



ASSESSING IRON AGE MARSH-FORTS

by

Shelagh Margaret Norton BA, MPhil

Volume 2 of 2

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IRON AGE MARSH-FORTS - ENGLAND AND WALES

LEGEND
 Group 1 Marsh-fort used for ritual/non-domestic purposes
 Group 2 Possible marsh-fort: ritual/non-domestic functionality
 Group 3 Possible marsh-fort. Evidence is predominantly domestic; potential economic centre or territorial marker

Region	Site	Grid Ref	Location	Size	Period	Environment	Classified as...	Finds	Entrance	Function	Morphology	Internal Features	Selected Refs	Visit	Fletcher analysis (in Van der Noort et al 2007)	Hillfort Atlas = marsh-fort	large size	location/marshland setting	monumentality/morphology	MIA/LIA chronology	Lengthy landscape chronology/discontinuity of use	Localised woodland/clearance/pasture	Non-domestic; possible ceremonial or ritual use	Summary			
			Regional context	Elevation OD	Topography	Pre Iron Age	Iron Age	Post Iron Age/Roman																			
Cambridgeshire	Arbury Camp, Hinton (dest)	TL 4449 6160	gravel (extraction) to west; R Cam river valley	13MOD	Lowland (cf Wandlebury)	Sha	Neolithic occupation	4th-2ndC BC 410-160 cal BC - 380-40 cal BC	Roman re-use	Fort; enclosure	Leatherwork(?); human scapula	monumental eastern entrance	Stock pen? (eastern?) Possible territorial marker	Univallate; timber gateway (E)	No occupational evidence - 'empty'	Evans & Knight 2002	Y	✓	✓	✓	✓	✓	unk	✓	A seasonal camp/ territorial marker. Possibly a ceremonial centre, territorial marker or marsh-fort?		
	Belkars Hill, Willingham	TL 42317020	Southern end of Cambridgeshire fens	5m OD	fen edge	2.57 ha		medieval ring-work; possible motte-and-bailey	no p/environmental analysis; modern pasture	Enclosure; univallate hillfort/plateau fort	east/west (eastern?) north? (Iron Age)		Univallate; bisected by the Aldreth Causeway		Kenney & Oswald 1996		Y	x	✓	x	unk	unk	unk	Limited information; univallate hillfort/enclosure in fenland; possible territorial marker			
	Borough Fen	TF 1908 0729	Southernmost of a string of forts defining Corieltauvu/ Catuvelaunus border	8m OD	On a peninsular projecting into the fen, buried beneath alluvium during the Roman period	3.8ha		ditched enclosure with elevated interior; buildings; abandoned in later prehistory	Grazed pastureland	Earthwork enclosure; circular	Defleshed horse skull with 'placed' eastern gateway	eastern; interred gateway	similarities with Belkars Hill	Bivallate; circular	Occupational evidence pottery	Mallin and McKenna 1994	Y	Y	✓	✓	drained marsh	✓	unk	unk	x	Based on the evidence, the site may be a possible territorial marker or domestic enclosure of some standing	
	Borough Hill, Sawston	TL 471 494	on low chalk hill 2.5m above surroundings, R Cam flows to South	20MOD	8ha	Early Mesolithic to Late Bronze Age lithics; pre-iron Age buried soils	Animal remains; glass; IA pottery; spindle whorl	Loomweight; w/iron pottery	woodland cleared at an unknown date	Multivallate hillfort			Univallate fort became developed as large multivallate hillfort	Features include pits, enclosure (identified by geophysical investigation and test-pitting)	Thomas and Taylor 2011		✓	✓	✓	✓	✓	✓	unk	x	Domestic evidence; possible territorial marker; defences suggested by river bend		
	Stonea Camp, Wimington	TL 448 930	Surrounding BA ring ditches & barrows nearby	0mOD	Earthworks on a gravel island, utilising natural topography	4.05ha (inner D) 6.07ha (outer D) 9.61ha (outer)	Bronze Age burials	phased development; 3rdC BC-1stC AD	Roman fort respecting? (see evidence; possible site (see also Holkham) of the final Roman battle	Originally dense oak and birch (became managed woodland; grazed pastureland; no arable	Multivallate hillfort	Human remains (inc physical evidence); metalwork/ coins; pottery; limited range of animal bones		Delimiting marsh; ceremonial/ burial	Multivallate; 4 phases with periods of abandonment	Little Iron Age settlement evidence; short occupation in AD 1stC	Mallin 2005; Hall and Coles 1994	Y	Y	✓	✓	✓	✓	✓	✓	Morphology, size, chronology and usage indicate a marsh-fort	
	Wardy Hill	TL 478 820	Prominent spur north of Ely on the fen edge	5m OD	Commanded the approach to the marsh area of The Cove	ca 2ha (?)	Bronze Age evidence	large artefactual assemblage - Late Iron Age	strong LIA/Roman evidence into Flavian period	open grassland conditions with local stands of woodland; cultivation at some distance from the ringwork, probably on Wardy Hill itself; 4 honey bees indicate honey production ?? Hedging inferring invisible boundaries	Iron Age ringwork	Human remains; shrine complex?; metalwork/ coins; animal bone; large artefact assemblage	'farmstead-like' residential and refuge with symbolic overtones (Evans 2003)	Complex and irregular (irrigal) multi ditch system; unusual entrances inc causeway/water gate; nested enclosures;	Limited occupational evidence not warranting the size of defences; double ring work and 6 round houses	Boast, Hall and Whitlow 1992; Osano 2009; Mallin 2005	Y	Y	Y	Y	x	✓	✓	✓	✓	✓	Morphology and chronology consistent as a small marsh-fort; a possible control point governing fen access; possible a chieftain's centre
Cheshire	Oakmere	SI 57604783	Cheshire Meres region	75MOD	lake shore promontory	8ha	Neolithic evidence	Iron Age fortifications	Roman evidence (pile) may have been introduced from another location	Promontory hillfort	VCP		Univallate	none evident; excavation of ramparts only	Forde Johnston 1962; Garner 2014; Leah et al 1998	Y	Y	x	✓	✓	✓	✓	unk	unk	unk	Small but monumental fortification commanding the lake edge; possible marsh fort	
	Peckforton	SI 54305767	Cheshire Meres region	75MOD	lake shore promontory	35ha		Assumed Iron Age	cleared woodland; arable	Promontory hillfort			Univallate	none evident; no excavation	Garner 2014; Schoenwetter 1982	Y	Y	x	✓	✓	✓	x	✓	unk	A small enclosure on the edge of a mere.		
Gloucestershire	Oldbury Camp	ST 61039283	Severn estuary - east	10mOD	Estuary; alongside River Pill	4.04ha	Mesolithic worked flint?	IA pottery; iron working	Roman coins	amongst salttings/dual enclosure	enclosure	Scant pottery finds	north?	unknown	Partly bivallate - outer rampart is higher than inner suggesting a possible livestock enclosure; possible what? (artificial platform) but could be later mutation	see Howell & Iles 1979; excavation ongoing (SN Glos CC)	Y	Y	✓	✓	✓	✓	unk	unk	unk	Ongoing excavation should provide more evidence; possible control point on the Severn estuary or trading port	
	Salmonsbury Camp	SP1720	Bourton on the Water	130mOD	valley bottom	23ha + 6ha annex	Neolithic causewayed enclosure?; Bronze Age ring ditch; flint/cane arrowheads; pottery	2 phases of LIA occupation; round houses; pottery; pits; metalwork/ring; currency bars; spurs; human remains; coins	AD1st-4thC; coins; pits; metalwork; ring; terrace bounded on 2 sides by swamp/lake	At the junction/angle of Rivers Dikley/ Windrush; gravel terrace bounded on 2 sides by swamp/lake	hillfort/ fortified settlement oppidum?	large artefact assemblage	E to river	Settlement; enclosed oppidum (see also Oram's Arbour; Winchester; Dyke Hills)	bivallate - extension to annex flanked by marsh	Dunning 1951; 1976	Y	Y	✓	✓	✓	✓	unk	x?	Multi functional, multi-period enclosure/oppidum; evidence of continuous use and importance. Possible marsh-fort		
Hampshire	Bulldown Camp	SU 67058338	N Basingstoke	55mOD	gently rounded hill on N edge of plateau overlooking bend in Bow Brook; near confluence with River Loddon	4ha/3ha footprint				Multivallate hillfort/Late Iron Age oppidum	NW		Multivallate OD fort; three banks/ditches;		Williams Freeman, J.P. 1915.		Y	✓	✓	✓	unk	unk	unk	unk	Field systems and marshland surround this fortification, but evidence is too limited to draw a conclusion		

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Hertfordshire	The Aubreys, Redbourne	TL 095 112	1km NE of Hemel Hempstead, adjacent to M1		100-110mOD	at the end of a shallow east-west valley and close proximity to a small tributary of the river Ver	7.3ha	Neolithic - MBA	likely to be IA based on morphology			hillslope/valley	defensive enclosure		W, poss N	positioning suggests focal point in surrounding area	Uni/bi-vallate	none identified	Stansbie, Bailford and Bridgman 2012.													A possible control point in a low lying landscape; insufficient evidence
Herefordshire	Eaton Camp	SO 454393	Nr Cradentill			Large, steep sided and unusually sided, triangular, island promontory fort at confluence of Crag Brook and River Wye and opposite to Cradentill hillfort	7ha		Ramparts ca 600BC			promontory overlooking river confluence	Hillfort/Promontory camp/valley fort	MIA ceramics; Dribtwich briquetage; crucible; cattle bones and part human skull as deposits	NW		Uni-bivallate; possible annex	hut platforms	Dorling 1931; Atkinson 2011	Y											Promontory fort overlooking River Wye	
	Risbury Camp	SO 541 552	SE of Leominster		110mOD	flat topped knoll overlooked by surrounding hills, at junction between two brooks	3.2 ha (enc); 12.3ha (footprint)				chance finds of Roman pottery (intertan)	Hillfort; Dyer included as a valley fort						Multivallate; may have incorporated water courses into defences; revetted. Entrances to E (simple) and W (inturned)	summit may be artificially flattened		Y										Possible control point at river junction; evidence too limited to draw conclusion	
Lincolnshire	Bugh Banks	SK 959 3305	Lincolnshire Wolds		100mOD	Lying 500m to the SW of Old Somerby on glacial till with surrounding peat and alluvium deposits	3.3ha		undated			monument	unk	unk			possible univallate hillfort; oval shape; similar to Tattershall Thorpe	unk													insufficient evidence	
	Tattershall Thorpe	TF223598	Lincolnshire Wolds		9.2m OD	Overlooks Rivers Bain & Witham	1.8ha	Mesolithic and Neolithic flints;	MIA/LIA; 400-900c (Mullin 2005); 780-2000 BC (Van der Noort 2007)	Roman evidence	surrounding pasture	Small bivallate hillfort; seasonal curial? Causeway to N (now dest) was probable entrance	Artefacts assoc with settlement (flint weights; to N (now dest) was probable entrance; Neolithic stone axe; some metalwork	south east facing entrance		morphological connection to Fyrcloast/Old Abbey Farm	Bivallate		Chowne, Giring, Grieg 1986	Y												One of several defended enclosures in the Lincolnshire Fens, occupying a strategic point between the rivers Witham and the Iron Age coast. Possible marsh-fort
	Kilnstead/ Old Abbey Farm	TF 195 008	2.5km from Tattershall Thorpe		9mOD	commanding position	1.00ha						Small multivallate hillfort				very similar to Tattershall Thorpe	Multivallate; triple ditch ovoid													One of several defended enclosures in the Lincolnshire Fens; occupied similar location to Tattershall Thorpe. Insufficient information	
Northumberland	Hetha Burn West	NT 8788 2748	Lowish area in Cheviots.		200mOD	Near Hetha Burn, in the shadow of the heavily defended Great Hetha	2ha	Iron Age	evidence	Roman settlement close by	Surrounded by cultivation evidence	Enclosed settlement; isolated settlement; trackways					Bivallate with trackways	none	MacLachlan 1867												A likely annex to Great Hetha. Small enclosure on river, possibly for stock control	
Norfolk/Suffolk	Bloodgate Hill, South Creake (dest)	TF 84 35	1.2km from R Burn		61m OD	Almost the highest point in the valley with good views	3.5ha	Lithics; internal area encompasses a ring ditch at its highest/ central point		IA sherds; metal working debris, knife, weight, flake, scraper	pottery; brooch; coin; cosmetic paste	Open grassland	Hillfort	lithics; metalwork; skull; IA sherds; Roman finds	north east		Univallate; circular		Fenn et al 2006; Davies Gregory et al 1991													Sizeable fortification and possible control point in shallow valley; possible central Bronze Age round barrow; limited settlement evidence. However, some distance from wetland
	Boney's Island, Beccles	TM 4309 9086			5m OD	spur of heath jutting into Beccles Marshes	unknown; circa 3ha		slight evidence				Oval, uni/bi-vallate 'marsh fort'; bank/ditch				Single, possibly a double, bank and ditch				Y?										Too little evidence to draw a conclusion; lack of monumentality suggests enclosure	
	Bugh	TM 22 52	9km NE of Ipswich		25m OD	Low lying clay; close to River Lark	7ha	Mesolithic, Neolithic and Bronze Age remains	Human and animal remains; Late Iron Age and Belgic pottery; metalworking materials; brooches; bracelet	Hypercaust and tessellated floor; possibly a Roman villa site; evidence into AD/BC		Hillfort; rectilinear enclosure	human remains at the base of a pit			LIA/Early Roman small oppidum?	Quadrilateral double ditched rectilinear enclosure;		Martin 1988	Y												A large enclosure/fortification with mainly LIA and extensive Romano-British evidence. Usage was probably domestic, albeit with a lengthy chronology. Close to River Lark
	Clare Camp	TL768458	Frontier location on the outer borders of the Trinovantes territory, just south of the Icen heartland		60mOD	Low lying clay; marshy ground to east	3.9ha			Post holes of Late Bronze Age/Early Iron Age date	None	enclosure/ Hillfort					Multivallate; E entrance; inturned ditches at E end		Martin 1999	Y												A fortification with defences augmented by marshland and a possible causeway. Scarce evidence suggests a possible territorial marker

Appendix 2 - The Berth - Excavation and finds archive

Peter Gelling was a Lecturer in Archaeology at the University of Birmingham and during the early 1960s he undertook several excavations at the Berth. These were joint exercises undertaken by undergraduates and members of the Ludlow Group of the Shropshire Archaeological Society. Prior to this, the Berth had featured in antiquarian accounts, (e.g. Hartshorne, 1841; Downman, 1906) supplemented by myth and folklore (Jackson, 1883), and been visited and 'surveyed' by the Shropshire Archaeological Society (Chitty, 1937/8). The Berth Cauldron (see below) was recovered from the site in 1906.

Excavations at the Berth were not written up in detail (perhaps due in part to Gelling's untimely death) but two notes were published in the West Midlands Archaeology Journal (Gelling, 1962/5; Gelling, 1964), one article was published on the wider subject of '*Dark Age Pottery or Iron Age Ovens?*' (Gelling and Stanford, 1965 (1967)) and a field note was included in the publications of the Hillfort Studies Group (Guilbert et al., 1977). In the 1980s, some pottery finds were analysed by Dr Elaine Morris, University of Southampton (Morris and Gelling, 1991).

This appendix is not offered as an expert summary but is intended to draw together the excavational archive to aid the interpretation of the Berth marsh-fort.

1. The Gelling Archive

The material archive is held by Shropshire Council Archive Services who have attempted to reconstruct the dig plan and activities from notes and diagrams, but the raw data is very fragmentary. The archive comprises:

- a) Photographs – eighty-seven black and white slides which show aspects of the excavations and some of the finds, plus forty-two colour slides, some of which repeat the black and white slides
- b) Two notebooks, plus a summary provided by Shropshire Council which probably accessed at least one more notebook
- c) A trench plan (labelled Trench G but see below), with an additional plan of post holes
- d) A typed note by Gelling
- e) A range of pottery and artefacts (NB Some finds are missing and some were not recorded - see Table 1)

Appendix 2 - The Berth - Excavations and finds archive

Margaret Gelling (Peter Gelling's wife, and an eminent toponymist) contributed a further twenty-four colour slides. Apart from two later site plans in the Shropshire Council HER, no other archival material is known.

The raw data from the site excavations is difficult to decipher. The 150+ digitised slides (including duplicates/near duplicates) depict the kind of student archaeological dig typical of the 1960s. Land Rovers were used for site access (seen parked on the causeways). Today's Health and Safety requirements were absent, volunteers digging in open-toed sandals, wearing suits in some cases, in narrow, deep trenches which would now require bracing/support. The photographs cover site orientation, trenches in various stages of development, the gradual uncovering of cobbled floors and post holes, occasional finds (organic material, a large pottery rim), and the in-filling of at least one trench. The location of the trenches is apparent in relation to the Berth main mound. None of the photographs is captioned, except for an occasional reference to date or place on Margaret Gelling's slides - 'Jan 66' or 'Baschurch'.

There are two notebooks in the archive, but there may have been more; they are often written in a shorthand. The trench plan has no key and is capable of multiple interpretations. The finds are unlabelled. At the same time as Gelling's excavation, the site was also being dug by Ernie Jenks (*pers. comm.* Shelagh Hampton), a well-known Shropshire archaeologist who had also worked on the excavations at Sharpstone Hill (Barker et al., 1991). Jenks published no reports; his finds escaped analysis or record and, apart from some photographs, are now lost.

This summary is the first comprehensive account of all finds from the Berth. The following can be gleaned:-

- Fig. 1 shows the areas of excavation as well as the location of chance finds. The placement of the find of 'slave chains' (see below), which came from Jenks' trench, came from a map supplied by Mrs Lea (adjacent farm).
- A 50'x12' trench was excavated in the 1962 excavation, in two sections – Trenches A and B, separated by a baulk – to a depth of about 6'. This trench is shown clearly in the photographs immediately to the northwest of the in-turned entrance of the main enclosure. According to Shropshire Council's archive, A and B were amalgamated under the heading of Trench G. Trench A is the more northerly – Fig. 2.
- A long (in excess of 139' according to the notebook), separate, and shallower trench – confusingly labelled Trench/Site D – was excavated further north of Trench G, through the main rampart.

Appendix 2 - The Berth - Excavations and finds archive

- Squares D1 and D2 are placed by Shropshire Council at the north/east end of Trench G; they are not obvious from any photographs and are referred to as short entries in the archive notebook – Fig. 2. However, another plan (by Smithson in the Shropshire Council HER) indicates that these squares were at the end of Trench D.
- It is unclear whether all trenches and squares were open during both excavations or whether any belonged to Jenks. Labelling several trenches 'D' might imply they were opened in different seasons.

