

Large late Neolithic and early Bronze Age ring-ditches in Wales

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INTRODUCTION (WJB)

A recent survey of prehistoric funerary and ritual monuments in Wales by the four Welsh Archaeological Trusts on behalf of Cadw identified about 180 cropmark ring-ditches in Wales (Fig. 1) belonging to types which are generally assumed to represent later Neolithic and Early Bronze Age round barrows which have been levelled by ploughing. They are largely distributed in the lowlands and in river valleys, on land which has been subjected to more intensive arable agriculture, though in rare instances barrow mounds still survive in association with ring-ditches (cf. Warrilow *et al.* 1986, 57; Gibson 2002, 27–32). A variety of different ring-ditch types are represented, including causewayed and some penannular forms. Some have two or three conjoined ring-ditches or concentric ring-ditches, the latter either representing successive phases of enlargement or embellishment of a single monument (e.g. Warrilow *et al.* 1986, fig. 6) or different structural components, such as an outer ditch and an inner palisade or revetment (e.g. Jones 2009b, 52–4).

Problems of definition

The size range of ring-ditches is generally comparable with round barrows and round cairns (Fig. 2), all mostly falling between about 5m and 35m in diameter. The mean diameter of barrows and cairns appears to be slightly lower than that of ring-ditches but this may be due to difficulties of recognising smaller ring-ditches from aerial photographic evidence. Small ring-ditches have been recognised as satellite burials in the vicinity of larger monuments (e.g. Warrilow *et al.* 1986, 68) in a similar manner to some earthwork monuments (cf. Britnell 1982, 152–4), but would potentially be more difficult to spot if they were isolated. A small percentage of round barrows and cairns and ring-ditches extend up to 60m in diameter, and there are two exceptionally large sites—the 80m-diameter cairn at Gop, Flintshire (Lynch *et al.* 2000, 75; Lynch 2003) and the 98m-diameter ring-ditch at Walton Court Farm, Radnorshire (see Britnell and Jones 2012, 62–3 and this article).

Some ring-ditches are undoubtedly equivalent to the numerically more numerous round barrows and cairns which largely survive on more marginal land, but the assumption that they all represent round barrows is beset with uncertainties. Encircling ditches were evidently not an essential component of later Neolithic or Early Bronze Age burial monuments since a high proportion of barrows and cairns in Wales were built of materials such as turf or surface stone which did not require the digging of a ditch (cf. Lynch *et al.* 2000, 128). Turf was likewise used for the construction of some lowland barrows, including those accompanied by ring-ditches (e.g. Warrilow *et al.* 1986, 57). It is generally assumed that ring-ditches in the lowlands were built from the material dug from the ring-ditches (cf. Lynch 2003, 27), but the presence of turf in the make-up of lowland barrows raises the question of whether all lowland barrows were necessarily accompanied by a ring-ditch and whether in some instances ring-ditches may have had a specific role in demarcating an area, or as a quarry for specific rather than exclusive aspects of barrow construction, or had an aesthetic purpose (cf. Garwood 2007, 142).

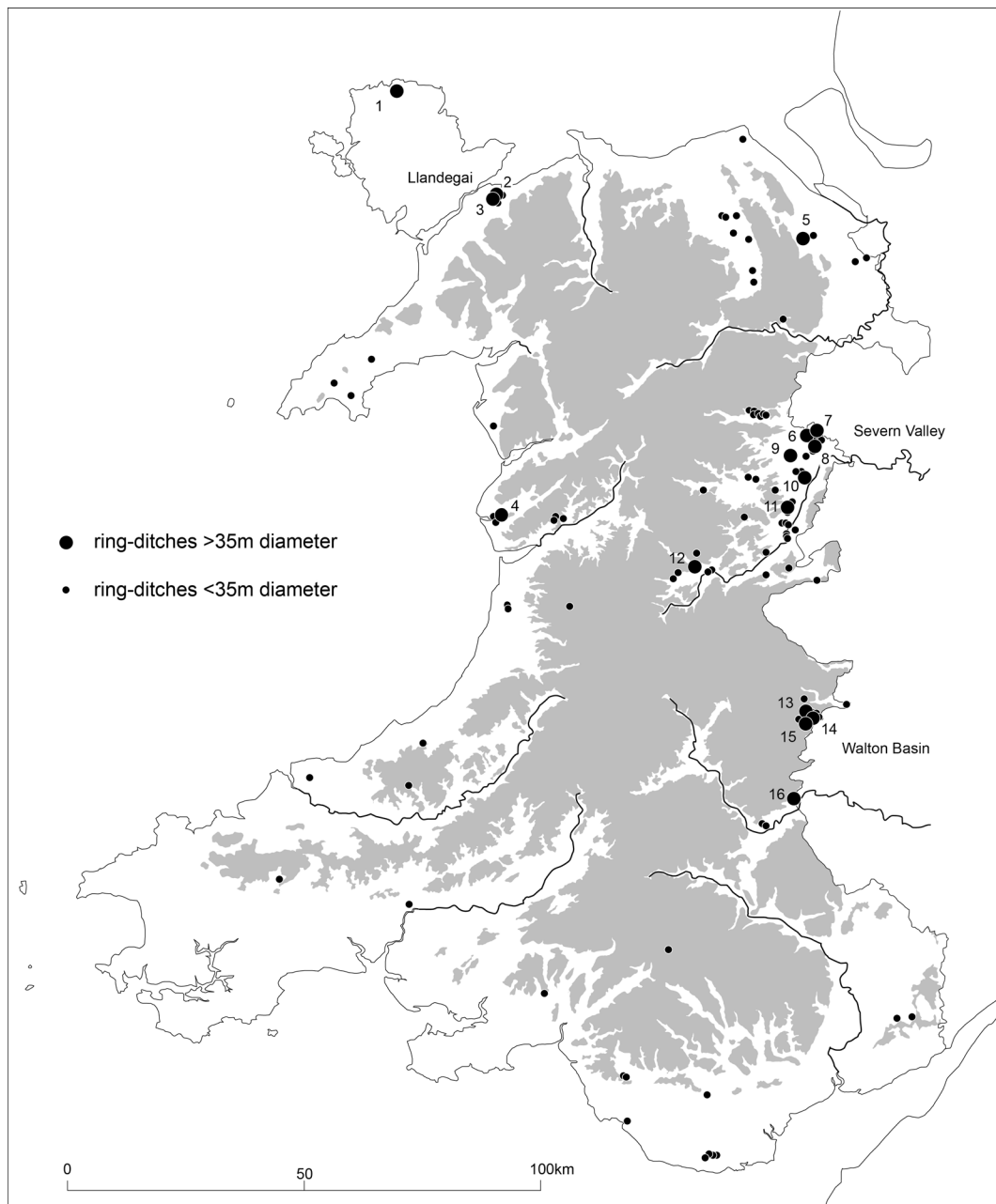


Fig. 1. Distribution of ring-ditches in Wales. (Note that at the scale at which this map is reproduced some clusters of sites are represented by a single dot. Omitted from this distribution are about 50 possible sites.)
 Source: *Historic Environment Records of the Welsh Archaeological Trusts*.

There is the possibility that some ring-ditches, perhaps particularly those under about 10m in diameter, might represent the drainage gullies encircling prehistoric roundhouses or other later site types (cf. Whimster 1989, 31). Larger circular cropmarks above 35m in diameter may alternatively represent later prehistoric ditched or palisaded settlements (cf. Wood 2009, 59–60), though sites of this form in the borderland are rarely precisely circular (cf. Whimster 1989, 36–7; Silvester 2011, fig. 3).²

Greater confidence can be placed in the ring-ditches which occur in nucleated barrow cemeteries, of the kind familiar in the Severn Valley and its tributaries (cf. Watson 1991), including those which are either loosely clustered, as at Dyffryn Lane, Berriew (cf. Gibson 1995, fig. 11), or grouped in linear cemeteries, as in the Tanat Valley (Gibson 2012, fig. 9; Musson 2012, 41) and possibly Four Crosses (Gibson 2002, 30). As in the case of similar upland cemeteries, the mixture of large and small monuments may well be a reflection of social hierarchy in the later Neolithic and earlier Bronze Age periods (cf. Lynch 2003, 28).

Ring-ditches are generally assumed to represent simple bowl barrows, but as the diameter of the monument increases the assumption that the material excavated from the ditch was used for the construction of a barrow mound becomes less plausible. A 50m-diameter ring-ditch with a 2m wide ditch, 1.5m deep, for example, would provide sufficient material³ for the construction of a barrow only up to 0.25m high covering the whole of the interior of the ring-ditch,⁴ but might have been used for the construction of a barrow 20m in diameter and up to 1.5m high at the centre of the ring-ditch,⁵ or an internal or external bank up to 4m wide and 0.75m high. The question arises, therefore, as to whether some ring-ditches might represent a broader spectrum of monument types. These potentially include open rings, such as embanked stone circles and ring cairns known in the uplands, which appear to have had a ceremonial function but also have links with burial (Lynch *et al.* 2000, 133), as well as the more exotic ‘Wessex’ barrow types such as disc, bell, saucer and pond barrows (cf. Garwood 2007, 142). Indeed, attempts have been made in the south Midlands to reconstruct the original form of monuments from the pattern of silting in ring-ditch sections, distinguishing, for example those with large or small mounds, those with a bank near the inner or outer edge of the ditch, or those with no evidence of a mound or bank close to the ditch (cf. Healy 1999, 325).

Larger-diameter round barrows and cairns and ring-ditches are generally more low-lying (cf. Gibson 2002, figs 6, 8; Needham 2012, 218–9). This is particularly the case of the ring-ditches over 35m in diameter, which in Wales show notable concentrations in the borderland valleys. There is a notable absence of the larger-diameter ring-ditches in the Vale of Glamorgan which is rich in Early Bronze Age monuments, but it may be significant that Neolithic ceremonial monuments are also unrecorded in this area.⁶ Some of these larger ring-ditches occur in complexes of other funerary or ritual monuments, two occurring in the same complex at Causeway Lane, Carreghofa, close to the confluence of the Vyrnwy and Tanat (Fig. 7), though others appear to have been more isolated. Gibson (2002, 30) in the Severn Valley and Garwood (2007, 141–2) in the neighbouring West Midlands have speculated whether the very large ring-ditches might represent other monument types. Drawing analogies with earthworks enclosing such sites at Stonehenge and Llandegai A, Burrow (2010) speculated whether some of the larger ring-ditches might represent a class of ‘formative henges’.

It was within this framework that the large ring-ditch project in Wales was initiated. This was at a time when perhaps greater confidence that a distinction could validly be drawn between large ring-ditches and henge monuments in Britain as a whole, but in the meantime Gibson has proposed that the term ‘henge’ has no meaning and should be abandoned (Gibson 2012, 97).

Aim of the large ring-ditch project

The aim of the project was to reassess the information relating to the unusually large ring-ditches that have been identified in Wales, and to see what might be learnt by aerial photographic rectification and

plotting, geophysical survey and trial excavation about the dating and original form of the monument type or types that they represent. It was anticipated that an enhanced understanding of what the sites are would help in their future management and conservation. As a basis for this study an arbitrary diameter of 35m was selected as a minimum, of which about 16 sites have been provisionally identified (see details in the catalogue below). Of these, six sites were examined in the field as part of the project. Palaeoenvironmental samples were recovered from ditch fills and other associated contexts from which charred plant remains and charcoal were studied for the environmental or economic information they might provide (see report by Caseldine, Griffiths and Bale, below), and as a basis of selecting material for AMS dating (see below).

The study was funded by funded by Cadw and undertaken by the Clwyd-Powys Archaeological Trust (CPAT) between March 2010 and March 2012. In the following text calibrated radiocarbon dates are quoted at 95% probability. Unless stated otherwise, site numbers given in bold refer to the CPAT Historic Environment Record (HER).

