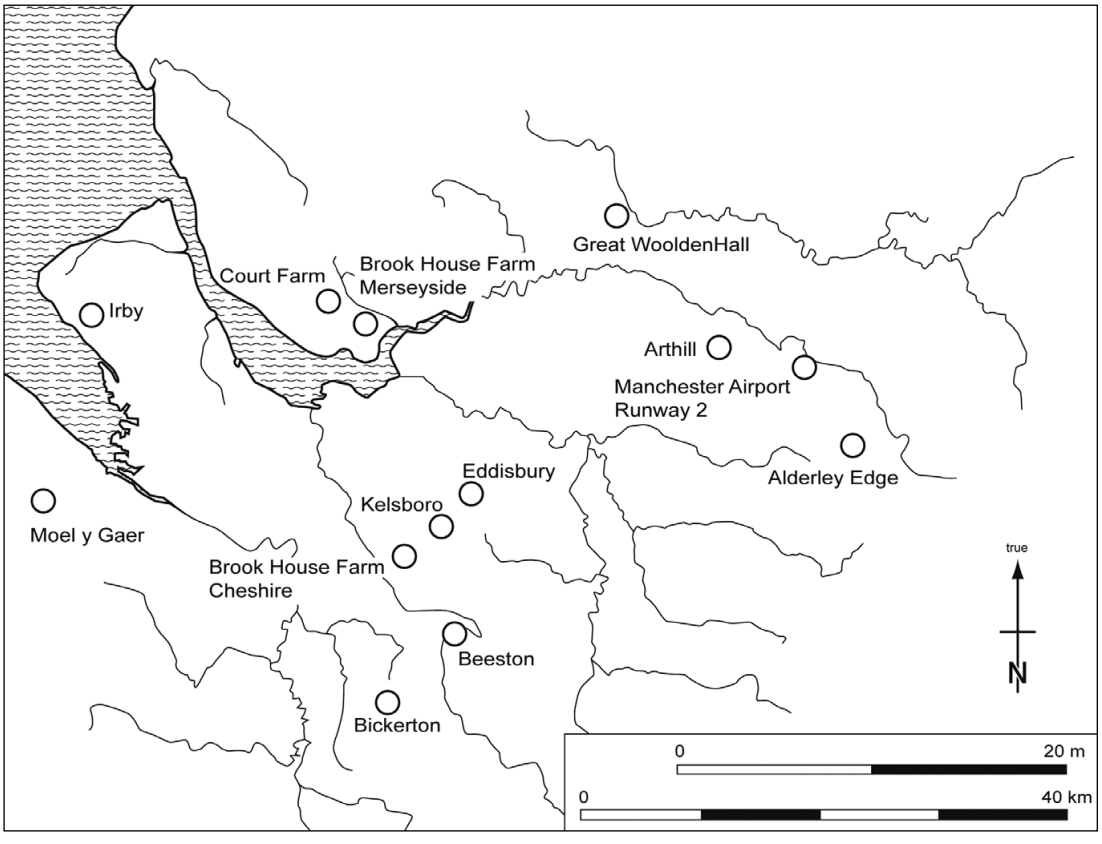


Ill II.1 Brook House Farm: site location map. (Not to scale)

II: Brook House Farm, Bruen Stapleford

Excavation of a First Millennium BC Settlement

by N Fairburn BA, FSA Scot
with D Bonner BA, MIFA, W J Carruthers BSc, MSc, MIFA,
G R Gale, K J Matthews BA, E Morris BA, PhD, MIFA
and M Ward BA, MSc

Excavation at Brook House Farm in the parish of Bruen Stapleford during construction of a gas pipeline revealed a settlement consisting of six possible domestic structures along with other features dating from the Middle Bronze Age to the Late Iron Age.

Introduction

The site and project

A prehistoric settlement situated close to Brook House Farm in the parish of Bruen Stapleford, OS SJ49756385, was uncovered during the construction by Transco of a gas pipeline from Birch Heath to Mickle Trafford (Ill II.1). Radiocarbon dates show that the settlement lasted from the end of the Middle Bronze Age apparently through to the very end of the Iron Age. However, no Roman material was recovered. There was also some additional, medieval, activity, with the digging of a large drainage ditch through the middle of the site. The settlement was spread over 170m between three fields labelled as 27, 28 and 29 of the pipeline easement. The excavation exposed the remains of six possible domestic structures — five roundhouses and one bow-sided roundhouse (defined by circular drip gullies or ring gullies) — a large boundary ditch, a number of linear features and a large number of other discrete features. All of the domestic structures except one were located in Field 28; the other was in Field 29. A small quantity of pottery recovered from one roundhouse has been identified as Late Bronze Age. In addition, numerous fragments of VCP (Very Coarse Pottery) were recovered from various contexts across the site. This collection of pottery will provide some useful comparisons with the small quantity of Late Iron Age pottery and VCP that has already been recovered in the region (*see* Nevell 1994). Metal artefacts were non-existent despite the use of metal detectors to aid recovery of these materials. It is possible that metal objects were not an integral part of life in the settlement or, more likely, that they were so valuable that they were carefully looked after. It is clear that this site makes a major contribution to our understanding of the cultural sequence of the first millennium BC in the region.

The excavation was carried out by Network Archaeology and funded by Transco. The archive will be deposited with the Grosvenor Museum, Chester.

Geology, soils and land use

The solid geology in the area comprises New Red Sandstone. Overlying the solid rock is a thick mantle of boulder clay (including lacustrine clay) which covers most of the route. The soils reflect the underlying drift geology. The vast majority of the area around Brook House Farm is covered by reddish, fine loamy soils (Salop), which are slowly permeable, prone to seasonal waterlogging and generally given over to dairying on short-term and permanent pasture and cereals on drier slopes (Soil Survey 1983).

The settlement is situated on a plateau of high ground (41m OD), with gentle slopes on all sides which assist with drainage; on the western side is a tributary of the River Gowy. Today there are good views of the lowland areas from this plateau.

The distribution of stray finds from the area has in the past supported the view that prehistoric activity in Cheshire was focused mainly on the lighter soils (Longley 1987), particularly in river valleys and on the Mid-Cheshire Ridge, to the east of the pipeline route. The location of the Brook House Farm site on a predominantly clay subsoil may change this view. Bronze Age farmers in some other parts of the county also exploited clay subsoils: lynchets excavated at Tatton Park in 1984 are an example of this (Nevell 1988b).

The three fields, 27, 28 and 29, have only been ploughed once in the past forty years (*pers comm* the landowner). At the time of the excavation they were being used for cattle-grazing. The site was also crossed in a number of places by modern field drains; these were laid at depth of *c* 0.75m and some of them had truncated a number of the archaeological features.

Historical and archaeological background

Late prehistoric settlements in the North West are still largely an unknown quantity, particularly as research in the past has concentrated on the larger military and civilian settlements of the Roman period. The settlement at Brook House Farm is the first such settlement to be found in the hinterland of Chester, with activity extending from 1000BC through to around 50BC. However, three similar sites are known elsewhere in the region, at Brook House Farm, Halewood, Merseyside (Cowell & Philpott 2000), Irby, Wirral (Philpott & Adams 1998) and Great Woolden Hall Farm, Urmston, Greater Manchester (Nevell 1998).

The site was unexpected, as neither geophysics nor fieldwalking was undertaken in advance of the construction work because of the foot and mouth epidemic. There is little in the way of Bronze Age activity in the area apart from that uncovered at nearby Beeston Castle, where there are sequences running from the Early Bronze Age through to the first century BC (Ellis ed 1993). In the Iron Age, currently the only known activities in the vicinity are the construction and occupation of the hillforts at Kelsborrow and Beeston Castle. The Brook House Farm settlement is positioned neatly between the hillforts at Beeston Castle and Kelsborrow, and it is possible that there may have been relationship between them.

The excavation

As there were three fields containing archaeology, the excavation was divided into three areas, labelled 27, 28 and 29. The majority of the archaeology was concentrated in Field

28. The excavation of the site concentrated on the domestic structures and their associated features to maximise the unique opportunity to understand a late prehistoric settlement in Cheshire. In addition, a sampling strategy was undertaken to ensure that the archaeology on the site was augmented by environmental analysis. It is extremely likely that the site extends beyond the 36m-wide pipe corridor and that other remains survive for investigation at a later date.

Sections of the three plots that did not appear to contain any archaeology were intensively stripped by machine to a much lower level to confirm this judgement and to check the consistency of the natural soil matrix. These sterile areas were then used to store any excess spoil. However, it is possible that some features were missed, as they may have been cut and backfilled with the same material, leaving no visible indicators. This was certainly the case with the two piles of stone (9665) and (9778) which served as post-pads for Structure 3.

Field 26/27

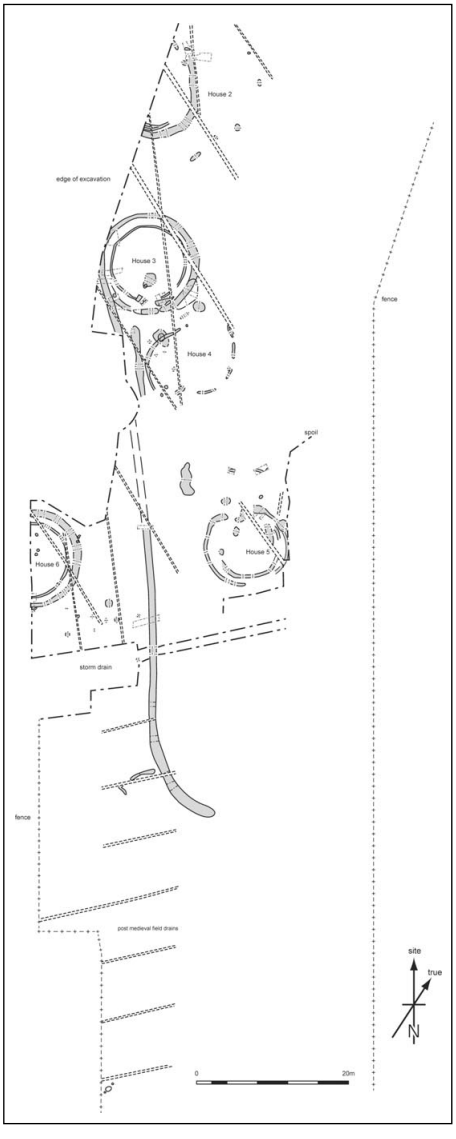
During the construction of the pipe trench, the watching brief in Field 26 just beyond the boundary of 27 recorded a large ditch, (2033), in section. Its presence had not been noticed during topsoil stripping owing to a significant covering of the natural clay that had become embedded in the top part of the ditch. The ditch was 1.4m deep and 6.8m wide. Its precise length is unknown, but post-excavation analysis showed that it could be seen on a 1935 aerial photograph held by Cheshire County Council.

It is extremely likely that there was an association between this ditch and the settlement. A soil sample was taken from a fill of the ditch, (2062); *Corylus* charcoal from the sample gave a radiocarbon date of 1130–800 cal BC (2775±70 BP; AA-49276), which is broadly contemporary with a number of the structures and the pottery in the settlement. The function of the ditch was unclear, but its size suggests that it might have been part of an enclosure for the settlement.

Field 2/27

The archaeology in Field 27 was dominated by a ditch, (9000), dating from the medieval period, which ran across the site, continuing through Field 28 and beyond the pipeline easement. This ditch was sectioned in a number of places and at its terminus. Part of the ditch had been truncated by the cutting of a pipe bend ditch, so the excavated sections within this area could only record part of the ditch's profile. The terminus had an irregular profile and was 1.02m wide and 0.36m deep with primary and secondary fills. The other sections of the ditch exhibited similar profiles and fills and were all *c* 1.20m wide and *c* 0.39m deep. No artefacts were recovered from the ditch in 2/27, but a bread-type wheat grain was recovered from a soil sample taken from the ditch terminus. This was used for radiocarbon dating, giving a date of 1280–1410 cal AD (645± 50 BP; AA-49263). The ditch may have been part of a boundary or simply have been used for drainage. It was not clear if the ditch continued beyond the recorded terminus in Field 27.

Apart from the ditch (9000) there were not many archaeological features in Field 2/27. Three recorded spreads of soils in hollows were interpreted as tree hollows, (9023), (9034) and



(9037). However, right on the limit of the excavation area between the boundary of fields 26 and 27 was a post hole, (9029), and two stake holes, (9025) and (9027), among a small spread of charcoal. Fifteen metres to the north was another possible post hole, (9021). The holes do not appear to form a structure. However, they do suggest that there was further activity in the area, although this remains undated and therefore possibly does not relate to the rest of the site. The lack of any obvious late prehistoric material in Field 2/27 may suggest that these features were medieval. On the other hand, the large late prehistoric ditch lay just beyond the boundary of Field 27 and it could be argued that the features mentioned above were associated with this ditch and therefore with the late prehistoric settlement.