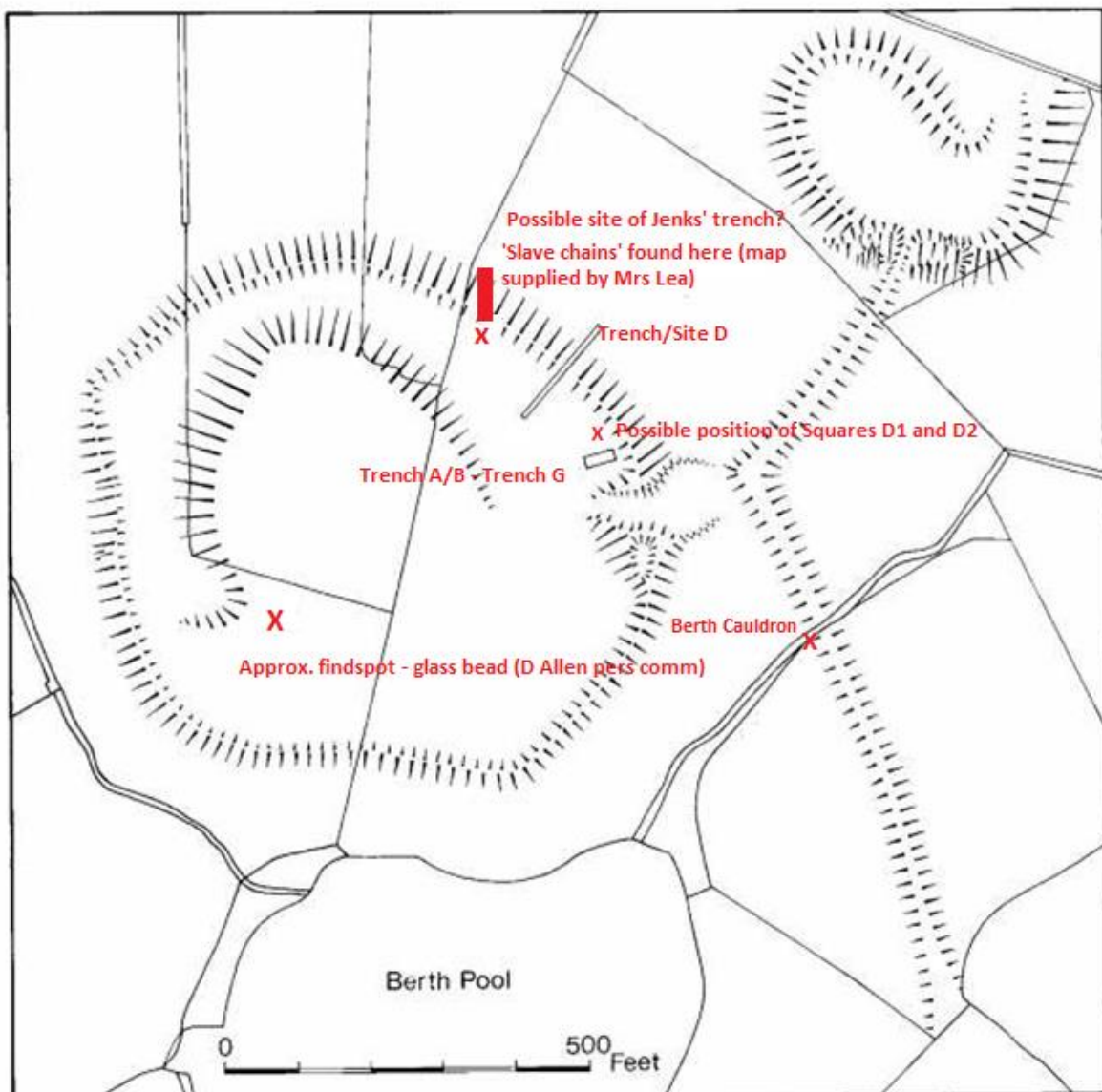


Fig. 1 Berth schematic plan - adapted from Morris and Gelling 1991

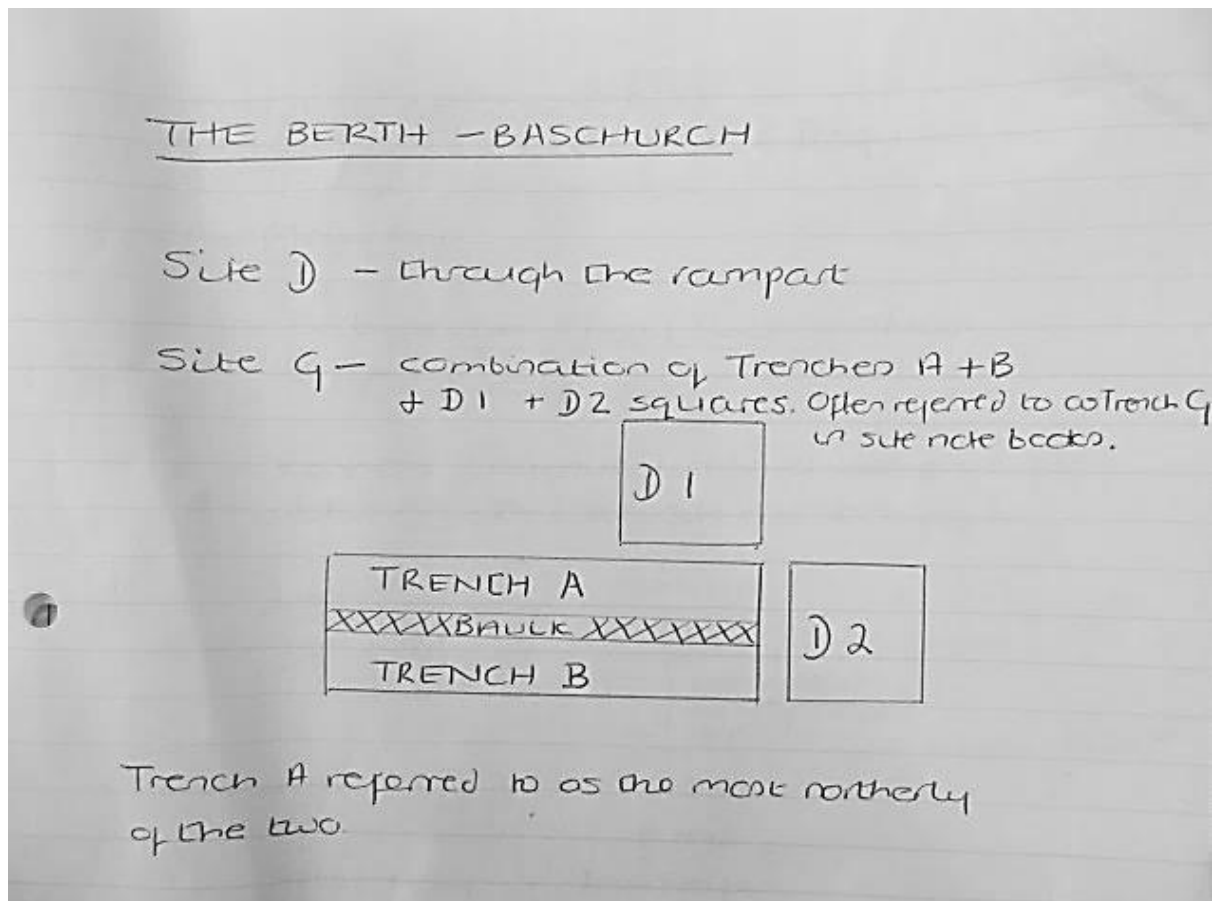


Fig. 2 Trench A and B = Trench G/Squares D1and2/Site or Trench D (Gelling Collection - Shropshire Council Archive)

- The dig was characteristically wet, at least in places. A pump is shown in use in one trench (Trench D? looking east) although it is clearly summer (Fig. 3).
- Fig. 4 shows Trench G, looking east towards the smaller enclosure; there is standing water in the background and a lack of leaf cover. This photograph is labelled 'Jan 66' in Margaret Gelling's archive. The baulk between the trenches is also much eroded suggesting that the trench had perhaps been exposed during the winter period, which would fit with a critical comment from the current farmer (Howard Edwards) of trenches being left open and jeopardising livestock during these earlier excavations.

Appendix 2 - The Berth - Excavations and finds archive



Fig. 3 Trench D (?) showing the need for a pump to remove ground water – looking east? (Gelling Collection - Shropshire Council Archive)



Fig. 4 Trench A and B = G ? looking east – Margaret Gelling Collection

1.1. Trenches A and B aka Trench G

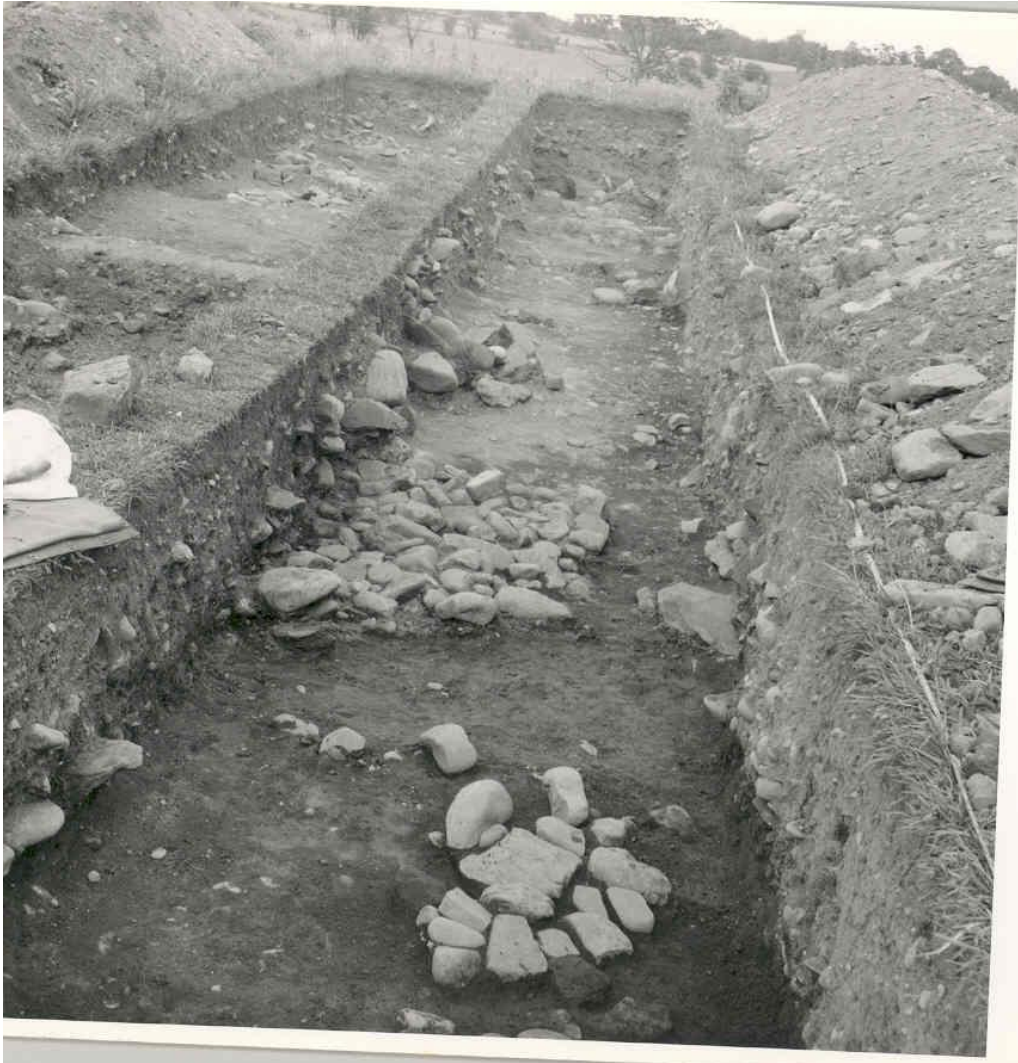


Fig. 5 Trenches A and B/G with stone features looking east (?)(Gelling Collection - Shropshire Council Archive)

Trenches A and B are shown separated by a baulk; at this stage, Squares D1 and D2 are absent. A notebook highlights a series of contexts and finds:-

- Sherds associated with a line of stones running diagonally (2-5, superficial?)
- a diagonal line of stones in a dark layer (44,45)
- La Tène III brooch (51-57)
- rough cobbles (75,76), cobbles (82, 108-9)
- a clay floor sealing a 'very hard floor' just above natural (117-121)
- a clay floor in a second occupational level at 56" depth (123)
- slight traces of occupation above natural gravel (126-7)
- lowest cobbled layer at 5'6" depth

Appendix 2 - The Berth - Excavations and finds archive

Another site notebook (Site G and assumed to be the same as Trench G, possibly representing a second season?) details the following:

- A-Type rim of bright red ware
- ½ blue glass bead
- a 'very definite floor' (possibly 117-121)
- red pottery, black pottery, iron nail, quern fragment from 'the A end' (unk?)
- an iron knife and red pottery from 'the B end' (unk?)
- A and B ends were separated by a heavy black occupation deposit
- a cobbled floor
- bone across the area
- a pebble floor (lying in clean sand and black humus, with red pottery, bone and a little charcoal)
- a cobble path edged with large stones
- a large piece of daub – possibly Fig. 6? – (though this may equally be VCP/briquetage used in the transportation of salt)



Fig. 6 Daub or VCP (Gelling Collection - Shropshire Council Archive)

Appendix 2 - The Berth - Excavations and finds archive

1.2. Squares D1 and D2

These excavated squares were either at the north/east end of Trench G or possibly the internal end of Trench D. They achieved a depth of at least 18", but although there are context numbers, there is no indication of the size of the area in the record, nor are they apparent on any photographs. However Square D1 produced information and artefactual evidence viz. a heavily cobbled layer, a curved iron stud, a 'very definite' floor level made of ash and charcoal, a spindle whorl, and 'a rim of red ware' (Fig. 7, now missing, but identified from the photographs by Elaine Morris (*pers. comm.*) as possibly Severn Valley Ware – see below). Other finds include more (buff and orange) pottery sherds.



Fig. 7 Red Rim in D1? (Gelling Collection - Shropshire Council Archive)

Assuming that Shropshire Council's interpretation is correct and by combining the notebooks and summary plan for Trench G and Squares D1 and D2, the following diagram of features and finds can be drawn:

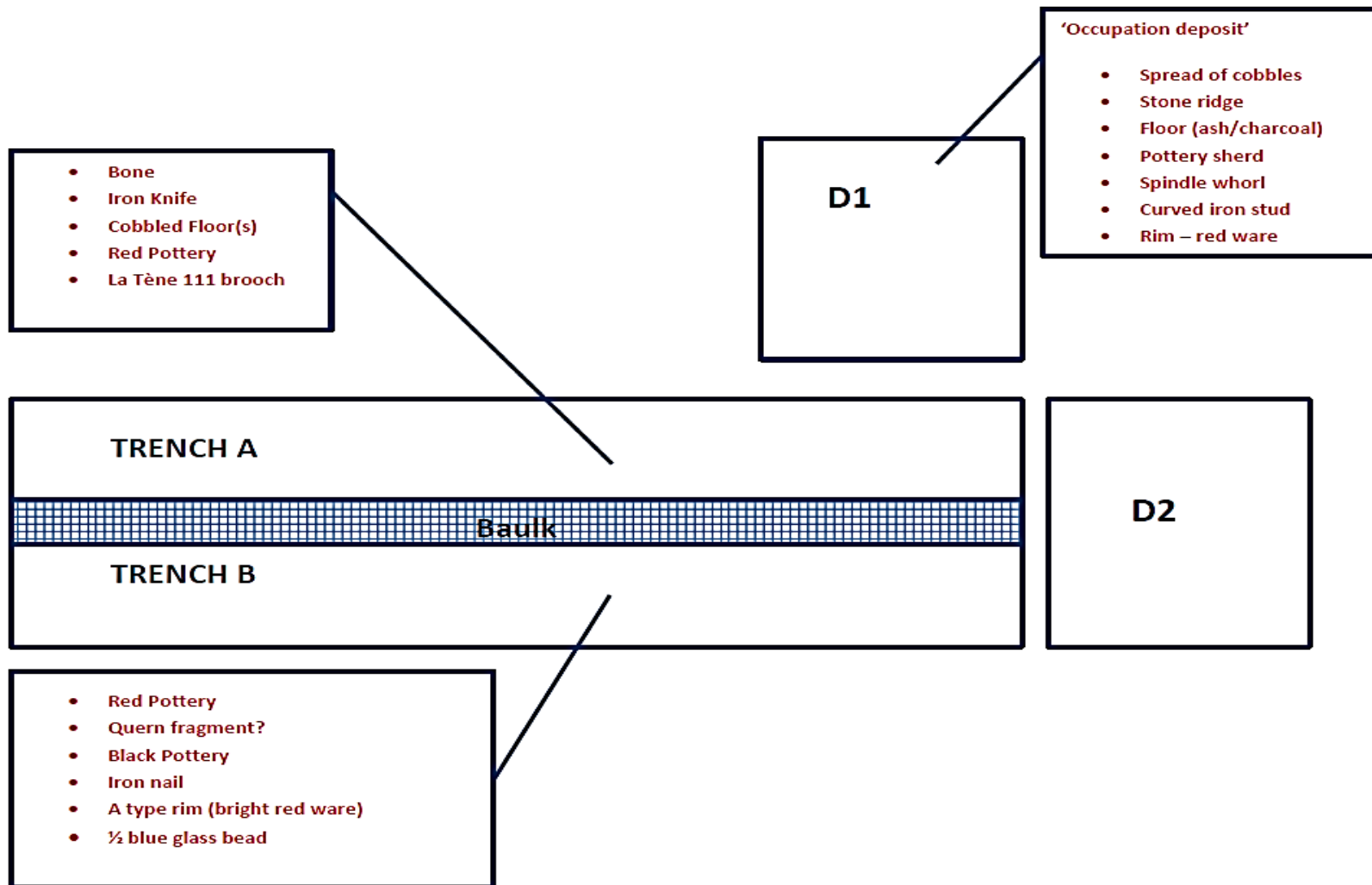


Fig. 8 Trench A/B (Trench G?). Squares D1/2 and associated finds (adapted from Gelling Collection - Shropshire Council Archive)

1.3. Trench D

The notebook record for **Trench D** (Site D? – see Fig. 2) indicates a trench approx. 139' long and around 2' deep. Unlike Trench G, this was a single narrow trench with no dividing baulk. It produced a dark grey layer (possibly humic? possibly Fig. 13) above a stone layer (at a depth of 1'3"), and a *'certainly coherent occupational layer'* at a depth of 21"-24". The *'foot of a wall'* appeared at a depth of 53" and a duck-stamped sherd at 23" deep. Two possible slingstones, a long thin piece of iron, miscellaneous teeth and bones (animal), an iron point and a piece of iron were recovered.

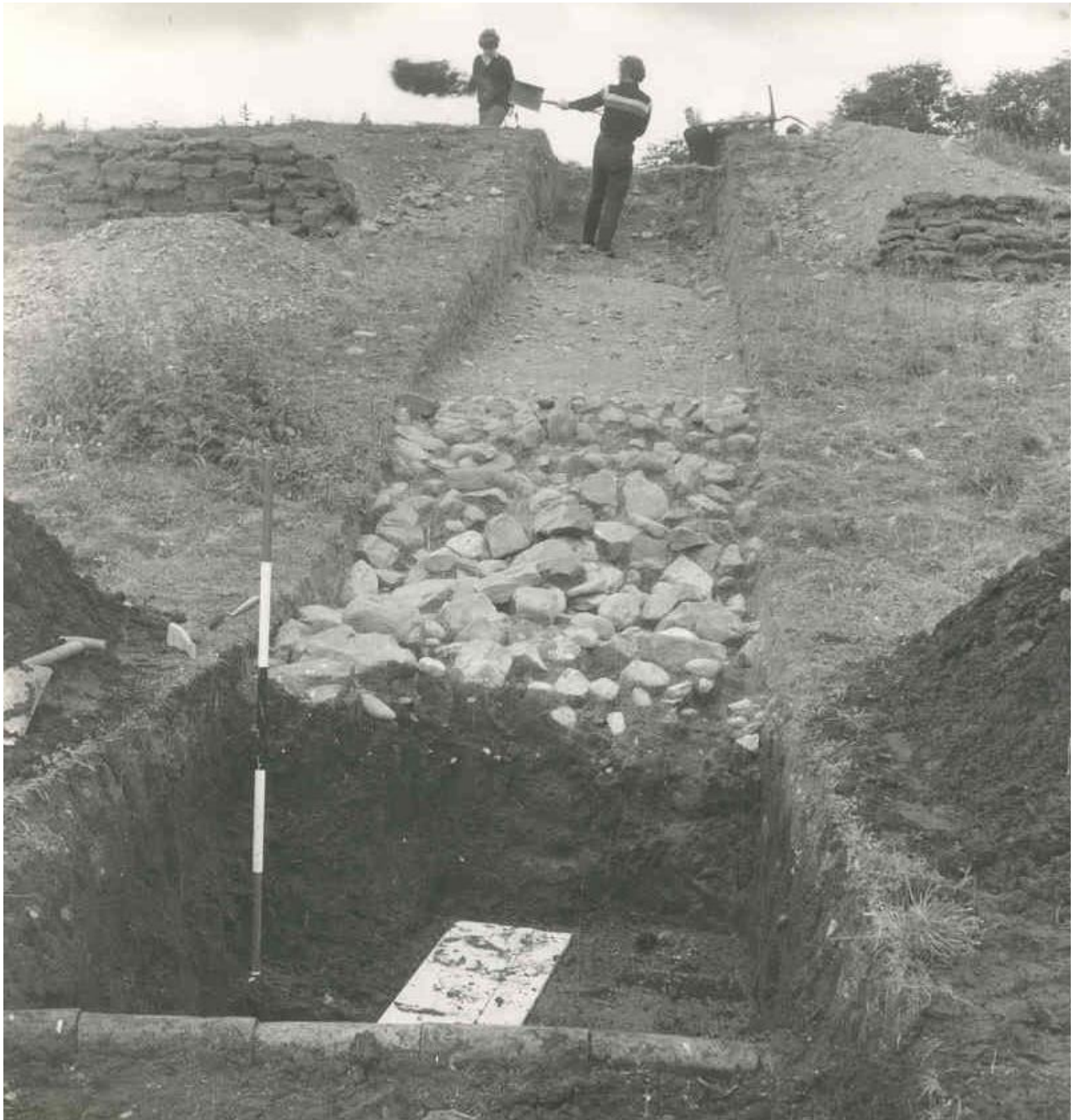


Fig. 9 Cobbled area/possible stone collapse (Gelling Collection - Shropshire Council Archive)

Appendix 2 - The Berth - Excavations and finds archive

The relationship between Trenches G and D is shown in Fig. 10:



Fig. 10 Trenches G and D, looking from the main mound towards the smaller enclosure linked by causeways – Margaret Gelling Archive

The only elevation plan from the whole excavation has been labelled as Trench G by Shropshire Council - Fig. 11; there is no key, and the drawing appears to be only one half of a trench which breaches the rampart. The plan illustrates a series of contexts and groups of stone including a stone collapse three-quarters of the way along the profile. A series of numbers runs along the plan from left to right, starting at '84' and finishing at '141'. Although this has been labelled as Trench G, it may be a better match for Trench/Site D. It is not clear whether the numbers relate to contexts or measurements. In the schematic plan of the wider site (Fig. 1), Trench/Site D spans the rampart, and the 'stone collapse' shown on the plan may be that shown in Fig. 9 or could be the 'foot of a wall' already mentioned.