TRIAL EXCAVATIONS (NWJ)

Pentrehobin

The ring-ditch lies in the valley of the river Alyn, to the south-east of Mold, Flintshire, at an altitude of about 105m. The site appears to form part of a dispersed complex of prehistoric funerary and ritual sites within the Alun valley. Other possible small cropmark ring-ditches (**101352**) have been recorded within several hundred metres to the north and a relatively large round barrow (**100056**), about 25m in diameter but with no visible ditch, survives 190m to the north-east. The round barrow (**100055**) in which the Mold Bronze Age gold cape was discovered was sited about 1.5 kilometres to the north-east (Lynch 2002; Needham 2012, 220).

Aerial photography indicates a continuous and fairly regular ring-ditch about 44m in diameter with a relatively wide ditch (Fig. 3). Geophysical survey was undertaken prior to trial excavations in August 2010, covering part of the central area of the ring ditch together with a section of the surrounding ditch (Fig. 4). The results confirmed the position of a broad ditch together with a large, slightly off-centre pit, which had also been identified from a cropmark. A single trench was excavated across the ditch and into the interior of the monument. The topsoil (1) and a layer of old ploughsoil (2) were removed by machine down to the surface of the natural subsoil, which consisted of a mixture of glacial gravels and sand. The encircling ditch (12) was about 4m wide and up to 2m deep with steeply sloping sides and a narrow, rounded base (Fig. 5). The primary fill consisted of a 0.15m-thick layer of pale grey, clay-silt (30) and a layer of loose gravel in a silt matrix (29) up to 0.25m thick, representing the initial weathering of the sides of the ditch. The layers of secondary fill consisted of interleaved deposits weathered from the inner and outer sides of the ditch and including a thin layer of peaty silt (28), a layer of sandy silt (27), and a layer of grey brown sandy silt (26), up to 0.22m thick, which was derived from the outer edge of the ditch, and a thin deposit of grey-brown clay silt from the inner edge (25). At this stage there appears to have been a second period of stabilisation, with the ditch infilled to around one third of its depth. Later infilling consisted of further deposits of clay silt (22, 23 and 24), followed by a thin layer of stony clay silt (21) which was heavily iron-panned, possibly suggesting a buried turf deposit. The uppermost fills consisted of a grey clay silt (16), which was sealed beneath an orange-brown sandy silt (15) up to 0.45m thick. Layer 15 produced a number of undecorated body sherds of prehistoric pottery which have been identified by Frances Lynch as being probably of mid to late Bronze Age or Iron Age in date. The latest infill is represented by a layer of brown sandy loam (14) overlain by a thin layer of glacial gravel (13).



Fig. 3. Pentrehobin: aerial photograph of the ring-ditch from the north. *Photograph: CPAT 89-3-22A.*

Both the geophysical survey and cropmark evidence had suggested the presence of a number of possible features within the interior of the ring-ditch. The trial excavation revealed three pits just to the west of centre of the monument in this area, two of which were intercutting. The earliest feature was an elongated pit (3) which extended beyond the limits of excavation but was around 2m wide and at least 3m in length, with a shallower pit extending from its northern side which appeared to be contemporary (Fig. 4). The upper fill of the pit (17) contained a number of substantial plank-like pieces of oak charcoal (Fig. 4) which appeared to form part of a timber structure such as a coffin or chamber. This deposit was left intact but a sample of charcoal has been dated to 2400–2130 cal. BC (SUERC-32382). The pit containing the charred timber was cut by another pit (5) about 2m across and 0.75m deep which extended beyond the excavation to the east. The lower fill of the pit consisted of a stony silt (6) which was overlain by soft silt (7). A further pit (9) lay just to the south and measured around 2m in width and up to 0.55m deep, also extending beyond the excavated area. The fills (10 and 11) were similar in character to those in pit 5. Neither pit produced any finds other than charred plant remains or charcoal.

Charcoal from a possible timber structure inside the ring-ditch suggests an early Bronze Age date and the dimensions of the ditch suggest that it was used to construct a large round barrow. However, the evidence from the single excavated section of whether the upcast from the ditch had been placed on the inside (as a barrow mound or bank) or outside (as a bank) was ambiguous.

Causeway Lane

The Causeway Lane ring-ditch (2455) forms part of a dispersed complex of cropmarks west of Llanymynech, Powys, about a kilometre north of the river Vyrnwy and about a kilometre east of its

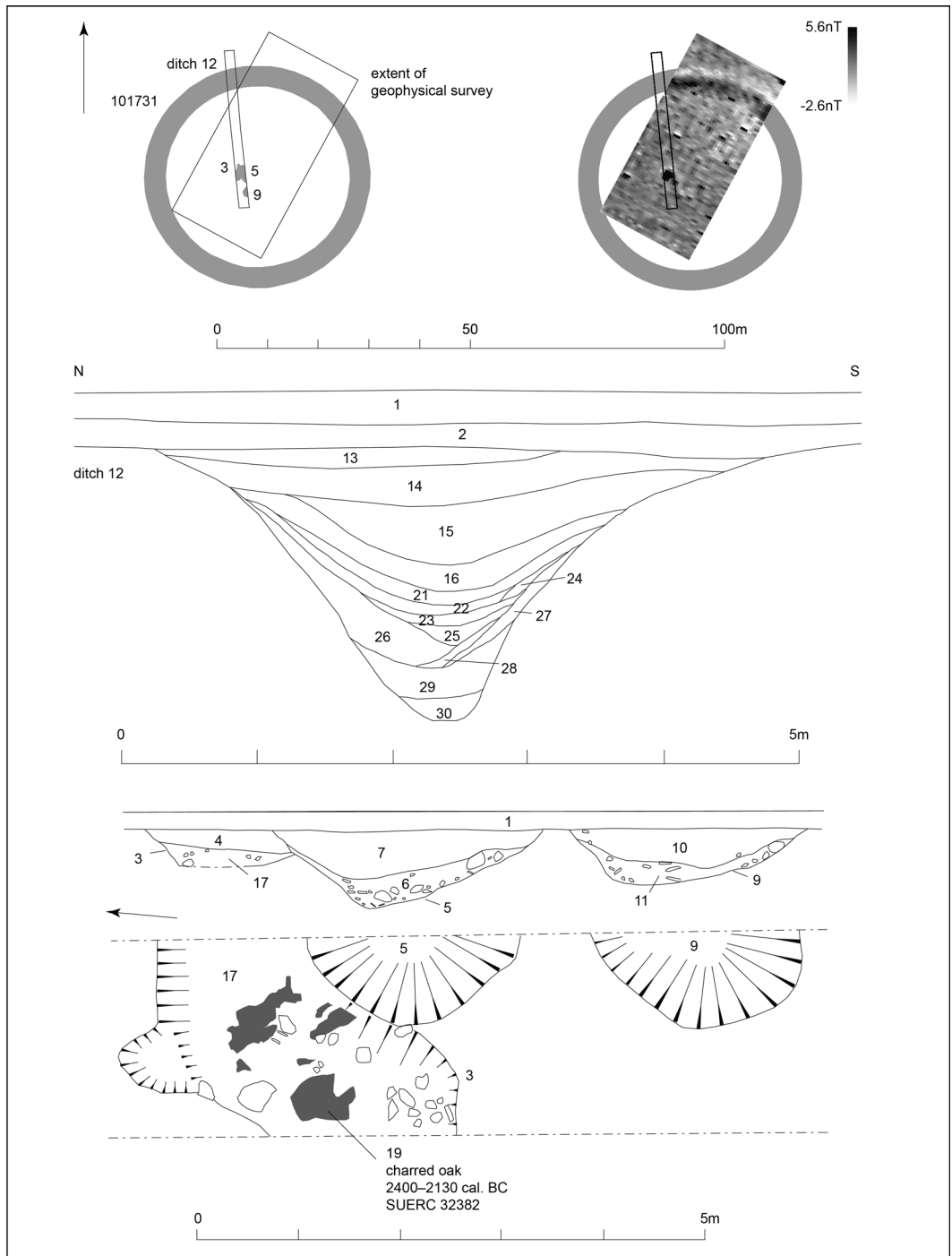


Fig. 4. Pentrehobin: plan and section and central features.



Fig. 5. Pentrehobin: 15a (*left*) west-facing section of the ring-ditch. *Photograph: CPAT 3148-0056*; 15b (*right*) general view of ring-ditch during excavation. *Photograph: CPAT 3148-0068*.

confluence with the Tanat (Figs 6–7) at an altitude of about 70m. The cropmark complex includes four other ring-ditches (**4599**, **38023**, **4601**, **4597**) as well as part of an undated system of pit alignments (**4600**, **38025**, **38024**). Three of the other ring-ditches appear to have two or more concentric ditches, one of which (**4597**) also has an unusually large diameter.



Fig. 6. Causeway Lane: aerial view of the cropmark ring ditch from the south-west. *Photograph: CPAT 84-c-0192*.

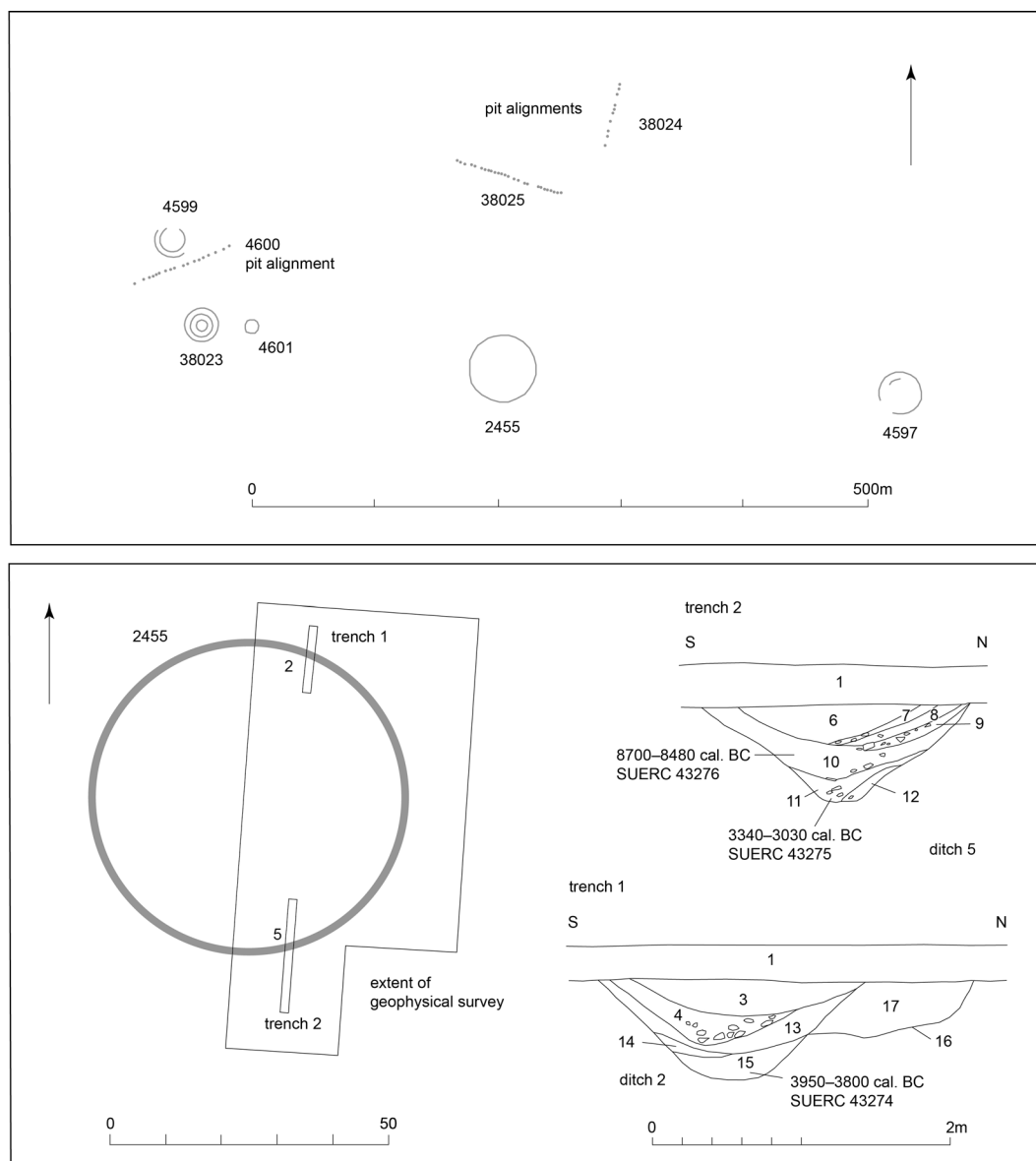


Fig. 7. Causeway Lane: (*above*) location of the site in relation to cropmark complex; (*below*) plan of ring-ditch and ditch sections.