Field 2/28

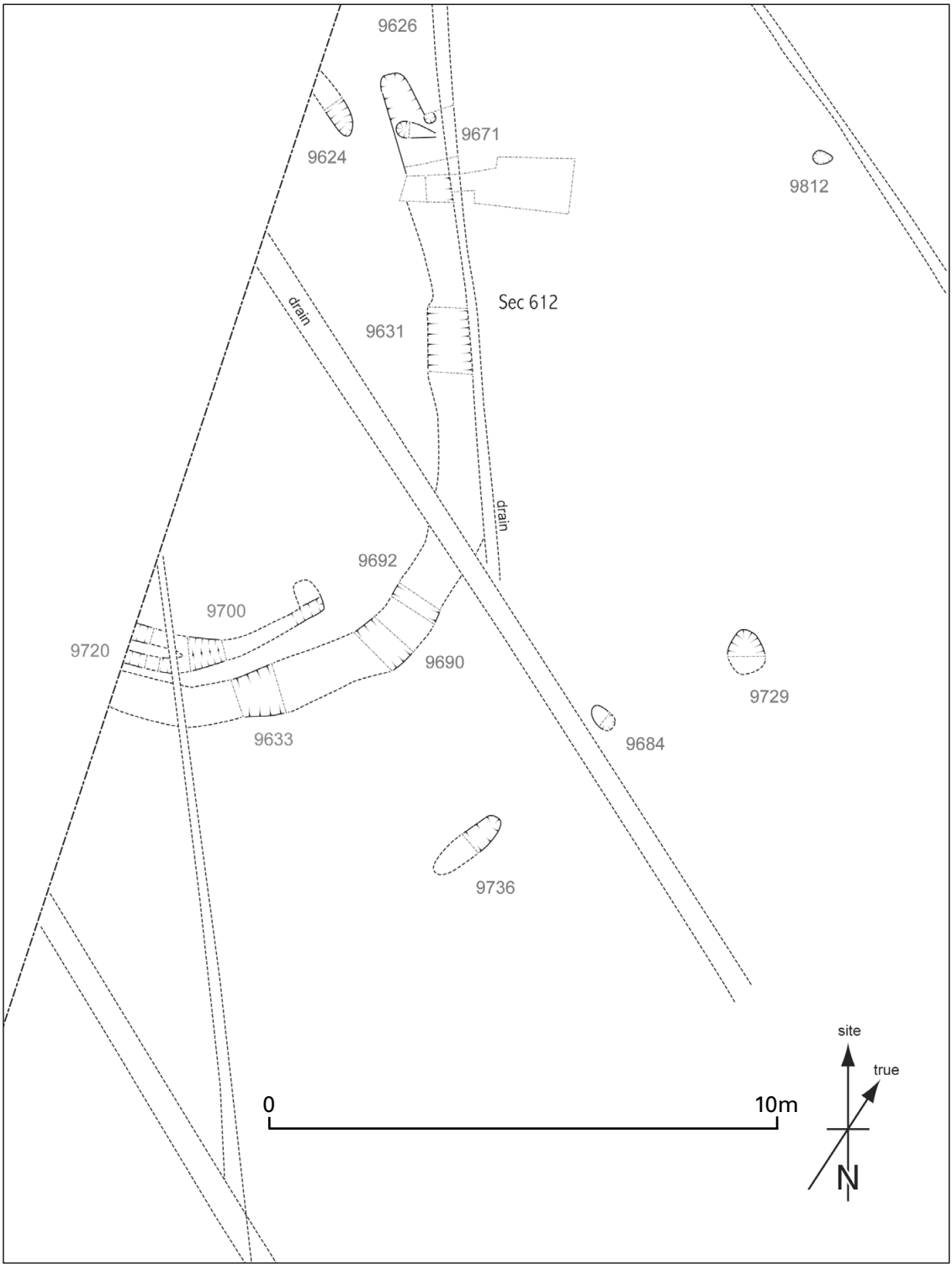
Structure 2

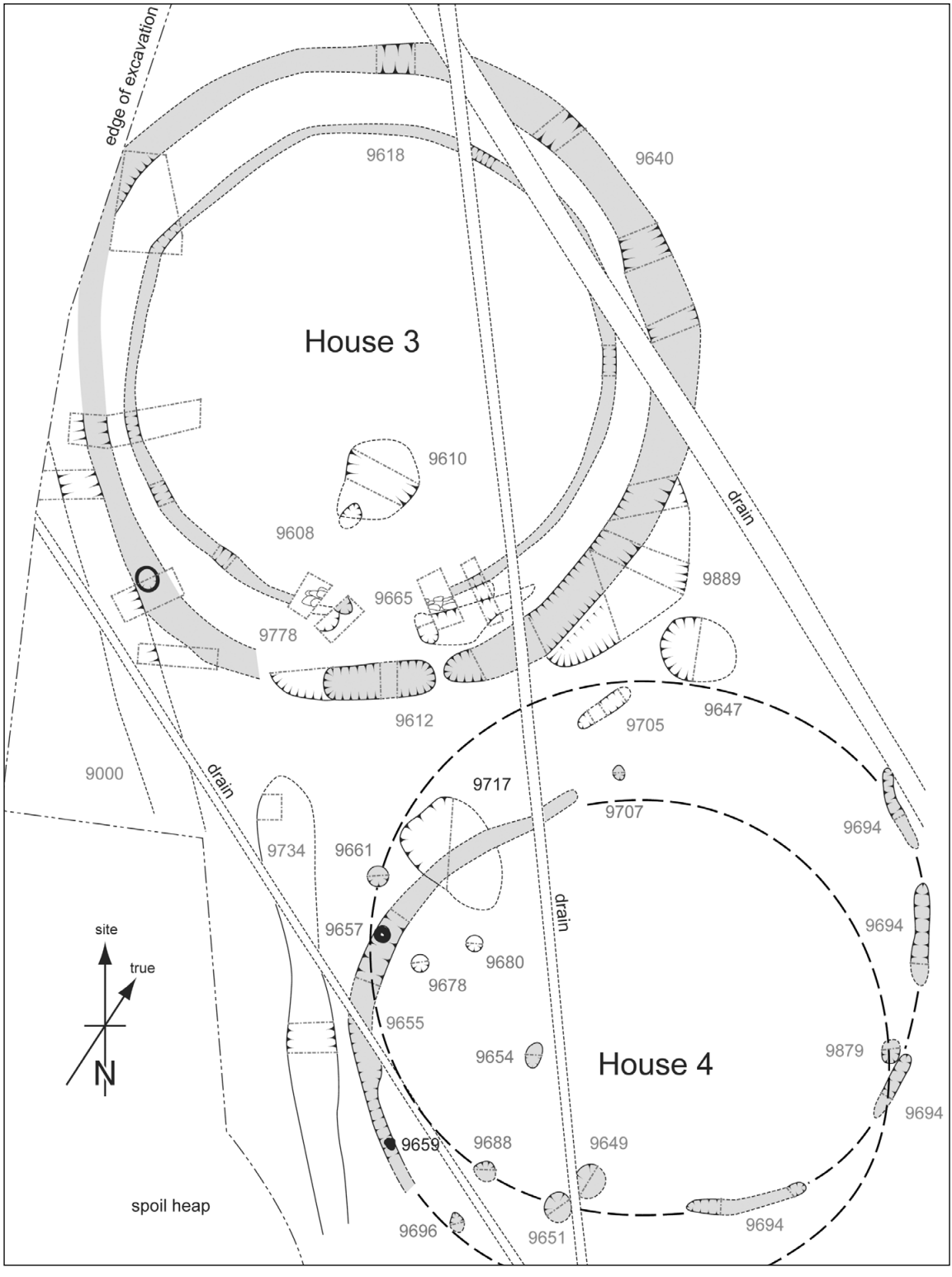
A domestic structure identified (by Keith Matthews from Chester Archaeology) as a bow-sided or oval roundhouse was partially exposed (Ill II.3). It consisted of a shallow outer ring gully, (9631), and the partial remains of an inner gully, (9700) and (9624). The building was probably *c* 11m in diameter. Only about forty percent of the structure was visible and modern field drains had truncated part of this. The remaining unexcavated portion lay beyond the construction easement and could be investigated in the future.

With the exception of one section, (612), the excavated sections of the outer ring gully were unremarkable, containing a few flecks of charcoal and occasional heat-shattered stones and showed the gully to be consistently shallow. Section (612) had a deliberate layer of small stones positioned at the bottom of the fill, possibly as part of a post support; this feature was not seen elsewhere. A struck flint flake also came from this fill. The rest of the fills were consistent, with no change in any of the grey- orangey-brown fills. One possible post hole, (9671) was located in the outer gully. A few sherds of VCP were found in the

above: Ill II.2 Brook House Farm: overall plan of remains (Scale 1/1,000)

right: Ill II.3 Brook House Farm Structure 2: plan. (Scale 1/125)


9626
9624
9671
9812
drain
Sec 612
9631
drain
9692
9700
9720
9690
9633
9729
9684
9736
site
true
0
10m
N


edge of excavation
9618
9640
House 3
9610
9608
drain
9889
9665
9778
9612
9705
9647
9000
drain
9717
9707
9694
9734
9661
drain
9657
9694
9680
9678
9655
9654
House 4
9879
9694
9659
9688
9649
9696
9651
9694
spoil heap
site
true
N

fill of gully close to the post hole. Two poorly preserved grains of wheat were recovered from a sample taken from (9634), the fill of the gully; these were used for radiocarbon dating and gave dates of 37,260±920 BP (AA-51420) and 30,700±920 BP (AA-49266). A further date for this context was obtained using *Alnus* charcoal taken from the same sample as the grain and this gave a date of 390–90 cal BC (2185±55 BP AA-51421).

The inner gully may have had two constructional phases as (9700) cut an earlier gully (9720). There was no other evidence of different building phases as the whole building was not exposed, and it is possible that (9700) was cut to correct a mistake during the initial construction. A soil sample from (9700) produced charcoal from a small piece of Altus; this gave a radiocarbon date of 200BC–20 cal AD (2080±40 BP; AA-49272) — a date that is contemporary with other activities on the site and also with bow-sided roundhouses in the region, eg at Court Farm and Brunt Bogart (*see* Cowell & Philpott 2000, 199) and Lousher's Lane, Wilderspool (Hinchliffe *et al* 1992, fig 64). The inner gullies were shown to be shallow with grey orange brown fills.

Just to the east of the building were two post holes, (9684) and (9812), and two pits, (9729) and (9736). It was not possible to define their purpose or decide if they were directly associated with the building and the settlement as they contained no identifiable remains.

Structure 3

This building comprised the almost-complete remains of a substantial domestic structure, identified as a roundhouse *c* 19m in diameter, with outer and inner ring gullies (9640) and (9618) (Ill II.4). These gullies were interpreted as an eavesdrip and a wall slot. Two modern field drains truncated the building and the outer gully was also cut by the medieval ditch (9000) running through the middle of the site. A small portion of the building was not excavated as it lay beyond the easement of the pipeline.

The building had an entrance *c* 1m wide facing south-south-east. On either side of the entrance were two very large piles of stone set into the ground, (9655) and (9778); these had probably been used as post pads. They did not become visible until the inner gully was being excavated, as their insertion had left no visible cut, suggesting that the hole was probably cut and then backfilled almost immediately.

The pile of stones (9665) was *c* 0.6m deep, *c* 0.35m wide and *c* 0.9m long, similar to (9778) which was *c* 0.45m deep, 1m wide and 0.4m long. The stones were a mixture of local materials, predominantly red sandstone. All were reasonably sized, *c* 0.2m x 0.2m, weighing approximately 10kg and placed on top of one another. None of the stones had been dressed. There was no evidence for other post holes or sink holes around the inner or outer gullies of the building, suggesting that other posts rested safely on the ground surface (Ill II.5).

The rest of the inner gully (9618), which can be considered to be a wall slot, was *c* 0.3m wide and *c* 0.15m deep. It had a light brownish-grey sandy silt fill with flecks of charcoal.

left: Ill II.4 Brook House Farm Structures 3 and 4: plan. (Scale 1/125)

Ill II.5 Brook House Farm Structure 3: post pad for entrance

A sample taken from the inner gully provided some *Salicaceae* charcoal suitable for radiocarbon dating which provided a date of 920–780 cal BC (2665±45 BP; AA-49271); this is broadly consistent with the Late Bronze Age construction style of the building.