1.4. Elevation Plan - Trench G or D(?)



Fig. 11 Trench G or D? (Gelling Collection - Shropshire Council Archive)

Appendix 2 - The Berth - Excavations and finds archive

A semi-circle of post holes (a,b,c,d,e in Fig. 12) was recorded in Trench G (Trench D?), along with stone deposits near the 'edge of the black' – see Fig. 12. 'The black' (see Fig. 13) could refer to Gelling's excavation having found the peat layer (about 60cm below the ground surface and consistent with terrestrial mapping undertaken as part of the June 2016 excavation), but also raises the question of whether the ramparts when built encountered the wet peat layer also.

Post holes - a,b,c,d,e

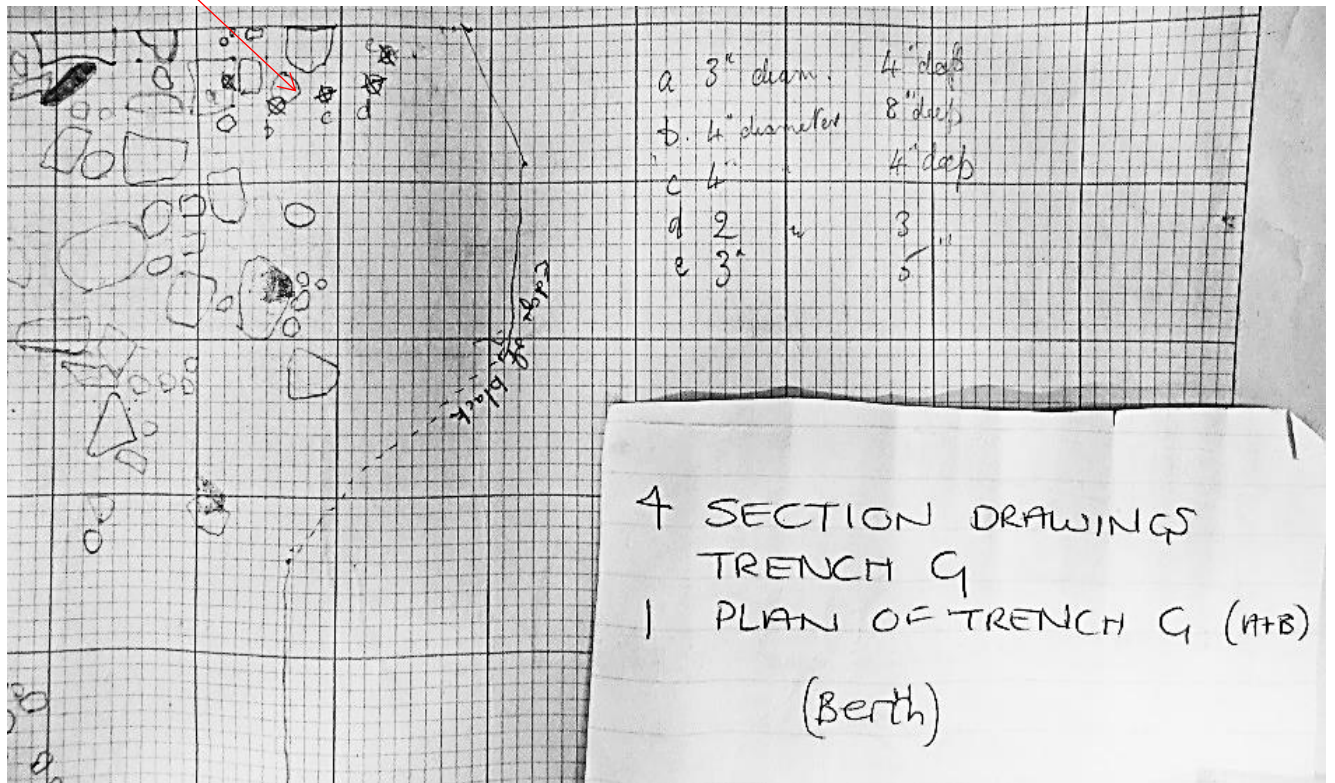


Fig. 12 Detail from Trench D/G plan showing post holes (Gelling Collection - Shropshire Council Archive)



Fig. 13 Trench D? - possible dark grey layer (Gelling Collection - Shropshire Council Archive)

A number of post holes can be seen in the photographic evidence (see Fig. 14), and are substantial in size (*circa* 46cm). They are difficult to relate to any specific area, but Gelling refers to big post-holes for a substantial building found in Trench D (Gelling, 1962/5; Gelling, 1964). Some of the 'post holes' shown in Fig. 15 appear more as lined pits (for grain deposits?); others could accommodate palisade posts. If the 'stone wall' referred to by Gelling is that shown in Fig. 16, it is inconclusive and could simply be the product of poor excavation (stratigraphy can be seen between the stones in this example).

Gelling referred to '3 layers of occupation' (Gelling, 1962/5; Gelling, 1964) separated by sterile layers. These may be decipherable from close-up photographs of the stratigraphy (Fig. 17). Layer 1 could be a beaten clay floor, as described in the archival notebook. VCP was found at every level, but artefact and ceramic finds came exclusively from the uppermost Layer 3 (dated Roman by ceramic analysis (Morris and Gelling, 1991)).



Fig. 14 Post Hole – location unknown (Gelling Collection - Shropshire Council Archive)



Fig. 15 Post Hole group? (Gelling Collection - Shropshire Council Archive)



Fig. 16 'Stone Wall'? (Gelling Collection - Shropshire Council Archive)

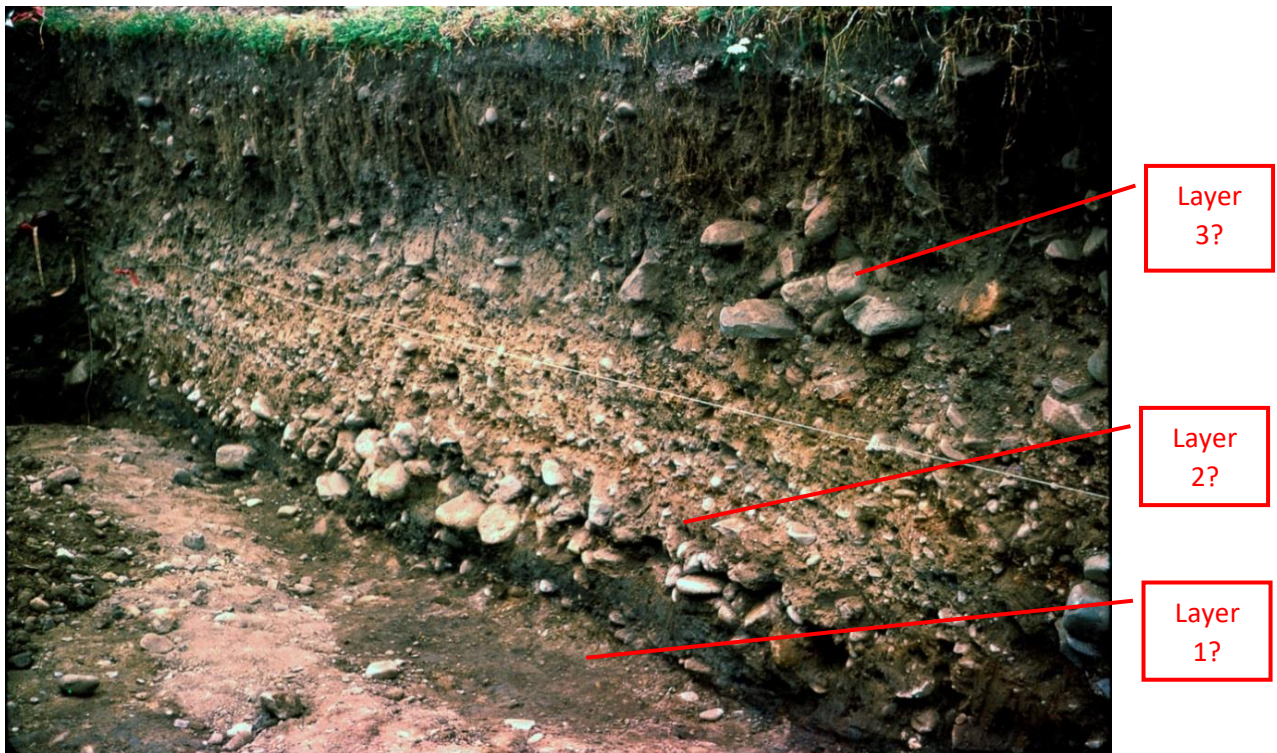


Fig. 17 Stratigraphy - Trench G showing floor levels (Gelling Collection - Shropshire Council Archive)

2. The written evidence

Two short summary reports were published in the West Midlands Archaeological Newsheet 1962/5, and 1964. From the 1962 excavation, Gelling recorded '*both Iron Age and late Roman occupation*' (Gelling, 1962/5), and gave an indication of some of the finds (for example, the La Tène III brooch and one sherd of duck-stamped pottery), therefore the 1962 excavation obviously opened up at least Trench G. He was certain that no post-Roman occupation had been found.

In 1964, Gelling records two buildings in an area about 50yds north-west of the main entrance (Gelling, 1964); the earlier was of Iron Age date whilst the later one was identified as AD fourth-century delineated by a line of large post-holes 15'-16' apart— see Fig. 14. Given the distance from the entrance, this is likely to be the long, thin Trench D, but no post-holes are recorded in the dig diary.

The next account comes in '*Dark Age Pottery or Iron Age Ovens?*' (Gelling and Stanford, 1965 (1967)), for which the typed note 1d) was clearly a draft. The account concentrated on the coarse red pottery that came from all levels on the site (VCP/Very Coarse Ware also known as briquetage - see below), in particular, its date and its crude appearance. In this article the site is described as having '*an in-turned entrance*' behind which '*an area 50'x12' was completely excavated*', with excavations achieving a depth of 6'(given the dimensions, likely to be Trench G). Gelling also concluded that there were three layers of occupation separated by sterile layers (see possibly Fig. 17). The lowest level had suffered some flooding. The La Tène III brooch was recovered from the higher level, and '*some 4th Century pottery turned up some thirty yards away*' (see below). Gelling concluded that VCP could not have been used for salt production/transportation, as the internal surface of the pots would have been too rough, and too much precious salt would have been lost. Instead, he and Stanford speculated that the pots were used as a type of oven, '*inverted over a bun*' to protect the contents from direct contact with fire (ibid: 1965 (1967):90). Morris has subsequently concluded that VCP is the detritus of salt containers from inland brine springs, traceable to the point of origin in either Droitwich or Cheshire; the fragments from the Berth are all Cheshire VCP.

In 1977, the site was visited by the Hillfort Studies Group (Guilbert et al., 1977). In the accompanying note, Gelling reports the 1962/3 excavation as a '*trial*', describing the ramparts as of slight construction of stone and gravel, with a markedly in-turned entrance, faced on the exterior with larger stones to prevent erosion from the lake that was presumed to have surrounded the site. Two trenches were described as being opened, the main one closest to the entrance providing the bulk of the material (i.e. Trenches A and B/Trench G), whilst a long cutting was made further away which indicated not more than one period of occupation (Trench D). The causeways were also mentioned.

3. The finds

This summary records both chance finds and those recovered from the excavations. A full list can be found in Table 1.

3.1. Organic remains

No organic evidence is retained in the archival collection. However, animal remains (plentiful bone, some teeth, including that of a large mammal) and charcoal are recorded in an excavation notebook in Trenches D and G together with a burnt floor.

A handful of grain (possibly charred spelt *Triticum spelta*; *pers comm* Dr W. Smith) is recorded in photograph, although it is not certain that the photograph relates to the Berth as Gelling was also excavating at Caynham Camp (*pers,comm.* Shelagh Hampton). However, assuming it was from the Berth, the superficial implication is of a site used for domestic/ agricultural purposes. This is supported by one photograph of finds (Fig. 19) of what may be badly corroded agricultural implements, including a billhook (compare agricultural implements from Glastonbury Lake Village - Fig. 20) and possible scale-tang knife, although the palaeoenvironmental evidence does not support this. None survive.



Fig. 18 Grain (Gelling Collection - Shropshire Council Archive)



Fig. 19 Iron agricultural Implements? (Gelling Collection - Shropshire Council Archive)

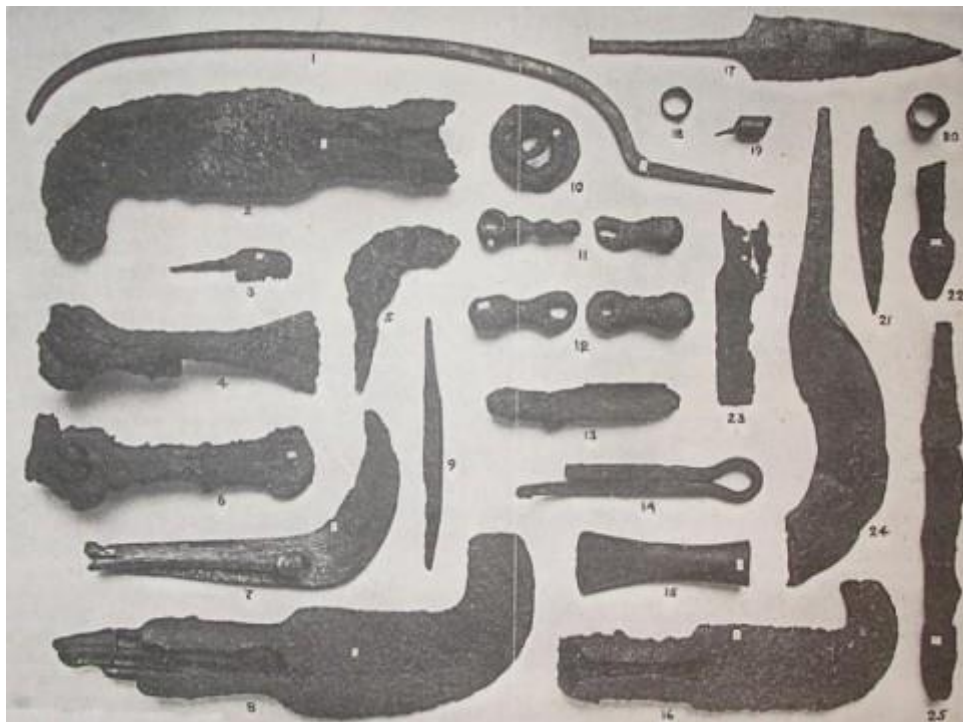


Fig. 20 Glastonbury Billhooks from <http://billhooks.co.uk/history/roman-billhooks/> accessed May 2016

3.2. Metalwork

3.2.1. *The Berth Cauldron*

The recovery of the Berth Cauldron preceded any excavation or investigation. Found in 1906 by Mr Wood cutting turf on behalf of Mr Richard Wall, the cauldron is 45cm x 30.5cm diameter and weighs 3.5lb. It is copper-alloy spun in one piece; there are two iron attachments on the neck with two rivets and a single rivet hole. A perforation at the centre of the base measures 1/5", and is thought to be part of the vessel's manufacture (Hawkes, 1951:184). It would also have allowed it to sink if it were placed in water.



Fig. 21 The Berth Cauldron (British Museum) together with its findspot; the Berth main enclosure is in the background

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The vessel was found at the junction of Berth Pool stream and the southern causeway – see Fig. 1 and Fig. 21 (Smith, 1907). It may have been carried there by water flow from Berth Pool, but is more likely to be a directly deposited votive offering. A combination of its shape and manufacturing technique places it in Joy's 'Group I - projecting-bellied' cauldrons (Joy, 2014), dating from the mid-first to second -century AD (*pers comms*; Dr J Joy; Dr J Farley (British Museum)). This and similarly pierced cauldrons recovered during the early part of the twentieth-century were initially interpreted as water-clocks (Smith, 1907:324-326), but this conclusion was subsequently overturned (Hawkes, 1951:186-7). The Berth Cauldron was housed at the British Museum and is now on permanent display in the Shrewsbury Museum.

3.2.2. 'Slave chains', 'currency bars', and 'agricultural implements'

The items in Fig. 19 and Fig. 22 survive only in the photograph and probably come from Jenks' trench (see Fig. 1); Gelling makes no mention of them. The chain is about 10" long and was interpreted by Jenks as a 'slave chain'; however it is much smaller and more flimsy than other examples (such as those from Llyn Cerrig Bach, Anglesey - Fig. 23), and may be more akin to a suspension chain for a cauldron (Manning, 1983; Piggott, 1952-3). Mr Jenks is shown demonstrating a replica of the 'slave chains' on a site visit (<http://www.megalithic.co.uk/article.php?sid=7668> accessed May 2016)

The additional two pieces of iron in Fig. 22 appear to be currency bars. These are normally considered Middle Iron Age objects but continued to be deposited into the first-century AD, often in hoards (Hingley, 2006:218), in enclosed settlements and hillforts (Hingley, 2006:227), and frequently at settlement boundaries (Hingley, 2006:238). The ones at the Berth appear to be Malvernian type (Crew, 1995). These are culturally significant artefacts and have been found in some quantity in the West Midlands - hoards were recovered from Meon Hill, Warwickshire and the Malvern Hills (Bowden, 2005:27). With limited sources for the raw material (probably the Forest of Dean in this instance (Hurst, 2017:137)), their production and subsequent burial was imbued with meaning. Not only do they reinforce the Berth as part of a much wider trading network, but also suggest that the ramparts were in some way 'invested' possibly at the time of creation or rebuilding. Unfortunately, as with the 'slave chains' and the agricultural implements, there is no information regarding their current whereabouts.



Fig. 22 Slave chains and currency bars (?)(Gelling Collection - Shropshire Council Archive)



Fig. 23 Slave chains from Llyn Cerrig Bach

http://www.museumwales.ac.uk/iron_age_teachers/artefacts/gang_chain/ accessed May 2016

3.2.3. *La Tène III brooch*

The (badly corroded) brooch in the Shropshire Council Archive has been categorised as La Tène III (Gelling, 1964; Guilbert et al., 1977). The most frequently recovered Roman brooch in Shropshire is Colchester-derivative Polden Hill style (AD 75-175) and this brooch looks similar¹. Such artefacts were clearly in use in North Shropshire in the Late Iron Age/ Roman period. Its date appears contemporary with the Berth Cauldron, and is likely to have been the result of deliberate deposition (Haselgrove, 1997:51). There was a marked rise in brooch deposition from early first-century AD, albeit that the sample reviewed is drawn from predominantly the south and east of England and around the Somerset Levels (Haselgrove, 1997:60). Possibly associated with increasingly wet conditions and final abandonment, unusually high numbers of brooches were recovered from the Meare and Glastonbury sites, where deposition began as early as the fourth- and third-centuries BC at Meare (Haselgrove, 1997). The Berth has a number of comparison points with the Somerset Lake Villages in terms of location and chronology.



Fig. 24 La Tène 111 brooch (Gelling Collection - Shropshire Council Archive)

¹

(<https://finds.org.uk/database/search/results/q/roman+brooch/county/Shropshire/broadperiod/ROMAN/objectType/BROOCH> May 2016).

3.2.4. Metalwork fragments

There are five fragments of metalwork, all recovered from Trenches D and G and Site D1, in the Shropshire Council Archive's Gelling Collection, although seven fragments are referred to in Gelling's notebooks. All are in poor condition and none have been curated. Their original purpose is difficult to decipher. The example shown in Fig. 25 is approx. 9" long and may be part of a currency bar; alternatively, it may be the dagger referenced in Gelling's notebooks. The fragments shown in Fig. 26 may be nails and/or the remains of agricultural implements.



Fig. 25 Metalwork fragment (Gelling Collection - Shropshire Council Archive)



Fig. 26 Metalwork fragments (Gelling Collection - Shropshire Council Archive)

3.3. Pottery

The pottery provides the best evidence for occupation, function and dating of the site and was analysed by Morris in the 1980s (Morris and Gelling, 1991). The actual material is now missing, although confusingly, some pottery is present in the Shropshire Council's Gelling Collection.

