of the Smatcher east-north-east to the base of Evenjobb Hill. The plan is still far from complete, however, with around 1100m (24%) of both ditches having been confirmed to date. In common with other cursus monuments, there is some variation in the distance between the ditches, which are 63m apart at the eastern terminal, and between 54m and 74m apart elsewhere, enclosing an area of around 27ha, making this the second largest prehistoric monument in Wales, exceeded only by the Hindwell Palisaded Enclosure. The cursus is aligned on a bearing of 63 degrees east of grid north, although there are no known monuments, or obvious topographical features which might form the focus for either end.
- 8.2 Only a single full section has been excavated across either ditch, near Four Stones, although the results have demonstrated the impressive size of the monument (Fig. 15). The southern ditch measured 3.9m across and 1.8m deep and the northern ditch 3.8m across and up to 1.45m deep. The pattern of silting in both ditches suggested that the accompanying bank may have been on the interior. The excavations have provided five radiocarbon dates which suggest a date of construction in the period after 3950-3520 cal. BC. A note of caution must be introduced, however, since although two of the dates were from primary fills (SUERC-24619 and SUERC-34209) the provenance of the charcoal must be considered to be uncertain, a fact which is reinforced by a Mesolithic date obtained from an upper fill (SUERC-34213).
- 8.3 Although there may be some uncertainty regarding the date of construction the most recent excavation has helped to clarify the place of the cursus in the general sequence of Neolithic monuments in the Walton area. The intersection of the northern cursus ditch with the Hindwell Palisaded Enclosure was investigated in September 2011, confirming that the cursus ditch had become completely infilled, whether deliberately or otherwise, by the time the palisade was constructed around 2870-2470 cal. BC, providing a *terminus ante quem* for the cursus. This chronology, whilst imprecise, is fully compatible with the dating evidence for cursus monuments elsewhere in Britain which it is suggested began in 3915-3545 cal. BC and possibly continued into the third millennium BC (Whittle *et al.* 2011, 724).