The outer gully, interpreted as the drip gully for the building's eaves, was *c* 1.1m wide and *c* 0.3m deep with sloping sides and a flat bottom. Near the entrance the gully may have cut through the edge of pit (9889). Alternatively, (9889) could represent an extension to the gully, or, more likely, a mistake during construction.

Just inside the entrance of the building was a shallow pit, (9610), which had been cut by a possible post hole, (9608). These were the only features inside the house. The pit was subrectangular, *c* 1.5m long, 1.3m wide and 0.24m deep with curved sides and a flat bottom. The post hole was 0.5m in diameter and 0.15m deep. Its silty fill contained a large proportion of charcoal and one emmer/spelt grain was recovered from a soil sample. Radiocarbon dating of this grain gave a date of 520–170 cal BC (2295± 60 BP; AA-49264). This date was much later than the one given for the fill of the wall slot (9619), suggesting either that the building was in use for a very long time, which is unlikely, or more likely that the feature relates to some later activity that took place after the building's demise.

In front of the building's entrance a pit, (9612), had been dug, which appears to have cut the terminus of the outer ring gully. It was 0.7m wide, 0.4m deep and 2.3m long. Its position, right in front of the entrance, would be strange if it was contemporary with the building. However, radiocarbon dating has shown it to be a much later feature, more likely to be associated with (9609). The shape suggests a grave, but no other evidence for this was found. The upper fill contained several fire-cracked stones, suggesting it had been

used for rubbish disposal. However, analysis of the soil samples did not reveal any domestic waste apart from these stones and charcoal. Charcoal obtained from the soil sample from (9613) was identified as oak and alder. The alder was used for radiocarbon dating, providing a date of 260–50 cal BC (2145±40 BP; AA-49275).

The building produced a number of finds, with the second highest quantity of the VCP that was recovered from in and around the settlement coming from here. Fragments of fired clay were found in the pit (9612) in front the roundhouse; some more were found, along with some VCP, in the fill of the outer gully (9640). Five pieces of VCP came from the interior of the roundhouse, from the possible post hole (9608) that cut the small pit (9610). Fifteen more sherds of VCP were found in the right-hand terminus of the outer gully (9640). A few sherds of VCP and some lumps of fired clay were found on the surface close to both of the two post pads. A struck flint flake was found in the fill of the inner gully (9618).

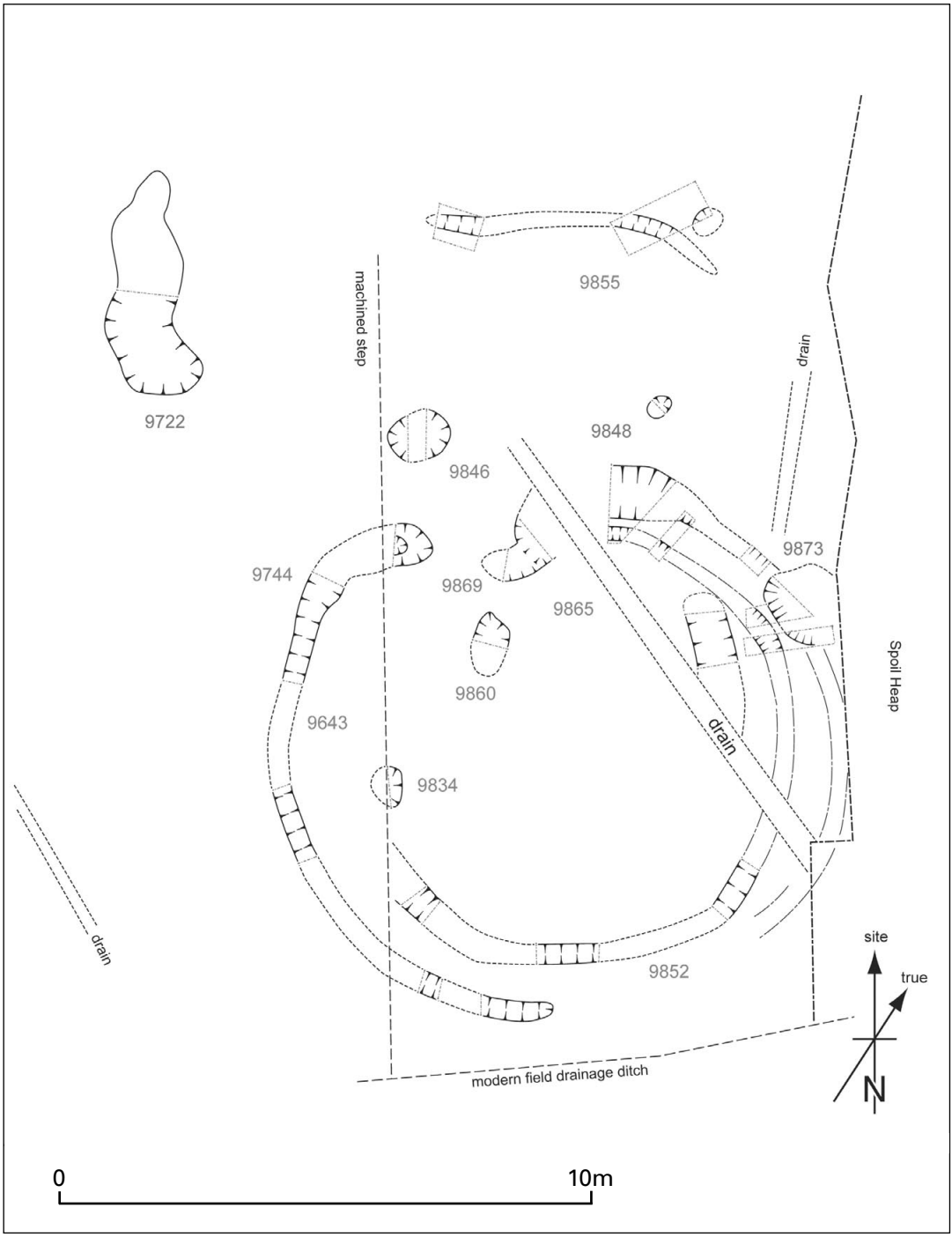
Overall, given the artefactual evidence and the absence of a definite hearth, the building's true function is unclear. However, a domestic use is the likeliest option, as has been concluded at a number of sites around the country with similarly shaped buildings. Pot boilers or heat-shattered stones were also found in the fill of a number of the sections cut through features in and around the structure, presumably indicating cooking.

Structure 4

Structure 4 was a roundhouse with two construction phases. One phase was represented by the remains of a semicircular gully, (9655); the other by a series of related small gullies, accompanied by a group of post holes and stake holes, which also formed a semicircular arrangement. The building was probably *c* 12m in diameter in both of its phases.

These curvilinear gullies were probably the remains of a eavesdrip gully. Any floor surface, hearths and associated occupation deposits of the house must have been severely truncated, possibly by ploughing in antiquity or by the topsoil stripping. Without this sort of evidence, the building's true function is unclear. However, a domestic structure is again the likeliest option.

Careful cleaning in the areas where it was predicted that the two gullies would continue did not uncover any extension. This may suggest that they were short-lived structures or that the gullies were very shallow and had been removed, for example during topsoil stripping. Certainly all of the (9694) gullies had shallow sloping termini, suggesting that they had not been cut to join up. Gully (9655), however, just faded into the soil, which may support the idea that the topsoil stripping may have inadvertently removed some part of it. Gully (9694) was consistently shallow. It was *c* 0.23m wide and *c* 0.1m deep with a light yellow-brown fill. Post holes (9649), (9651), (9688) and (9879) were probably associated with it. Post hole (9651) contained two flat stone post pads and may have utilised small angular stones for additional packing. As this was the most substantial post hole for the building it is speculated that it may have been part of the entrance way. Gully (9655) was also consistently shallow. It was *c* 0.4m wide and *c* 0.1.m deep with a mid-grey fill containing some charcoal, burnt stone, a few small pebbles and a stone pounder. Part of (9655) overlay a small natural hollow, (9717), which had silted up with a mixture old redeposited soil and



Ill II.6 Brook House Farm Structure 5: plan. (Scale 1/125)

a small amount of charcoal. Sherds of VCP were found in this fill. Post holes (9696), (9678) and (9707), along with stake holes (9657) and (9659) were associated with gully (9655), as they were positioned along the circular alignment of the proposed house.

It is not clear which phase of Structure 4 the post holes (9654) and (9680) were connected with, as they both lay within the area of the two proposed building phases. There were also two other features: a shallow narrow slot, (9705), and a pit, (9647), which were within the confines of the building associated with gully (9694). It is not clear how or if they related to this building phase or what their function was. They may be entirely separate features or even associated with Building 3. They did not produce any datable evidence.

Apart from the stone pounder recovered from the fill of gully (9655) and the VCP from (9717), there were no other recorded artefacts from any features belonging to Structure 4. Nor did the fills of (9694) contain any charcoal or other material suitable for radiocarbon dating. Unfortunately, samples were not taken from any of the post holes or stake holes found in and around the two gullies of Structure 4. However, gully (9655) was sampled, and suitable material for radiocarbon dating was recovered from Pomoideae charcoal fragments. This showed that building associated with gully (9655) was associated with the latest activities on the settlement, with a date of 170BC–60 cal AD (2035±40 BP; AA-49274).

Structure 5

This round house was the last to be excavated on the site. Unfortunately it was not possible to investigate all of the area around the building as the spoil heap was already in place before the structure was identified and could not be easily cleared. The building was represented by the remains of three ring gullies, two outer and one inner, along with a number of pits and post holes (Ill II.6). The plan of the building, combined with the radiocarbon dates, suggests that it was rebuilt twice, with the three phases of activity spanning around 1000 years from the Bronze Age possibly through to the Roman conquest.

A machined step for a pipe bend beneath the field drainage ditch had cut through part of the building before the latter was recognised, and this had removed part of the inner gully and part of a post hole. A modern field drain had also truncated part of the building, cutting through one part of the inner gully and the outer gullies at their termini and also through one post hole by the entrance. It had also cut through a shallow pit inside the building.

The first phase structure was *c* 8m in diameter and was represented by the western ring gully, (9744). This was *c* 0.4m wide and *c* 0.5m deep with a U-shaped profile with steep sides and light grey fills. The fill contained pockets of charcoal along with fire-cracked stones and a large collection of pottery. This gully was possibly a part of the eavesdrip for the building. However, as such it would have been unusually deep, and it may instead have served as a post trench, possibly to support the eaves, although there was no other evidence for this. Any other structural evidence from the first phase appears to have been removed during the construction of the later phases. A soil sample taken from around the pottery produced *Alnus* charcoal which gave a radiocarbon date of 1320–1010 cal BC (2970±55 BP; AA-49273). The pottery also had charred material sticking to it which gave a radiocarbon date of 1050–800 cal BC (2775±55 BP; AA-49298).

The terminus of the phase 1 gully appeared to have had a possible post hole cut into it. A soil sample from the fill of the terminus produced *Corylus* charcoal suitable for radiocarbon dating, giving a date of 120BC–60 cal AD (2035±35 BP; AA-49270) — a date much later than the phase 1 building and suggesting that this feature was part of the third phase.

The second phase structure was also *c* 8m in diameter and was represented by the eastern ring gully. This was *c* 0.4m wide and *c* 0.3m deep with a U-shaped profile with steep sides and light grey fills. The fill contained pockets of charcoal along with fire-cracked stones. A modern field drain had disturbed the terminus. However, part of a post hole, (9869), was found in this terminus, although it was not clear if it was part of this phase or a later phase. A soil sample was taken from the fill of the phase 2 gully, close to the cutting by the modern drain. *Alnus* charcoal was identified in the sample and gave a radiocarbon date of 400–170 cal BC (2240±55 BP; AA-49269).

The third and final phase of the building saw the construction of a smaller structure represented by the inner gully, possibly a wall slot, which was *c* 0.4m wide and *c* 0.15m deep, with sloping sides and a flat bottom. The gully would probably have continued had it not been cut in places by the machined step and the modern field drain. At one end of the terminus the inner gully cut the phase 2 gully before being truncated by the modern field drain.

A large circular pit, (9873), containing large amounts of charcoal but no artefacts, cut the phase 2 gully. The full extent of the pit was not established as it continued beneath the spoil heap: as seen it was 0.43m deep and at least 1.5m in diameter. The pit contained charcoal and fire-cracked stones but did not contain any artefactual evidence. It was probably contemporary with the phase 3 building, but this was not tested by radiocarbon dating.