Morris identified thirty-one Iron Age sherds, the majority of which indicate wares from the wider Welsh Marches. Malvernian Ware (twenty-six sherds) is normally dated between the fifth-century BC and the first-century AD and originated *circa* 53 miles to the south. Clee Hills dolerite fabric (one sherd) dates to the later pre-Roman period and originated *circa* 30 miles south. East Midlands Scored Ware is also present, which could originate from any context within the West/East Midlands with Keuper Marl deposits and is predominantly first-century AD. Three sherds of Severn Valley Ware were also identified, providing evidence for Romano-British occupation at the Berth at any time from AD50 until AD fourth-century. Severn Valley Ware does not appear at Wroxeter/Viroconium until after the departure of Legio XX around AD80, but flourished in the third-fourth-century AD (Webster, 1976) suggesting a later rather than earlier date for the Berth pottery. There are several conclusions possible from this assemblage. Firstly, Malvernian ware was spread by a 'down-the-line' exchange mechanism (Morris, 1996:44-45) involving kinship ties and indicating a complex social network across the Marches. Secondly, the ceramic assemblage spans the mid- to late- Iron Age and into the Romano-British period, and reflects discontinuity of occupation at the Berth. Hill's conclusions that decorated pottery was frequently deposited at spatial and conceptual boundaries may be applicable in this context, although its significance in a principally aceramic society such as the Cornovii may have been different (Hill, 1995b:109).

The Berth produced a range of non-pottery ceramics – briquetage, a spindle whorl and some fired clay and daub. Large quantities of briquetage/VCP, used for the transportation of salt, have been recovered from hillfort and enclosure sites across the Welsh Marches. Originating from one of two salt producing centres - Droitwich or Cheshire - its distribution frequently reflects a north/south divide, with Cheshire VCP being more frequent in more northerly hillforts (Morris, 1985). Large quantities were recovered from Croft Ambrey (56 sherds, 454gm) (Stanford, 1980:68), the Breiddin (926 sherds, 3136.00gm) (Musson et al., 1991), Collfryn, Powys (2839 sherds, 13,285gm) (Britnell et al., 1989; Kinory, 2012) and Wall Camp (89 sherds, 272gm) (Morris, 1991). Cheshire briquetage was in use between the fifth-century BC and the early Roman period (Morris, 1985); the earliest was recovered from Beeston Castle (Royle and Woodward, 1993), and the latest from Collfryn (Britnell et al., 1989). The Berth's assemblage is all Cheshire briquetage (120 sherds, 1678.5gm) providing a date for the Berth's occupation and indicating the importance of salt for the Berth's inhabitants. Matthews has suggested that the Cheshire salt was traded by sea around the Welsh coast, and

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thence north by river (1999). Conversely, Dorling et al (2017:81) emphasised terrestrial transportation citing the substantial Iron Age road at Atcham (Malim and Hayes, 2010) as one possible route. The combination of briquetage from Cheshire and ceramics from as far south as Malvern confirms that the Berth looked both north and south for its traded wares.

Two spindle whorls, one recovered from Square D1, suggest domestic occupation and that spinning was part of life at the Berth; no loom weights were recovered, but the excavation was fragmentary and a conclusion (spinning versus weaving) cannot be drawn on this evidence. A pestle and mortar, although in the same box as the Berth finds, may or may not be from the site and was never referred to in the diaries.



Fig. 27 Spindle whorl (one of two) (Gelling Collection - Shropshire Council Archive)

Morris also identified a possible crucible used for bronze/metal working (Morris and Gelling, 1991). As the collection that Morris analysed is lost, this is unlikely to be the crucible in the Gelling Archive (Fig. 28), hence there might be two. The crucibles provide evidence for bronze metalworking on site. This activity was not unusual in small, self-sufficient Iron Age settlements (Hill, 1995a:63) including crannogs (Crone, 1993), where a secluded water-protected environment may have been an appropriate setting for something that is semi-dangerous and fire-prone. However, it is also

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associated with high-status sites (for example, Danebury) and the transformative act associated with metalworking may also have had ritual connotations (e.g. Budd and Taylor, 1995).

More pottery is referred to in the dig diaries (all missing) viz.:

- Site/Trench G -A Type rim of bright red ware; red and black pottery; daub. This might be that shown in Fig. 7, which from the photograph only, was identified by Morris as Severn Valley Ware (*pers comm*: Dr E. Morris).
- Square D1 – pottery sherd; 2 medium thin buff sherds; 1 very thin orange sherd; rim ‘red ware’



Fig. 28 Metalworking crucible (Gelling Collection - Shropshire Council Archive)

3.4. Miscellaneous

A quern stone fragment (Trench G) and two possible slingstones (Trench D) were recorded in the notebooks but are missing, as is a blue glass bead fragment (Trench G). A whole bead of turquoise glass was recovered from the top of the mound as a chance find (in a rabbit-hole) and is held by Dr Denise Allen. The glass is definitely Roman, and may have been imported as a piece prior to reworking (*pers comm*: Dr D. Allen). Occasional glass beads are not uncommon on Iron Age sites; they are thought to be used for personal decoration or as decorative items on horse harnesses (e.g. Foulds, 2014; Lewis, 2015).



Fig. 29 Bead (D. Allen - personal collection)

4. Summary

The following conclusions can be drawn from the combined evidence:

1. From the stratigraphy, Gelling concluded three layers of occupation, with the pottery providing the basis of the chronology.
 - **Earlier Iron Age**
 - Cheshire briquetage is present in all occupational layers. It was in use from the fifth-century BC to the early Roman period. It also indicates that salt was an important commodity from the earliest stages of the Berth's occupation.
 - **Middle to Late Iron Age / Early Roman**
 - The Iron Age pottery is representative of a mid- to late- Iron Age occupation although there is no indication which layer of occupation this pottery was recovered from (Layer 2 or 3). Some of the metalwork (currency bars, billhooks) may also be part of this period.
 - The Berth Cauldron, La Tène III brooch and glass bead may belong to the early Roman period
 - **Roman/ Later Roman**
 - Severn Valley Ware suggests usage during the Roman period but is chronologically unspecific.
 - The recorded floors and post holes indicate that there were buildings on site close to the in-turned entrance. Gelling interpreted one set of post holes as a substantial building from a later occupation. The post holes could also refer to an enclosing palisade.
2. The nature of the occupation is unclear. Superficially, many artefacts (bead, metalwork, spindle whorls, quern fragment), the briquetage, and the animal and grain findings, suggest domestic use. However, the assemblage shares some characteristics with the findings at Sutton Common (Van de Noort et al., 2007) where the conclusion was that the marsh-fort was used for non-domestic purposes. The currency bars may be foundation deposits (Hingley, 1997). Ritual use could be further supported by the deposition of the Berth Cauldron and the La Tène III brooch at the entrance to the fort. When looking at Iron Age deposits in Wessex, Hill concluded that small finds recovered from the archaeological record were more likely to be ritual than rubbish (Hill, 1995b:108), and that metalwork including brooches is unlikely to be 'lost'.

In summary, there was a presence at The Berth during the Middle to Late Iron Age and again in the Roman period, possibly as late as the third- or fourth-century AD. Several artefacts suggest that the area was used for the deposition of special objects.

Appendix 2 - The Berth - Excavations and finds archive

Summary of Finds	Where found	Notes	Current location
CHANCE FINDS			
The Berth Cauldron	Intersection of Berth stream and causeway	Date and typology verified by Jody Joy/ Julia Farley – Late Iron Age/ Early Roman	Shrewsbury Museum
Turquoise Bead – whole	Top of the Berth mound	Found by Dr Denise Allen and confirmed as Romano-British	D. Allen personal collection
FROM EXCAVATION			
Metalwork			
'Slave Chains'	Unknown	All from the Jenks' excavation but not mentioned in Gelling's notebooks and present in photographs only. Jenks is shown on the Megalithic Portal demonstrating the chains http://www.megalithic.co.uk/article.php	Unknown
Two (possible) currency bars	Unknown		Unknown
Five agricultural implements including a possible billhook	Unknown		Unknown
One La Tène 111 brooch	Trench G - 24" down; 19'3" across		Council Archive

Appendix 2 - The Berth - Excavations and finds archive

Summary of Finds	Where found	Notes	Current location
Blade (possibly a dagger)	D? or D1	Difficult to separate these items; a count of the metalwork items held by the Shropshire Archive (5) agrees roughly with Gelling's notebook (7); the 'curved iron stud' may be missing.	The Council Archive holds 5 pieces of metalwork
Point	D? or D1		
Nail	'A' end of G		
Knife	'B' end of G		
Iron fragment	D? or D1		
Iron bar (in 2 pieces)	D? or D1		
Curved iron stud	D1		
Organic			
Animal remains (bone, teeth)	Trenches D and G	Bone and teeth are mentioned in the notebook but are missing. No mention is made of the grain which exists only as a photograph (and may be included with the Berth photographs by mistake). Dr W. Smith examined the photograph of the grain and suggested possible charred spelt.	Unknown
Charred Grain	Unknown		Unknown
Charcoal	Trench G (with red pottery); Square D1		Unknown

Appendix 2 - The Berth - Excavations and finds archive

Summary of Finds	Where found	Notes	Current location
Pottery			
IA Pottery 31 sherds Mavernian Ware <ul style="list-style-type: none"> Gp A - 16 Gp C – 2 Gp D – 8 (inc duck stamped ware?) Clee Hills dolerite Fabric (1 sherd) Midlands scored ware (12 sherds)	Unknown Possibly D1 or G	When Elaine Morris analysed the pottery findings, she accessed them at the 'West Midlands Museum'. Her findings are summarised in the 1991 Morris and Gelling report but this location and the assemblage cannot be traced. Some additional items shown in photograph or mentioned in the notebooks were clearly not part of her summary, such as the red rim and	Unknown
Cheshire Stony VCP (circa 130 sherds)	In all 3 layers but scant in bottom layer	the base/side of a bowl (which she has subsequently identified as Severn Valley Ware – <i>pers comm.</i> E Morris), 'bright red ware' or 'black pottery'.	Unknown Some VCP is held in the Council Archive
Romano-British Severn Valley Ware (3 sherds)	Unknown Possibly D1 or G		Unknown
Daub/ Fired clay (7)	Unknown Possibly D1 or G		Unknown. Some possibly held in the Council Archive

Appendix 2 - The Berth - Excavations and finds archive

Summary of Finds	Where found	Notes	Current location
Possible bronze working crucible	Unknown Possibly D1 or G		Possibly that held by Council Archive
Miscellaneous			
2 sling stones (?)	Site D – high in the stratum, rear tail of rampart	All mentioned in the notebook but missing	Unknown
½ blue glass bead	The 'A' end of Trench G		Unknown
Quern fragment	The 'A' end of Trench G		Unknown
Wooden object	Unknown		Council Archive
Pestle and mortar	Unknown	Although this item is included with the Gelling finds, it is not mentioned in any record and may not originate from the Berth.	Council Archive

Appendix 3 – The Berth and its causeways - Archival Research

It has long been assumed from antiquarian records (see below) that that the Berth's two upstanding causeways were contemporary with the rest of the Iron Age marsh-fort, connecting the enclosures and providing access to the main enclosure across wet ground. It is also assumed Berth Pool has remained the same size throughout history. The issues are linked because they both affect the way in which the monument could be accessed. Although the North West Wetlands Survey of Shropshire and Staffordshire (NWWWS) (Leah et al., 1998:61-64) summarised the Berth's historic records, detailing changes in ownership, access rights to Berth Pool (used for the harvesting of reed rather than fishing), and the lowering and raising of lake levels by 2'8" (1809: Shrops Archive 6000/17409), neither the causeways nor the extent of Berth Pool were addressed.

Considering the importance of both to the way in which the marsh-fort functioned, it is surprising that they have escaped scrutiny. Recent excavation of the causeways has shown that they are probably post-medieval in construction (Chapman, Smith and Norton, 2017; however, the underlying deposits of the north-south causeway have returned an Iron Age radiocarbon date and this anomaly is discussed in the thesis). Therefore, access to the main enclosure required an alternative route, which appears to have been along a third causeway which joined the small and large enclosures across a neck of marshland toward the north-east of the monument. This new information raises questions over the functionality of the south-east 'entrance' which appears to have accessed only marshy ground and/or an enlarged Berth Pool.

However, the post-medieval causeways remain integral to the life to the monument and form part of the Berth's Scheduled Area (Scheduled Monument 1004770). Their provenance and the development of Berth Pool can be traced via a review the historic records. This appendix summarises the Berth's archival history using records from the Shropshire Archive and the British Library.

1. Historic mapping

The earliest map, dated 1731 (Fig. 1; Shrops Archive 6000/17389), shows a large area called Byrth (sic) Bank. Berth Pool is shown similar to its modern limit (later maps show no variation) draining east via Berth Stream; neither enclosures nor causeways are detailed. The field south of the Berth Stream is divided, but whether these divisions were causeways, field divisions, or drains is unclear. A document summarising a dispute over the reed cutting and other rights at Berth Pool also dates to 1731/2 (Shrops Archive 6000/17387).



Fig. 2 The Rocque Map 1752: Shropshire Archive 552/8/916

The Baschurch Parish map of 1794 (Fig. 3; Shropshire Archive P22/L/1/1) shows The Byrth (sic) as a very specific area (marked green, perhaps denoting the woodland or heath indicated on the Rocque map), and reflects the 1731 map in its orientation, the shape of the area and the positioning of Berth Pool. Despite assertions by NWS (Leah et al., 1998:63, Fig.21), the Berth's monumental earthworks and causeways are not shown on this map.



Fig. 3 1794 Baschurch Parish Map; Shropshire Archive P22/L/1/1

During the early part of the nineteenth-century, the Berth was sketched by John Buckler and appeared in several more maps created as a result of the process of Enclosure. Drawings in the Buckler Collection (British Library Add MS 36379, 8 *et seq*; Fig. 4 and Fig. 5) detail an ancient monument in the ‘*parish of Baschurch about 10 miles north of Shrewsbury*’. The sketch was one of many undertaken by Buckler at this time, and these drawings (part of his Shrewsbury series) may

have been on behalf of the antiquarian, historian and owner of the Stourhead Estate, Sir Richard Colt Hoare, who was sufficiently interested to make comment on the reverse of the sketch:

'In examining these works, I am inclined to think they were raised for religious not military purposes - and one strong reason for this supposition is that the vallum has its foss (?) or ditch with inside the works which is the case with the celebrated works at Abury (sic) in Wiltshire and in many other instances which have fallen under my notice; whereas in works of defence, the ditch was always placed on the outside of the ramparts. Both Abury and Stonehenge had their avenues leading to them. We know also from papages (pages?) in the Scriptures that religious circles were placed on high places of which I have recorded many instances in my history of Ancient Wilts.'

Dated May 31st 1821, these two sketches depict an open landscape with Berth Pool to the left. The ramparts are shown surrounding Berth Hill which is accessed via the causeways; the small enclosure is detailed. The causeways were clearly extant at the time. They appear level with the surrounding topography, whilst today they are upstanding to around 1m-1.5m, suggesting that there has been reduction in the peat surface in the intervening 200 years. The ground to the east of the main causeway is described as 'swampy' in one sketch. A gap is apparent in the east-west causeway just before the entrance to the main enclosure. Although Berth Stream does not feature in the Buckler drawings, it features on maps both before and after.

The Inclosure map (Shrops Archive X/QE/ 1/2/42; Fig. 6), also 1821, shows the land area around the Berth divided between Messrs. Bowman, Parton and Wakeman, with new field boundaries which run across both fortifications. The entrance to the main enclosure is evident, and the northern edge of Berth Pool is shown, but no causeways are detailed. The extent to which Byrth Bank as detailed in the 1731 map has been sub-divided can be seen when these maps are overlaid (Fig. 7).

The 1841-1844 Baschurch Parish Tithe Apportionment Map (Fig. 8) is next in the archival series and shows further subdivision. The area enclosed by Bowman in 1821, containing the small enclosure, half the large enclosure and Berth Hill, and the land where the east-west causeway should lie, was divided into three and labelled 'Byrth'. Whether these extra subdivisions represent a change in ownership is not obvious, but by 1841, the small and large enclosures were separated by a field boundary, possibly related to the gravel extraction which was known to take place at the site (see below). Much of the land is labelled as *leasow* (rough pasture). The three fields west of the Berth labelled Juglar's Grave are possibly the site of Bronze Age ring ditches (Shropshire HER 2451). Fig. 9 depicts the 1821 and 1841-44 maps overlaid.

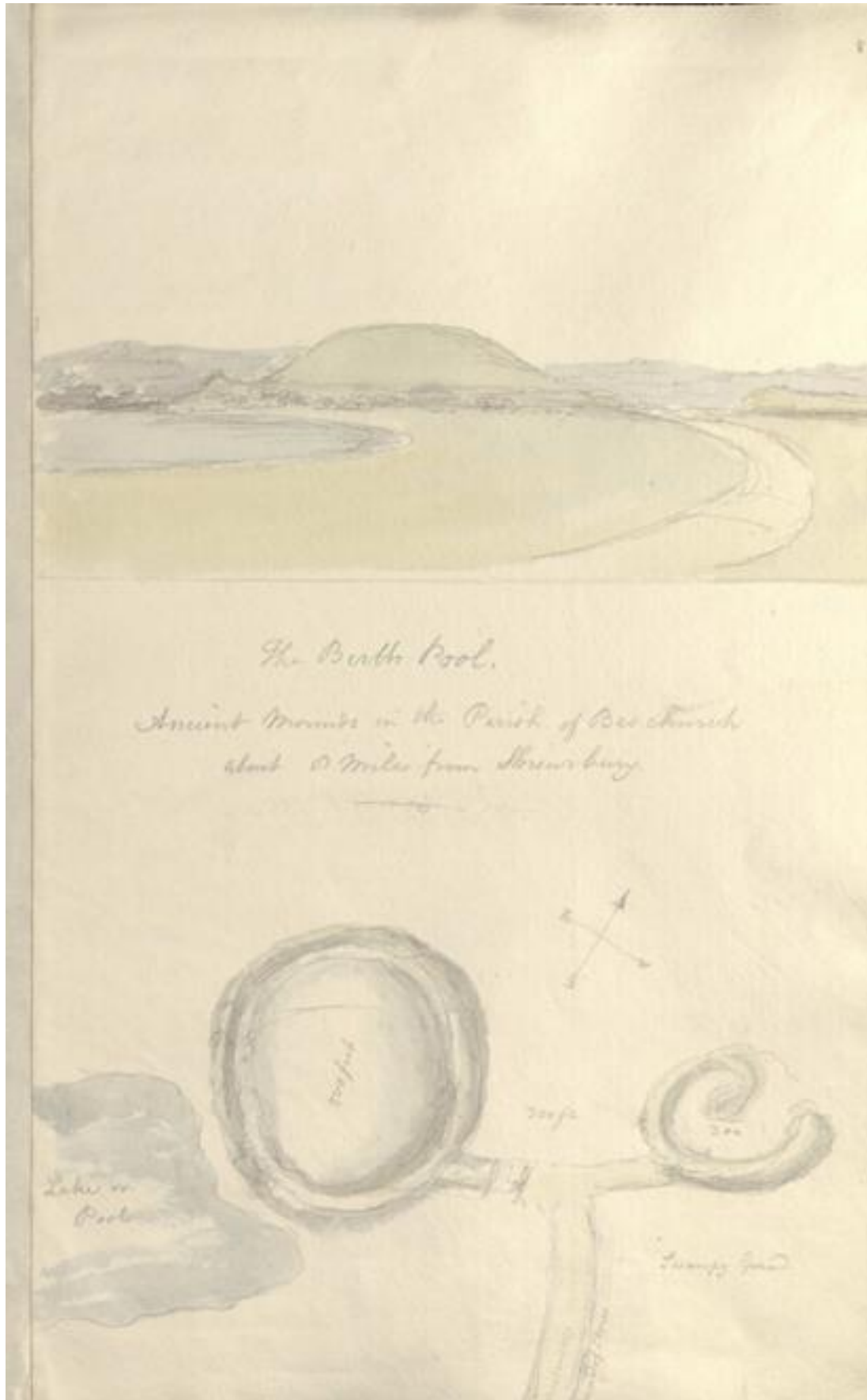


Fig. 4 Buckler Collection: one of two sketches of the Berth; (British Library Add MS 36379, 8 et seq)