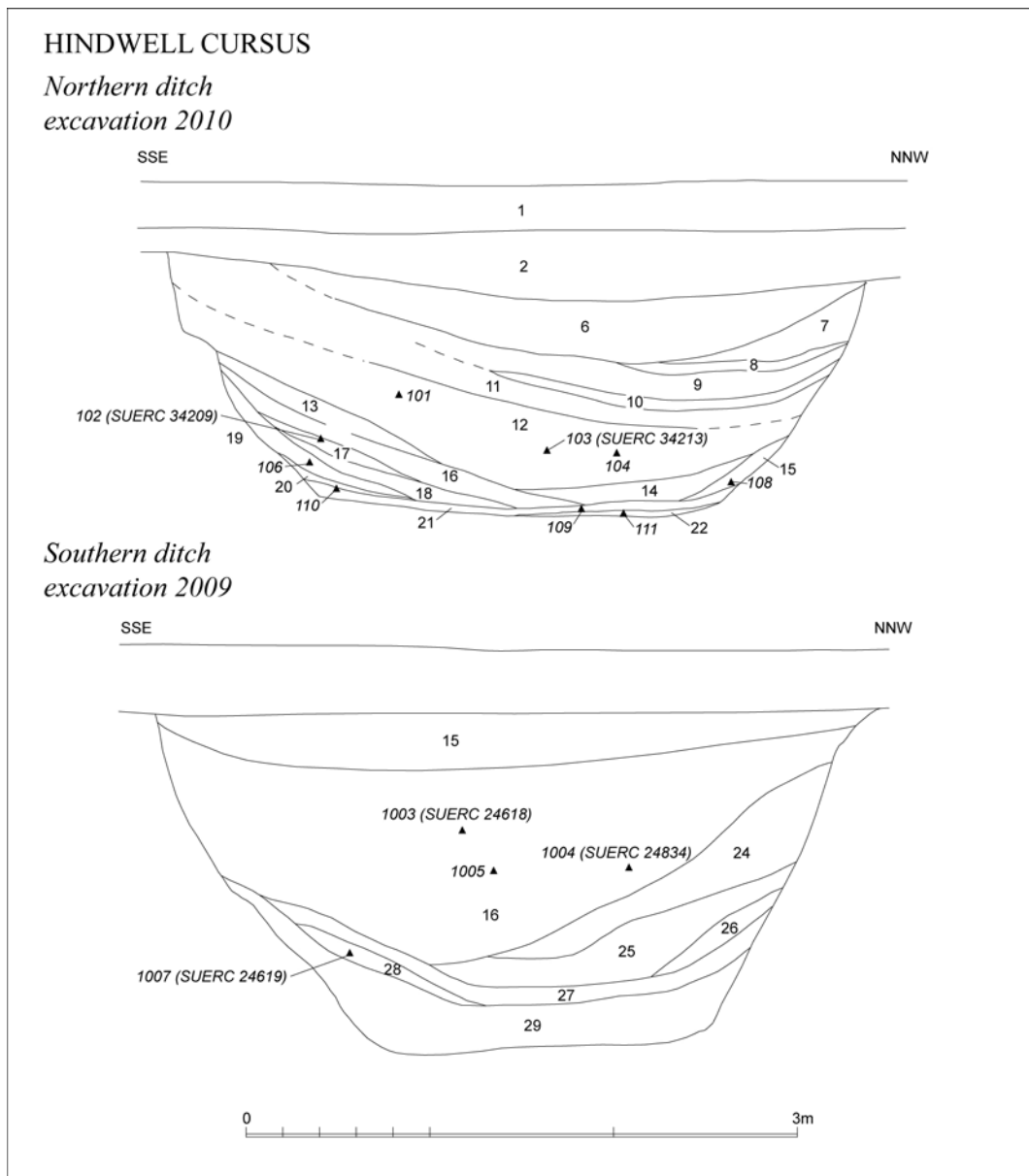


Fig. 15 Sections of the north and south ditches excavated in 2009 and 2010, showing the location of the dated charcoal samples

- 8.4 The size of the ditches, at up to 3.9m wide by 1.8m deep places the Hindwell cursus amongst the largest cursus ditches so far identified. By comparison, the Rudston A cursus (Yorkshire) has a maximum ditch width of 4m, while the Greater Stonehenge Cursus (Wiltshire) measures around 3.3m by 1.5m towards the western terminal, although elsewhere it is far more slight at around 2.5m by 0.45m, conforming to the generally accepted pattern of cursus ditches becoming more substantial closer to the terminals.
- 8.5 The potential length of the Hindwell cursus appears to place it in Loveday's category of 'Mega sites' which currently includes the Dorset Cursus (the associated Gussage and Pentridge cursuses), the greater Stonehenge cursus, in Wiltshire, the Stanwell cursus, in Middlesex, and the Rudston A and D cursuses, in East Yorkshire (Loveday 2006, 157-61, 203). Indeed, if the tentative identification of the south-eastern end of the Hindwell cursus is correct, this would make it potentially the second or third largest cursus known in Britain.



## 9 ACKNOWLEDGEMENTS

- 9.1 The writer would like to thank his colleagues Richard Hankinson for conducting the geophysical surveys and also assisting with the excavations, and Bill Britnell, Jenny Britnell, Ian Grant and Wendy Owen for their assistance with the excavations. Thanks are also due to the owners, John, Colin and Anne Goodwin at Hindwell, Andrew Price at Crossway, and Sylvia Evans, Harpton Farm, for permitting access for the excavations and geophysical survey. Thanks are also due to Astrid Caseldine and Catherine Griffiths of the School of Archaeology, History and Anthropology, University of Wales Trinity St David, to Philippa Bradley and finally to Frances Lynch.