Inside the roundhouse there was a fire pit, (9860), and a pit, (9891), which had been cut by the modern field drain. The fire pit was 0.6m in diameter and 0.32m deep and contained a large amount of charcoal in four layers. Mixed in with the charcoal were some fragments of VCP and burnt bone. Charcoal samples were taken for analysis and are discussed later in the report. Emmer/spelt grains were also recovered and gave a radiocarbon date of 1000–800 cal BC (2740±55 BP; AA-49265), a date that is contemporary with the carbonised food residue on the pottery from the phase 1 ring gully.

Just outside the buildings was a circular pit, (9846), and a smaller post hole, (9848). The pit (9846) contained a lot of charcoal and fire-cracked stones, also a few small fragments of burnt bone and pieces of VCP, and so was probably used for the disposal of domestic waste The post hole was 0.3m wide and 0.15m deep with small stones used for packing. It is possible that both features were part of one of the structural phases. Slightly away from the main structures were a possible post hole, (9858), and a narrow, V-shaped gully, (9855). The latter was *c* 7m long, 0.4m wide and 0.4m deep. The possible post hole was 0.55m in diameter with a circular base 0.22m deep. Their purpose and relationship with Structure 5 is unclear, but they could have been part of one of the structural phases. Towards the west lay an irregularly shaped pit, (9722). The sides and base of the pit were also irregular, containing small pockets of light grey silty clay fill, suggesting it was a large tree hollow.

The three phases of the structure contained the largest collection of ceramics from the whole site, with 115 sherds of pottery from two different vessels and seventy-six pieces of VCP. All of the pottery came from one area of the first phase ring gully, context (9744), and forms one of the largest collections obtained from a late prehistoric settlement in the North West. A large proportion of the VCP came from the end of the phase 1 gully terminus two metres further on, interpreted as belonging to the third phase (*see above*). The pottery appears to have come from two vessels, probably bucket-shaped jars with parallels with other Late Bronze Age pottery that has been found in the region, for instance at Beeston Castle (Ellis ed 1993), The Breiddin (Musson 1991), Mam Tor (Barrett 1979) and Rhuddlan (Berridge 1994) (*see further below*). Pot-boilers or heat-shattered stones were found in a number of features from all three phases, in and around the structure, again indicating domestic activity, probably cooking.

Structure 6

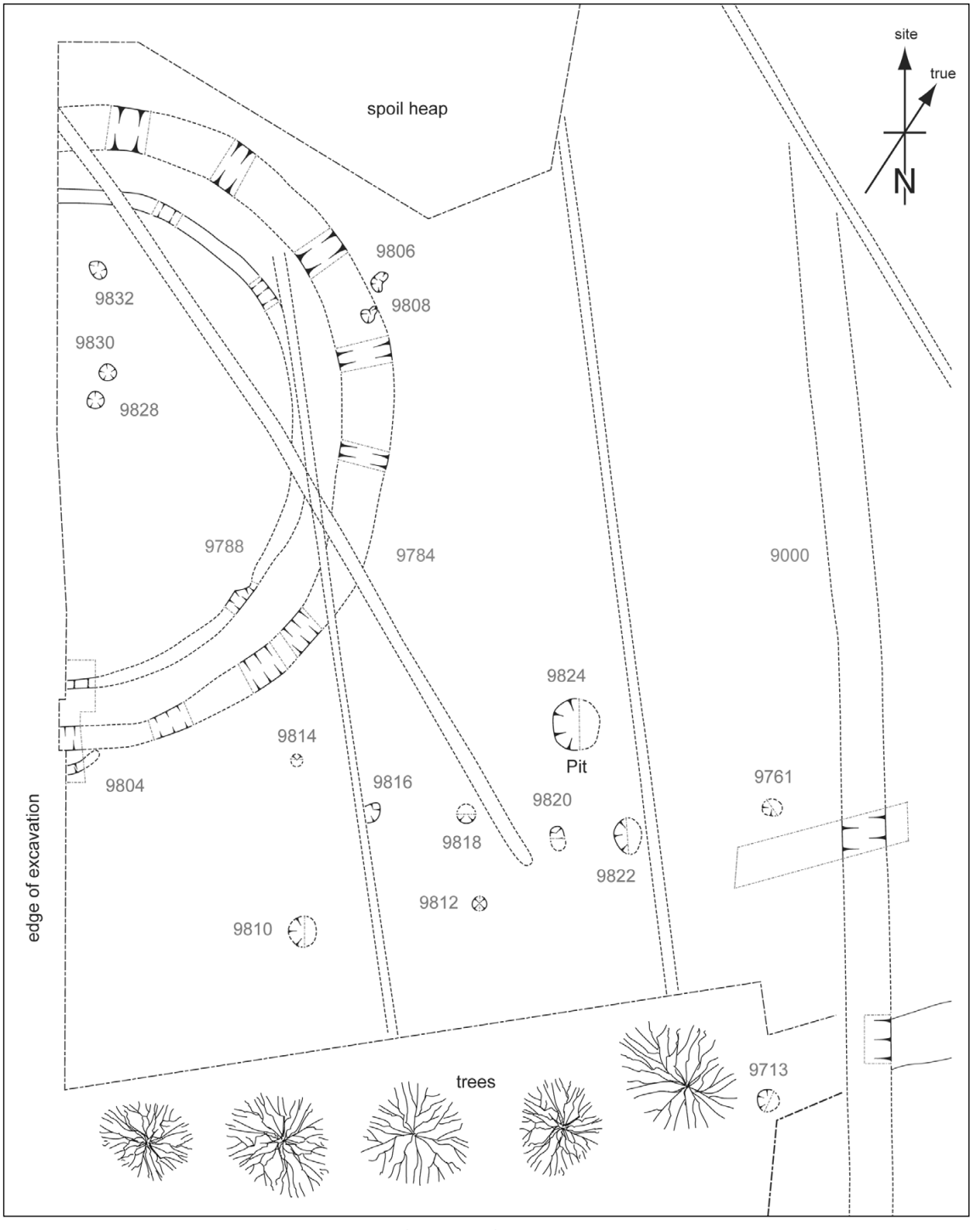
The substantial remains of a domestic structure identified as a double-ring roundhouse, *c* 9.5m in diameter, with outer and inner ring gullies (9784) and (9788), was partially exposed and excavated (Ill II.7). Only about fifty percent of the structure was visible and modern field drains had truncated part of this. The remaining unexcavated portion lay beyond the construction easement and is available for investigation in the future. It is likely that the entrance for the building lies within the unexcavated portion of the site.

The outer ring gully or eavesdrip gully, (9784), was for the most part *c* 0.9m wide but narrowed in the southern part to *c* 0.4m. It had a grey-brown fill that was *c* 0.2m deep. The inner ring gully or wall slot, (9788), was *c* 0.3m wide with a grey-brown fill *c* 0.2m deep. Only two possible stake holes were associated with the ring gullies, (9806) and (9808), and these may have been later additions to the construction of the building. They were both in irregular shape and could even have been root holes.

Inside the house there was a cluster of three stake holes, (9828), (9830) and (9832). Their function is not clear, but they may have been part of an internal partition. Ploughing in antiquity and recent topsoil stripping may have removed some internal features: there was no sign of any hearth, for example, but this may have been situated in the unexcavated part of the building.

Outside the house was a loose linear group of post holes, some of which had been affected by root action and had irregular shapes. Their function was unclear, but attention should be paid to post hole (9713), which lay on its own but in line with (9761) and on the edge of an unexcavated part of the site, perhaps hinting at the possibility of a rectangular building. Again, this possibility could be investigated in the future.

No pottery or VCP was recovered from any of the excavated sections. Samples from the inner and outer gullies were relatively unproductive. Two poorly preserved grains of barley were recovered from (9785), the fill of the outer ring gully. These were used to obtain a radiocarbon date of 800–350 cal BC (2345±50 BP; AA-49267) for the building, a date that is broadly comparable with Building 3, a similarly constructed roundhouse.



Ill II.7 Brook House Farm Structure 6: plan. (Scale 1/125)

Field 2/29

Structure 1

Additional soil-stripping in this field revealed an unsuspected ring gully of a single roundhouse, a linear ditch cutting a pit and three pits inside the roundhouse. These features were located some fifty-one metres north of the features that had been uncovered in Field 28. Part of the ditch extended beneath a temporary farm track and also beyond the pipeline easement, so its full extent was not discovered. Without further investigation of the surrounding area beyond the easement of the pipeline, the reason for these outlying features beyond the main site in 2/28 is not clear. However, it remains a possibility that this roundhouse indicates that the settlement was much larger than it presently appears, possibly extending across the plateau.

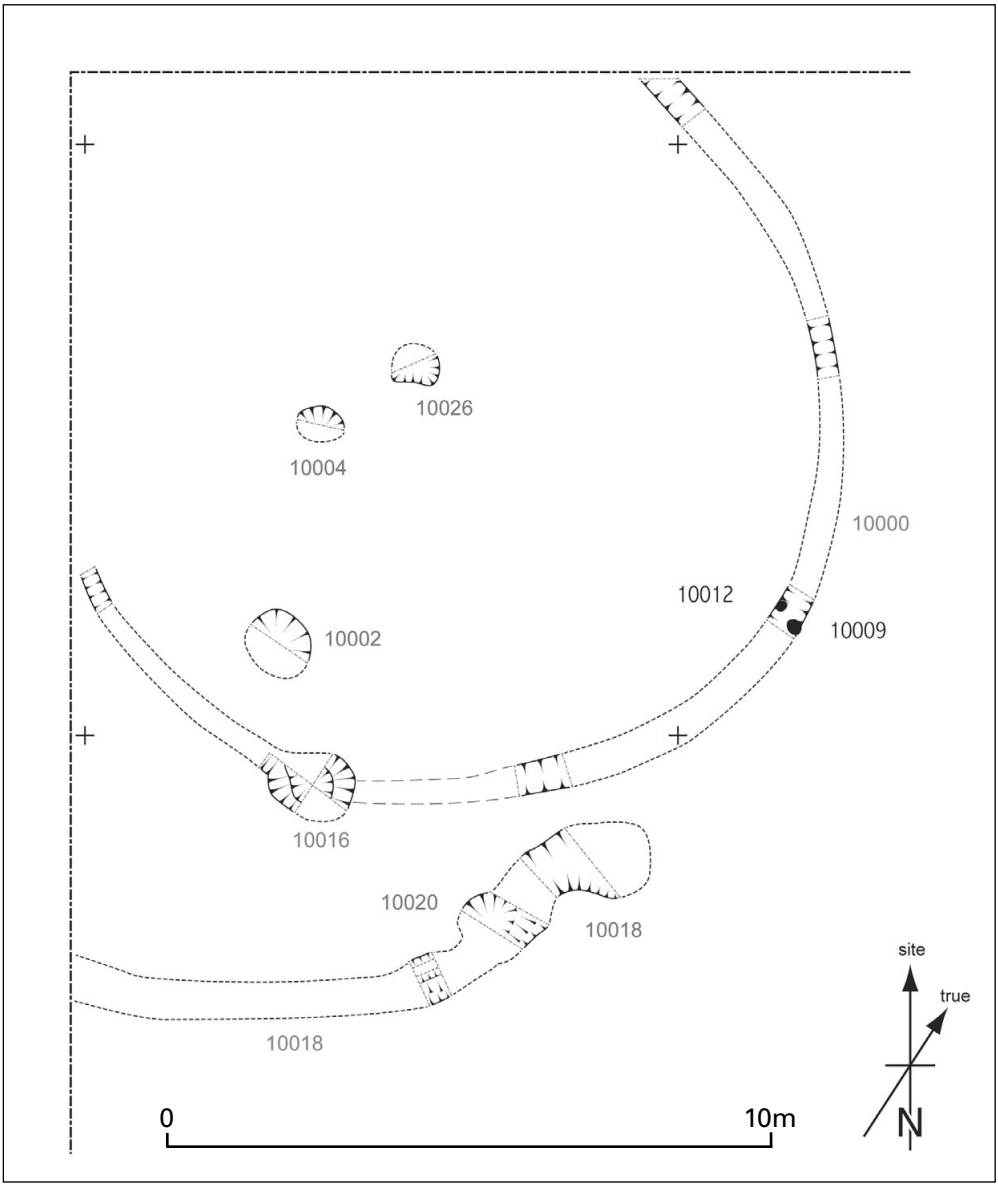
The single ring gully of the roundhouse, (10000), was 12.5m in diameter and was sectioned in a number of places (Ill II.8). These sections showed that the gully was U- shaped with a flattish base *c* 0.13m deep and *c* 0.45m wide, all with similar fills of mid-grey sandy clay with sparse flecks of charcoal. Soil samples taken from the gully produced *Quercus* charcoal which gave a radiocarbon date of 390–160 cal BC (2195±40 BP; AA-49277). Only one section contained clear structural evidence: this contained a small post hole, (10009), with a post pipe and a stake hole, (10012), both of which were set into the edge of the gully. One portion of the gully had two flat stones set into it; these may be interpreted as posts pads.