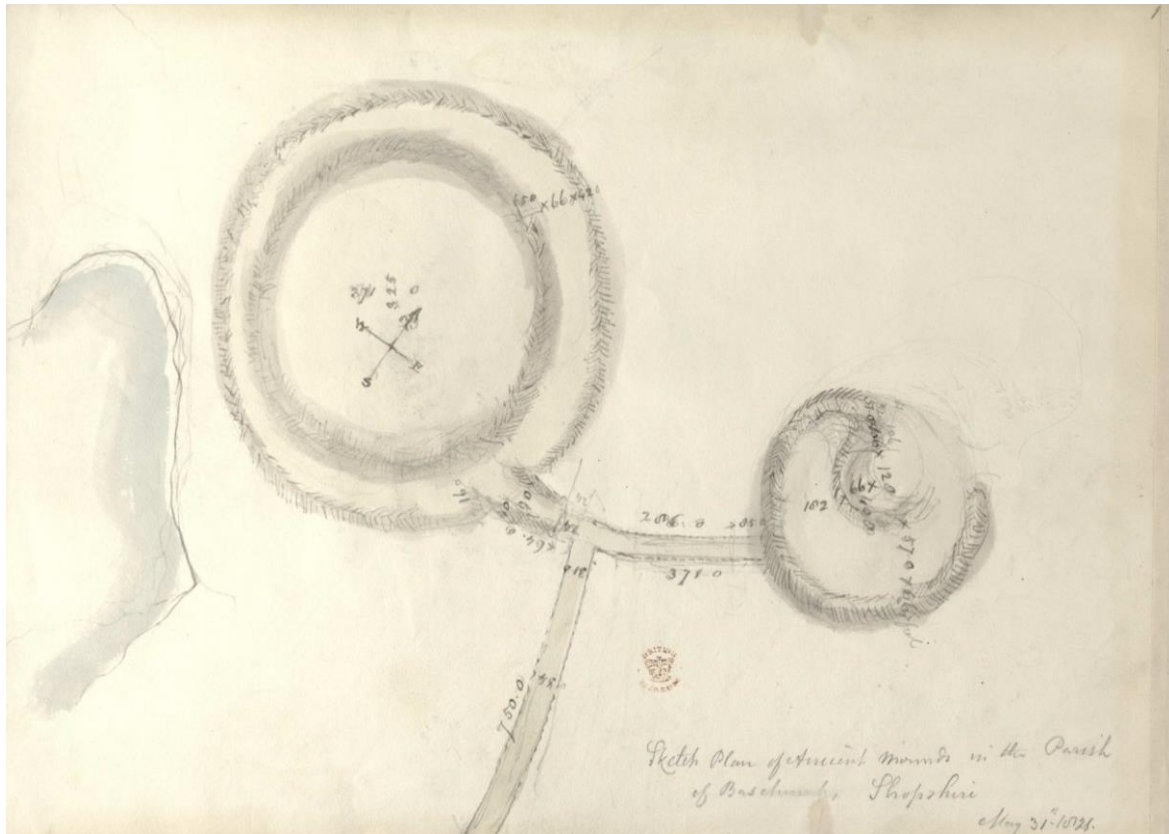


Fig. 5 Buckler Collection: two of two sketches of the Berth (British Library Add MS 36379, 8 et seq)



Fig. 6 1821 Berth Inclosure Map: Shropshire Archive



Fig. 10 1830 Ordnance Survey (Market_Drayton_1830_1840 (<http://www.visionofbritain.org.uk/> - accessed Feb 2016)

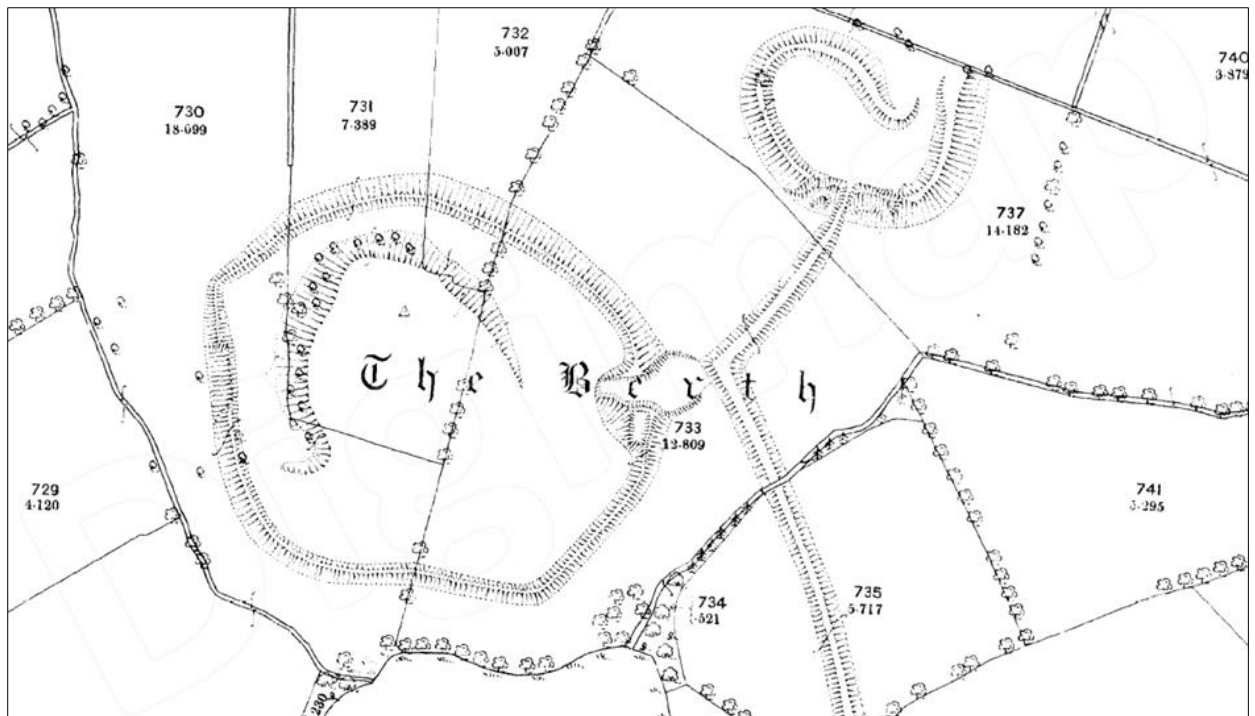


Fig. 11 Ordnance Survey; Historic Mapping 1890s; available via <http://digimap.edina.ac.uk/>; accessed Feb 2017

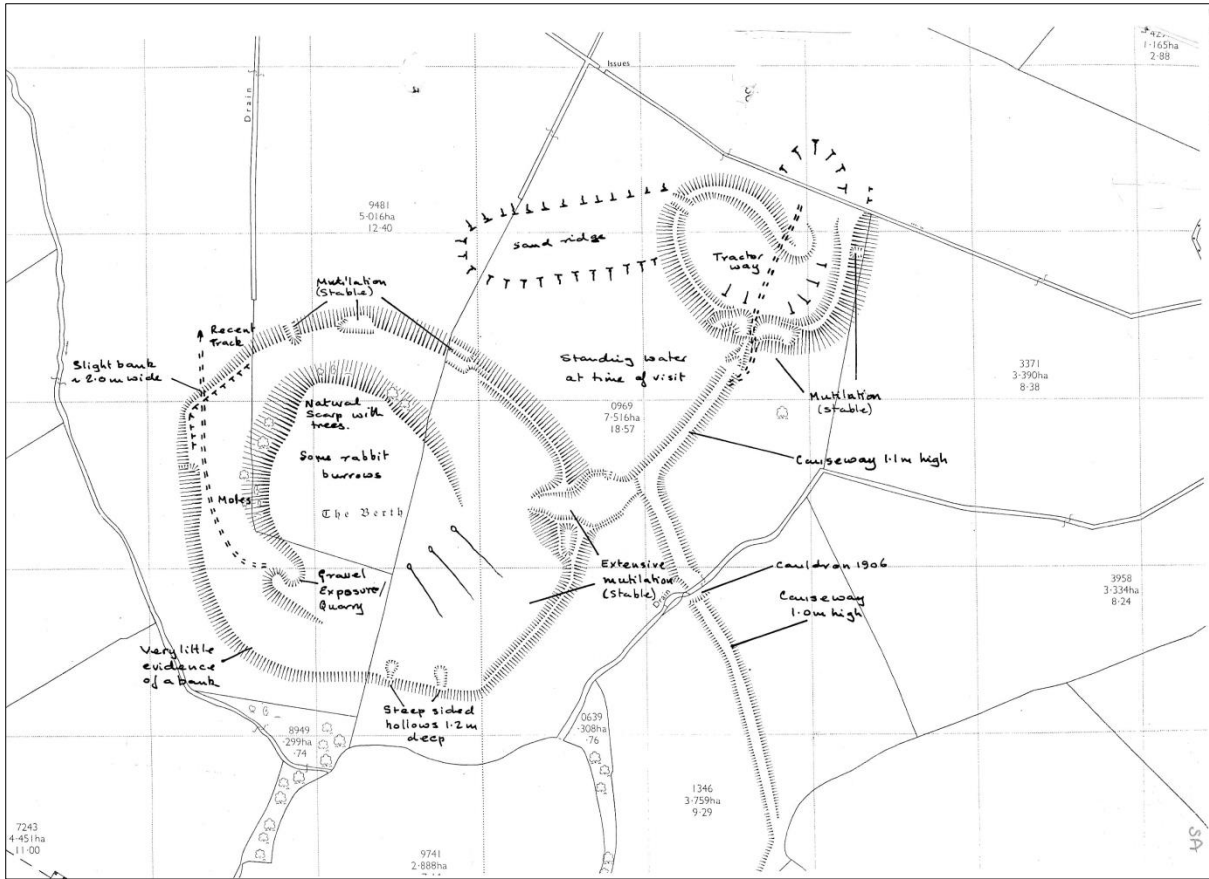


Fig. 12 Tyler's map of the Berth made in the 1980s; Shropshire HER



Fig. 13 The Berth, looking north showing the west side of the main enclosure, the flat top of Berth Hill and the quarry scar (bottom left) (Deacon 2016)

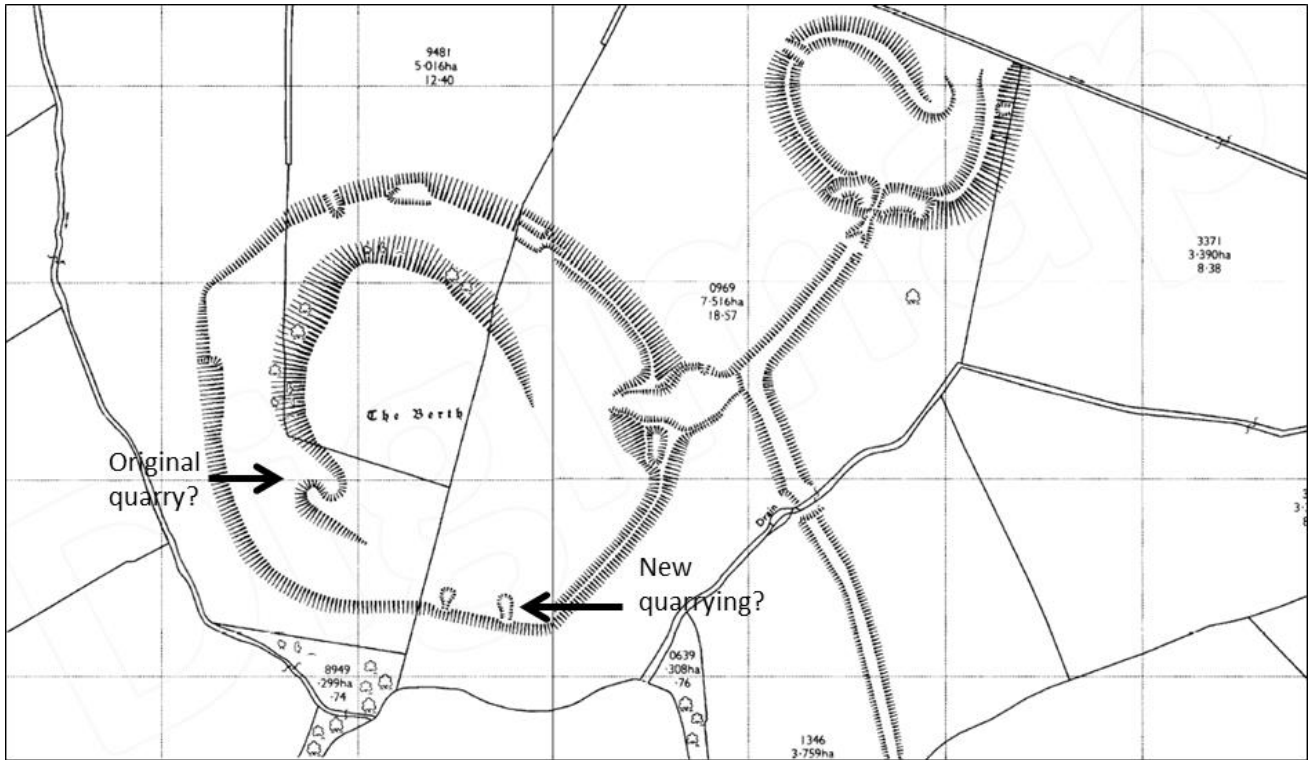


Fig. 14 Ordnance Survey; Historic Mapping 1970s; available via <http://digimap.edina.ac.uk/>; accessed Feb 2017



Fig. 15 One of the possible gravel extraction sites on the southern side of the Berth's main enclosure (Norton 2014)

3. The written evidence

Turning to the written record, the *'waters that issue out of the Burgh poole'* are mentioned in Gough's *'A History of Myddle'* published around 1700 (Hey, 1981:31); this gossipy account of village life in Myddle, a village about 3km due east of the Berth, confirms that Berth Stream was in existence in the early eighteenth-century, reinforcing the 1731 map. Therefore Berth Stream is not a modern drain.

Antiquarian writers wrote extensively about low-lying fortifications, possibly because they were accessible and, unlike smaller, less monumental enclosure sites, had survived ploughing. The Berth features in numerous antiquarian records and collections of folklore, and writers concentrate on providing descriptions of the earthworks, the causeways and the connection the monument may have had with Cynddylan, seventh-century Price of Powys.

The first historic reference to the Berth was made by Parkes (Drawings of Shropshire: Baschurch; D. Parkes; British Library Add MS21012:1801-1832) who described the monument as a *'remarkable British fastness'*. This account also included the first reference to the causeways which were separately described as *'a low road of small heaped stones'* connecting the enclosures east-west, and *'a sort of causeway'* providing access to the south across the marshy ground. The Berth's enclosures and causeways were further described by Owen and Blakeway in *'A History of Shrewsbury'* (Owen and Blakeway 1825), which used an enhanced version of Buckler's sketch as its frontispiece (Shropshire Archive X6001/16/1/198/97). The causeways were described with similar wording to that used by Parkes, but in more detail. The gap between the causeway and the entrance to the main enclosure was noted (this is not obvious today), speculating that it would be crossed by *'a kind of rude drawbridge'*, and two *'outworks'* of heaped stone were identified at that entrance (Owen and Blakeway, 1825:8). Owen, Blakeway and Parkes noted high earthworks at the entrance to the small enclosure.

In *Salopia Antiqua* (Hartshorne, 1841:172-176), Hartshorne covered the Berth, its enclosures and its causeways in some detail. The east-west causeway was described as being at the same level as the bog *'notwithstanding all the draining which the land has undergone'* (Hartshorne, 1841:174), and discernible mainly by discolouration to the vegetation (this matches with Buckler's sketch). He concluded that the stones were brought from a gravel pit, *'a quarter of a mile distant'* (the quarry on the south-west of Berth Hill). Hartshorne also described the *'two great heaps of stones'* which he labelled towers, outside the main entrance. Hartshorne was an eye-witness to the ongoing destruction of these stone heaps, and provided an account of the vast quantity of stone which had already been deposited in the bog *'or carried away to mend the neighbouring roads'*. Hartshorne

also described a stream which cut off the causeway before it reached the entrance; this interruption to the causeway had already been noted by Owen and Blakeway, although the path of the Berth Stream does not tally either with their account or the modern stream position. Moving towards the smaller enclosure, *'the Inferior Work'*, Hartshorne described a high, thick hedge which crossed the causeway (Hartshorne, 1841:176), which may represent the new field boundary shown on the 1841 Tithe map. The entrance to the smaller enclosure was between two elevated mounds (unchanged in modern morphology), and Hartshorne suggested that the small enclosure was surrounded by a water-filled ditch. Both modern and antiquarian maps show a drain to the east of the small enclosure, but no surrounding stream, and this reference remains a mystery. Hartshorne concluded that this was a formidable and highly defensible fortification. Bagshaw, in his 1851 *'History, gazetteer and directory of Shropshire'*, referred to the Berth's enclosures as being connected by a low road made of stones *'by incredible labour'* (Bagshaw, 1851:212-3).

The Berth has attracted a wealth of folklore, and the legend that the Berth is the site of the grave of Cynddylan, seventh-century prince of Powys, is recounted by all the antiquarian authors (Parkes, 1801-1832; Owen and Blakeway 1825; Hartshorne, 1841; Bagshaw, 1851). According to an anthology of early Welsh poem (*Canu Heledd*, part of *Canu Llywarch Hen*), Cynddylan died fighting the Anglo-Saxons, and was buried at *Eglwyseu Bassa*, 'the churches of Bassa', interpreted as Baschurch. Possibly influenced by this legend, the Berth was proposed as a centre for the lowland Cornovii after the seat of government had transferred away from Wroxeter (Trinder, 1983:22; Gelling, 1992:25). This myth is also used in modern texts as part of an argument linking Baschurch and the Berth with the legend of King Arthur (Phillips and Keatman 1992:169 et seq). In *'Shropshire folk-lore – a sheaf of gleanings'*, Jackson describes how attempts to build a church on Berth Hill were continually thwarted by unknown forces (the Devil), who, overnight, demolished day-time progress (Jackson, 1883:9), and how those same forces threw the proposed church bells into Berth Pool from whence they were never recovered (Jackson, 1883:68).

The Berth was recorded in the Victoria County History (Page, 1908:408 et seq), which also documented the recovery of the Berth Cauldron in 1906. This vessel was recovered from the intersection of Berth Stream with the north-south causeway; an account of its discovery including its precise location are recorded in the Proceedings of the Society of Antiquaries (London) (Smith, 1907:324-326). Although there was no reason to contradict this original account, Auden suggested that the Cauldron was recovered from Berth Pool (Auden, 1918:64), but as the finding was made during peat cutting, the original location is more likely. The Cauldron was originally interpreted as a water-clock but this theory was overturned by Hawkes (Hawkes, 1951). It was also regarded as Late

Roman (e.g. Tyler, 1981) and indicative of occupation. [At one point the Berth was seen as a post-Roman administrative centre, after the abandonment of Viroconium (Rowley, 1972:43 et seq)]. However, it is now regarded as Early Roman (*pers comm.* Dr. J. Joy, University of Cambridge; Dr J. Farley, British Museum) and assigned to Joy's 'Group I - projecting-bellied' cauldrons (Joy, 2014:331-2), mid-first to second-century AD.

Edward Downman (Downman, 1906) included the Berth in his '*Ancient earthworks of Shropshire*' (Shrops Archive 6001/297) (Fig. 16), a handwritten volume of maps and sketches; it also detailed several other marsh-fort candidates notably Wall Camp, near Kynnersley and Pan Castle, near Whitchurch. Downman's plan reflected the OS maps, without indicating any gravel extraction, although Downman noted that the entrances are '*in chaos*'. The elevation of the north-south causeway (N---O) shows a rise of 5ft, similar to modern elevation suggesting that, by the early twentieth-century, the surrounding swampy ground had shrunk. This valuable document was completed in the same year as the Berth Cauldron was found. Where shown, all maps (OS, Downman) show that the causeway is bisected by Berth Stream rather than the other way around suggesting that the current gap in the causeway appears to have always been present. Modern landowners record that it was bridged until comparatively recently (*pers comms*: Rod Timmis and Howard Edwards). Extensive drainage in the wider Baschurch/Weston Lullingfields area in the 1860s was recorded in Rowley's modern *History of Shropshire* (Rowley, 1972:170).

Modern archaeological and historical interest in the Berth was recorded from 1929 onwards, mainly by the well-known Shropshire archaeologist and historian Lily Chitty, either as the result of site visits by the local historic society, or in published texts (Chitty, 1923-32; Chitty, 1937/8; Chitty, 1956). The preferred interpretation during the early twentieth-century was that the Berth was a lake dwelling or crannog and it was assumed that the site would have been surrounded by water in antiquity (see above). The original entrance, with towers, was recorded as being to the north-north-east (Chitty, 1923-32). This is anomalous as the entrance to the main enclosure faces south-east although, curiously, is suggestive of the third causeway and entrance discovered as part of recent excavations (Chapman, Smith and Norton, 2017). A summary and diagram of the Berth was completed Miss R A Brown in 1951 (Brown, 1951) but adds no extra details.