The ring-ditch is about 57m in diameter and appears from aerial photographic evidence to be continuous (Fig. 7). Prior to the trial excavation in August 2010, a magnetometer survey was undertaken across the eastern side of the ring-ditch in order to confirm its location and identify any potential internal features. There was little magnetic contrast between the fill of the ditch and the underlying natural gravel and consequently only part of the ring-ditch was tentatively identified. Two trenches, each 1.5m wide, were

excavated on opposite sides of the site. Modern ploughsoil (1) was removed by machine onto the surface of the natural subsoil which consisted of gravel with patches of silty clay.

The ring-ditch is relatively shallow in relation to its diameter (Fig. 8). The section (2) in trench 1 was 1.8m wide and up to 0.68m deep from the subsoil surface, with sloping sides and a rounded base. The primary fill (15) consisted of a pale, yellowish-brown clay silt up to 0.18m thick, from which a fragment of blackthorn charcoal produced a radiocarbon date of 3950–3800 cal. BC (SUERC-43274). This was sealed by a deposit of grey-brown clay silt (14) against the inner edge of the ditch, probably representing an initial period of stabilisation. Both primary fills were sealed beneath a deposit of yellow-brown clay silt (13) which extended across the full width of the ditch. The upper fills consisted of a yellow-brown clay silt (4), which contained a notable quantity of small stones and had been principally derived from the inner side of the ditch, lying beneath a layer of brown clay-silt (3). The outer, northern edge of the ditch had cut through an earlier pit (16), filled with orange-brown clay silt with charcoal flecking (17), which was at least 1m across and extended beyond the limits of the excavation to the west.

The ring-ditch section (5) in trench 2 was 1.8m wide and up to 0.64m deep from the subsoil surface. The primary fill consisted of a compact gravelly silt (12) against the inner edge of the ditch, sealed by a pale yellow-brown clay silt (11) which contained small flecks of charcoal and occasional small stones, together representing a period of initial stabilisation. A fragment of hazel charcoal from layer 11 produced a radiocarbon date of 3340–3030 cal. BC (SUERC-43275). This was overlain by a uniform deposit of yellow-brown silty clay (10) up to 0.22m thick which appeared to represent a period of gradual silting. This produced hazel charcoal dated to 8700–8480 cal. BC (SUERC-43276) which is clearly residual. Later infilling of the ditch consisted of a succession of three layers against the inner edge of the ditch, comprising a layer of stony, silty clay (9), a relatively stone-free silty clay (8) and a deposit of small stones in a clay silt matrix (7), which were overlain by a layer of pale brown clay silt (6) up to 0.24m thick.

The pattern of infilling in the ditch sections suggests that the upcast from the ditch was placed on its inner side. The radiocarbon dates, which clearly include residual material, suggest that the ditch was constructed at a date after the latest radiocarbon date, which is 3340–3030 cal. BC.



Fig. 8. Causeway Lane: 8a (left) ring ditch in trench 1 during excavation with Llanymynech Hill in the background. Photograph: CPAT 3150-0016. 8b (right) section of the ring-ditch in trench 1, viewed from the north. Scales 2m. Photograph: CPAT 3150-0045.

Collfryn

The ring-ditch lies about 5 kilometres north of Guilsfield, in the low hills south-east of the river Vyrnwy, at an altitude of 130m, on ground sloping gently downwards from south to north. No other ring-ditches or other prehistoric funerary or ritual monuments are known in close proximity.

The plan of this 36m-diameter ring-ditch is known from aerial photography (Figs 9–10) and geophysical survey in 2008 which have failed to identify any internal features. There is a gap of about 10m in the circuit of the ditch on the eastern side of the ditch on both the aerial photograph and the geophysical survey but it is uncertain whether this is real or is simply due to soil conditions. The ditch on the eastern side of the monument was identified during trial excavations in 2008 but was not excavated. A further trial trench was excavated across the site in October 2011 which provided the opportunity to investigate two ditch sections (Fig. 11). The modern ploughsoil (1) was removed by machine onto the surface of the natural subsoil, which consisted here of variable stony clay. On the southern side the ring-ditch (7) was 1.8m wide and 0.8m deep from the subsoil surface, with concave sides, narrowing to a rounded base 0.2m wide. The primary fill (17) consisted of a yellowish silty clay 0.12m thick, which was sealed by a 0.2m-thick layer of greyish-yellow clay (21), both deposits presumably resulting from the initial weathering of the ditch sides. The secondary fill consisted of two layers (21, 16) of grey-yellow silt clay, each 0.2m thick, with a band of small stones at the interface between them suggesting a period of stabilisation. The uppermost ditch fill (6) consisted of a dark grey-brown silty clay 0.34m thick, which seemed likely to represent the return of material excavated from the ditch, though there was no clear indication of whether this may have originally placed on the inside or outside of the ditch. On the northern side the ring-ditch (9) was 1.7m wide and 0.75m deep from the subsoil surface and was steeper-sided with a slightly broader base.



Fig. 9. Collfryn: cropmark ring-ditch from the west. *Photograph CPAT 87-7-16.*

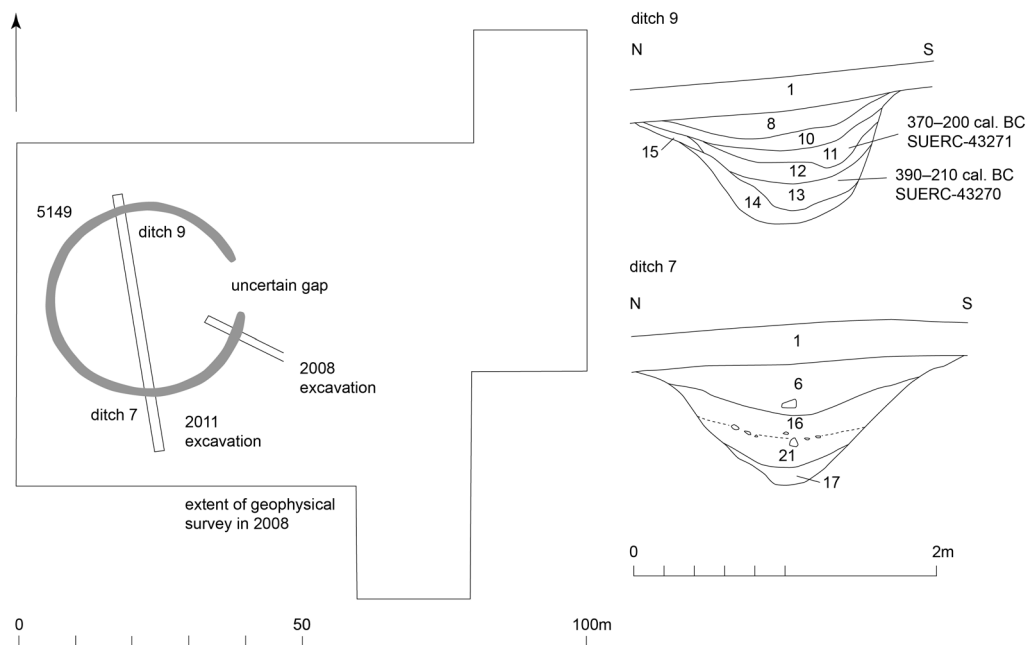


Fig. 10. Collfryn: plan and ditch sections.

The primary fill (14) consisted of mottled yellow-brown silty clay (7), 0.10m thick, similar to fill 17 in the other ditch section, with in this instance deposits of iron pan suggesting periods of waterlogging. On the outer edge of the ditch a 5mm-thick layer of reddish-pinkish-brown silty clay (15) was interpreted at the time as possible redeposited bank material. The secondary fills (13 and 12) were composed of bluish-grey silty clays with a combined thickness of 0.3m. The upper ditch fills (8, 10 and 11) had a combined thickness 0.36m and showed only slight variations in their yellowish-brown colouring, although context 11 contained a lens of sub-angular and rounded stones, while context 10 was characterised by numerous



Fig. 11. Collfryn: 11a (left) general view of trial trench from the south. Photograph CPAT 3366-0004; 11b (right) west-facing section of the ring-ditch. Scales 1m and 2m. Photograph CPAT 3366-0008.

grits and small stones. The silting pattern of the ditch, and in particular contexts 14 and 15, hinted at the former existence of an external bank, though this is by no means certain.

Birch charcoal from layer 13 has been dated to 390–210 cal. BC (SUERC-43270), while oak charcoal from the overlying layer 11 has been dated to 370–200 cal. BC (SUERC-43271). The radiocarbon dates clearly suggest that the ring-ditch is Iron Age in date.

Dyers Hall Farm

The ring-ditch lies on the crest of a low ridge on west side of the Severn Valley about 300m from the river Severn near Pool Quay, Powys, about 30m above the level of the river and at an altitude of about 95m. The site lies about midway between the Neolithic and Bronze Age complexes of funerary and ritual monuments at Four Crosses, about 6 kilometres to the north (Warrilow *et al.* 1986), and at Sarn-y-bryn-caled, about 7 kilometres to the south (Gibson 1994), but no other prehistoric funerary or ritual monuments are known in close proximity to the site.

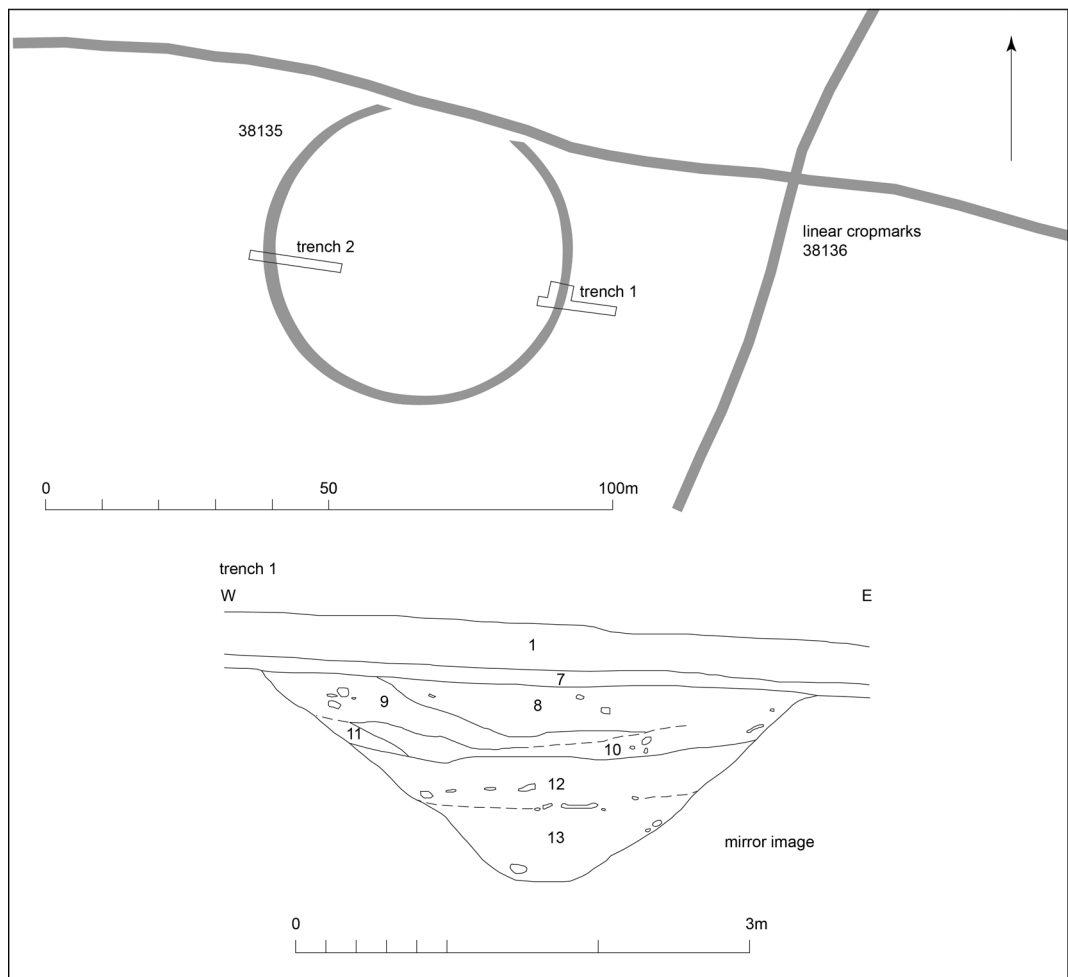


Fig. 12. Dyers Hall Farm: plan and ditch section.