One lump of fired clay, an unidentifiable burnt animal bone (possibly a metacarpal) and a tiny, intrusive sherd of clear glaze earthenware pottery, too small to identify precisely and assign a date, were found in the fill of the ring gully; the size of the latter sherd suggests that it arrived through worm action. A few pot boilers or heat-shattered stones mixed with small concentrations of charcoal, probably associated with a domestic activity, were noticed in the ring gully and a number of the internal features, but there was little evidence of their presence away from these features.

The roundhouse gully cut an oval pit, (10016), *c* 0.5 deep and *c* 1.30m wide which contained a lump of fired clay, three fragments of VCP and a few heat-shattered stones. The pit did not show any reuse as a very large post hole with packing material. *Salicaceae* charcoal obtained from a soil sample taken from the pit and used for radiocarbon dating gave a date of 1020–800 cal BC (2765±55 BP; AA-49268), much earlier than the roundhouse.

There were three oval pits inside the roundhouse ring gully, (10002), (10004) and (10026). Pit (10002) was unremarkable: it was large, *c* 1.30m diameter and 0.32m deep and contained no evidence of having served as a post hole. Pit (10004) was more of a shallow hollow, but was circular in shape and *c* 0.8m diameter. Pit (10026) was *c* 0.7m diameter and 0.30m deep; it contained some small concentrations of charcoal and two fills and may have been the remains of an eroded fire pit. Charcoal from a small branch of *Alnus* recovered from a soil sample gave a radiocarbon date of 390–90 cal BC (2185±55 BP; AA-49278), which broadly matches that of the ring gully.

Outside the ring gully was an irregular ditch, (10018), *c* 10m long, which extended beyond the excavation area underneath the farm track. Towards the northern end of the ditch was



III II.8 Brook House Farm Structure 1: plan. (Scale 1/125)

an oval pit, (10020), which had been cut through by the ditch (10018). The pit was *c* 1.20m wide, *c* 0.48m deep and contained three fills. The ditch had cut through the upper fill, (10023). It continued for a short distance beyond the pit before terminating abruptly.

A small quantity of fragmented burnt animal bone was recovered from the fill, (10024), of ditch (10018) where it cut through the pit (10020). In the absence of any suitable charcoal this bone was used for radiocarbon dating and gave the latest date for the site — 0-AD240 (1915±50 BP, AA-49647), suggesting the possibility of activity on the site into the early Roman period. However, no other material associated with the Roman period was found on the site.

Phasing

Unphased: Possible woodland clearance

A series of irregular cuts and hollows have been interpreted as probable tree hollows and root systems. It is uncertain whether these features indicate clearance in advance of the settlement or clearance of a regenerated landscape after its disuse. Such evidence as we have suggests that the region as a whole was probably still densely wooded by the Romano-British period, with oak providing the dominant tree canopy and with scattered settlements sited within woodland clearings.

Phase 1: Middle to Late Bronze Age *c* 1320–900 cal BC

Radiocarbon dates indicate that that the first activity on the settlement was centred on Structure 5, and it is possible that the boundary ditch (2062) in Field 26 was also in use at the same time. Activity was also taking place elsewhere on the site, in Field 29 to the north, with pit (10016) containing fire-cracked stone and VCP.

The radiocarbon date for the ring gully (1320–1010 cal BC (2970±55 BP)) was the earliest for the settlement, and was obtained from material that surrounded the pottery, in the hope of getting a reliable date for the pottery. This was before the carbonised food residue on the pottery was identified. The date for the latter (1050–800 cal BC (2775±55 BP)) and that from the firepit (1000–800 cal BC (2740±55 BP)) are similar to one another and suggest that they are contemporary. However, the date for the residue may tell us when the food was cooked and the pottery broken, but not necessarily when the latter was finally deposited. This event may have coincided with the destruction or abandonment of the first phase of Structure 5, the building being razed to the ground and this older burnt material mixing with the broken pottery.

Phase 2: Late Bronze Age–Early Iron Age transition *c* 900–700 cal BC

This phase was characterised by the construction and occupation of the two double-ring roundhouses, Structures 3 and 6. The buildings' shape and size can be seen on other Late Bronze Age–Early Iron Age sites in the country, eg Irby (*pers comm* Rob Philpott). The radiocarbon dates 920–780 cal BC (2665±45 BP) for Structure 3 and 800–350 cal BC (2345±50 BP) for Structure 6 are also broadly contemporary.

It is possible that other features may relate to this period, but without the artefactual evidence or further radiocarbon dating it is impossible to say.

Phase 3: The Early Iron Age *c* 700–400 cal BC

There is no actual evidence for this phase, but it would seem probable that the site was occupied in this period. Admittedly, analysis of the radiocarbon dates indicates a clear gap between the Late Bronze Age and the Middle Iron Age, but this is only based around the choice of samples used for the radiocarbon dates and the assumption that the settlement was only concentrated in the pipeline corridor, which is unlikely.

Phase 4: Middle Iron Age *c* 400–150 cal BC

There were two buildings on the settlement that were occupied in this period, Structure 1 in Field 29 and Structure 5 (phase 2). This was based on the radiocarbon dates of 390–160 cal BC (2195±40 BP) from the ring gully of Structure 1 and 400–170 cal BC (2240±55 BP) for the phase 2 gully of Structure 5.

There was no stratigraphic evidence to link these structures, only the radiocarbon dates. The only apparently contemporary settlement in the region was that at Brook House Farm, Halewood (Cowell & Philpott 2001), active during the Middle to Late Iron Age, but this chronology is again based mainly on radiocarbon dates.

This phase may represent a change in the fortunes of a long-lived settlement, indicating a period of decreased nucleation — possibly a family grouping in one or two buildings. This is, of course, speculation as the site may have been larger than the area if the pipeline corridor. However, it is widely accepted that the population at this time was lower than during the later Iron Age. A shift could be associated with a decrease in small-scale warfare and a move by family units towards greater arable production away from the social control of the nucleated settlements.

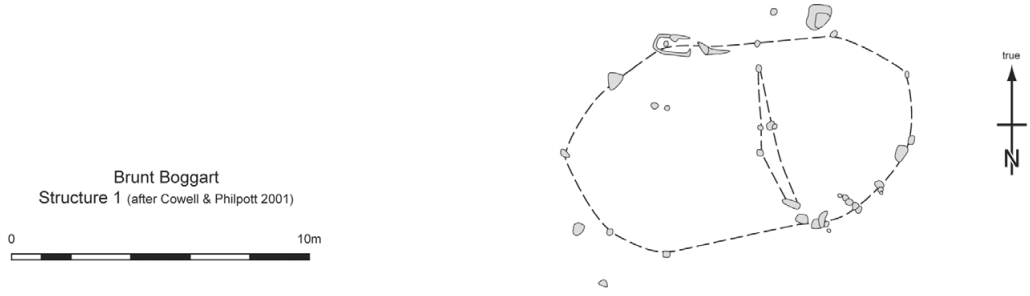
Phase 5: Late Iron Age *c* 150 cal BC–Roman conquest

The last centuries BC saw an improvement in the climate, which led to an expansion of farming activities and associated small enclosed and unenclosed settlements. This is certainly reflected in the number of sites in the North West that date to this period, eg Brunt Boggart, Tarbock (Cowell & Philpott 2001), Great Woolden Hall (Nevell 1988a and 1998) and Lathom (Cowell 2002).

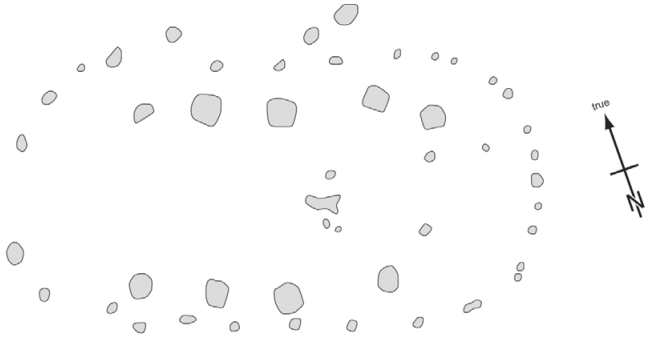
This expansion would appear to have been reflected at Brook House Farm, with activity taking place around three structures, 2, 4 and 5 (phase 3). However, little can be said about this activity as there was no real stratigraphy and the main source of information is again provided by the radiocarbon dates.

Structure 2 has some similarities (oval shape — 'bow-sided roundhouse') to later structures at Brunt Boggart, Tarbock and Court Farm, Halewood (Cowell & Philpott 2000, 199), and Lousher's Lane, Wilderspool (Hinchliffe *et al* 1992, fig 64), all of which appear to date to the first century AD (Ill II.9). However, as one of the two radiocarbon dates for this building (390–90 cal BC (2185BP)) indicates that the building has origins in the Middle Iron Age period, Structure 2 may not really be comparable with these structures other than in shape.

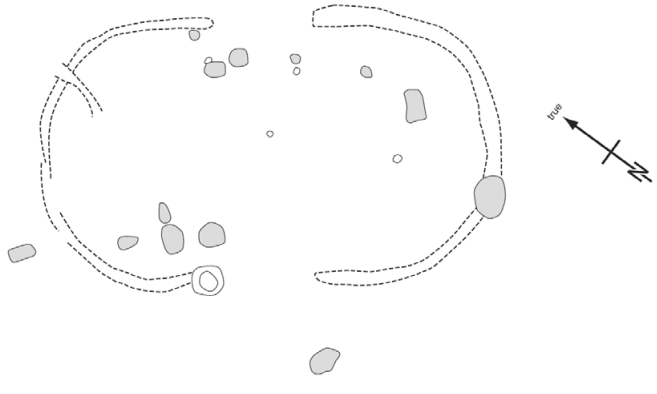
right: II.9 Bow-sided roundhouses in north-west England: plans. (Scale 1/250)



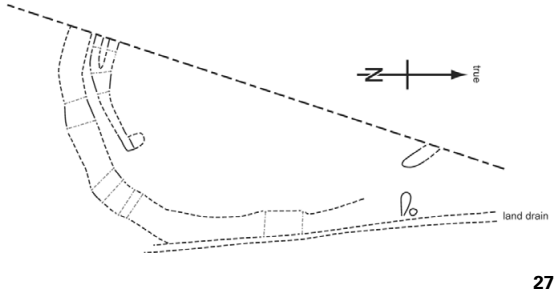
Brunt Boggart
Structure 1 (after Cowell & Philpott 2001)



Loucher's Lane, Wilderspool
Structure 2956 (after Hinchliffe & Williams 1992)



Court Farm, Halewood (after Adams & Philpott 1993)



Birch Mickle Trafford : BMT01
House 2

Some additional activity is indicated by the radiocarbon dates of some pits and post holes around Structures 3 and 5. The possible post hole in the terminus of the ring gully (9643) of Building 5 may have been a later cut rather than part of the structure of the building. Its position may be explained by the relative ease with which pits or post holes could be dug into the fills of features as opposed to the unforgiving natural boulder clay. Equally it is possible that the terminus was contaminated with material from a later period and that this was used for the radiocarbon sample, giving the late date of 120BC–60 cal AD.

Phase 5a: Reconstruction of Structure 4

Structure 4 was probably the latest building to be constructed on the site, sometime (on the basis of a single radiocarbon date from part of a ring gully) during the Late Iron Age. It appears to have had two phases of construction, resulting in the two ring gullies, (9655) and (9694), and their associated post holes (See Ill II.4). It is not clear which of the two gullies came first, but (9655) produced a radiocarbon date of 170BC–60 cal AD, giving a late date for this work. No visible intersection between the two phases, which would have shown the stratigraphic relationship, was noticed during the excavation; alternatively, it may have been truncated by a modern field drain. No visible cuts were recorded during the excavation of the outer gully, (9640), of Structure 3 (a much earlier structure, according to the radiocarbon dating), where there should have been an intersection with Structure 4.

Phase 6: The abandonment of the site

It is not clear when this took place, but the lack of any later material would suggest that the site was abandoned before the end of the Late Iron Age and the arrival of the Romans. The latest radiocarbon date for the site from Structure 1 provides a broad date of 0–AD240. Generally, the region as a whole has very little pre-conquest material. It is likely, and the radiocarbon dates would also support the suggestion, that the abandonment took place before the end of the first century BC.

Phase 7: Medieval activity

It was surprising, but not wholly unexpected, to find some medieval activity on the site. This took the form of the ditch (9000) that ran through the centre of the site. It is not clear what its function was, but it is assumed to have been drainage. It is possible that there is an association with the pottery kilns that are known to be in the vicinity and believed to be of a similar date.