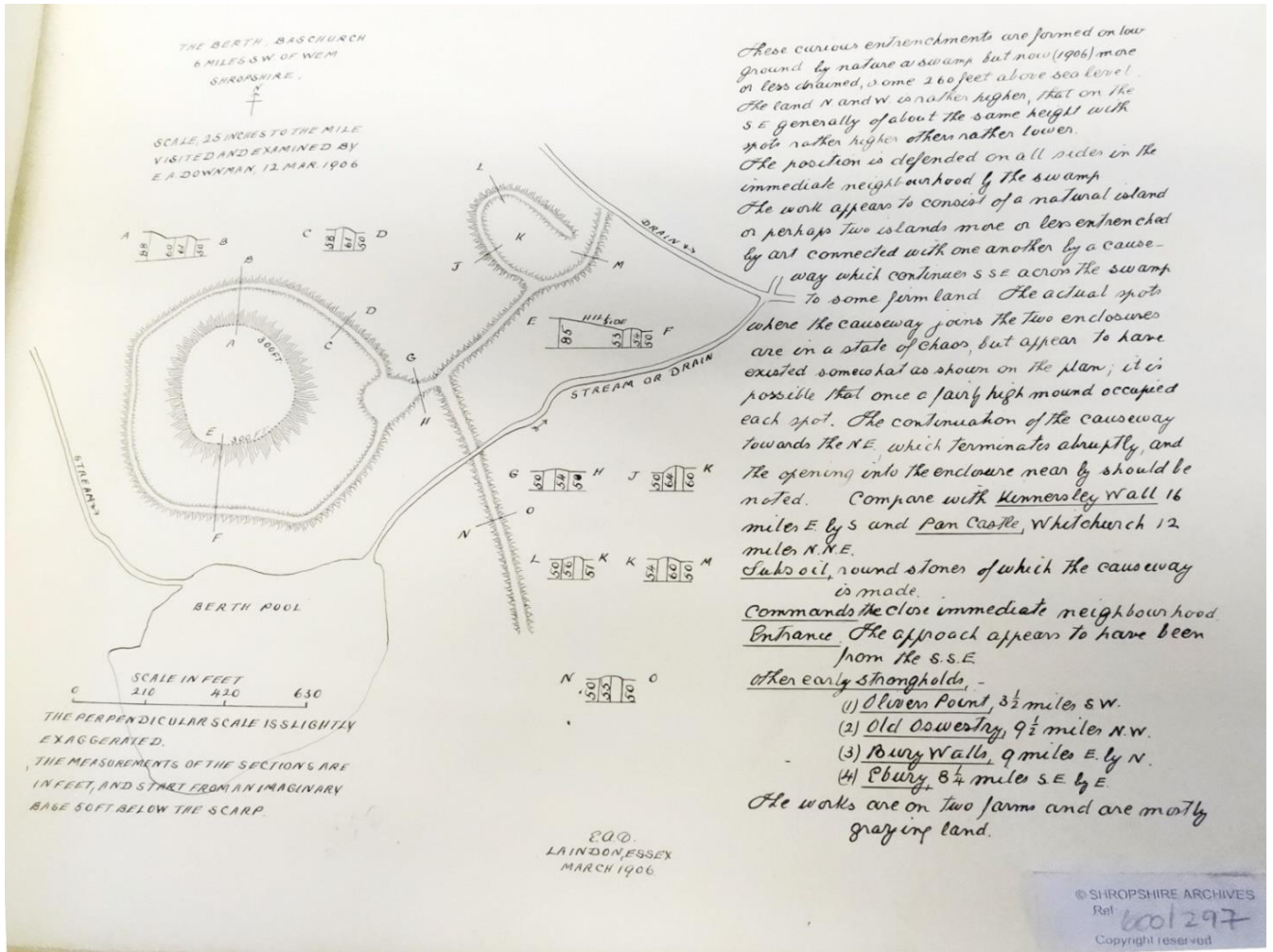


Fig. 16 'Ancient earthworks of Shropshire' The Berth: Shropshire Archive (Downman, 1906)

Coda

The monument's name is derived from the Old English *burf*, meaning 'stronghold' (*pers.comm.* Dr. John Baker, University of Nottingham), but this nomenclature is used widely; several prehistoric monuments incorporate the name in their title for example, Berth Hill Camp, Maer (Staffordshire HER 00023) and Abdon Burf Hillfort (Shrops HER 00182).

4. Summary

This appendix consolidates the historic evidence relating to the Berth, Berth Pool and the Berth's causeways. The Berth's surroundings are described in historic maps and records from the 1730s onwards. The enclosures feature from the early nineteenth-century onwards, together with the causeways. The maps are consistent in both their depiction of the size of Berth Pool and the direction and location of Berth Stream. There are no indications that water surrounded the enclosures, although there is reference to the surrounds being swampy (Buckler, 1787 - 1897).

Antiquarians and map-makers described what they saw and assumed that the Berth's causeways formed part of the '*ancient works*'. Recent excavation (Chapman, Smith and Norton, 2017) and comparison to other similar structures locally (Blockley and Shaw, unpublished) have shown that the causeways are most likely to be post-medieval and built to facilitate gravel extraction. This conclusion does not contradict the historic evidence. The causeways do not appear in any depiction of the Berth before Buckler's sketches in 1821, whilst the first written account of their presence dates from the early nineteenth-century (Parkes, 1801-1832). They were being used to transport stone/gravel at the time of Hartshorne's visit around 1840 (1841:175). Additionally, the 1841 Tithe Map (Fig. 8) suggests that land around the Berth was subdivided during the early nineteenth-century; gravel may have been extracted by separate owners, and shipped out along different routes - south from the main enclosure along the north-south causeway, and east through the small enclosure across solid land to the Marton road - hence the need for two causeways. It would be reasonable to conclude therefore that the causeways were built before 1800. The anomaly of the Iron Age sub-surface identified beneath the north-south causeway is discussed elsewhere in the thesis.

The follow-on question of how the main enclosure was accessed prior to the causeways being built has also now been substantially resolved by the identification of a putative third causeway running between the gravel spit and the north-eastern part of the main enclosure. Although this causeway is somewhat ephemeral, it leads to an entrance in the north-east ramparts of the main enclosure (Chapman, Smith and Norton, 2017). This makes the south-east 'entrance' redundant for all practical purposes, and raises questions regarding its function.

Appendix 4 – The Berth - Site Visit Record

Date	Location	Purpose	Ground and weather conditions	Outcomes
March 2014	The Berth - whole site	Initial site visit	Fair; ground waterlogged between enclosures	Reconnaissance and photographic record
July/ August 2014 (3 visits)	Berth Main Causeway and Berth North Pasture Wall Camp	Exploratory visits to both sites to establish the extent and profile of the peat deposits.	Fair to sunny; ground damp but passable	Eight cores (maximum depth - 7m+) were recorded summarising the peat stratigraphy in areas of pasture surrounding the Berth; radiocarbon dates obtained which establish location of Neolithic, Bronze Age and Iron Age stratigraphy Six cores were recorded of the peat stratigraphy near to Wall Camp (maximum depth - 1.9m)
December 2014	Berth North Pasture	Obtain organic material for analysis	Overcast to wet, with very poor ground conditions (deep mud)	Samples unobtainable; visit abandoned
May 2015	Berth North Pasture	Obtain organic material for analysis	Fine weather; ground was muddy. Cattle on the pasture were sinking to their hocks	6m+ core obtained for pollen analysis plus a parallel 2m core obtained (1m-3m depth) for plant macrofossil and insect analysis; samples selected to radiocarbon dating
January 2016	The Berth - whole site	assessment of site for summer excavation; liaison with landowner	Fine and clear with exceptionally good light for photography; flooded pasture	Photographic record obtained; the causeways were agreed as suitable locations for summer field school (to be led by Dr H Chapman); landowner agreement
June 2016	Berth North and South Pastures	Peat profiling; causeway excavation; obtain samples for palaeoenvironmental analysis; field school training	Weather fine deteriorating to thunderstorms and leading to localised flooding on site and in the surrounding area on the final two days	Excavation and palaeoenvironmental analysis of causeways concluded; stratigraphic coring completed of key sites in the Berth's peat basin
December 2016	Field adjacent to Berth Main Causeway	Obtain organic deposits for additional palaeoenvironmental analysis	Fine, dry and exceptionally cold; ground was damp but solid and workable	7m+ core obtained for post-glacial pollen analysis. Plant macrofossil and insect analysis of selected layers, undertaken by Yuxiao Kang, Masters student, and report produced; samples selected to radiocarbon dating
June 2017	Berth Main Enclosure and Berth North Field	Further peat profiling in Berth North Field; excavation of Berth north-east entrance and 'third causeway'; field school training	Weather fine with rain and showers; ground damp but workable	Profiling of the stratigraphy surrounding the Berth was completed and modelled in ArcGIS 10.2 and Strater software programmes. The excavation concluded successfully

UBANo	Sample ID	Material Type	¹⁴ C Age	±	F14C	±
UBA-32479	Berth 1, trench 1	larch?	2141	25	0.7660	0.0024
UBA-32480	Berth2, trench 1	larch?	2266	30	0.7542	0.0028

Henry Chapman
University of Birmingham
Department of Classics, Ancient
History and Arch
Edgbaston
Birmingham, West Midlands B15
2TT
England
VAT No. GB729856187
Customer No. 2310432



¹⁴CHRONO Centre
Queens University
Belfast
42 Fitzwilliam
Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification: UBA-32479
Date of Measurement: 2017-08-28
Site: Berth Shropshire
Sample ID: Berth 1, trench 1
Material Dated: wood
Pretreatment: AAA
Submitted by: Henry Chapman

Conventional ¹⁴ C	
Age:	2141±25 BP
	using AMS
Fraction corrected $\delta^{13}\text{C}$	

Henry Chapman
University of Birmingham
Department of Classics, Ancient
History and Arch
Edgbaston
Birmingham, West Midlands B15
2TT
England
VAT No. GB729856187
Customer No. 2310432



¹⁴CHRONO Centre
Queens University
Belfast
42 Fitzwilliam
Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification: UBA-32480
Date of Measurement: 2017-07-31
Site: Berth Shropshire
Sample ID: Berth2, trench 1
Material Dated: wood
Pretreatment: AAA
Submitted by: Henry Chapman

Conventional ¹⁴ C Age: 2266±30 BP using AMS Fraction corrected δ ¹³ C
--

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.0.0

Copyright 1986-2013 M Stuiver and PJ Reimer

*To be used in conjunction with:

Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.

Annotated results (text) - -

Export file - c14res.csv

Berth 1 tr

UBA-32479

Radiocarbon Age BP 2141 +/- 25

Calibration data set: intcal13.14c

% area enclosed cal AD age ranges

Reimer et al. 2013

relative area under
probability distribution

68.3 (1 sigma) cal BC 343- 325 0.138

204- 157 0.707

134- 116 0.155

95.4 (2 sigma) cal BC 351- 299 0.189

227- 223 0.005

210- 91 0.796

70- 61 0.010

Berth2 tre

UBA-32480

Radiocarbon Age BP 2266 +/- 30

Calibration data set: intcal13.14c

% area enclosed cal AD age ranges

Reimer et al. 2013

relative area under
probability distribution

68.3 (1 sigma) cal BC 393- 357 0.596

283- 256 0.307

245- 236 0.097

95.4 (2 sigma) cal BC 398- 350 0.474

305- 210 0.526

References for calibration datasets:

Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE, Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Haflidason H, Hajdas I, Hattä© C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.

IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

Comments:

* This standard deviation (error) includes a lab error multiplier.

** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)

** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)

where ^2 = quantity squared.

[] = calibrated range impinges on end of calibration data set

0* represents a "negative" age BP

1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

<>

Calibration of Radiocarbon Age to Calendar Years

(Variables: $\delta^{13}C = -28.60$ o/oo)

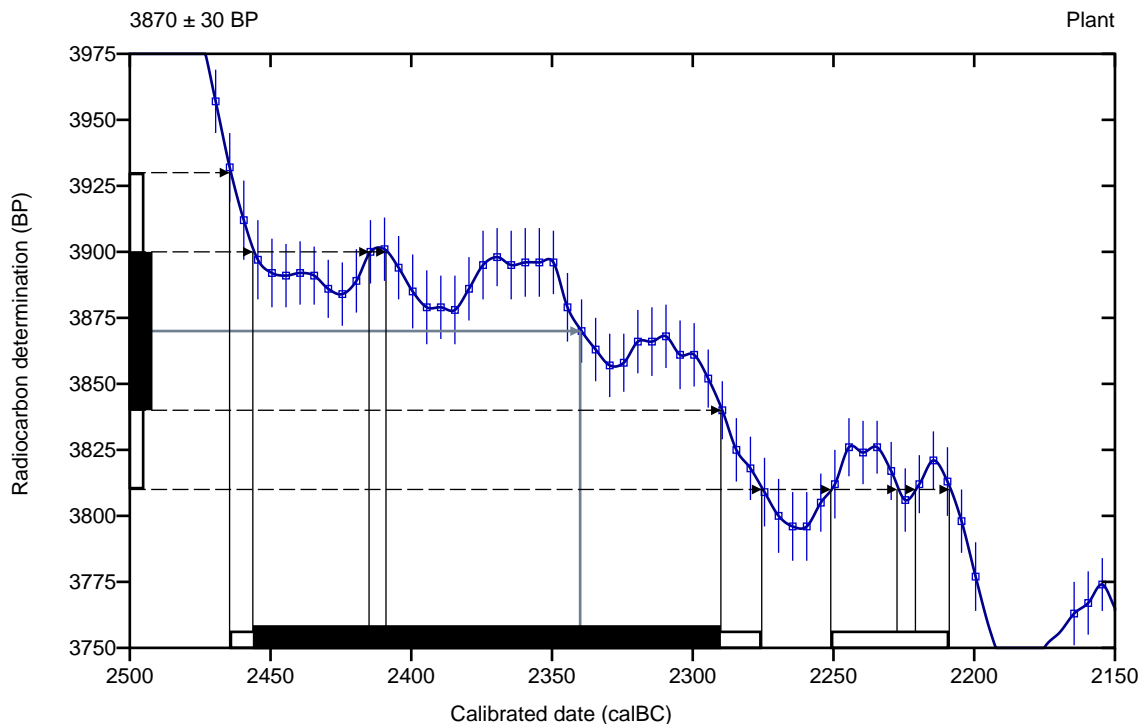
Laboratory number **Beta-453320 3BBMC16-1 (150-160cm)**

Conventional radiocarbon age **3870 \pm 30 BP**

2 Sigma calibrated result **cal BC 2465 - 2275** **(cal BP 4415 - 4225)**
95% probability **cal BC 2250 - 2210** **(cal BP 4200 - 4160)**

Intercept of radiocarbon age with calibration curve cal BC 2340 (cal BP 4290)

1 Sigma calibrated results **cal BC 2455 - 2290** **(cal BP 4405 - 4240)**
68% probability



Database used
INTCAL13

References

References to Intercept Method

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2) : 317-322

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

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Calibration of Radiocarbon Age to Calendar Years

(Variables: $\delta^{13}C = -28.70$ o/oo)

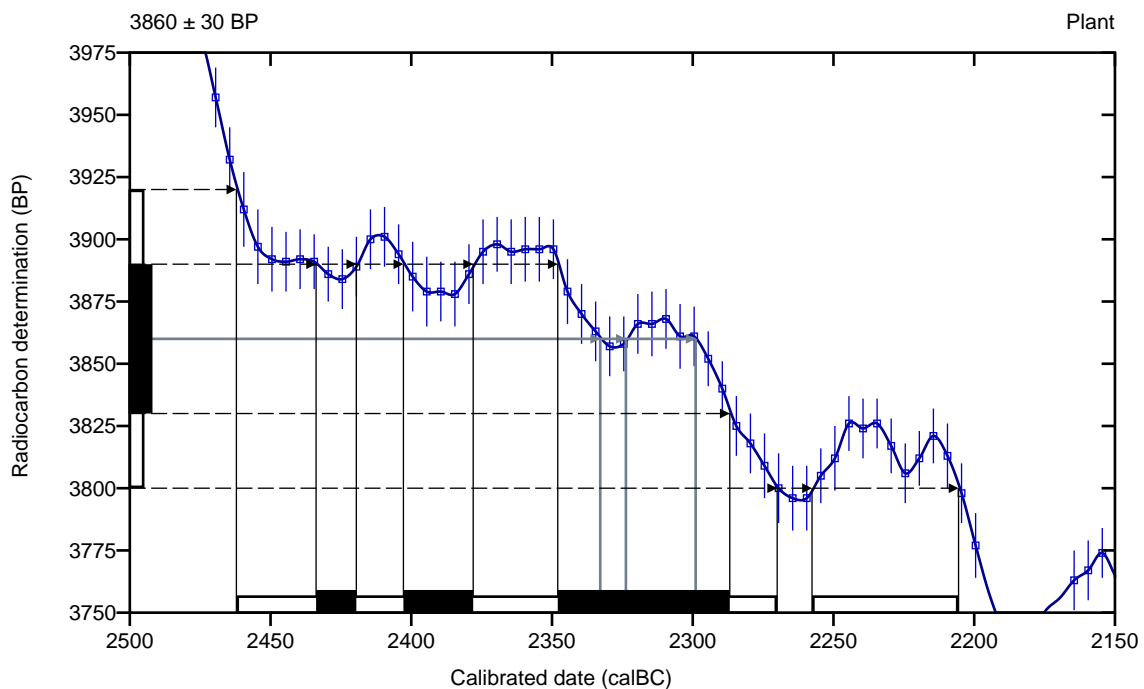
Laboratory number **Beta-453321 3BBMC16-2 (170-180cm)**

Conventional radiocarbon age **3860 \pm 30 BP**

2 Sigma calibrated result **cal BC 2460 - 2270** **(cal BP 4410 - 4220)**
95% probability **cal BC 2260 - 2205** **(cal BP 4210 - 4155)**

Intercept of radiocarbon age with calibration curve
cal BC 2335 (cal BP 4285)
cal BC 2325 (cal BP 4275)
cal BC 2300 (cal BP 4250)

1 Sigma calibrated results **cal BC 2435 - 2420** **(cal BP 4385 - 4370)**
68% probability **cal BC 2405 - 2380** **(cal BP 4355 - 4330)**
 cal BC 2350 - 2285 **(cal BP 4300 - 4235)**



Database used
INTCAL13

References

References to Intercept Method

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2) : 317-322

References to Database INTCAL13

Reimer, et.al., 2013, Radiocarbon55(4).

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www.radiocarbon.com

Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

August 28, 2014

Mrs. Shelagh Norton
Stock Barn, Leigh Court Barns
Leigh, Worcester, WR6 5LB
United Kingdom

RE: Radiocarbon Dating Results For Samples 1BBMC1 1.70, 1BBMC2 3.25, 2BBMC4 1.6-1.7

Dear Mrs. Norton:

Enclosed are the radiocarbon dating results for three samples recently sent to us. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable. The Conventional Radiocarbon Ages have all been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

Reported results are accredited to ISO-17025 standards and all chemistry was performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO-17025 program participated in the analyses.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result.

When interpreting the results, please consider any communications you may have had with us regarding the samples. As always, your inquiries are most welcome. If you have any questions or would like further details of the analyses, please do not hesitate to contact us.

The cost of analysis was previously invoiced. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,


Digital signature on file



REPORT OF RADIOCARBON DATING ANALYSES

Mrs. Shelagh Norton

Report Date: 8/28/2014

Stock Barn, Leigh Court Barns

Material Received: 8/8/2014

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 387078 SAMPLE : 1BBMC1 1.70 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (wood): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1625 to 1500 (Cal BP 3575 to 3450)	3320 +/- 30 BP	-27.3 o/oo	3280 +/- 30 BP
Beta - 387079 SAMPLE : 1BBMC2 3.25 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (plant material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 3690 to 3680 (Cal BP 5640 to 5630) and Cal BC 3660 to 3635 (Cal BP 5610 to 5585) and Cal BC 3550 to 3540 (Cal BP 5500 to 5490)	4890 +/- 30 BP	-27.5 o/oo	4850 +/- 30 BP
Beta - 387080 SAMPLE : 2BBMC4 1.6-1.7 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (wood): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 765 to 410 (Cal BP 2715 to 2360)	2510 +/- 30 BP	-28.2 o/oo	2460 +/- 30 BP

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "**". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -27.5 o/oo : lab. mult = 1)

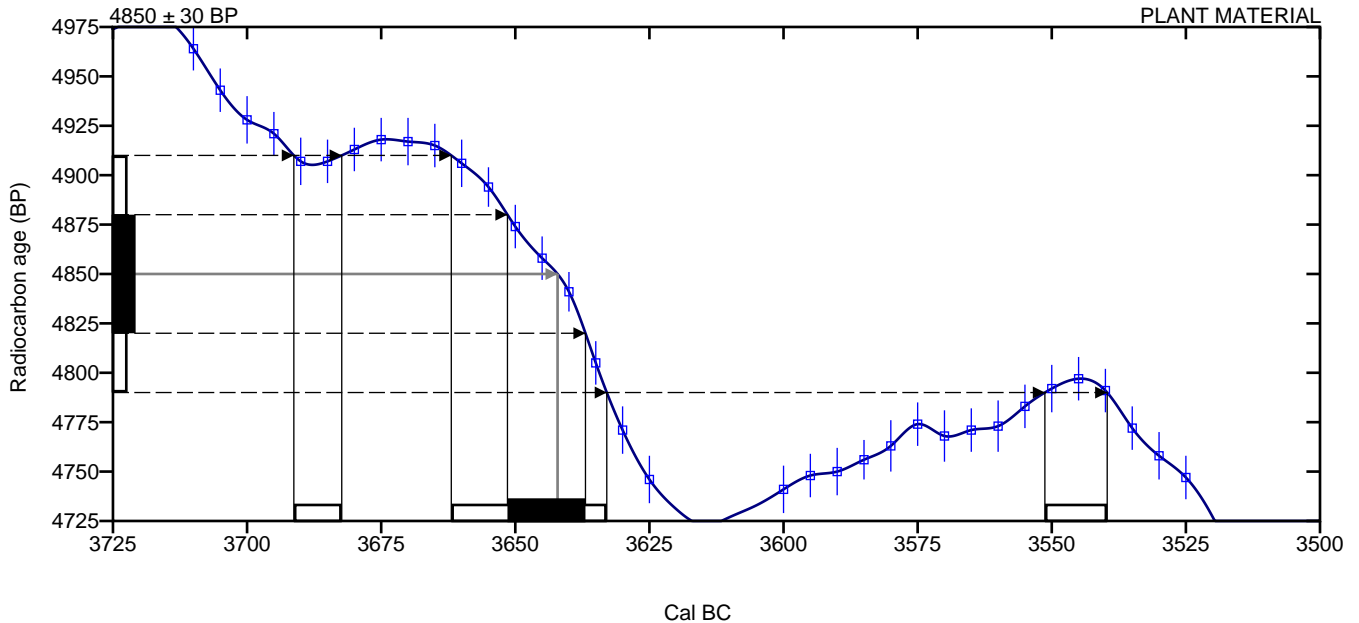
Laboratory number **Beta-387079**

Conventional radiocarbon age **4850 ± 30 BP**

2 Sigma calibrated result **Cal BC 3690 to 3680 (Cal BP 5640 to 5630)**
95% probability **Cal BC 3660 to 3635 (Cal BP 5610 to 5585)**
 Cal BC 3550 to 3540 (Cal BP 5500 to 5490)

Intercept of radiocarbon age with calibration curve Cal BC 3640 (Cal BP 5590)

1 Sigma calibrated results Cal BC 3650 to 3635 (Cal BP 5600 to 5585)
68% probability



Database used
INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

Reimer PJ et al. IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP. Radiocarbon 55(4):1869–1887.