Aerial photographs suggest that the ring-ditch is fairly regular and about 55m in diameter, its northern side being obscured by linear cropmarks (38136) forming part of a former field system (Fig. 12). Two trial trenches were excavated in May 2011, modern ploughsoil (1) being removed by machine down to the surface of the stony clay subsoil. The ditch was identified in both trenches but only the section in trench 1 on the eastern side of the monument was fully excavated (Fig. 13). The ring-ditch (6) was relatively substantial, being 3.7m wide and up to 1.3m deep from the subsoil surface, with sloping sides and a narrow flat base. The primary fill (13) consisted of yellowish-brown clay-silt (13), up to 0.48m thick, which was sealed by a more stony deposit (12) up to 0.35m thick. A sequence of clay and clay-silt deposits in the upper fills (11–9) on the inner edge of the ditch suggested that the upcast from the ditch, of which no visible trace remained, had been placed on the inner side of the ditch. The uppermost fill consisted of a layer of dark, greyish-brown clay-silt (8), which was up to 0.35m thick. Insufficient charcoal was recovered from the primary or secondary ditch silting for radiocarbon dating and no other datable material was recovered.

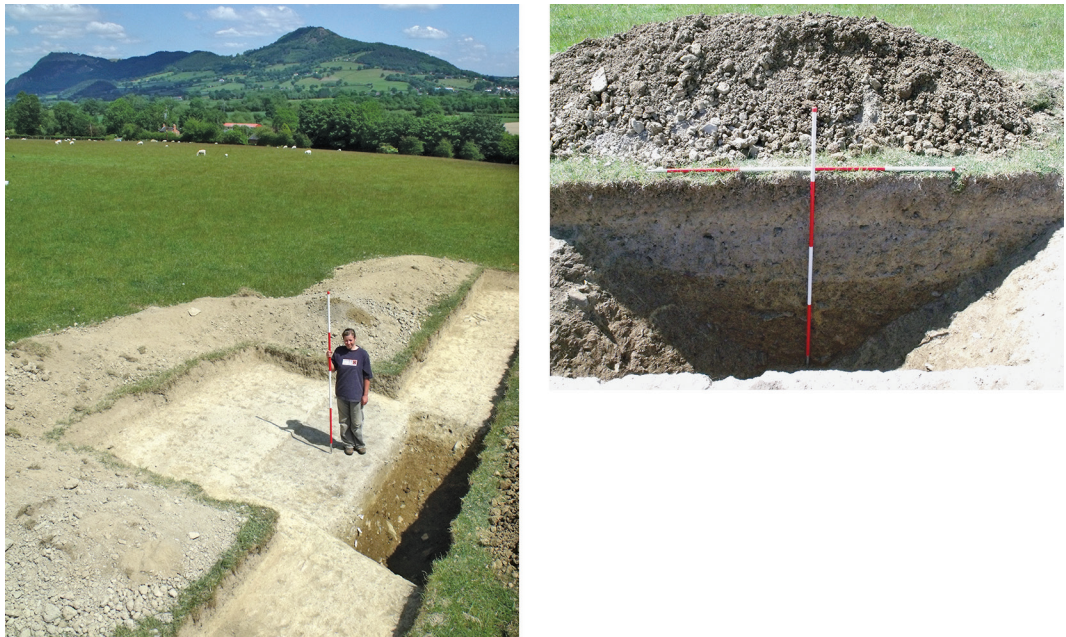


Fig. 13. Dyers Hall Farm: 13a (left) general view of the excavated ditch section looking north-eastwards towards the Breidden hills. Photograph CPAT 3292-0029; 13b (right) section of the ring-ditch in trench 1, viewed from the north. Photograph: CPAT 3292-0011.

Sarn-y-bryn-caled

The ring-ditch lies in the Severn valley at Sarn-y-bryn-caled, just to the south of Welshpool, in Powys, at an altitude of about 70m. It forms part of the Neolithic and Bronze Age complex of funerary and ritual monuments which includes a cursus monument (3482), timber circles (3994), penannular ring-ditch (4930), other smaller ring-ditches (4928, 8951) and other sites (Gibson 1994; 2010; Blockley and Tavener 2002) (Figs 14–15).



Fig. 14. Sarn-y-bryn-caled: aerial photograph of part of the Sarn-y-bryn-caled cropmark complex from the west, with the large ring-ditch visible abutting the lane to the right and part of the cursus visible to the left. *Photograph: CPAT 89-c-0179.*

Aerial photography indicates the partial plan of a slightly irregular ring-ditch up to 35m in diameter, the northern portion of which is obscured by a modern road. Two trial trenches were excavated across the ring-ditch in February 2012 following the removal of modern ploughsoil (1 and 14) by machine down to the surface of the natural subsoil, which consisted of river gravels with patches of silty clay. In trench 1, the ditch (9) was up to 1.4m wide and 0.6m deep from the subsoil surface, with steeply sloping sides and a flat bottom, 0.45m across (Fig. 16). The primary fill (8) consisted of a 0.1m-thick layer of greyish-brown gravelly silt with occasional flecks of charcoal which was sealed by a layer of gleyed greyish-brown clay-silt (7), 0.3m thick. The gleyed fill contained numerous iron-panned mineral deposits, suggesting a period of waterlogging followed the stabilisation of the ditch. The upper ditch deposits consisted of a layer of stony, yellow-brown silty clay (6), 0.14m thick, which appeared to have been derived predominantly from inside the ring-ditch and suggested that the upcast from the ditch had been placed on the inside of the ditch. The latest ditch fill (5) consisted of fine, orange-brown, silt clay. The ditch section (23) revealed in trench 2 was of similar dimensions, measuring 1.2m wide and up to 0.55m deep from the subsoil surface. The primary fill (22) consisted of greyish-brown clay-silt and gravel, 0.22m thick, similar to the basal fill (8) in trench 1. The secondary and upper fills of the ditch were also similar to those in trench 1, consisting of what appeared to be a ploughed down spread of stone and clay (20), 0.14m thick, overlying a firm, gleyed and iron panned, silty clay (21) 0.18m thick. No finds were recovered from either ditch section, but two radiocarbon dates were obtained from fragments of oak charcoal from the ditch fills in trench 2. A sample from the secondary fill (21) produced a date of 2190–1980 cal. BC (SUERC-43273). A date of 7048–6780 cal. BC (SUERC-43272) from the primary fill is clearly derived from remnant material of Mesolithic date.

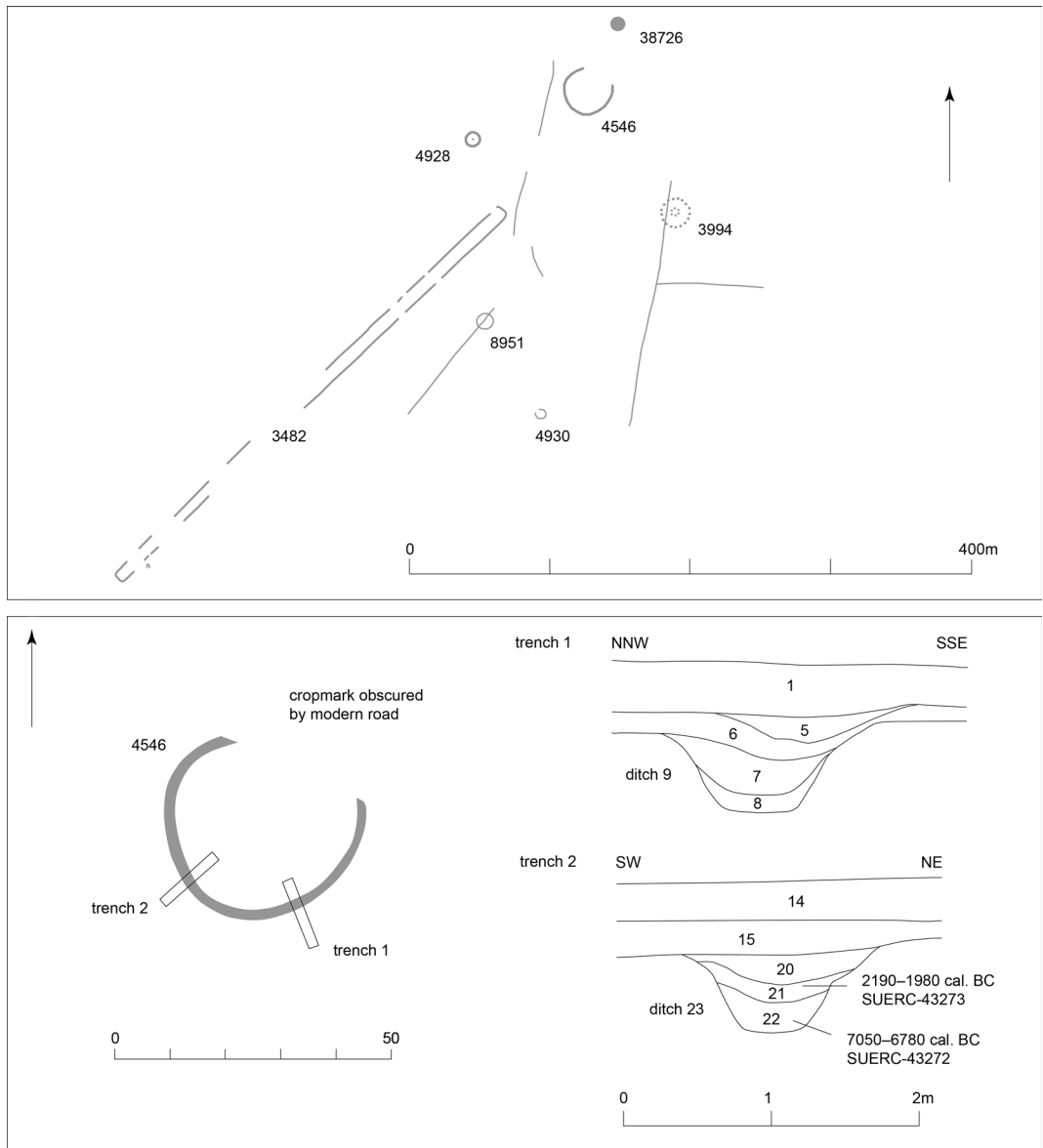


Fig. 15. Sarn-y-bryn-caled: (above) location of the site in relation to cropmark complex; (below) plan of ring-ditch and ditch sections.

The trial excavation has shown that the ring-ditch is Early Bronze Age or later in date and post-dates 2190–1980 cal. BC. There are hints that the material excavated from the ring-ditch was placed on its inner side.



Fig. 16. Sarn-y-bryn-caled: 18a (left) excavated section of ditch in trench 1, viewed from the north-west. *Photograph: CPAT 3424-0059*; 18b (right) south-west-facing section of ring-ditch in trench 1. *Photograph: CPAT 3424-0066*.

Walton Court Farm

This unusually large ring-ditch lies within the complex of Neolithic and Bronze Age funerary and ritual monuments in the Walton Basin, Radnorshire (Figs 17–18) (Jones 2009a, fig. 11; Britnell and Jones 2012, figs 1, 10; Britnell 2013, 36–7). It is sited at an altitude of about 192m on the edge of a slight terrace,



Fig. 17. Walton Court Farm: aerial photograph of the cropmark ring-ditch from the south-east. *Photograph: CPAT 96-c-0021*.