The artefacts

Pottery

K Matthews *Chester Archaeology*

Methods

The material was initially sorted for assessment by macroscopic appearance, based on colour and texture. Some further sorting was then performed using a binocular microscope at a magnification of x10. Weighing was carried out to an accuracy of 1g. Numbers were assigned in the Chester Archaeology fabric series and representative sherds retained to add to the Service's reference collection.

Further sorting of the material was greatly assisted by the comments of Dr Elaine Morris on the VCP; her report is incorporated here.

Table II.1 Brook House Farm: quantities of pottery fabrics by context

Context	*Fabric no*	*No rim sherds*	*Rim %*	*No base sherds*	*Base %*	*No body sherds*	*Total no sherds*	*No vessels*	*Weight (g)*	*Frag*
U/S	771	1	<5			1	2	1	9	4.5
9744	771	11	42			100	111	1	578	5.2
9844	771					1	1	1	2	2
Sub-total							**114**		**591**	**5.1**
9744	772			4	90		4	1	71	17.7
Sub-total							**4**	**1**	**71**	**17.7**
U/S	773					3	3	1+	8	2.7
9609	773					5	5	1+	10	2
9627	773					3	3	1+	5	1.7
9640/9642	773					1	1	1	13	13
9644	773					15	15	1+	31	2.1
9717	773					1	1	1	6	6
9757	773					1	1	1	10	10
9789	773					1	1	1	5	5
9842	773	1	5			27	33	1+	155	4.7
9844	773					1	1	1	2	2
9847	773					11	11	1+	35	3.2
9861	773					1	1	1	2	2
9863	773					1	1	1	1	1
9871	773					3	3	1+	47	15.7
10017	773					3	3	1+	8	2.7
Sub-total							**83**		**338**	**4.1**
9644	776					10	10	1	27	2.7
Sub-total							**10**		**9**	**9**
9842	?					1	1	1	2	2
Sub-total							**1**		**2**	**2**
Total							**212**		**1011**	**4.8**

Fabrics

Fabric 771

A slightly sandy fabric with a dark grey to grey-brown core with darker margins and a surface that varies from black to orange to buff. There are about 5% small inclusions (rounded sand < 1mm in diameter) and the occasional larger inclusions (angular and sub-angular pieces up to 5mm long). Both interior and exterior surfaces are wiped.

Context date range1050–800 cal BC.

Fabric 772

A hard, sandy fabric. The core is dark grey brown and the surfaces vary from dark grey-brown to buff. There are 10% inclusions (rounded and sub-angular pieces up to 7 mm long). Only base sherds were recovered, but they suggest that both surfaces were wiped.

Context date range 1050–800 cal BC.

Fabric 773 (VCP)

This is the classic Cheshire stony VCP. It has a very sandy clay matrix with orange surfaces and large angular rock fragments (Morris 1985, 355–64, tables 3–4). A petrological report on one of the sherds from context 9842 by Dr Alan Vince (archive report) confirms this identification.

Context date range 1020/800 cal BC–170 cal BC/AD60.

Fabric 776

A hard, sandy fabric. The core and surfaces are a reddish grey-brown. There are fewer than 3% inclusions (< 1 mm in diameter) and occasional pieces of burnt organic material. Only the inner surface shows any sort of finish and is wiped smooth; it appears to have been laid as separate finer sheets over the inner surface of the vessel before firing. The outer surface appears to have been left deliberately rough. Thin section analysis indicating high manganese concentration is not significant in terms of provenance or function.

Found in context (9644). Undated.

Catalogue

1 Rim of a Late Bronze Age jar. The rim is a simple flat and horizontal form; although there are no exact parallels from the region, some of the Late Bronze Age material from Beeston Castle belongs to this general tradition (eg Royle & Woodward 1993, 70, nos 37–9, 46, 48 and 52). The surviving body sherds give no evidence for a shoulder of any type, so it appears to be the upper part of a biconical or barrel jar; Fabric 771. (9744); SF 2.

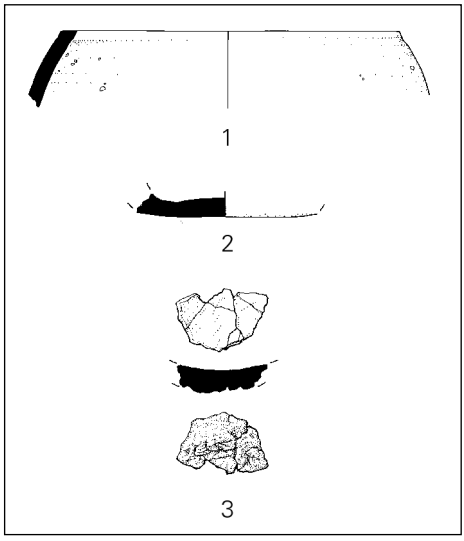
2 Base of vessel; Fabric 772. (9744); SF 3.

3 Small vessel, apparently industrial in character, although its oxidised nature indicates that it cannot have been used as a crucible. However, the attention to manufacture evident on the interior (perhaps even evidence for relining) and the rough outer surface certainly suggest an industrial rather than domestic function; Fabric 776. (9644); SF 1.

The Late Bronze Age pottery

Numerous sherds from the apparently domestic vessel in Fabric 771 from context (9744) had burnt organic residues on the interior surface that were subjected to radiocarbon dating. The calibrated date range (1050–800 cal BC) confirms a date in the Late Bronze Age, enabling comparison with the material from Mam Tor and Beeston Castle and allowing an identification with generic post-Deverel-Rimbury barrel forms to be suggested.

The almost complete base of a domestic vessel in a quite different fabric (Fabric 772) was found in the same drip gully, (9744), as the barrel-shaped urn.



A group of sherds from (9644) appeared to be part of a crucible, but thin-sectioning did not confirm this. The inner surfaces are finely finished, whilst the outside bears no trace of surface finish; the presence of quartz derived from millstone grit is suggestive of an origin in East Cheshire, whilst the manganese staining might be indicative some industrial or chemical process.

The VCP **E L Morris,** *University of Southampton*

A total of eighty-three sherds (338g) of Cheshire briquetage, otherwise known as Stony VCP (Morris 1985), was identified amongst the pottery and burnt or fired clay material from the excavations. This ceramic material has been demonstrated to be the containers used to dry and transport salt from the brine springs in central Cheshire to settlement sites and hillforts throughout North Wales, the Welsh Marches and central Midlands regions during the latter half of the first millennium BC and into the early Roman period (Morris 1985; Britnell 1989; Knight 1992).

The material is in relatively poor condition with predominantly small sherds (mean sherd weight 4.1g) and the presence of post-deposition iron oxide concretions or mineralisation from groundwater conditions on sherd surfaces and broken edges. Nevertheless, three rim sherds were identified.

Form, manufacture and firing

The vessel form of Cheshire briquetage is very distinctive. The profile is cylindrical with a widely flaring rim, small thick base and thick walls. The Brook House Farm examples were between 9 and 24mm thick. The rims usually appear as two different types: rounded or internally folded creating a wedge or angled platform (Morris 1985, 353, figs 7–8; Britnell 1989, fig 26, pl 20), and both types were found in the Bruen Stapleford assemblage. The

above: Ill II.10 Brook House Farm: prehistoric pottery. (Scale 1/4)

vessels are always hand-made and are currently thought to have been constructed collar-upon-collar or to be coil-built. This method is usually revealed by the appearance of a rounded break to the upper part of a body sherd or by the 45 degree angle break when a coil is pressed onto the next coil or collar and an internal excess of clay results. Because this was industrial material, these rough joins and internal irregularities were normally not concealed or removed to create a smooth surface as in pottery manufacture. Several of the Brook House Farm sherds reveal these manufacturing methods. The vessels are nearly always recovered as oxidised sherds with orange surfaces and frequently an unoxidised core to the vessel wall, suggesting that the vessels had not been fired for a long time or had not been used over a salt-working hearth for a long time or at a high temperature.

Dating

The distribution and use of the salt produced from the Cheshire brine springs and transported in briquetage containers is currently dated to the second half of the first millennium BC and the early Romano-British period (Morris 1985, 352–70; Britnell 1989, 124 and microfiche 2.4). In the Shropshire and Cheshire area specifically, the earliest material has hitherto been recovered from deposits dated to the Early Iron Age at the Wrekin hillfort and Beeston Castle hillfort. At the Wrekin, Early Iron Age pottery and Cheshire briquetage were recovered in deposits radiocarbon dated to *c* 400BC (340+100bc: Birm-530; 520+180bc: Birm-531; 390+70bc: HAR-4452; 410+80bc: HAR-4454) (Stanford 1984, 83). At Beeston Castle, a sequence of occupation debris and hillfort ramparts demonstrated that the deposition of Cheshire briquetage was found to be contemporary with or slightly earlier than the Early Iron Age period 3A rampart dated by radiocarbon to around 400bc (791–410 cal BC) (Ellis ed 1993, 89; Royle & Woodward 1993, 74).

The apparent occurrence of some VCP on the present site in contexts dated to the first half of the first millennium ((9861): 1000–800 cal BC; (10017): 1020–800 cal BC) suggests that the production and use of inland Cheshire salt started prior to the Iron Age. At present, only coastal salt-working can be shown to belong to the Bronze Age (Morris 2001, 389–404, table 98). However, the number of sherds involved is small and it would be unwise to revise the established dating without firmer evidence.

Distribution and trade

Cheshire briquetage has been demonstrated to have had an extraordinarily wide distribution during the later prehistoric period (Morris 1985, 367–70, figs 9–10), and recent publications have shown that this trade extended as far east as Derbyshire, Leicestershire and Nottinghamshire (Elsdon 1991, 1992; Knight 1992, 1999; Morris 1999). The presence of sherds from more than one Cheshire briquetage container at the Bruen Stapleford settlement could have been predicted given the location of the site within the core area of distribution during the later prehistoric period. The recovery of these fragments demonstrates that the settlement's inhabitants participated in the common trading networks of the period.

More settlement sites within Cheshire and Lancashire are being excavated and published which contribute valuable local information about the distribution of this material. These

include Irby (Philpott & Adams 1999, 69; *in prep*), Great Woolden Hall Farm (Nevell 1998, 56), and Brook House Farm, Halewood (Cowell & Philpott 2000, 44).

Discussion

It is extremely important that a later Iron Age settlement site in Cheshire has been carefully excavated and well recorded under modern conditions. In future, sites in Cheshire which are found to be of this date should be targeted as of major importance requiring special excavation programmes which allow for a more detailed recovery of this unusual material, as well as the pottery and other material culture and faunal remains associated with it, than would normally be recommended. This would include more sections of linear features to be excavated, preferably up to fifty percent of ditches, and complete excavation of pits such as those identified and half-excavated at Brook House Farm. So little is known about the use of Cheshire salt at this time and the significance of the salt industry within the county that this approach should become the standard methodology for future fieldwork.

The material in its regional context **K Matthews**

Late prehistoric ceramics are extremely uncommon in the region, the only widely represented, locally made form being VCP. A large quantity of prehistoric material in seven or eight different fabrics has been recovered from Mill Hill Road, Irby (Philpott & Adams 1998, 69). As well as VCP, there are barrel-shaped jars and vessels with widely flared rims, similar to the material from Brook House Farm. The material has general affinities with Yorkshire and the east Midlands, although there are sufficient differences from these areas to recognise a separate tradition. The writer has recently proposed a 'Bickerton-Mam Tor jar continuum' for the north-western Late Bronze/Early Iron Age (Matthews 2000–01, 16), although it remains to be seen if this terminology will win general acceptance.

Several sites have produced a variety of pot forms of uncertain affinity; much of this material is impossible to relate to that from Brook House Farm as it has rarely been published to modern standards and its present whereabouts is generally unknown. Pottery with fingertip impressions was found at Castle Ditch, Eddisbury (Varley 1964, 90); the form, although not the fabric, has parallels in the West Harling-Staple Howe group of eastern England. A high-shouldered, flat-rimmed jar from Maiden Castle, Bickerton (Varley 1936, 105; Varley 1964, 101), is of the same general type, while the one sherd from Wilderspool (Hinchliffe *et al* 1992, 100) has not been published. There is also material from Mellor, comprises 21 sherds /63g of VCP and 240 sherds/1675g of later prehistoric pottery, which is associated with radiocarbon dates of the Early to Middle Iron Age. The only forms represented are jars with straight or slightly out-turned rims (Chris Cumberpatch, *pers comm*).

In this light, the material from Brook House Farm is of regional importance. The well stratified nature of the deposits, the association of ceramics with material suitable for radiocarbon dating and, indeed, the presence of directly datable residues on one of the vessels have allowed this assemblage to be dated in a much more meaningful way than has previously been possible, whilst the lack of domestic pottery from any of the Iron Age features raises questions about the date of material found elsewhere.