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -28.2 o/oo : lab. mult = 1)

Laboratory number **Beta-387080**

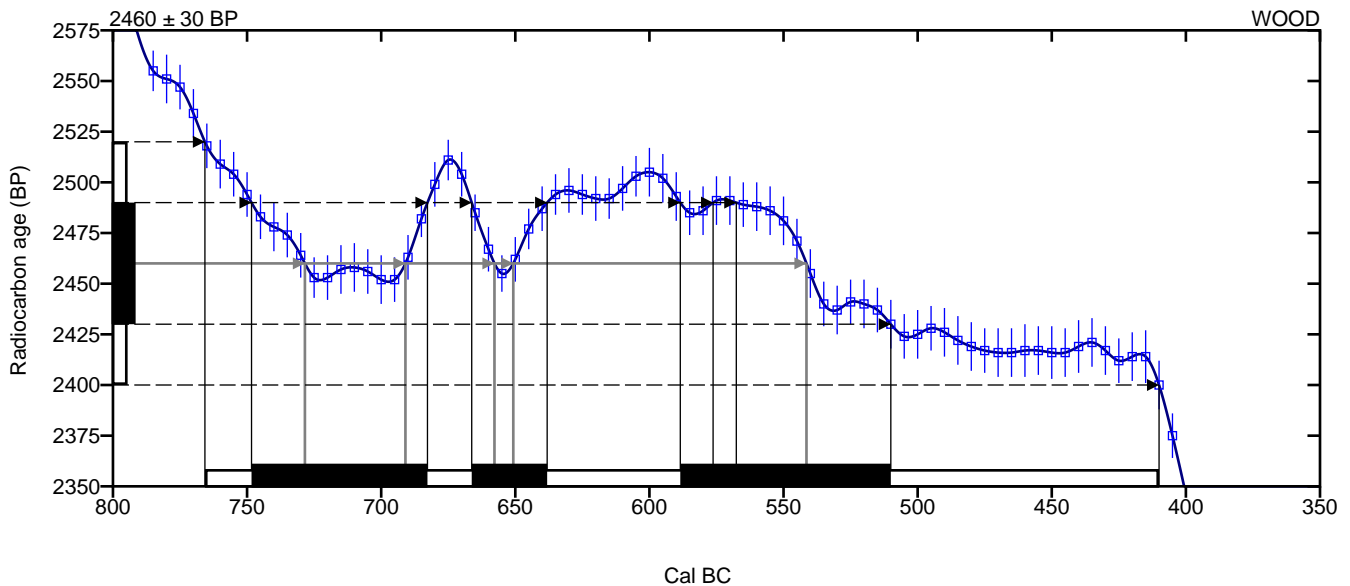
Conventional radiocarbon age **2460 ± 30 BP**

2 Sigma calibrated result **Cal BC 765 to 410 (Cal BP 2715 to 2360)**
95% probability

Intercept of radiocarbon age with calibration
curve

Cal BC 730 (Cal BP 2680)
Cal BC 690 (Cal BP 2640)
Cal BC 660 (Cal BP 2610)
Cal BC 650 (Cal BP 2600)
Cal BC 540 (Cal BP 2490)

1 Sigma calibrated results Cal BC 750 to 685 (Cal BP 2700 to 2635)
68% probability Cal BC 665 to 640 (Cal BP 2615 to 2590)
Cal BC 590 to 510 (Cal BP 2540 to 2460)



Database used
INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

Reimer PJ et al. IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP. Radiocarbon 55(4):1869–1887.

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Poznań, 18-01-2016

Report
on C-14 dating in the Poznań Radiocarbon Laboratory

Customer: **Shelagh Norton**
College of Arts and Law
University of Birmingham

B15 2TT- Edgbaston, Birmingham
United Kingdom

Job no.: 10390/15

<i>Sample name</i>	<i>Lab. no.</i>	<i>Age 14C</i>	<i>Remark</i>
The Berth BNP 15 (2) (1A)	Poz-77442	6120 ± 40 BP	label: 1A 100-110
The Berth BNP 15 (2) (1B)	Poz-0	>0 BP	reserve label: 1B 100-110
The Berth BNP 15 (2) (2A)	Poz-77444	7060 ± 50 BP	label: 2A 140-150, 0.8mgC
The Berth BNP 15 (2) (2B)	Poz-0	>0 BP	reserve label: 2B 140-150
The Berth BNP 15 (2) (3A)	Poz-77445	7280 ± 90 BP	label: 3A 160-170, 0.2mgC
The Berth BNP 15 (2) (3B)	Poz-0	>0 BP	reserve label: 3B 160-170
The Berth BNP 15 (2) (4A)	Poz-77446	6950 ± 100 BP	label: 4A 180-190, 0.08mgC
The Berth BNP 15 (2) (4B)	Poz-0	>0 BP	reserve label: 4B 180-190
The Berth BNP 15 (2) (5A)	Poz-77546	8710 ± 50 BP	label: 5A 290-300, 0.6mgC
The Berth BNP 15 (2) (5B)	Poz-0	>0 BP	reserve label: 5B 290-300

Comments: Results of calibration of 14C dates enclosed

Head of the Laboratory

Prof. dr hab. Tomasz Goslar

Appendix 6 - Palaeoenvironmental samples - volume and weight

APPENDIX 6 - Palaeoenvironmental samples by volume/weight

Berth North Pasture BNP15			
Sample location/ Depth cm	Volume – ml	Weight - kg	Washed weight - kg
100-110	600	4.5	2.5
110-120	600	4.5	3.5
120-130	600	4.8	3.25
130-140	700	4.9	3.2
140-150	600	4.9	3.0
150-160	500	3.3	2.7
160-170	500	3.0	2.3
170-180	500	3.1	2.4
180-190	500	3.3	2.4
190-200	500	2.9	2.3
200-210	500	3.7	2.6
210-220	500	3.5	2.0
220-230	460	2.6	2.0
230-240	500	2.5	2.0
240-250	500	2.2	2.5
250-260	500	2.3	2.0
260-270	500	2.2	1.8
270-280	500	2.9	2.8
280-290	500	2.7	1.2
290-300	500	2.2	1.2

Berth Main Causeway – 3BBMC16			
Sample location/ Depth cm	Volume – ml	Weight - kg	Washed weight - kg
130-140	650	3.50	2.0
150-160	750	5.0	2.0
170-180	800	4.9	1.5

Appendix 6 - Palaeoenvironmental samples - volume and weight

Berth - Causeway Excavation - 2016			
Sample location/ Depth cm	Volume – L/mL	Weight - kg	Washed weight - kg
Trench 1- 0-10cm			
Total sample/ insects	10l	8kg	2.5 kg
Plants	500ml	350g	250g
Trench 1 - 10-20cm			
Total sample/ insects	9l	8kg	3.25kg
Plants	500ml	400g	310g
Trench 2 - 0-10cm			
Total sample/ insects	4l	5kg	2.5kg
Plants	500ml	300g	200g
Trench 2 – 10-20cm			
Total sample/ insects	4.5l	5.5kg	3.00kg
Plants	500ml	285g	200g
Trench 3 - 0-10cm			
Total sample/ insects	8.5l	5.5kg	4.0kg
Plants	500ml	550g	250g
Trench 3 - 10-20cm			
Total sample/ insects	8.5l	6.2kg	4.5kg
Plants	500ml	650g	300g

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) – BERTH NORTH PASTURE (BNP15)																						
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	Species count: MNI
		110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	
GYRINIDAE																						
<i>Gyrinus</i> spp.	A/R								1	1					1		2	1	1	3	1	11
DYTISCIDAE																						
<i>Agabus affinis</i> (Payk.)	A/R								1								1					2
<i>Agabus guttatus</i> (Payk.)	A/R											1										1
<i>Agabus</i> spp.	A/R						1	1				1			1							4
<i>Ilybius</i> spp.	A/R											1										1
<i>Hydroporus elongatulus</i> Sturm	A/R												1									1
<i>Hydroporus scalesianus</i> Steph.	A/R								1	1		1	1		1							5
<i>Hydroporus</i> spp.	A/R								3		1						1					5
<i>Porhydrus lineatus</i> (F.)	A/R																1					1
<i>Hygrotus inaequalis</i> (F.)	A/R												1				1					2
CARABIDAE																						
<i>Elaphrus lapponicus</i> Gyll.	DA						1															1
<i>Trechus quadristriatus</i> (Schrank.)/ <i>obtusus</i> Er.	U										1											1
<i>Bembidion doris</i> (Panz.)	DA																1					1
<i>Pterostichus melanarius</i> (Ill.)	U								1													1
<i>Pterostichus gracilis</i> (Dej.)	DA										2	1			2							5
<i>Pterostichus diligens</i> (Sturm.)	DA																			1		1
<i>Pterostichus strenuus</i> (Panz.)	U				1				1					1								3
<i>Pterostichus</i> spp.	U														1		2					3

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) – BERTH NORTH PASTURE (BNP15)																						
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	Species count: MNI
		- 110	- 120	- 130	- 140	- 150	- 160	- 170	- 180	- 190	- 200	- 210	- 220	- 230	- 240	- 250	- 260	- 270	- 280	- 290	- 300	
<i>Agonum gracile</i> Sturm	DA				2																	2
<i>Agonum</i> spp.	U				1									1								2
<i>Carabidae</i> indet.	U				1			1	1		1		2		2							8
HELOPHORIDAE																						
<i>Helophorus brevipalpis</i> Bedel	A/R														1							1
HYDROPHILIDAE																						
<i>Chaetarthria seminulum</i> (Hbst.)	A/R															1						1
<i>Enochrus affinis</i> (Thun.)	A/R								1													1
<i>Enochrus melanocephalus</i> (Ol.)	A/R																	2				2
<i>Enochrus</i> cf <i>testaceus</i> (F.)	A/R																		1			1
<i>Enochrus</i> spp.	A/R												1									1
<i>Helochares punctatus</i> Sharp	A/R																		1			1
<i>Hydrobius fuscipes</i> (L.)	DA								1	1	1	1	2		2	1	2		3	1		15
cf <i>Hydrobius fuscipes</i> (L.)	DA																	3				3
<i>Laccobius sinuatus</i> Mots.	A/R																	1				1
<i>Laccobius</i> spp.	A/R							2		2		1				1						6
<i>Coelostoma orbiculare</i> (F.)	A/R																		3		1	4
<i>Cercyon sternalis</i> Steph.	A/R				1																	1
<i>Cercyon tristis</i> (Ill.)	A/R							4												1		5
<i>Cercyon</i> (aquatic) spp.	A/R	1	1	1	3		2	1	1	2	1	1	4	1	1	5	2					27
<i>Hydrophilidae</i> indet.	U											1										1
HYDRAENIDAE																						

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) – BERTH NORTH PASTURE (BNP15)																							
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	Species count: MNI	
		- 110	- 120	- 130	- 140	- 150	- 160	- 170	- 180	- 190	- 200	- 210	- 220	- 230	- 240	- 250	- 260	- 270	- 280	- 290	- 300		
<i>Brachygluta</i> spp.	DA					2																2	
<i>Rybaxis</i> spp.	DA					2												2				4	
<i>Bryaxis</i> cf. <i>bulbifer</i> (Reich.)	DA							2														2	
<i>Bryaxis curtisii</i> (Leach)	DA					1																1	
<i>Bryaxis</i> spp.	DA						2				1											3	
<i>Tachinus</i> spp.	R					1																1	
<i>Phyllodrepa</i> spp.	R							1														1	
<i>Aleocharinae</i> indet.	U					1					1	1	1	1								5	
<i>Anotylus rugosus</i> F.	DA				5		1					1										7	
<i>Oxytelus</i> / <i>Anotylus</i> spp.	U				4																	4	
<i>Platystethus</i> spp.	U						2											1				3	
<i>Stenus</i> spp.	U					1		3	1	1	1	1	2	1	1			1				13	
<i>Euaesthetus</i> cf. <i>bipunctatus</i> (Ljungh)	DA					1																1	
<i>Lathrobium</i> spp.	DA				2				2	1				1								6	
<i>Philonthus</i> spp.	U				1			2				1		1								5	
<i>Quedius</i> spp.	U																1					1	
SCARABAEDIDAE																							
<i>Aphodius</i> sp. cf. <i>sphacelatus</i> (Panz.)/ <i>prodromus</i> (Brahm)	P/D						1															1	
<i>Aphodius</i> spp.	P/D																			1		1	
CLAMBIDAE																							
<i>Clambus</i> spp.	R								1													1	
SCIRTIDAE																							
<i>Cyphon</i> spp.	DA	1		1	6	4	15	7	9	6	21	10	23	23	35	6	8	6	6	1	6	194	

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) – BERTH NORTH PASTURE (BNP15)																						
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	Species count: MNI
		110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	
ELMIDAE																						
<i>Oulimnius</i> spp.	A/R																		1	1		2
<i>Riolus subviolaceus</i> (P. Müller)	A/R																	1				1
DRYOPIDAE																						
cf <i>Dryops</i> spp.	DA								1			1		1	3	1			1	1		9
ELATERIDAE																						
<i>Athous haemorrhoidalis</i> (F.)	M														1							1
<i>Athous bicolor</i> (Goeze)	M											1										1
<i>Agriotes</i> cf. <i>pallidulus</i> (Ill.)	M																		1			1
CANTHARIDAE																						
<i>Cantharis</i> cf. <i>livida</i> L.	M										1				1							2
<i>Cantharis</i> spp.	M								2										1			3
<i>Rhagonycha lignosa</i> (Müll.)	M												1									1
PTINIDAE																						
<i>Dryophilus pusillus</i> (Gyll.)	W													1								1
<i>Ochina ptinoides</i> (Marsham)	W																	1				1
<i>Anobium</i> spp.	W											1										1
LYMEXYLIDAE																						
cf. <i>Hylecoetus</i> spp.	W										1											1
NITIDULIDAE																						
<i>Nitidula</i> indet.	U					1																1
CRYPTOPHAGIDAE																						

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) – BERTH NORTH PASTURE (BNP15)																						
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	Species count: MNI
		110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	
(Müll.)																						
<i>Rhynchaenus</i> spp.	W											2			2	1	2	1				8
<i>Bagous</i> spp.	DA																1		1	1	1	4
<i>Limnobaris t-album</i> (L.)	DA							1		1							1					3
<i>Limnobaris</i> spp.	DA										1											1
<i>Ceutorhyncus</i> spp.	M	1																				1
<i>Rhyncolus ater</i> L.	W						1								1							2
<i>Neliocarus (Strophosoma) faber</i> (Hbst.)	M										1											1
<i>Strophosoma cf capitatum</i> (Deg.)	W																		1			1
<i>Strophosoma cf melanogrammum</i> (Forst.) <i>/capitatum</i> (Deg.)	W													1								1
<i>Barynotus obscurus</i> (F.)	M																1					1
<i>Otiorhyncus</i> spp.	U													1								1
<i>Sitona cambricus</i> Steph.	DA						1															1
<i>Sitona cf. hispidulus</i> (F.)	M										1											1
<i>Sitona</i> spp.	M					3					1				1				1			6
<i>Curculionidae cf Sitona</i> spp.	M	1																				1
<i>Curculionidae</i> indet.	U											2			1							3
TOTAL MNI		4	1	4	37	21	43	27	39	25	42	31	54	48	69	31	57	31	37	21	13	635

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) - 3BBMC16 (Kang, 2017)					
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	130-140cm (MNI)	150-160cm (MNI)	170-180cm (MNI)	Main plant associations
DYTISCIDAE					
<i>Noterus clavicornis</i> (Geer.)	A		1	1	
CARABIDAE					
<i>Pterostichus diligens</i> (Sturm)		1			
<i>Agonum</i> spp.				5	
<i>Oodes gracilis</i> Villa	DA		1		<i>Phragmites australis</i> (Cav.) Trin. ex Steud. (Common reed)
HYDROPHILIDAE					
<i>Enochrus</i> sp.	A		1		
<i>Chaetarthria seminulum</i> (Hbst.)	A		1		
<i>Cercyon</i> spp.			2		
STAPHYLINIDAE					
<i>Othius melanocephalus</i> (Grav.)		2	1		
<i>Oxytelus nitidulus</i> Grav.	DA		1		
<i>Quedius</i> spp.				1	
SCARABAEIDAE					
<i>Phyllopertha horticola</i> (L.)	M	3			
HELODIDAE/SCIRTIDAE					
<i>Helodidae</i> Gen. & spp. Indet.	A	14	9	10	
THROSCIDAE					
<i>Throscus</i> sp.	W			1	
CANTHARIDAE					
<i>Cantharis</i> spp.				1	
PTINIDAE					
<i>Grynobius planus</i> (F.)	W		3		
CHRYSOMELIDAE					
<i>Donacia crassipes</i> F.	DA	1	1		<i>Nymphaea alba</i> L. and <i>Nuphar lutea</i> (L.) (waterlily)
<i>Agelastica alni</i> (L.)	W	2	1		<i>Alnus</i> spp. (alder)
CURCULIONIDAE					
<i>Limnobaris dolorosa</i> (pilistriata) (Goeze)(Steph.)	DA		2	2	<i>Juncaceae</i> and <i>Cyperaceae</i> (rushes)
<i>Rhyncolus ater</i> (chloropus) (L.)	W	1		1	
Bug				1	
TOTAL MNI = 71		24	24	23	

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) - TRENCH 1				
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	0-10cm (MNI)	10-20cm (MNI)	Main plant associations
GYRINIDAE				
<i>Gyrinus</i> sp.	A		1	
DYTISCIDAE				
<i>Agabus</i> sp. cf <i>chalconatus</i> (Panz.)/ <i>melanarius</i> Aube	A		1	
<i>Agabus</i> spp.	A	1	1	
<i>Hydroporus melanarius</i> Sturm.	A		1	<i>Sphagnum</i> ; <i>Eriophorum</i>
CARABIDAE				
<i>Blethisa multipunctata</i> (L.)	DA	1		
<i>Dyschirius globosus</i> (Hbst.)	DA		1	
<i>Trechus quadristriatus</i> (Schrk) T. <i>obtusus</i> Er.	U	1		
<i>Bembidion</i> sp.	U			
<i>Pterostichus strenuus</i> (Panz.)	U		1	
<i>Pterostichus nigrita</i> (Payk.)	DA	1		<i>Carex</i> ; <i>Sphagnum</i>
<i>Pterostichus minor</i> (Gyll.)	DA		1	<i>Carex</i> ; <i>Sphagnum</i>
<i>Pterostichus</i> spp.	U		1	
<i>Agonum thoreyi</i> Derj.	DA	1		<i>Typha</i> ; <i>Carex</i>
Carabidae indet.	U			
HELOPHORIDAE				
<i>Helophorous</i> spp.	A	4	1	
HYDROPHILIDAE				
<i>Cymbiodyta marginella</i> (F.)	DA	2	1	
<i>Hydrobius fuscipes</i> (L.)	U	1	3	
<i>Laccobius</i> sp.	A	1		
<i>Coelostoma orbiculare</i> (F.)	DA	5	4	
<i>Cercyon impressus</i> Sturm.	P/D	1	1	
<i>Cercyon</i> cf <i>pygmaeus</i> (Ill.)	P/D			
Aquatic <i>Cercyon</i> spp.	A	2	1	
<i>Megasternum concinnum</i> (<i>boletophagum</i>) (Marsham)	R		1	
Hydrophilidae indet.	U		3	
HYDRAENIDAE				
<i>Hydraena</i> spp.	A	5	4	