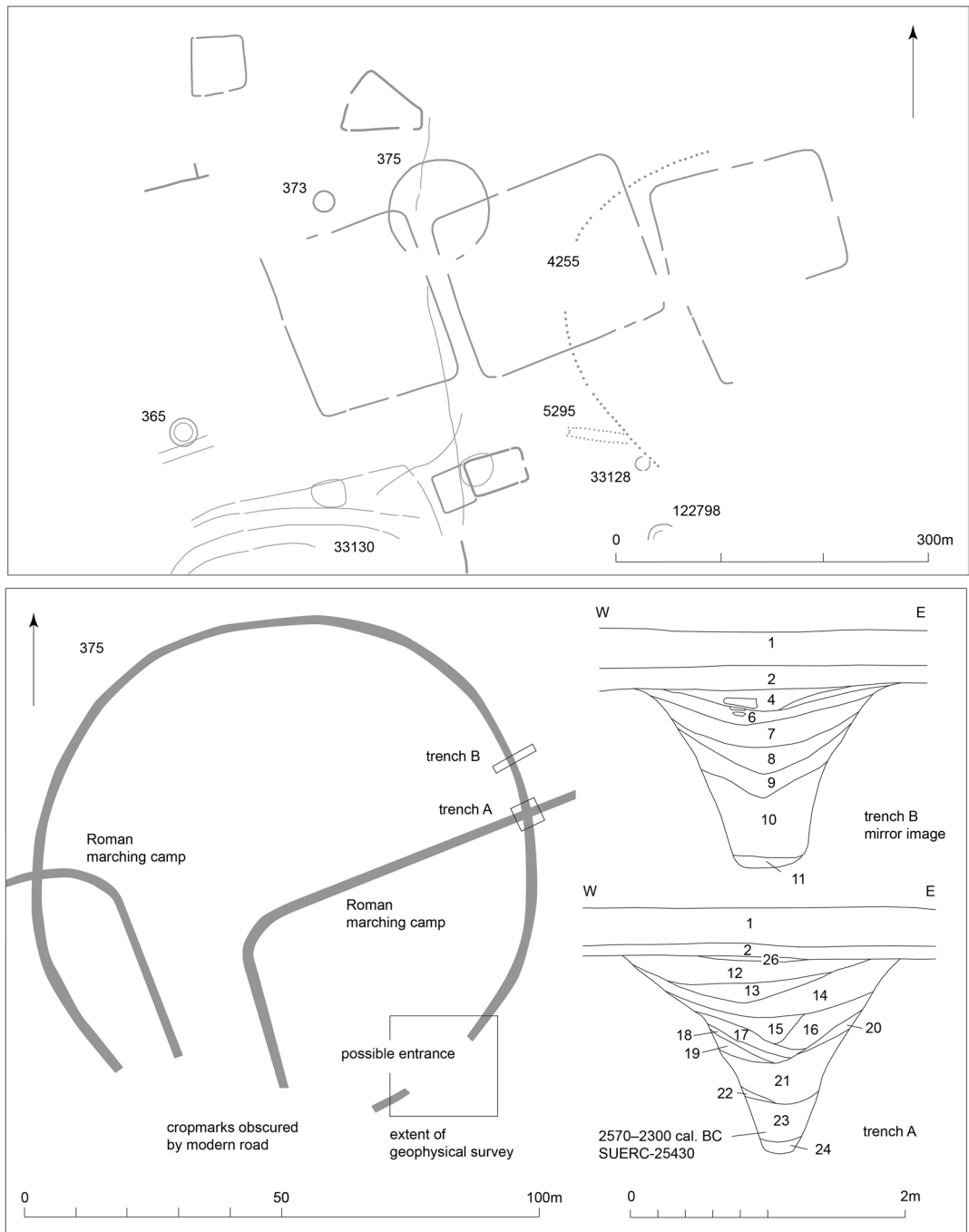


Fig. 18. Walton Court Farm: 4a (left) location of the site in relation to cropmark complex; 4b (right) plan of ring-ditch and ditch sections.

on land which slopes down gently from south-west to north-east by about 1.5m across the diameter of the circle. Sites in close proximity (Fig. 18) include the Walton palisaded enclosure (4255) and pit alignment (5295), a possible triple-palisaded enclosure (33130) and a number of smaller ring-ditches (373, 365, 33128, 122798). Other sites within the same complex but which lie further afield include the Hindwell palisaded enclosure (19376), the largest Neolithic enclosure known in Britain, the Hindwell double-palisaded enclosure (114489), and the extraordinarily long Hindwell cursus (33109), which is one of the largest cursus monuments in Britain, and the smaller Walton Green cursus (5134). Later sites include a number of rectilinear enclosures probably of later prehistoric or Romano-British date and a line of three Roman marching camps, two of which intersect with the large ring-ditch (Davies and Jones 2006, 139 and fig. 88).

Aerial photography indicates that the ring-ditch is about 98m in diameter. The southern side is obscured by a modern road and there is a gap about 14m wide on the south-east which may represent an original entrance causeway. Geophysical survey undertaken in March 2010 to investigate this gap failed even to identify the ring-ditch at all, probably due to geological conditions (Lewis and Roseveare 2010). Two trenches were excavated across the ring-ditch, one at its intersection with one of the Roman marching camps (trench A), and the other (trench B) 8m to the north (Fig. 19). Up to 0.4m of topsoil and a layer of old ploughsoil was removed by machine in both trenches down to the surface of the natural subsoil, which was composed of gravels containing bands of silty clay. Trench A confirmed that the ring-ditch had been cut by the marching camp ditch and sections of both features were subsequently excavated. (The results for the marching camp will be published separately in due course.) The ring-ditch was found to be 2m wide and around 1.4m deep, below the surface of the natural gravel. In trench A the outer edge was relatively straight-sided with a narrow base only 0.25m wide. In trench B the profile of the ditch was more symmetrical, with both sides sloping steeply with a slightly broader base, about 0.5m wide. The pattern of infilling in both of the excavated sections revealed two periods of stabilisation, the earliest following the deposition of a sequence of gravelly layers (21, 23, 24 in trench A and 10, 11 in trench B) which were presumably deposited relatively soon after the ditch was excavated, having been formed by rapid weathering of the ditch sides. A fragment of hazel charcoal was recovered from the base of context 23 which has been dated to 2570–2300 cal. BC (SUERC-26430). The upper fills were composed predominantly of orange to grey-brown clay



Fig. 19. Walton Court Farm: 5a (left) general view during excavation, looking towards the north-west. Photograph: CPAT 2942-0067; 5b (right) ring-ditch section in trench A, looking north. Scales 2m. Photograph: CPAT 2942.047.

silts, with the exception of a layer of loose gravel (16) which had been deposited from the outer edge of the ditch. The upper part of layer 15 in trench A and layer 8 in trench B contained a significant amount of iron panning which may indicate a second stage of stabilisation. There was no clear and unambiguous evidence from the pattern of silting in the ditch to suggest whether the upcast had originally been placed on the inside or outside the ditch. The only find recovered from the ditch fill was an unretouched flint flake probably from a small nodule with a rough, irregular, 'pebble' cortex.⁷

CHARRED PLANT REMAINS AND CHARCOAL IDENTIFICATIONS FROM TRIAL EXCAVATIONS ON LARGE RING-DITCHES

By Astrid E. Caseldine, Catherine J. Griffiths and Roderick J. Bale⁸

Introduction

A limited programme of sampling was undertaken from samples obtained from the trial excavation of six large ring-ditches in order to provide information about the environment in which the sites lay as well as to identify suitable samples for AMS dating.

A flotation machine was used to process the samples. The minimum mesh size used to recover the flot was 250 microns and a 500-micron mesh was used for the residues. The samples were examined using a Wild M5 stereomicroscope. Seeds and other remains were identified by reference to modern type material and seed atlases and manuals (e.g. Berggren 1981; Schoch *et al.* 1988; Anderberg 1994; Cappers *et al.* 2006). Nomenclature and ecological information is based on Stace (1995) which is also used for ecological information. Details of all the samples examined are in the Site Archive.

Charcoal was fractured to produce clean sections for examination of the wood anatomy. The charcoal was identified using a Leica DMR microscope with incident light source. Identification was by reference to wood identification manuals (Schoch *et al.* 2004; Schweingruber 1978) and modern type-material. Nomenclature follows Stace (1995).

Pentrehobin

A sample from one of the primary layers of ditch fill (29) produced only charred possible rhizome fragments and parenchymatous-type fragments, possibly from tubers (Table 1). A sample from a layer (28) overlying the primary fill contained charred rhizome and stem fragments. Samples overlying layers of secondary fill (25, 23, 22) failed to produce any identifiable charred plant remains other than one rhizome fragment. Plant remains from the later ditch fill (15), which also produced sherds pottery of mid-late Bronze Age to possibly early Iron Age date, included seeds of elder (*Sambucus nigra*), violet (*Viola* sp.), and possible crab (cf. *Malus sylvestris*) as well as rhizome fragments and parenchymatous-type fragments, again possibly from tubers.

Little identifiable charcoal was recovered from the samples of ditch fill. Two fragments of oak (*Quercus* sp.) charcoal were identified from one of the primary layers of fills (2), but samples from the secondary layers failed to produce any identifiable charcoal. Samples from upper layers included one fragment of charcoal from layer 16 and several fragments of alder (*Alnus glutinosa*) charcoal from layer 15, which also contained the later prehistoric pottery mentioned above.

Apart from one fragment of ash (*Fraxinus excelsior*), only oak charcoal, was present in the charcoal samples from the charred timber structure, possibly a coffin, in pit 3 towards the centre of the ring-ditch, which provided a date of 2400–2130 cal. BC (SUERC-32382). A samples from the fill of the adjacent pit 5 produced further oak charcoal and lesser amounts of blackthorn (*Prunus spinosa*) charcoal, whereas samples from pit 9 produced a few rhizome fragments and parenchymatous-type material.

The evidence is limited but does indicate the presence of oak woodland in the area *c.* 2400–2130 cal. BC and, from the presence of the structure, that oak was being selected for use. Although the assemblage is small, the occurrence of only alder, from one of the upper layers of ditch fill which also contained pottery of mid-late Bronze Age and possible late Bronze Age or early Iron Age date, may indicate a change in woodland in the area, or deliberate selection of that species. Similarly the presence of blackthorn in the upper fill of one of the pits could indicate a change to more scrub in the area but the evidence is scanty.

The evidence for vegetation, apart from woodland, is very limited and is largely confined to the occasional rhizome fragment suggesting grassland. The presence of violet in the uppermost ditch fill could also indicate either woods or grassland. It is uncertain whether the elder and possible crab apple, also from this ditch fill, indicate deliberate collection of wild foodstuffs or incidental burning along with wood collected for fuel. Equally, the remains could reflect natural fires or deliberate burning of woodland in the area. Their association with later prehistoric pottery, however, suggest that the charred remains reflect anthropogenic activity. Their presence may indicate autumn fire activity.