Stone objects

Pounder

A pounder made from a quartzite glacial erratic was recovered from context (9654) (a post hole fill within Structure 4). It was probably used to crush foodstuffs.

Flint **D Bonner** *Network Archaeology*

Two stratified flint flakes were found: a cutting flake with acute retouch from context (9618) and a flake fragment from context (9632). These were not particularly diagnostic but can probably considered to be Late Neolithic–Bronze Age. However, the frequent finds of flint blades on Iron Age sites suggest that this material was still in use for small tools, as were antler and bone.

The environmental remains

The animal bone **M Ward** *Network Archaeology*

Only eleven contexts contained any animal bone. Of these, four contained bone items that are anatomically identifiable: cow molar fragments from (9744) and (9764); pig M3 from (9765) and a possible metacarpal from a sheep/goat/roe deer-sized animal from (10000). Only the pig tooth and fragments of cow teeth can be determined as to species. Importantly, this shows the poor preservation of this assemblage.

The unworn M3 from (9765) was also found with fragments of bone (possibly mandible) and teeth that may have originated from the same individual. Interestingly, these bone fragments do not appear to have been exposed to heat, although they are still very poorly preserved.

The frequency of the bone was greatest from Structure 5, with 5.8g from the gully (9744), (8764) and (9842) and 9.7g from its hearth (9863). Structures 1 and 3 had lesser amounts, but these come from only a single context each, (10000) and (765) respectively. A comparatively large amount of bone was retrieved from ditch (10024) outside Structure 1.

The taphonomic signatures of this assemblage suggest the bone had endured both burning and the effects of the burial environment. The acidic soil is probably responsible for the poorly preserved unburnt bone from (9765) and has contributed to the poor state of the burnt material.

The faunal remains presented here are too few and too fragmented to comment on husbandry. It is unwise to suggest any agricultural or economic practices other than the presence of the domestic animals noted above.

Plant remains **W J Carruthers**

Methods

Forty-five soil samples, totalling 420 litres, were processed under the supervision of the author, using standard methods of floatation. A sieve of mesh 250 microns was used to retain the flots and the residues were sieved on a 1mm mesh. The average sample size was *c* 10 litres.

Sample processing proved to be difficult for two reasons. In some cases it was necessary to pre-soak the samples in hot water containing hydrogen peroxide in order to disaggregate the clayey soils. The second difficulty was that charred plant remains were often impregnated with silt and were reluctant to float. This is discussed in more detail in the report on the charred plant remains from the Birch Heath Romano-British settlement (Carruthers, *this volume*). Despite the problems, the analysis of two residues and scanning of several others led to the conclusion that the scarcity of plant remains was genuine and that very few fragments were likely to have been lost in the residues.

No waterlogged plant remains were preserved and any uncharred fruits and seeds present were assumed to be modern contaminants. Very few artefacts were recovered from the samples. The acidity of the soil meant that no molluscs were preserved and the only bone recovered was a few burnt fragments. Charcoal was frequent in only about six samples out of forty-five.

Results

Table II.2 presents summarised data from the assessment and full analysis, and details of one sample from Field 2/28. Most of the samples that produced a few charred remains came from ditch fills and pits associated with Structure 5. Sample 20032 (context (9863), fill of firepit (9860)) was the only sample out of the five that was fully sorted to produce more than five charred plant remains.

Nomenclature and most of the habitat information are taken from Stace (1991).

Discussion

The samples from the site produced remarkably few charred plant remains, and in many cases the fruits and seeds were fragmented and eroded. Out of forty-five samples, only sixteen produced any charred plant macrofossils at all (besides charcoal), and in most of these sixteen samples the remains consisted of one or two poorly preserved cereal grains or weed seeds. Only one sample produced more than five charred fragments, 20032, from the fill (9863) of the fire pit in Structure 5. This feature also produced the largest quantity of charcoal (*see below*, Gale, charcoal report).

Of the eleven samples from Structure 5, eight produced charred plant remains, making it the most productive area of the site (NB the total number of fragments recovered was still extremely low). These consisted of a few poorly preserved cereals, including a little bread-type wheat (*Triticum aestivum*-type), emmer/spelt (*T dicoccum/spelta*) and a little hulled barley (*Hordeum* sp). Chaff fragments consisted of emmer/spelt glume bases and spikelet forks. A few weed seeds and a fragment of hazelnut shell (*Corylus avellana*) were also recovered. Some of the weed seeds may have been growing as arable weeds (eg chess (*Bromus* sect *Bromus*)), but others could have been derived from other types of burnt waste such as hay, or from vegetation burnt in situ.

Considering the small size of the assemblage, it is surprising how many grassland remains were present, including plants of wet grassland/marsh (spike-rush (*Eleocharis* subg *Palustris*)) and plants of acidic grassland or heath (sheep's sorrel, (*Rumex acetosella*)).

Table II.2 Brook House Farm: summary of charred plant remains

	Sample 20032 Context (9863)	*No of remains from all 45 samples*	*Total no of samples containing this taxon*
Taxa			
Cereals			
Triticum aestivum-type (bread-type free-threshing wheat grain)	1	1 (3)	1 (1)
Cf Triticum aestivum-type (*cf* bread-type free-threshing wheat grain fragments)	3	3	1
Triticum dicoccum/spelta (emmer/spelt wheat grain)	8	9	2
Triticum sp (wheat grain)	4	6	2
Hordeum sp (hulled barley grain)		2	1
Avena/Bromus sp (oat/chess grain)	1	2	2
Indeterminate cereal fragments	16	19	3
Chaff			
Cf Triticum spelta L (*cf* spelt glume base)	2	2	1
Triticum cf dicoccum (*cf* emmer glume base)	2	2	1
Triticum cf dicoccum (*cf* emmer spikelet fork)	1	1	1
Triticum dicoccum/spelta (emmer/ spelt glume base)	8	10	2
Triticum dicoccum /spelta (emmer/spelt spikelet fork)	6	6	1
Avena sp (oat awn frag)	+	+	1
Weeds			
Ranunculus repens/acris/bulbosus (buttercup embryo) DG		3	3
Corylus avellana L (hazel nut shell frag) HSW		1	1
Persicaria maculosa/lapathifolia (redshank/pale persicaria achene) CD	3	3	1
cf Fallopia convolvulus (*cf* black bindweed embryo) CD	1	4	3
Rumex acetosella (sheep's sorrel achene) CDGa		1	1
cf Brassica/Sinap's sp (charlock, mustard etc seed) CD	1	1	1
Vicia/Lathyrus sp (small seeded weed vetch/tare) CDG		2	2
Galeopsis tetrahit (common hemp nettle nutlet)		1	1
Cirsium/Carduus sp (thistle achene) CDG		1	1
Eleocharis subg *Palustris* (spike-rush nutlet) GdM	1	3	2
Bromus sect *Bromus* (chess caryopsis) ADG		2	2
Poaceae (small seeded grass caryopsis) CDG	1	1	1
Indeterminate tubers		3	2
Total	59	89 (3)	45 samples
Sample size (litres)	15	420.65	
Fragments per litre	3.9	0.2	

Key: ( ) = radiocarbon dated as medieval

Habitat preferences : A = arable; C = cultivated; D = disturbed/waste; E = heath; G = grassland;

H = hedgerow; M = marsh/bog; R = rivers/ditches/ponds; S = scrub; W = woods; Y = waysides/hedgerows

Soil preferences: a = acidic soils; c = calcareous soils; n = nutrient-rich soils; o = open ground; d = damp soils

Several buttercup embryos (*Ranunculus* sp) were recovered from gully samples (Structures 4 and 5). The Birch Heath Romano-British settlement samples also produced evidence of burnt grassland vegetation, but contained more tubers and several grass stem fragments (culms, culm nodes and culm bases), suggesting that turves had been burnt *in situ*. In the case of the latter site, the grassland vegetation had probably been charred when the structure was burnt to the ground. On the Brook House Farm site, damp grassland vegetation represented in the charred assemblages may have been growing in and around the gullies, or the remains could have come from burnt waste hay deposited in them. The charcoal analysis also provided evidence of the local low-lying damp soils, as alder was relatively frequent, despite the fact that it is a poor firewood (Gale, *this volume*). Acidic, slow-draining soils would also have been much more suitable for the production of hay and for grazing than for the cultivation of cereal crops, which may explain why charred cereal remains were so infrequent in the samples from the site as a whole.

The other four buildings sampled in Field 2/28 produced only a few emmer/spelt wheat grains (Structures 2 and 3) and two possible barley grains (Structure 6). The building in Field 2/29 was even less productive, with only one out of eleven samples producing any charred remains at all (a black bindweed (*Fallopia convolvulus*) testa fragment and oat/chess (*Avena/Bromus* sp) fragment). The flots from this plot were very small, indicating that very little burnt material of any sort had been deposited in the area.

One of the notable features of the Birch Heath Romano-British settlement samples was the relatively high occurrence of bread-type wheat grains in the small assemblage. It is difficult to gauge the importance of any of the cereals from the even smaller assemblage recovered from Brook House Farm. Emmer, spelt and hulled barley are all frequently recovered from Iron Age sites, and small quantities of bread-type wheat are sometimes present. It should be noted that three of the four bread-type wheat grains recovered from the Brook House Farm samples were radiocarbon dated to the medieval period (128–1410 cal AD), so they appear to be intrusive. Comments had been made in the assessment that these grains appeared to be in a much better state of preservation than the other remains. Three other dates for the emmer/spelt and hulled barley grains (samples 20000, 20023 and 20032) were Late Bronze Age to Late Iron Age.

Conclusions and comparisons with other sites

Charred plant assemblages from archaeological sites in Britain primarily consist of cereal-processing waste. The main components of this are cereal grains, chaff fragments and the seeds of weeds growing with the crops. This is because cereal-processing produces a lot

of highly combustible waste that is useful as tinder and for fuel. It is also partly due to the fact that cereals need to be heated over fires and in ovens as part of their processing, and this often results in the accidental charring of grains and chaff.

Reasons for not recovering charred remains could be:
- related to the method of recovery
- related to sampling
- related to the method of preservation
- due to an actual absence on the site of activities that result in the production of charred plant remains

The recovery of the charred remains was problematical on this site. Admittedly, in many samples charcoal fragments were so impregnated with silt that some of them remained in the residue. Charcoal, however, is more likely to become impregnated than intact cereal grains, weed seeds and chaff fragments, because wood contains large open vessels that can easily fill up with fine silt. A couple of residues from the most productive samples were scanned, and it was confirmed that large numbers of seeds were not being lost due to a failure to float.

Sampling was widespread, with a variety of features being sampled and several samples being taken from different points along the gullies. It is possible that crop-processing had taken place in a different area to that excavated and sampled, but if activities had taken place on a large scale the burnt evidence should have been detected in at least some of the samples.

The state of preservation of the remains was not good, with most of the seeds being fragmented and eroded. This suggests that some post-depositional loss of charred remains may have occurred. Thus, preservation could to some extent be a limiting factor on this site. However, cereal remains and charcoal are fairly robust and it is unlikely that the many samples which produced almost no charred material at all had suffered a complete loss of this material because of post-depositional destruction. Cereal remains may not have become charred in the first place, but this is unlikely considering that hulled cereals were the principal crop in the Iron Age and that these required drying prior to de-husking.

This leaves the possibility that the cultivation of cereals was not a major component of the economy for the occupants of these enclosures. Small-scale cultivation of emmer/spelt, bread-type wheat and hulled barley was taking place, but because only limited quantities of cereals were being cultivated, they were probably more highly valued. Processing waste would also have been valued for fodder and was thus less likely to have been used as a fuel or tinder on a primarily pastoral site than on a site where cereals were being grown in large quantities. It is always dangerous to argue a point using negative evidence, but other evidence from the area, such as Brook House Farm, Halewood (Huntley & Daniell 2000) tends to support the absence of large-scale cereal cultivation. The farmstead at Brook House Farm, Halewood, appears to have been set in a glade within woodland, and there was very little pollen evidence for cereal cultivation.

Cowell (in Cowell & Philpott 2000), admitting that the evidence is slight in north-west England, suggests that land-use intensification may have started in the Early Iron Age in the

west of this region. Climatic deterioration would have had less of an effect in the coastal, lowland areas and river valleys, so cereal cultivation would have been possible. There is little evidence from this site to support such a suggestion. Today, cereals are grown on the drier slopes, but the seasonally waterlogged soils of the river valleys are primarily permanent grassland.