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) - TRENCH 1				
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	0-10cm (MNI)	10-20cm (MNI)	Main plant associations
<i>Limnebius</i> spp.	A		1	
<i>Ochthebius minimus</i> (F.)	A		1	
<i>Ochthebius</i> spp.	DA	6		
STAPHILINIDAE				
<i>Anthobium unicolor</i> (Marsham)	DA		1	
<i>Lesteva</i> sp.	U	1		
<i>Omalium</i> spp.	R		2	
<i>Phyllodrepa</i> spp.	R	2		
<i>Xylodromus concinnus</i> (Marsham)	R -SY	1		Hay and straw; also grassland
<i>Tachinus</i> sp.	R	1		
Aleocharinidae indet.	U		2	
<i>Anotylus complanatus</i> (Er.)	R	1		
<i>Stenus</i> spp.	U	2	6	
<i>Philonthus</i> spp.	R		2	
<i>Gabrius</i> sp.	R	1		
Pselaphid indet.	U	1	1	
GEOTRUPIDAE				
<i>Geotrupes</i> sp.	P/D	1		
SCARABAEIDAE				
<i>Aphodius prodromus</i> (Brahm)	P/D	2	1	
<i>Aphodius fimentarius</i> (L.)	P/D	2	4	
<i>Aphodius</i> spp.	P/D		1	
<i>Hoplia philanthus</i> (Fues.)	M		1	esp <i>Salix</i> ; <i>Pinus</i>
<i>Phyllopertha horticola</i> (L.)	M		6	
SCIRTIDAE				
<i>Cyphon</i> sp.	DA	1		
DASCILLIDAE				
<i>Dascillus cervinus</i> (L.)	M	1		
ELMIDAE				
<i>Oulimnius</i> spp.	A	1		
DRYOPIDAE				
<i>Dryops</i> spp.	DA		1	
HETEROCERIDAE				
<i>Heterocerus marginatus</i> (F.)	DA		1	

Appendix 7 – Coleoptera – full species lists; all samples

The Berth – Coleoptera – Full species list (MNI) - TRENCH 1				
Nomenclature follows Lucht; ordering follows Elias 2012	Habitat	0-10cm (MNI)	10-20cm (MNI)	Main plant associations
THROSCIDAE				
Throscus indet.	W		1	
ELATERIDAE				
<i>Ctenicera pectinicornis</i> (L.)	M		1	Lush grassland in old hay meadows
PTINIDAE				
<i>Ptinus fur</i> (L.)	R - SY		1	
<i>Anobium punctatum</i> (Deg.)	L - SY		2	
CORYLOPHIDAE				
<i>Orthoperus cf brunnipes</i> (Gyll.)	R		1	
<i>Orthoperus</i> sp.	R		1	
CHRYSOMELIDAE				
<i>Donacia clavipes</i> F.	DA	1		<i>Phragmites australis</i>
<i>Donacia obscura</i> Gyll.	DA		1	Cyperaceae esp <i>Carex</i>
<i>Donacia vulgaris</i> (Zsch.)	DA		1	<i>Sparganium</i> ; <i>Typha</i> ; <i>Carex</i>
<i>Plateumaris bradata</i> (Scop.)	DA	1	2	<i>Phragmites australis</i>
<i>Donacia/Plateumaris</i> spp. indet.	DA	1	3	
<i>Phaedon cochleariae</i> (F.)	DA	1	1	<i>Nasturtium officinale</i>
<i>Phaedon</i> spp.	M	1	1	
<i>Altica</i> sp.	M		1	
<i>Chaetocnema concinna</i> (Marsham)	M		1	Polygonaceae; <i>P. aviculare</i>
<i>Chaetocnema</i> sp.	DA		1	
APIONIDAE				
<i>Apion</i> spp.	M		2	<i>Rumex</i>
ERIRHINIDAE				
<i>Notaris acridulus</i> (L.)	DA	1		<i>Glyceria</i>
<i>Tanysphyrus lemnae</i> (Payk.)	DA		1	<i>Lemna</i> sp.
CURCULIONIDAE				
<i>Mecinus pyraster</i> (Hbst.)	M		1	<i>Plantago</i> ; <i>P. lanceolata</i>
<i>Limnobaris</i> sp.	DA	1		Cyperaceae
<i>Nedyus quadrimaculatus</i> L.	M		1	<i>Urtica dioica</i>
<i>Alophus triguttatus</i> (F.)	M	1		<i>Plantago</i> ; <i>Symphytum</i> ; <i>Eupatorium</i>
<i>Barynotus</i> sp.	M		1	
TOTAL MNI = 141		58	83	

Appendix 7 – Coleoptera – full species lists; all samples

KEY

Habitat groupings follow Kenward (1997), Robinson (1981; 1983; 1992; 2000) and Smith (Smith, 2009)		
A = Aquatic	M = Meadow/grassland	R = Decaying organic matter
DA = Damp fen, marsh, swamp, riverbank	W = Woodland	SY = Synanthropic/house fauna
P/D = Pasture/dung		

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth – Plant Macrofossils – Full species list (abundance) – BERTH NORTH PASTURE (BNP15)																						
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habit at	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190	190-200	200-210	210-220	220-230	230-240	240-250	250-260	260-270	270-280	280-290	290-300
<i>cf. Moehringia trinervia</i> L. (Clairv)		W; SCR																				+
<i>cf. Sagina</i> L. sp.	Pearlwort	OGR																			+	
<i>Silene flos-cuculi</i> (L.) Clairv.	Ragged-Robin	DA; OGR?											+									
<i>cf Vaccinium</i> L. sp.	Cranberry/ Bilberry	MO															+					
<i>Solanum</i> L. sp.	Nightshade	NS			+			+					+									
<i>Solanum nigrum</i> L.	Black nightshade	WDG													+							
<i>Solanum dulcamara</i> L.	Bittersweet	W; DA			+																	
<i>Fraxinus excelsior</i> L. - ash key	Ash	W; SCR; DA											+									
<i>Plantago major</i> L.	Greater Plantain	WDG; OGR																				+
<i>Plantago major</i> L. (modern- germinating)	Greater Plantain												+									
<i>Plantago major</i> ssp <i>major</i>	Greater Plantain	WDG; OGR	+																			
<i>Plantago</i> sp. cf <i>P. media</i>	Hoary Plantain	OGR										+										
<i>Callitriche</i> L. sp.	Water-starwort	A; DA															+	+				
<i>Glechoma hederacea</i> L.	Ground-ivy	W; SCR	+																			
<i>Lycopus europaeus</i> L.	Gypsywort	DA		+		++	+	+	++	+			+			+			+			

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth – Plant Macrofossils – Full species list (abundance) – BERTH NORTH PASTURE (BNP15)																						
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habit at	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190	190-200	200-210	210-220	220-230	230-240	240-250	250-260	260-270	270-280	280-290	290-300
<i>Menyanthes trifoliata</i> L.	Bogbean	A												+						+		
<i>Asteraceae</i> sp. indet.	Daisy family	NS											+									
<i>Carduus</i> L./ <i>Cirsium</i> Mill./ <i>Centaurea</i> L. sp.	Thistle/ Knapweed	OGR; DA														+						
<i>Cirsium</i> sp.	Thistle	OGR; DA											+									
<i>Centaurea</i> sp.	Knapweed	OGR; WDG											+									
<i>Asteraceae</i> sp. indet. cf <i>Hieracium</i> L.	Hawkweed	OGR; WDG							+													
<i>Asteraceae</i> sp. indet. cf <i>Bidens tripartita</i> L.	Bur-Marigold	DA															+					
<i>Eupatorium cannabinum</i> L.	Hemp agrimony	DA; OGR	+	++	+++	+	+++	+	++	+	++		+	+	+	+	++	+	+	+	++	++
<i>Dipsacaceae</i> indet. cf <i>Dipsacus pilosus</i> L. type	Small Teasel	DA; SCR; W				+												+				
<i>Knautia arvensis</i> (L.) Coult.	Field Scabious	OGR												+								
<i>Hedera</i> L. sp. (Leaf fragments)	Ivy	NS											+								+	
cf <i>Pimpinella</i> L. sp.	Burnet-saxifrage	OGR; SCR														+						
cf <i>Apium graveolens</i> L.	Wild celery	DA;																	+			

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth – Plant Macrofossils – Full species list (abundance) – BERTH NORTH PASTURE (BNP15)																						
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habit at	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190	190-200	200-210	210-220	220-230	230-240	240-250	250-260	260-270	270-280	280-290	290-300
<i>Cicuta virosa</i> L.	Cowbane	DA														+						
cf <i>Thyselium palustre</i> (L.) Raf.(= <i>Peucedanum palustre</i> (L.) Moench)	Milk Parsley	DA	+														+					
<i>Sagittaria/Alisma</i> sp.	Arrowhead/ Water-plantain	A;DA		++																		
<i>Alisma</i> L. sp. (core)	Water-plantain	A;DA					+															
<i>Alisma plantago-aquatica</i> L.	Water-plantain	A;DA			+																	
<i>Najas marina</i> L.	Holly-leaved Naiad	A														+	++	++	+++	+++	+++	+++
cf <i>Scheuchzeria palustris</i> L. - seed	Rannoch-rush	DA; A					+															
cf <i>Scheuchzeria palustris</i> L. - leaf frag	Rannoch-rush								+													
<i>Potamogeton</i> L. spp.	Pondweed	A							+								+		+	+	+	+
cf <i>Potamogeton</i> L. spp.	Pondweed	A														+						
<i>Zannichellia palustris</i> L.	Horned Pondweed	A											+									
<i>Sparganium</i> L. spp.	Bur-reed	A																		+		
<i>Sparganium</i> cf. <i>erectum</i> L.	Branched bur-reed	A	+	++						+						+						

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth – Plant Macrofossils – Full species list (abundance) – BERTH NORTH PASTURE (BNP15)																						
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habit at	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190	190-200	200-210	210-220	220-230	230-240	240-250	250-260	260-270	270-280	280-290	290-300
<i>Typha L. spp.</i>	Bulrush	A					+++	+	+	+			+	+	+	+	+	+				
<i>Juncus L. spp.</i>	Rush	DA																+	+			
<i>Juncus effusus L. type</i>	Soft-rush	DA					+	+														
<i>Luzula DC.sp.</i>	Wood rush	DA;W; SCR															+	+		+	+	+
<i>Cyperaceae indet.</i>	Sedge	DA	+	+	+								+								++	
<i>Bolboschoenus (Asch.) Palla/ Schoenoplectus (Rchb.) sp.</i>	Sea Club-rush/Club-rush	DA													+		+				+	+
<i>Schoenoplectus spp.</i>	Club-rush	DA																	++		+	
<i>Cyperaceae indet. - Schoenoplectus type</i>	cf Club-rush	DA																			+	
<i>Cyperaceae indet. cf Eleocharis R. Br. sp.</i>	Spike-rush	DA						+														
<i>Cladium mariscus L.</i>	Great Fen-sedge	DA;A											+	+	+		+++	+++	+++	+++	+++	+++
<i>Carex L. spp.</i>	Sedge	DA	++	+++	+++	++	+++	+++	+++	+++	+++	+++	+++	+++	+++		+++	++	++	+++		++
<i>Carex L. spp. - urticla</i>	Sedge	DA							+	+	+		+	++	++	++		+	+	+		+

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth – Plant Macrofossils – Full species list (abundance) – BERTH NORTH PASTURE (BNP15)																						
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habit at	100-110	110-120	120-130	130-140	140-150	150-160	160-170	170-180	180-190	190-200	200-210	210-220	220-230	230-240	240-250	250-260	260-270	270-280	280-290	290-300
<i>cf Carex L.sp.</i>	Sedge	DA			+											+++						
<i>Carex sp. cf C. Paniculata L.</i>	Greater Tussock-sedge	DA							+++													
<i>Carex sp. urticula cf C. Hirta L.</i>	Hairy Sedge	DA													+							
<i>Carex Subgenus 2 -C. acutiformis Ehrh./C. riparia Curtis/C. pseudocyperus L.</i>	Lesser /Greater/ Cyperus Pond-sedge	DA							++													
<i>Carex sp. cf C. Sylvatica Huds.</i>	Wood-sedge	W; SCR; DA							++													
<i>Carex sp. cf C. Hostiana DC.</i>	Tawny Sedge	DA							+													
<i>Poaceae indet. -medium</i>	Grass	OGR; DA																		+		
<i>cf Poa annua L.</i>	Annual Meadow-grass	WDG; OGR			+																	
<i>Poaceae sp. cf. Alopecurus L.sp.</i>	Foxtail	DA; OGR							+													
<i>Poaceae sp. - Phleum L. type</i>	Cat's-tail	OGR; WDG																	+			
<i>Glyceria R.Br.sp.</i>	Sweet-grass	A; DA							+						+							

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth - Plant Macrofossils – Full species list (abundance) – 3BBMC16					
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habitat	Sample 1 130- 140cm	Sample 2 150- 160cm	Sample 3 170- 180cm
<i>Caltha palustris</i> (<i>Caltha radicans</i> T.F. Forst)	marsh-marigold	DA			+
<i>Ranunculus acris</i> L./ <i>repens</i> L./ <i>bulbosus</i> L.	meadow/creeping/ bulbous buttercup	DA/OGR	+		
<i>Ranunculus</i> sp. - unidentified	buttercup	NS		+	
<i>Rubus</i> sect.1 <i>Rubus</i> (sect. <i>Suberecti</i> Lindl)	bramble/blackberry	NS	++	+	
cf. <i>Quercus</i> sp. (poorly preserved)	oak	W	+		
<i>Betula pendula</i> Roth	silver birch	W/DA		+	
<i>Betula pubescens</i> Ehr.	downy birch			+	+
<i>Betula</i> spp.	birch family			+	+++
<i>Alnus glutinosa</i> (L.) Gaertn	alder	W/DA	++	+++	+++
<i>Alnus glutinosa</i> (L.) Gaertn (male cone)	alder				++
<i>Alnus glutinosa</i> (L.) Gaertn (female cone)	alder				+++
<i>Alnus glutinosa</i> (L.) Gaertn (cone fragment)	alder		++	++	+++
<i>Oxalis acetosella</i> L.	wood-sorrel	SCR			+
CARYOPHYLLACEAE / <i>Sliene</i> L. - fragment	campion	NS			+
<i>Solanum</i> sp.	nightshade	NS		+	
<i>Solanum nigrum</i> L.	black nightshade	WDG		+	
<i>Solanum dulcamara</i> L.	bittersweet	W/WDG	+		
cf. <i>Fraxinus excelsior</i> L. panicle	ash	W	+		
<i>Lycopus europeus</i> L.	gypsywort	DA			+
<i>Ilex aquifolium</i> L.	holly	W		+	
<i>Menyanthes trifoliata</i> L. - seed	bogbean	A	+	+	+
<i>Menyanthes trifoliata</i> L.- valve	bogbean	A	+		
ASTERACEAE indeterminate - fragment	daisy family		+		
Cf. ASTERACEAE- <i>Erigeron</i> L sp.	fleabane	OGR/WDG	+		
<i>Carduus</i> L./ <i>Cisium</i> sp.	thistle	OGR/DA	+		
<i>Eupatorium cannabinum</i> L.	hemp agrimony	DA/OGR	++	+	+++
APIACEAE- indeterminate - fragment	carrot family				+
<i>Aethusa cynapium</i> L.	fool's parsley	OGR/WDG		+	+
<i>Aethusa</i> sp. / <i>Sagittaria</i> sp.	fool's parsley/ arrowhead	NS		+	+
<i>Alisma gramineum</i> L. - carpel/ seed	ribbon-leaved water-plantain	A	+	+	+
<i>Potamogeton</i> sp.- Unidentified	pondweed	A	+	+	+

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth - Plant Macrofossils – Full species list (abundance) – 3BBMC16					
Taxa Ref: Stace 3rd Ed 2010	Common Name	Habitat	Sample 1	Sample 2	Sample 3
			130-140cm	150-160cm	170-180cm
<i>Carex</i> spp. - 2-sided	sedge	DA	+++	+++	+++
<i>Carex</i> spp. - 3-sided	sedge	DA	++	+++	+++
POACEAE sp. - indeterminate	grass family	OGR/DA	+		
IGNOTA			++	+++	+++

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth - Plant Macrofossil - Full species list (abundance) - TRENCH 1				
Taxa Ref: Stage 3rd Ed 2010	Common name	Habitat	0-10cm	10-20cm
<i>Ranunculus</i> Subgen. 1 <i>Ranunculus</i> sp.	buttercup	NS	++	
<i>Ranunculus sceleratus</i> L.	celery leaved buttercup	DA	+++	+
R. Subgen. <i>Batrachium</i> (DC.) A. Gray	crowfoot	DA	+++	+++
<i>Rubus</i> sect. 2 <i>Glandulosus</i> (<i>fruticosus</i> L. agg.)	bramble	NS	+	+
<i>Potentilla</i> sp.	cinquefoil	OGR	++	++
<i>Aphanes arvensis</i> L.	parsley piert	OGR		+
<i>Urtica dioica</i> L.	nettle	WDG	++	+++
Seed indet cf <i>Myrica gale</i> L.	bog myrtle	DA		+
<i>Alnus glutinosa</i> (L.) Gaertn.	alder	W	+++	+++
<i>A. glutinosa</i> (L.) Gaertn. (female catkin fruiting)	alder	W	++	+
<i>A. glutinosa</i> (L.) Gaertn. (male catkin)	alder	W		+
<i>Oxalis acetosella</i> L.	wood sorrell	SCR	++	+
<i>Salix</i> sp. (capsule frag.)	willow	W	+	
<i>Viola</i> sp.	violet	NS	+	+
<i>Linum catharticum</i> L.	linseed	MO	+	+
<i>Rorippa</i> Scop. sp. (immature)	yellow cress	DA		+
<i>Nasturtium officinale</i> W.T Aiton	water cress	DA		+
<i>Persicaria lapathifolia</i> (L.) Delarbre	knotweed	OGR		+
<i>Polygonum aviculare</i> L.	knotgrass	OGR	+	+
<i>Solanum</i> sp.	nightshade	NS		+
<i>Hyoscyamus niger</i> L.	henbane	WDG	+	+
cf. <i>Mentha aquatica</i> L.	water mint	DA	+	+
<i>Centaurea</i> sp.	thistle	OGR		+
Asteraceae sp. indet.	daisy family	NS		+
<i>Bidens cernua</i> L.	bur marigold	DA	+	
<i>Bidens</i> sp. cf <i>cernua</i> L.	bur marigold	DA	+	
<i>Sambucus nigra</i> L.	elder	SCR	+	+
<i>Hydrocotyle vulgaris</i> L.	marsh pennywort	SCR	++	++
<i>Oenanthe crocata</i> L.	water dropwort	DA	+	
<i>Apium graveolens</i> L.	celery	DA	+	
<i>Cicuta virosa</i> L.	cowbane	DA	+	
Apiaceae indet.	Umbellifer family	NS	+	
<i>Lemna</i> sp. L.	duckweed	A	+	
<i>Sagittaria/Alisma</i> sp.	arrowhead/ water-plantain	DA		+

Appendix 7 – Plant Macrofossil – Full species lists; all samples

The Berth - Plant Macrofossil - Full species list (abundance) - TRENCH 1				
Taxa Ref: Stace 3rd Ed 2010	Common name	Habitat	0-10cm	10-20cm
<i>Potamogeton</i> sp(p).	pondweed	A	+	
<i>Zannichellia palustris</i> L.	horned pondweed	A	+	+
<i>J. effusus</i> type	rush	DA	+	+
<i>Bolboschoenus/ Schoenoplectus</i> sp.	sedge	DA	+	+
<i>Cladium mariscus</i> L. Pohl.	great fen-sedge	DA	+	
<i>Carex</i> L. spp.	sedge	DA	+++	+++
<i>Poaceae</i> indet. - small	grass	OGR	+	++
<i>Poaceae</i> indet. -medium	grass	OGR	+	+
<i>Glyceria</i> sp.	sweet-grass	A	++	++
<i>Chara</i> sp.	stonewort	A		+
Charred plant remains		CH		++
IGNOTA		NS	++	++

KEY

Habitat	Abundance - 1-5 fragments + ; 6-20 fragments ++ ; 21+ fragments +++	
A=Aquatic/Riverine	W=Woodland	CH=Charred
DA = Damp Fen	SCR=Scrub/Hedgerow	WDG = Waste/Disturbed Ground
MO=Moorland	OGR = Open Grassland	NS = Non Specific