Table 1. Charred plant remains and charcoal identifications from Pentrehobin ring-ditch

Feature	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch	Pit 3	Pit 5	Pit 9
Contexts	12	12	12	12	12	12	12	8, 17, 19	6, 7	10
Charred plant remains										
<i>Viola</i> sp. (violets)	1	–	–	–	–	–	–	–	–	–
cf. <i>Malus sylvestris</i> (L.) Miller (Crab apple)	2	–	–	–	–	–	–	–	–	–
<i>Sambucus nigra</i> L. (elder)	1	–	–	–	–	–	–	–	–	–
seed indeterminate	1	–	–	–	–	–	–	–	–	–
rhizome fragments	6	–	1	–	–	1	–	–	–	4
cf. rhizome fragments	1	–	–	–	–	–	3	–	–	2
stem fragments	–	–	–	–	–	2	–	–	–	–
parenchymatous-type fragments	16	–	–	–	–	–	23	–	–	28
Charcoal										
<i>Quercus</i> spp. (oak)	–	1	–	–	–	–	2	89*	28	–
<i>Alnus glutinosa</i> (L.) Gaerner (alder)	10	–	–	–	–	–	–	–	–	–
<i>Prunus spinosa</i> L. (blackthorn)	–	–	–	–	–	–	–	–	2	–
<i>Fraxinus excelsior</i> L. (ash)	–	–	–	–	–	–	–	1	–	–
indeterminate fragments	–	–	+	+	+	+	–	–	–	+

* = sample used for AMS dating

Causeway Lane

Charcoal from the primary layers of fill (11, 15) has been dated to 3950–3800 cal. BC (SUERC-43274) and 3340–3030 cal. BC (SUERC-43275). A date of 8700–8480 cal. BC (SUERC-43276) from a secondary layer (10) of fill suggests residual material resulting either natural or anthropogenic activity, during the Mesolithic period.

Charred seeds were generally scarce although fragments of charred rhizome material were quite common and wood charcoal was present in all the samples (Table 2). Charred rhizome fragments were

particularly frequent in the primary fill (11, 15) of the ditch on the northern and southern sides of the ring-ditch. In addition, hazelnut (*Corylus avellana*) shell fragments, clover (*Trifolium*-type) seeds and a single vetch/vetchling (*Vicia/Lathyrus*) seed were recovered from these layers. Hazelnut shell and rhizome fragments were again present in the fill (17) of an earlier though undated pit (16) which had been cut by the ring-ditch. The only charred plant remains recovered from the secondary fill of the ditch was a hawthorn (*Crataegus* sp.) seed and further charred rhizome fragments from layer 10 on the south-side of the ring-ditch.

Samples produced only a small amount of identifiable charcoal. The primary layers of ditch fill (11, 15) yielded oak (*Quercus* spp.), hazel (*Corylus avellana*), blackthorn (*Prunus spinosa*) and Maloideae-type charcoal. The latter includes crab apple (*Malus sylvestris*), hawthorn (*Crataegus* spp.), and rowan, whitebeam, wild service-tree (*Sorbus* spp.). The secondary fill of the ditch (10) produced oak, hazel and Maloideae-type charcoal, and in this instance the presence of the hawthorn seed (see above) suggests the charcoal was of this species rather than any other. The fill of the earlier pit (17) produced oak and again Maloideae-type charcoal.

The presence of hazelnut fragments in the primary fill of the ring-ditch may either indicate the collection of wild foodstuffs or incidental burning along with wood. It may be significant that no hazel

Table 2. Charred plant remains and charcoal identifications from Causeway Lane ring-ditch

Feature	Ring-ditch 5	Ring-ditch 5	Ring-ditch 2	Pit 16
Context	10	11	15	17
Charred plant remains				
<i>Corylus avellana</i> L. (hazel) shell fragments	–	–	10	2
<i>Vicia/Lathyrus</i> (vetches/peas, vetchlings)	–	1	–	–
<i>Crataegus</i> sp. (hawthorn)	1	–	–	–
<i>Trifolium</i> -type (clovers)	–	1	2	–
seeds indeterminate	1	–	1	–
cf. seeds indeterminate	2	–	4	–
rhizome	58	32	91	19
cf. rhizome	2	–	–	–
large rhizome/tuber	5	7	31	4
cf. rhizome/tuber	–	4	–	–
cf. receptacle	–	1	–	–
parenchymatous-type material	4	8	8	–
Charcoal				
<i>Quercus</i> spp. (oak)	7	7	12	4
<i>Corylus avellana</i> L. (hazel)	1*	1*	–	–
<i>Prunus spinosa</i> L. (blackthorn)	–	–	1*	–
Maloideae type (crab apple, hawthorn, rowan, whitebeam, wild service-tree)	1	2	–	1
<i>Fraxinus excelsior</i> L. (ash)	–	1	2	–
Other material				
burnt bone	+	+	–	–
molluscs	+	+	+	+

* = sample used for AMS dating; + = present

charcoal was recorded from the samples producing the hazelnut fragments, though very little charcoal was identifiable from the samples in general. The occurrence of charred rhizomes and seeds such as clover and vetch, associated with grassland, as well as wood charcoal (see below), suggests that burning took place locally. The remains may reflect fire activity contemporary with the monument or be earlier in date. The hazelnut fragments and hawthorn seed may suggest burning activity in the autumn. Although oak charcoal is present in the primary and secondary layers of ditch fill, the occurrence of species such as hazel, blackthorn and hawthorn-type may indicate secondary colonisation of cleared ground, though these species can also form the understorey in oak woodland. Ash, which is light-demanding, might also have benefited from clearance activity.

Collfryn

Samples were retrieved from the ring-ditch sections 7 and 9 excavated in 2012 (Table 3). The only charred plant remains other than charcoal was one emmer wheat (*Triticum dicocum*) glume base from one of the upper layers of ditch fill (11). Oak (*Quercus* sp.) charcoal from the same layer has been dated to 370–200 cal. BC (SUERC-43271), suggesting the emmer wheat reflects cultivation during the Iron Age. There is further evidence for cereal cultivation in the area from the Iron Age and Romano-British enclosure at Collfryn, just under a kilometre to the north-east, where there is evidence for both emmer and spelt wheat but emmer wheat dominates (Britnell 1989; Jones and Milles 1989). In contrast, during the Romano-British period at the Collfryn enclosure, bread/club wheat appears to have taken over as the main wheat species grown in the area.

Charcoal from secondary layers of ditch fill (11, 13) included oak (*Quercus* spp.), birch (*Betula* spp.), hazel (*Corylus avellana*) and ash (*Fraxinus excelsior*). This is associated with the Iron Age radiocarbon date quoted above from layer 11 and with a similar radiocarbon date of 390–210 cal. BC (SUERC-43270) obtained from birch charcoal from underlying layer 13, which suggest the presence of scrub and woodland in the later prehistoric period. A single fragment of hazel from the primary ditch fill (17) was too small to provide an AMS date but may indicate hazel woodland in the area around the time the ring-ditch was constructed.

Table 3. Charred plant remains and charcoal identifications from Collfryn ring-ditch

Feature	Ring-ditch 9	Ring-ditch 9	Ring-ditch 7
Context	11	13	17
Charred plant remains			
<i>Triticum dicocum</i> – glume bases (emmer wheat)	1	–	–
Charcoal			
<i>Quercus</i> spp. (oak)	1*	–	–
<i>Betula</i> spp. (birch)	–	3*	–
<i>Corylus avellana</i> L. (hazel)	–	1	1
<i>Fraxinus excelsior</i> L. (ash)	2	–	–

* = sample used for AMS dating

Dyers Hall Farm

The only remains recovered were small fragments of wood charcoal from the primary fill (13) and from the uppermost layer of fill (8) (Table 4). The charcoal from the primary fill was too small to permit

identification. Charcoal from the uppermost layer of fill (8) was scarce but oak (*Quercus* sp.), blackthorn (*Prunus spinosa*) and wild cherry/bird cherry (*Prunus* spp.) were present, suggesting the presence of oak woodland, and possibly scrub, in the area, although the dating of this is uncertain.

Table 4. Charcoal identifications from Dyers Hall Farm ring-ditch

Feature	Ring-ditch 6	Ring-ditch 6	Ring-ditch 6
Context	8	12	13
<i>Quercus</i> spp. (oak)	2	–	–
<i>Prunus spinosa</i> L. (blackthorn)	1	–	–
<i>Prunus</i> spp. (wild cherry, bird cherry)	1	–	–
indeterminate fragments	+	–	+

+ = present

Sarn-y-bryn-caled

Few remains, other than wood charcoal, were recovered from the samples from the two ring-ditch sections (Table 5). Plant remains from the primary ditch fills (8, 22) included tuber of onion couch grass (*Arrhenatherum elatius* Var. *bulbosum*), which grows in a variety of places including coarse grassland, hedgerows and rough ground and its presence can be an indicator of reduced, or absence of, grazing pressure (Robinson 1988). A date of 7050–6780 cal. BC (SUERC-43272) obtained from oak charcoal from the primary fill (22), however, suggests that some of the material in the primary fills is residual and represents a burning event, either as a result of wild fires or anthropogenic activity, during the Mesolithic period. The onion couch grass in the primary fill may also date to this period, but there is also a possibility that it may be later in date and contemporary with the monument since it also occurs together with other grass rhizome fragments in the secondary ditch fills (7, 21), from which a date of 2190–1980 cal. BC (SUERC-43273) was obtained. Onion couch grass has been noted at a number of sites in Wales, including Middle Bronze Age pits at Pennant Melangell (Caseldine 1994) and early Neolithic pits at Carrog (Caseldine *et al.* 2012) as well as several early medieval cemetery sites including Meusydd cemetery (Caseldine and Griffiths forthcoming) and West Angle, Pembrokeshire (Caseldine and Griffiths 2011).

A possible wheat (*Triticum* sp.) grain was found in the uppermost fill (20) of one ditch section (23), which may suggest arable cultivation in the vicinity at some date during or after the Early Bronze Age. The onion couch grass did not occur in the same sample as the wheat grain but it does tend to spread in arable land owing to the corm-like internodes. Hulled barley, dated to *c.* 2000 cal. BC, was recovered from a ring-ditch at Coed-y-dinas (Gibson 1994), about 400m to the north-east.

Charcoal was also scarce in the samples and, unfortunately, much of it was too small for radiocarbon dating purposes. Hazel (*Corylus avellana*) was present in the primary fills (8, 22) of the two ditch sections, as well as oak (*Quercus* sp.) and blackthorn (*Prunus spinosa*) in the primary fill of ditch 23. Oak and hazel also occurred in the secondary fills (7, 21) of both ditch sections. A slightly greater range of taxa were recorded from the upper ditch fills (6, 20), including oak, hazel, blackthorn, birch and ash. As noted above, at least some of the material from the primary ditch fill appears to be residual, though the results may indicate the presence of oak woodland with hazel and blackthorn in the vicinity at around the time the monument was constructed. A rather more extensive assemblage was obtained from a ring-ditch at Coed-y-dinas and included blackthorn, rowan type, willow/poplar and field maple as well as oak and hazel/alder (Gibson 1994; Morgan 1994), reflecting more varied woodland. Charcoal, also of similar date,

from a secondary cremation and from posts forming part of the outer circle at Sarn-y-bryn-caled timber circle was dominated by oak (Gibson 1994; Morgan 1994), suggesting species selection in both instances.

The presence of birch and ash in the upper fill (6) of one of the ditch sections may indicate a change in woodland in the area but the sample size is very small and the date of the charcoal uncertain.

The evidence suggests rough grassland and possibly reduced grazing activity with some oak woodland and scrub in the area around the time the ring-ditch was constructed. There is some evidence from elsewhere in the area, namely Coed-y-dinas, for cultivation *c.* 2000 cal. BC and, probably at a later date, at Sarn-y-bryn-caled. There is also evidence that ash and birch were part of the woodland in the area, along with oak, blackthorn and hazel, at a later date but the charcoal assemblage is small and does not necessarily indicate a change in woodland.

Table 5. Charred plant remains and charcoal identifications from Sarn-y-bryn-caled ring-ditch

Feature	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch	Ring-ditch
Context	9	9	9	23	23	23
	8	7	6	22	21	20
Charred plant remains						
<i>cf. Triticum</i> sp. – grain (wheat)	–	–	–	–	–	1
<i>Arrhenatherum elatius</i> Var. <i>bulbosum</i> (Willd.) St Amans – (onion couch grass) tuber	–	1	1	1	–	–
Poaceae – rhizome fragments (grass)	–	–	7	–	14	4
Charcoal						
<i>Quercus</i> spp. (oak)	–	1	1	2*	2*	1
<i>Betula</i> spp. (birch)	–	–	1	–	–	–
<i>Corylus avellana</i> L. (hazel)	2	–	–	1	2	1
<i>Prunus spinosa</i> L. (blackthorn)	–	–	–	1	–	1
<i>Fraxinus excelsior</i> L. (ash)	–	–	1	–	–	–

* = sample used for AMS dating

Walton Court Farm

Few charred plant remains were recovered from the layers of ditch fill (Table 6). The primary and secondary layers of fill failed to produce any identifiable plant remains, though from the undated upper layers of fill (6, 7) a seed possibly of common hemp nettle (*Galeopsis tetrahit*) was recovered from on layer (7). The latter can be found in woodland clearings and where there are damp soil conditions as well as on rough ground or where there is arable cultivation. The fill (6) above produced two charred grass (Poaceae) seeds, a rhizome fragment and a charred stem of a tree bud. A charred seed of sheep's sorrel (*Rumex acetosella*), a species typically found in grassland or where there is cultivation, was recorded from sample 106 from one of the upper fills (15/17) of trench B.