## 10 REFERENCES

- Anderberg, A-L., 1994. *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions. Part 4. Resedaceae–Umbelliferae*. Stockholm: Swedish Museum of Natural History.
- Berggren, G., 1969. *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions. Part 2. Cyperaceae*. Stockholm.
- Berggren, G., 1981. *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions. Part 3. Salicaceae–Cruciferae*. Arlow.
- Bradley, P., 1999. The worked flint from the Dunn Collection and the excavations, in Gibson 1999c, 49-81.
- Caseldine, A. E., 1993. Roman charred grain deposit from Caersws. In Jones, N. W. Caersws Roman fort and vicus, Montgomeryshire, Powys, 1984-92. *Montgomeryshire Collections* 81, 83-84.
- Caseldine, A. E., 1996. Charred plant remains from Caersws 46. In Jones, N. W., Excavations within the Roman vicus at Caersws, 1989-93. *Montgomeryshire Collections* 84, 29-32.
- Caseldine, A. E., and Barrow, C. J., 1997. *The charred plant remains from Plas Coch, Wrexham*. Unpublished report prepared for Clwyd-Powys Archaeological Trust.
- Caseldine, A. E. and Barrow, C. J. 1999a. The charred plant remains from Walton. In Gibson, A., *The Walton Basin Project: Excavation and Survey in a Prehistoric Landscape 1993-7*. CBA Research Report 118, 141-150.
- Caseldine, A. E., and Barrow, K., 1999. The charred plant remains. In Jones, N., Excavation and survey at Broad Heath Romano-British enclosure, Presteigne, Powys. *Archaeology in Wales* 39, 22-25.
- Deforce, K., Bastiaens, J., Van Calster, H., and Vanhoutte, S., 2009. Iron Age acorns from Boezinge (Belgium): The role of acorn consumption in prehistory. *Archäologisches Korrespondenzblatt* 39, 381-392.
- Gibson, A. M., 1994. Excavations at the Sarn-y-bryn-caled Cursus Complex, Welshpool, Powys, and the Timber Circles of Great Britain and Ireland. *Proceedings of the Prehistoric Society* 60, 143-223.
- Gibson, A., 1995a. Aerial Photography in Clwyd and Powys, *Archaeology in Wales* 35, 28.
- Gibson, A., 1999a. Cursus monuments and possible cursus monuments in Wales: avenues for research (or roads to nowhere?), in A. Barclay and J. Harding (eds), *Pathways and Ceremonies: The cursus monuments of Britain and Ireland*. Neolithic Studies group Seminar Papers 4, 130-140. Oxford: Oxbow Books.
- Gibson, A., 1999b. *The Walton Basin, Powys, Wales: Survey at the Hindwell Neolithic Enclosure*. Welshpool: CPAT.
- Gibson, A., 1999c. *The Walton Basin Project: Excavation and Survey in a Prehistoric Landscape 1993-7*, CBA Research Report 118. York: Council for British Archaeology.
- Hankinson, R., 2007. *Geophysical surveys of defended enclosures in Montgomeryshire*. CPAT Report No. 895.