Seven fragments of charcoal were identified from context 23, one of the lower fills of the ring-ditch (Table 1). Six of the fragments were hazel (*Corylus avellana*) and one was ash (*Fraxinus excelsior*). One of the hazel fragments gave a date range of 2570–2300 cal. BC (SUERC-26430).

The evidence from the charred plant remains indicates grassland and the presence of woodland in the area and relates to some time after 2570–2300 cal. BC. Although the evidence provided by the charcoal is

slight it suggests that hazel woodland was present in the area, probably secondary scrub woodland. This might have become more widespread following abandonment of land after clearance and agriculture. Ash might also have been favoured by earlier clearance of oak. Oak was frequent during the Grooved Ware phase in the charcoal record from Upper Ninepence (Johnson 1999) and oak charcoal clearly represented the remains of oak posts at the Hindwell palisaded enclosure dated to *c.* 2800–2500 cal. BC (Gibson 1999).

Table 6. Charred plant remains and charcoal identifications from Walton Court Farm ring-ditch

Feature	Ring-ditch Trench B	Ring-ditch Trench B	Ring-ditch Trench A	Ring-ditch Trench A
Context	6	7	15/17	23
Charred plant remains				
<i>Rumex acetosella</i> L. (sheep's sorrel)	1	–	–	–
cf. <i>Galeopsis tetrahit</i> L. (common hemp-nettle)	–	1	–	–
Poaceae (grass)	2	–	–	–
rhizome	1	–	–	–
stem	–	–	–	–
tree bud stem	1	–	–	–
indeterminate fragments	–	+	+	–
Charcoal				
<i>Corylus avellana</i> L. (hazel)	–	–	–	6*
<i>Fraxinus excelsior</i> L. (ash)	–	–	–	1

* = sample used for AMS dating

RADIOCARBON DATING

Samples of charcoal from 5 of the 6 sites investigated were submitted for AMS dating to SUERC in East Kilbride. The calibrated dates are calculated by OxCal v4.1 (Bronk Ramsey 2009) using the IntCal09 atmospheric calibration curve with Atmospheric data from Reimer *et al.* (2004) and are quoted at the overall range at 95.4% probability. The calibrated date ranges cited are quoted in the form recommended by Mook (1986), with the end points rounded outward to 10 years for errors greater than 25 years. The dated samples were identified prior to submission (see report by Caseldine, Griffiths and Bale above).

PENTREHOBIN

SUERC-32382

Context: 19, charred timber in pit 3

Material: charcoal, oak (*Quercus* spp.)

Radiocarbon age: 3810±30 BP

Calibrated date (95.4% probability): 2400–2130 cal. BC

CAUSEWAY LANE

SUERC-43274

Context: 15, primary ditch fill

Material: charcoal, blackthorn (*Prunus spinosa*)

Radiocarbon age: 5066±29 BP

Calibrated date (95.4% probability): 3950–3800 cal. BC

SUERC-43275

Context: 11, primary ditch fill
Material: charcoal, hazel (*Corylus avellana*)
Radiocarbon age: 4483±29 BP
Calibrated date (95.4% probability): 3340–3030 cal. BC

SUERC-43276

Context: 10, secondary ditch fill
Material: charcoal, hazel (*Corylus avellana*)
Radiocarbon age: 9323±28 BP
Calibrated date (95.4% probability): 8700–8480 cal. BC

COLLFRYN

SUERC-43270

Context: 13, secondary ditch fill
Material: charcoal, birch (*Betula* spp.)
 246±28 BP
Calibrated date (95.4% probability): 390–210 cal. BC

SUERC-43271

Context: 11, upper ditch fill
Material: charcoal, oak (*Quercus* spp.)
Radiocarbon age: 2208±29 BP
Calibrated date (95.4% probability): 370–200 cal. BC

SARN-Y-BRYN-CALED

SUERC-43272

Context: 22, primary ditch fill
Material: charcoal, oak (*Quercus* spp.)
Radiocarbon age: 7983±30 BP
Calibrated date (95.4% probability): 7050–6780 cal. BC

SUERC-43273

Context: 21, secondary ditch fill
Material: charcoal, oak (*Quercus* spp.)
Radiocarbon age: 3684±29 BP
Calibrated date (95.4% probability): 2190–1980 cal. BC

WALTON COURT FARM

SUERC-26430

Context: 23, secondary ditch fill
Material: charcoal, hazel (*Corylus avellana*)
Radiocarbon age: 3945±35 BP
Calibrated date (95.4% probability): 2570–2300 cal. BC

DISCUSSION (WJB)

The assessment of large ring-ditches over 35m in diameter in Wales, combined with a limited programme of geophysical survey, trial excavations, environmental sampling and radiocarbon dating at six sites (Fig. 20) has made a modest contribution to the continuing debate about this intriguing class of field monuments. It suggests that a broad spectrum of site types is represented—from probable round barrow at one extreme to probable enclosed settlement at the other—and ranging in date from possible Late Neolithic to probable Iron Age. Given these uncertainties, the focus in this discussion will be upon the sites listed in the provisional catalogue where excavation has taken place.

One site that can probably be immediately excluded from the types of later Neolithic and early Bronze Age monuments under consideration is the Collfryn ring-ditch (**5149**) which radiocarbon dating suggests is likely to represent an enclosed settlement of no earlier than the third or fourth centuries BC. It is probably significant that the ring-ditch is not associated with other sites of an overtly funerary or ritual character and that like the excavated Iron Age and Romano-British enclosure (**50217**; Britnell 1989)

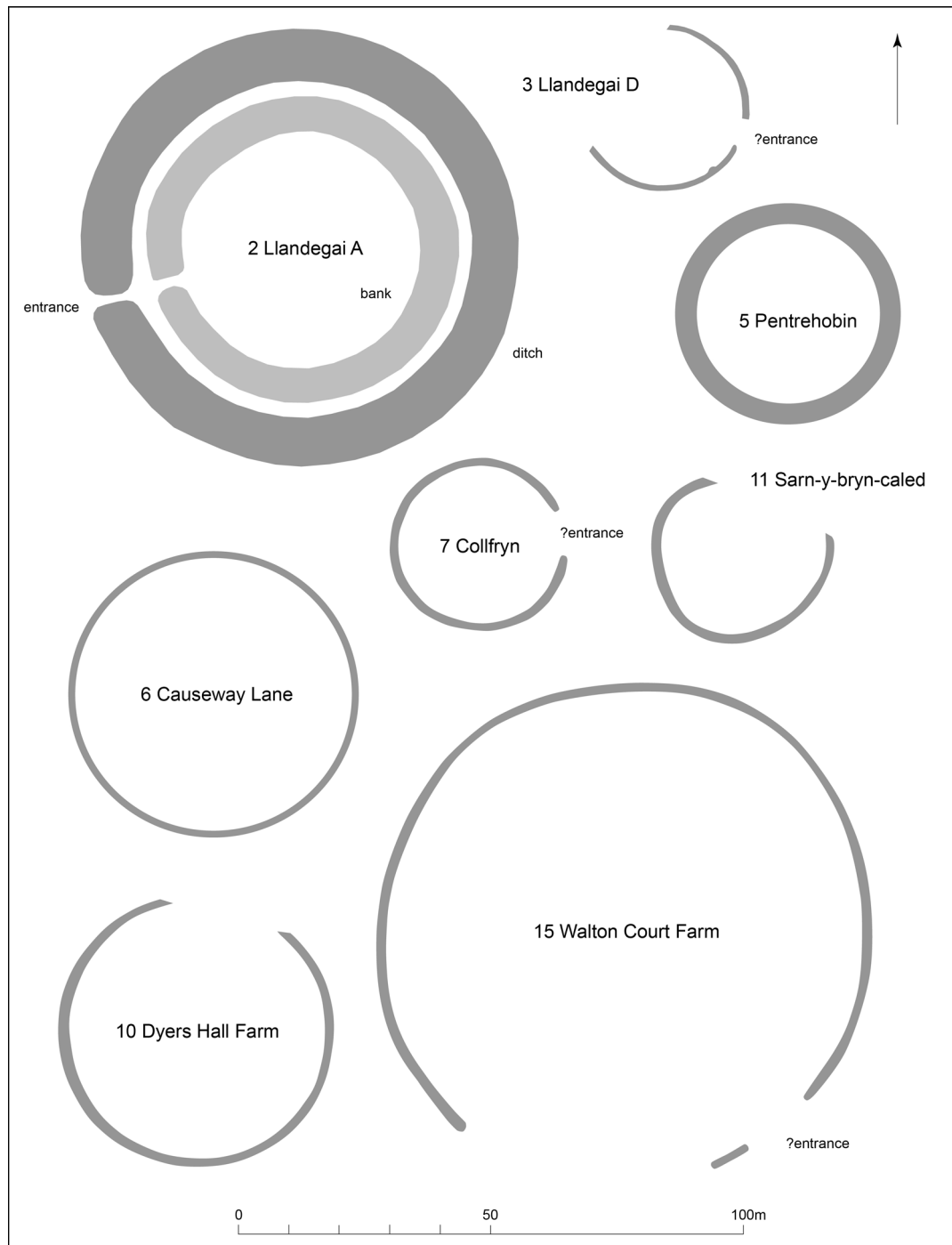


Fig. 20. Comparative plans of eight large ring-ditches in Wales that have been examined in the field (numbered as in the provisional catalogue). *Source: this report and Lynch and Musson 2001.*

just under a kilometre to the north-east it lies on slightly sloping ground. At only 36m in diameter and enclosing an area of under 0.1 hectares it is small in comparison to known later prehistoric curvilinear enclosed settlements (cf. Silvester 2011, 6), but it nonetheless appears to add to our scant knowledge of smaller Iron Age settlements in the region.

The Dyers Hall Farm ring-ditch (**38135**) is likewise isolated from other known funerary and ritual monuments. No dating evidence was recovered from the trial excavations and only limited palaeoenvironmental evidence was obtained, which means that, on present evidence, the site has little contribution to make to this discussion.

The remaining sites which were investigated in the field all fall within prehistoric funerary and ritual monument complexes. The 57m-diameter Causeway Lane ring-ditch (**2455**) forms part of a roughly linear grouping of ring-ditches close to the Vyrnwy-Tanat confluence which includes a second large ring-ditch (**4597**), 40m in diameter, and several possible multi-ditched sites (Fig. 7). The Sarn-y-bryn-caled ring-ditch (**4546**) lies within an extensive complex of Neolithic and Bronze Age monuments including a cursus monument and timber circles (Fig. 15) close to the floodplain of the river Severn. The Walton Court Farm ring-ditch (**375**) falls within the extensive complex of Neolithic and Bronze Age monuments in the Walton Basin which includes cursus monuments, palisaded enclosures and pit alignment (Fig. 18) as well as two further possible large ring-ditches (**33112**, **7022**) listed in the provisional catalogue of sites below. Llandegai A, Llandegai D and a large ring-ditch at Four Crosses, which are also included in the provisional catalogue below, again form part of more extensive complexes.

The 44m-diameter ring-ditch at Pentrehobin (**101731**) lies within several hundred metres of other ring-ditches and an upstanding barrow in the Alyn valley, which suggests that it formed part of a dispersed round-barrow cemetery. The Pentrehobin ring-ditch stands apart from the other sites investigated in the field in terms of the size of its ditch in relation to the diameter of the ring-ditch. It is also as one of the few sites where aerial photography and geophysical survey have revealed internal features which excavation suggests include an off-centre burial deposit associated with an oak coffin or chamber. This has provided a radiocarbon date of 2400–2130 cal. BC, which implies an Early Bronze Age date for the monument. There is therefore a strong likelihood that the ring-ditch represents an exceptionally large but denuded round barrow. Calculations suggest that the ditch could have been used to construct a bowl barrow up to 1.2m high,⁸ which would have been visually accentuated by the presence of the encircling ditch.

By a process of elimination this leaves three sites to be considered from amongst those investigated in the field—Causeway Lane (**2455**), Sarn-y-bryn-caled (**4546**), and Walton Court Farm (**375**), whose diameters range from 40m to 98m and which all form part of more extensive complexes of monuments. Causeway Lane appears to be a continuous ring-ditch, Walton Court is possibly penannular, and only part of the plan of the Sarn-y-bryn-caled ring-ditch is known. In each instance the scale of the ditches suggests that the material from them was used to construct a bank rather than a barrow mound. The dimensions of the ditches suggest that they would have provided sufficient material to construct a bank between 2m to 4m wide and perhaps little more than 0.5m to 0.75m high. The trial excavations at Causeway Lane and Sarn-y-bryn-caled suggest that this was placed on the inner edge of the monument but in the case of Walton Court Farm it is uncertain whether an internal or external bank (or both) is indicated. The fact that the Walton Court Farm and Sarn-y-bryn-caled ring-ditches abut modern lanes might suggest that earthworks associated with these monuments remained visible until modern times. This also appears to be the case at Dyers Hall Farm. However, in the case of the Walton Court Farm this appears to be contradicted by the fact that ring-ditch was overlain by two marching camps, which suggests that either no earthworks were visible or that these were probably levelled during the Roman period.

The only dating evidence for the three sites is provided by AMS dates for charcoal obtained from the ditch silts, which as discussed in another context (Barclay and Bayliss 1999) is taphonomically fraught

with uncertainty. The difficulty of using this kind of evidence for dating the monuments in question is highlighted by the presence of what is clearly residual charcoal dating to the Mesolithic period in the ditch fills at both Causeway Lane and Sarn-y-bryn-caled. In these circumstances the safest conclusion that can be reached is to assume that the radiocarbon dates provide no more than *termini post quos* for the deposits in which they were found. This implies that the Causeway Lane ring-ditch was constructed after 3340–3030 cal. BC, the Walton Court Farm ring-ditch after 2570–2300 cal. BC, and the Sarn-y-bryn-caled ring-ditch after about 2190–1980 cal. BC. Charred plant remains and charcoal from the primary ditch silts was generally slight and in each case the precise environmental context in which the sites were constructed remains uncertain.

In conclusion, it seems possible that a range of rare and unusually large-diameter circular ditched and embanked enclosures, some with causeways and others not, were constructed in the third millennium BC, during the later Neolithic and earlier Bronze Age periods, as components of more extensive complexes of funerary and ritual monuments. Larger-scale excavations and multiple ditch sections are clearly needed to provide more secure dating evidence, further information about the original form of the enigmatic monuments they represent, and to provide a better understanding of their function and place within the chronological sequence of the monumental complexes in which they appear.

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PROVISIONAL CATALOGUE OF LARGE RING-DITCHES IN WALES OVER 35M IN DIAMETER

Bold numbers refer to the Historic Environment Records (HER) maintained by the Clwyd-Powys Archaeological Trust (CPAT) and the Gwynedd Archaeological Trust (CPAT). External diameters are quoted.

1. Rhos Isaf, Llanbadrig, GAT HER **5198**, SH 387 934
Description Unexcavated 35m-diameter ring-ditch with the suggestion of an internal bank occupied a slight terrace on a hillside; possibly a settlement enclosure. *References* Smith 2003, 30; Gibson 2012, 113, no. 45.

primary ditch fills, although sherds of Fengate Ware were recovered from a stabilisation layer which also produced a radiocarbon date of around 3000 BC. Dates from a series of pits within the interior indicate that the monument is likely to date to around 3200–3100 cal. BC. The site is published as a henge but is unusual in having an internal rather than external bank. Though distinctly different to other monuments in this provisional catalogue it is included here by virtue of the fact that it is interpreted by Gibson as a penannular ditched enclosure and by Burrow as a ‘formative henge’. *References* Lynch and Musson 2001, 36–55; Burrow 2010, 184–6; Gibson 2012, 112–13, no. 38.
2. Llandegai A, Llandygai, GAT HER **222**, SH 5930 7110
Description Excavations in 1966–67 investigated the 80m-diameter ring ditch, which was thought to have originally been 8.5m wide and 3.3m deep, with an internal bank 7m wide with a narrow entrance on the south-west side. There was no dating evidence from the

primary ditch fills, although sherds of Fengate Ware were recovered from a stabilisation layer which also produced a radiocarbon date of around 3000 BC. Dates from a series of pits within the interior indicate that the monument is likely to date to around 3200–3100 cal. BC. The site is published as a henge but is unusual in having an internal rather than external bank. Though distinctly different to other monuments in this provisional catalogue it is included here by virtue of the fact that it is interpreted by Gibson as a penannular ditched enclosure and by Burrow as a ‘formative henge’. *References* Lynch and Musson 2001, 36–55; Burrow 2010, 184–6; Gibson 2012, 112–13, no. 38.

3. Llandegai D, Llandygai, GAT HER **222**, SH 594 712
Description Part of an approximately 38m-diameter ring-ditch with a ditch 1.5–1.8m across and 0.3–0.4m deep with a possible causeway, possibly aligned upon a cursus monument. A pit within the interior has produced a date of 2840–2460 cal. BC (GrN-26829). *References* Lynch and Musson 2001, 81–3; Gibson 2012, 113, no. 41).
Description Unexcavated 40m-diameter ring-ditch with hints of a second internal concentric ditch forming part of ring-ditch cluster. A further large ring-ditch (CPAT HER 2455) lies about 300m to the west. *References* Gibson 2002, 30; this report Fig. 7.
4. Pen y Sarn, Gwyddelfynydd, GAT HER **522**, SH 6070 0360
Description Circular ring-ditch around 75m, in diameter with a narrow ditch and no obvious entrance. Geophysical survey has suggested a possible internal bank. *References* St Joseph 1975, 101; Smith and Hopewell 2007a; Smith and Hopewell 2007b; Gibson 2012, 113, no 43.
5. Pentrehobin, Nercwys, CPAT HER **101731**, SJ 24626240
Description 44m-diameter ring-ditch. Trial excavation revealed a single ditch about 4m wide and 2m deep as well as internal features, one of which contained what may have been an oak coffin which has been dated to 2400–2130 cal. BC (SUERC 32382) A few undiagnostic later prehistoric sherds were found in the upper ditch fill. *References* Jones 2011a; Gibson 2012, 108, no. 2; Needham 2012, 220; this report.
6. Causeway Lane, Carreghofa, CPAT HER **2455**, SJ 25355 20650
Description 57m-diameter ring-ditch. Trial excavations revealed a single ditch 1.8m wide and around 0.7m deep. Hazel and blackthorn charcoal from the primary ditch fills have provided dates of 3954–3795 and 3341–3031 cal. BC (SUERC 43274 and 43275). A further large ring-ditch (CPAT HER 4597) lies about 300m to the east. *References* Gibson 2002, 30; Jones 2011b; this report.
7. Causeway Lane, Carreghofa, CPAT HER **4597**, SJ 2566 2063
Description Eastern, unexcavated half of ring-ditch about 38m diameter, forming part of a linear alignment. *References* Gibson 2002, 30.
8. Four Crosses, Llandysilio, CPAT HER **38096**, SJ 27173 18541
Description Eastern, unexcavated half of ring-ditch about 38m diameter, forming part of a linear alignment. *References* Gibson 2002, 30.
9. Collfryn, Llandrinio, CPAT PRN **5149**, SJ 2186 1650
Description 36m-diameter ring-ditch with possible causeway on the eastern side. Excavation revealed a narrow ditch, 1.8m wide and around 0.8m deep. Samples of beech and oak charcoal from the secondary and upper ditch fills have produced dates respectively of 392–207 and 374–200 cal. BC (SUERC 43270 and 43271) which suggest an Iron Age. *References* Jones 2009c; Grant 2011; this report.
10. Dyers Hall Farm, Pool Quay, CPAT HER **38135**, SJ 25334 11475
Description 55m-diameter ring-ditch. Trial excavations revealed a single ditch 3.7m wide and around 1.3m deep. *References*: Jones 2011c; this report.
11. Sarn-y-bryn-caled, Welshpool, CPAT HER **4546**, SJ 2187 0502
Description approximately 35m-diameter ring-ditch forming part of complex of funerary and ritual monuments. Trial excavations revealed a single ditch up to 1.4m wide and around 0.6m deep. Oak charcoal from the secondary ditch fill has provided a date of 2190–1980 cal. BC (SUERC-43273). *References* St Joseph 1980, fig. 2; Gibson 1994; 2012, 1167, no. 71; Grant 2012; this report.
12. Blackhall Cottages, Caersws, CPAT HER **2510**, SO 0172 9315

Description Unexcavated 40m-diameter ring-ditch possibly with a smaller ring-ditch some 15m across set eccentrically inside it. A second possible ring-ditch lies about 40m to the south-west. *References* Barker 1997; Gibson 2002, 27.

13. Rough Close, Old Radnor, CPAT HER **33112**, SO2543062308

Description Indistinct, unexcavated cropmark, 38m in diameter.

14. Burfa Bank, Old Radnor, CPAT HER **7022**, SO 26962 61242

Description Subcircular, unexcavated ring-ditch up to 35m across; possibly a ring-ditch or an enclosure. *References* Gibson 2012, 114–15, no. 56.

15. Walton Court Farm, Old Radnor, CPAT HER **375**, SO 25232 59959

Description Ring-ditch with an external diameter of around 98m with a possible entrance 14m wide on the south-east side. Excavations have demonstrated that the ditch was around 2m wide and 1.4m deep. Fragments of hazel charcoal from the secondary fill have produced a date of 2570–2300 cal. BC (SUERC 26430). *References* St Joseph 1973; 1980; Davies and Jones 2006, 139 and fig. 88; Jones 2010; Britnell and Jones 2012; Britnell 2013, 36–7; this report.

16. Boatside Cottage, Clyro, CPAT HER **5301**, SO23024382

Description Indistinct and unexcavated circular cropmark 40m in diameter. *References* Gibson 2012, 114.

NOTES

1. Clwyd-Powys Archaeological Trust, 41 Broad Street, Welshpool, Powys, SY21 7RR.
2. Of the three such sites in Wales plotted by Whimster (1989, fig. 22), no. 5 is the Dyffryn Lane Henge (CPAT HER 3590), and no. 7 is the Causeway Lane ring-ditch considered in this report (CPAT HER 4597), and no. 6 is the Ty Brith Wood enclosure (CPAT HER 5263) which has been shown by geophysical survey to be a D-shaped (Hankinson 2008, fig. 8).
3. Approximately 235 cubic metres, calculating the volume of soil from the cross-sectional area of the ditch ($\frac{1}{2}wd$, where w =width and d =depth) multiplied by its circumference ($2\pi r$, where r =radius).
4. By calculating the volume of such a barrow as a ‘spherical cap’ using the formula $(\pi h/6)(3r^2+h^2)$ (where r =radius and h =height).
5. Again by calculating the volume of such a barrow as a ‘spherical cap’.
6. We are grateful to Frances Lynch for this observation. See Evans 2006 for a discussion of monuments in Glamorgan.
7. Identified by Philippa Bradley.
7. School of Archaeology, History and Anthropology, University of Wales Trinity Saint David.
8. Calculated by estimating the internal radius of the site as 18m. By applying the formulae given in notes 3–4 the circumference of the ring-ditch is calculated at *c.* 138m, its cross-sectional area as *c.* 4.3m², giving a volume of *c.* 605m³ of material excavated from the ditch.

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