- Hopewell, D., 2004. *Roman Fort Environs. Geophysical survey at Caerau, Colwyn Castle and Brecon Gae*. Bangor: GAT report.
- Jacomet, S., 2006. *Identification of Cereal Remains from Archaeological Sites*. Archaeobotany Lab, IPAS, Basel University.
- Johnson, S., 1999. The Walton complex charcoal identifications. In Gibson, A., *The Walton Basin Project: Excavation and Survey in a Prehistoric Landscape 1993-7*. CBA Research Report 118, 150-153.
- Jones, G., 2000. Evaluating the importance of cultivation and collecting in Neolithic Britain. In Fairbairn, A. S. (Ed), *Plants in Neolithic Britain and beyond*. Neolithic Studies Group Seminar Papers 5. Oxford Oxbow Books. 79-84.
- Jones, G. and Milles, A., 1984. Plant remains from Arddleen. In Britnell W. J. and Musson, C. R., Rescue excavation of a Romano-British double-ditched enclosure at Arddleen, Llandrinio, northern Powys. *Archaeologia Cambrensis*. 133, 96-97.
- Jones, G., and Milles, A., 1989. Iron Age, Romano-British and Medieval plant remains. In Britnell, W. J., The Collfryn hillslope enclosure Llansantffraid Deuddwr, Powys: Excavations 1980-1982. Proceedings of the Prehistoric Society 55, microfiche 3-5.
- Jones, G., and Rowley-Conwy, P., 2007. On the importance of cereal cultivation in the British Neolithic. In Colledge, S. and Conolly, J. (Eds.), *The Origins and Spread of Domestic Plants in Southwest Asia and Europe*. Left Coast Press, Inc.
- Jones, N. W., 2010. Womaston Neolithic Causewayed Enclosure, Powys: survey and excavation 2008, *Archaeologia Cambrensis* 158 (2009), 19-42.
- Jones, N. W., 2011. Excavations at Hindwell, Radnorshire, 2010-11. CPAT Report No. 1089.
- Loveday, R., 2006. *Inscribed Across the Landscape. The Cursus Enigma*. Stroud: Tempus.
- Mason, S., 1995. Acornutopia? Determining the role of acorns in past human subsistence. In Wilkins, J., Harevey, D. and Dobson, M. (eds.), *Food in Antiquity*. Exeter: Exeter University Press. 12-24.
- Mason, S., and Nesbitt, M., 2009. Acorns as food in southeast Turkey: Implications for prehistoric subsistence in Southwest Asia. In Fairbairn, A. S., and Weiss, E., (eds.), *From Foragers to Farmers*. Oxford: Oxbow Books. 71-85.
- Moffett, L., Robinson, M. A., and Straker, V., 1989. Cereals, fruits and nuts: charred plant remains from neolithic sites in England and Wales and the neolithic economy. In Milles, A., Williams, D. and Gardner, N., *The Beginnings of Agriculture*. 261. B.A.R. Int. Series 496, 243-261
- Monk, M., 2000. Seeds and soils of discontent: an environmental archaeological contribution to the nature of the early neolithic. In Desmond, A., Johnson, G., McCarthy, M., Sheehan, J. and Shee Twohig, E., (Eds.), *New Agendas in Irish Prehistory*. Papers in Commemoration of Liz Anderson, pp67-87. co. Wicklow, Ireland: Wordwell.
- Out, W., 2010. *Sowing the Seed: Human Impact and Plant Subsistence in Dutch Wetlands During the Late Mesolithic and Early and Middle Neolithic (5500-3400 cal BC)*. Amsterdam: Leiden University Press.
- Robinson, M. A., 2000. Further considerations of Neolithic charred cereals, fruits and nuts. In Fairbairn, A.S.(Ed), *Plants in Neolithic Britain and beyond*. Neolithic Studies Group Seminar Papers 5. Oxford: Oxbow Books. 85-90.
- Schoch, W., Heller, I., Schweingruber, F. H., and Kienast, F., 2004. *Wood Anatomy of Central European Species*. Online version: [www.woodanatomy.ch](http://www.woodanatomy.ch)
- Schoch, W. H., Pawlik, B. and Schweingruber, F. H., 1988. *Botanical macro-remains*. Berne and Stuttgart: Paul Haupt.
- Schweingruber, F. H., 1978. *Microscopic Wood Anatomy*.
- Silvester, R. J., and Hankinson, R., 2006. *Roman Military Sites in Powys*, Welshpool: CPAT Report No. 767.
- Silvester, R. J., Hopewell, D. and Grant, I., 2005. *Roman Fort Environs in Powys I. The geophysics*. CPAT Report No. 702.
- Stace, C., 1995. *New Flora of the British Isles*. Cambridge: Cambridge University Press.
- Thomas, J., Marshall, P., Parker Pearson, M., Pollard, J., Richards, C., Tilley, C., and Welham, K., 2009. The date of the Greater Stonehenge Cursus. *Antiquity* 83, 40-53.

Whittle, A., Healy, F. and Bayliss, A., 2011. *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland* (Oxford: Oxbow Books), 2 vols.