The charcoal **R Gale**

Forty-five environmental samples were collected from the site. and of those that yielded suitable quantities of charcoal for species identification, seventeen were selected for further study from features associated with Structures 1, 2, 3, 4, 5 and 6 (Fields 28 and 29) and from a stake hole in Field 27. One further sample collected from a ditch in Field 26 during the watching brief was also examined. The charcoal was very degraded, but given the general paucity of other environmental samples recovered from the site and a regional deficit of environmental data, every effort was made to obtain as much information as possible from the charcoal. Analysis was undertaken to evaluate the local woodland environment and to obtain evidence of the use of these resources to provision the settlement with fuel.

In common with the plant macrofossils, preservation of the charcoal was extremely poor and, as mentioned above, most fragments were heavily contaminated and infiltrated with silts. The charcoal was too fragmented to include intact radial segments of roundwood. Samples were prepared for examination using standard methods (Gale & Cutler 2000). The fragments were supported in washed sand and examined using a Nikon Labophot-2 microscope at magnifications up to x400. The anatomical structures were matched to prepared reference slides. When possible, the maturity of the wood was assessed (ie heartwood/ sapwood).

Results

The charcoal analysis is summarised in Table II.3 and discussed below. Classification follows that of *Flora Europaea* (Tutin *et al* 1964–80). Group names are given when anatomical differences between related genera are too slight to allow secure identification to genus level. These include members of the Pomoideae (*Crataegus*, *Malus, Pyrus* and *Sorbus*) and Salicaceae (*Salix* and *Populus*). Similarly, in degraded charcoal some unrelated taxa can be problematical, eg *Corylus* and *Alnus*. Where a genus is represented by a single species in the British flora, this is named as the most likely origin of the wood, given the provenance and period, but it should be noted that it is rarely possible to name individual species from wood features, and exotic species of trees and shrubs were introduced to Britain from an early period (Godwin 1956; Mitchell 1974) The anatomical structure of the charcoal was consistent with the following taxa or groups of taxa:

Cf Aquifoliaceae *Ilex aquifolium* L, holly
Betulaceae *Alnus glutinosa* (L) Gaertner, common alder
Corylaceae *Corylus avellana* L, hazel
Fagaceae *Quercus* spp, oak
Oleaceae *Fraxinus excelsior* L, ash

Rosaceae subfamilies:
Pomoideae which includes *Crataegus* spp, hawthorn; *Malus* sp apple;
Pyrus sp pear; *Sorbus* spp, rowan, service tree and whitebeam. These taxa are anatomically similar; one or more taxa may be represented in the charcoal.
Prunoideae which includes *P avium* (L) L, cherry; *P padus* L, bird cherry,
and *P spinosa* L, blackthorn. In this instance the broad heterocellular rays suggest *P spinosa* as the more likely.
Salicaceae Salix spp, willow, and *Populus* spp, poplar. In most respects these taxa are anatomically similar and, in this instance, it was not possible to separate the genera.

Field 29

Structure 1: Charcoal was examined from the fills of pit (10026) (sample 22010), sited more or less centrally within the roundhouse, and pit (5907) (sample 22009), which interrupted the ring gully. Charcoal was sparse in both contexts and included oak (*Quercus* sp), willow (*Salix* sp) or poplar (*Populus* sp) and alder (*Alnus glutinosa*) (*see* Table II.3). Similar species were identified from a gully fill, sample 22007 (context (1007)).

Field 28

Structure 2: This was situated on the western boundary of the plot and was only partially excavated. Sample 20005 was obtained from the fill of the roundhouse gully (9634) and, although very degraded, a fairly wide range of taxa was identified: alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), blackthorn (*P spinosa*), oak (*Quercus* sp) and the hawthorn/Sorbus group (Pomoideae). Sample 20008, context (9719), came from the fill of a ditch close to the roundhouse gully; the charcoal was infrequent and included oak (*Quercus* sp), alder (*Alnus glutinosa*) and blackthorn (*Prunus spinosa*).

Structure 3 was sited immediately south of 2. Although very little charcoal was available for examination, oak (*Quercus* sp) and alder (*Alnus glutinosa*) were recorded from context (9613), the fill of a linear feature, and possibly willow (*Salix* sp) or poplar (*Populus* sp) from sample 20016, from the fill of the ring gully, context (9783).

Structure 4: The outline of Structure 4 was less well defined and, here again, charcoal was exceedingly sparse. A single fragment from a member of the hawthorn/*Sorbus* group (Pomoideae) was identified from context (9656), the fill of the ring gully.

Structure 5: Three samples were examined from the fill of the ring gully. These included contexts (9842), the fill of the gully terminus; (9744), the upper fill; and (9871), the fill of the expanded gully on the western aspect. Taxa identified included oak (*Quercus* sp), alder (*Alnus glutinosa*), blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*) and the hawthorn/*Sorbus* group (Pomoideae) (*see* Table II.3). In addition, oak (*Quercus* sp) and alder (*Alnus glutinosa*) charcoal was identified from context (9874), a pit straddling the ring gully. The fill of the large pit (9860) (context (9861)), sited just inside the entrance, was probably the most productive feature in terms of both charcoal and charred plant macrofossils. Charcoal from the bulk soil sample 20032 included oak (*Quercus* sp), blackthorn (*Prunus spinosa*), the hawthorn/*Sorbus* group (Pomoideae), hazel (*Corylus avellana*), holly (*Ilex aquifolium*) and probably willow (*Salix* sp) or poplar (*Populus* sp); similar species were present in the hand-picked sample from context (9861).

Structure 6: A single sample, 20023, from the fill of the ring ditch, included oak (*Quercus* sp), hazel (*Corylus avellana*) and blackthorn (*Prunus spinosa*).

Fields 26 and 27

Charcoal, sample 19001, from a stake hole in plot 27 included small, degraded fragments of oak (*Quercus* sp) heartwood. The origin of this charcoal was not clear and although the absence of other species could suggest the burnt remains of a post, the quantity of charcoal present was insufficient to provide conclusive evidence of such. Charcoal was also examined from a feature in Plot 26, from which hazel (*Corylus avellana*), oak (Quercus sp) and the hawthorn/*Sorbus* group (Pomoideae) were identified.

Discussion

Charcoal was selected for examination from contexts associated with the roundhouses. Given the nature of the buildings, it was designated as domestic fuel debris. Apart from fragments of VCP there was no evidence to suggest industrial activity at the site — it seems unlikely, however, that salterns could have operated here. The range of taxa recorded included oak (*Quercus* sp), alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/*Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*), holly (*Ilex aquifolium*) and willow (*Salix* sp) or poplar (*Populus* sp). Alder and oak occurred in a larger number of contexts than other taxa and, by implication, were used more frequently. The charcoal was too comminuted to assess the dimensions of the firewood (ie narrow roundwood etc), but the abundance of oak heartwood implies that much of it probably came from wide roundwood, cordwood or trunkwood. Seasoned oak, especially the heartwood, provides high-energy, long-lasting firewood (Edlin 1949). In contrast, alder wood is slow to burn and produces comparatively little heat. The apparently frequent use of alder, rather than better quality firewood, eg ash, hazel, blackthorn, and holly, may reflect the low distribution and availability of the latter, whereas stands of alder or possibly alder carr were probably commonplace on the low-lying, damp soils around the site. Cereal-processing debris may have been used as tinder or kindling but such remains were sparse in the soil samples, suggesting either alternative uses (eg fodder) or a general lack of this type of material (Carruthers, *this volume*).

Environmental evidence

Until the medieval period Cheshire was one of the most densely wooded lowland counties in Britain (Marren 1992). On the more fertile but often poorly drained soils in the region, woodland typically included oak (*Quercus* sp), ash (*Fraxinus excelsior*), maple (*Acer campestre*), lime (*Tilia* sp), service tree (*Sorbus torminalis*) and hazel (*Corylus avellana*). Where soils were more acidic and impoverished the woodland flora was correspondingly reduced and oak predominated. Extensive land clearance in favour of agriculture during the medieval phase seriously depleted the woodland resources of the region, and Cheshire is now one of the least wooded counties. For example, woodland that once dominated extensive tracts of land between the Rivers Gowy and Weaver, forming the forests of Delamere and Mondrum, had turned to heathland by the early nineteenth century.

Environmental evidence in the archaeological record for this part of Cheshire is currently extremely poor. More data is required to establish a comprehensive knowledge of local environments and land-use for the prehistoric and pre-medieval periods, and sites such as

Table II.3 Brook House Farm: analysis of charcoal fragments

Key: h = heartwood; r = roundwood (diameter <20mm); s = sapwood
The number of fragments identified is indicated"

Sample	*Context*	*Description*	*Alnus*	*Alnus/ Corylus*	*Corylus*	*Fraxinus*	*Ilex*	Pomoideae	*Prunus*	*Quercus*	*Salicaceae*
Field 2/26											
7011	(2062)		-	3	1	-	-	2	-	3	-
Field 2/27											
19001	(9027)	Stakehole	-	-	-	-	-	-	-	17	-
Field 2/28											
20010	(9668)	Beam slot	2	-	-	-	-	-	-	4	-
Structure 2											
20005	(9634)	Fill of ditch	8	4	2	2	-	9	1	5	-
20008	(9719)	Fill of ditch	33	-	-	-	-	-	1	1h	-
Structure 3											
20001	(9613)	Linear feature fill	1	-	-	-	-	-	-	-	-
20016	(9783)	Fill of ring ditch	-	-	-	-	-	-	-	-	cf 1
Structure 4											
20007	9656	Fill of gully	-	-	-	-	-	1	-	-	-
Structure 5											
20012	(9744)	Ring gully fill	8	-	-	-	-	-	-	10h	-
20027	(9842)	Ring gully terminus	6	10	2	-	-	-	1	21h	-
20030	(9853)	Fill of ditch gully	3	-	-	-	-	1	-	19h	-
20033	(9874)	Pit fill	1	-	-	-	-	-	-	9h, 4r	-
20032	(9863)	Fill of pit (9860)	-	2	2	-	1	18	2	6h, 1s	cf. 1
-	(9861)	Fill of pit (9860)	-	-	-	-	cf 1	3	1	6h	-
Structure 6											
20023	(9785)	Fill of ring ditch	-	1	1	-	-	-	2	5h	-
Plot 2/29											
Structure 1											
10017	(22009)	Pit fill	-	-	-	-	-	-	-	1h	1
10027	(22010)	Pit fill	3	-	-	-	-	-	-	1h	-
10007	(22007)	Ditch fill	3	2	-	-	-	-	-	6h, 12s	-

this are potentially of great importance in determining these baselines. The absence of pollen and the paucity of plant macrofossils at Brook House Farm and at the Birch Heath site (Carruthers, *this volume*), emphasises the value of the charcoal to provide evidence of local woodland and the use of these resources.

As mentioned above, poor drainage would have kept the acidic soils wet for a large part of year, making them unsuitable for cereal crops. Wetland species such as alder (*Alnus glutinosa*) probably proliferated in these conditions, and its frequency in the Iron Age deposits confirms its ready availability at this time. It could be expected that willow (*Salix* sp) would also have been common, perhaps in association with alder, to form alder carr. The rare occurrence of willow (also a wetland species) in the charcoal deposits may be more indicative of its poor performance as firewood and its better use for other purposes, for example wattle-work and basketry, than its availability at the site.

Oak (*Quercus* sp), hazel (*Corylus avellana*) and ash (*Fraxinus excelsior*) tolerate damp, although not permanently waterlogged, soils and probably clothed the slightly higher and dryer sides of the valley. In common with hazel, holly (*Ilex aquifolium*) probably grew both as understorey in dryer woodland and in shrubbier form in more open areas. Hawthorn and blackthorn are typically shrubby or scrubby and probably grew locally in woodland margins or cleared areas.

The charcoal was too comminuted to assess for evidence of coppicing, but since cereal-growing was unlikely to have taken significant areas of land into cultivation (Carruthers, *this volume*), extant woodland may have been sufficiently abundant to sustain the settlement without the need for organised management.

The range of taxa identified from charcoal at the late prehistoric settlement provides fair parity with the charcoal-rich deposits from the Romano-British and later site at Birch Heath (Gale, *this volume*). This site included debris from both domestic and iron-working fuels, and the preferential selection of oak (*Quercus* sp) for the latter was evident. In addition, slight differences in local soil conditions probably accounted for the emphasis on alder (*Alnus glutinosa*) at the Brook House Farm site and the suggestion of heathland at Birch Heath.

The high incidence of tree pollen in cores taken from the Iron Age enclosure at Brook House Farm, Halewood, suggested that the site was largely wooded, predominantly with oak (*Quercus* sp), hazel (*Corylus avellana*) and alder (*Alnus glutinosa*), and it seems likely that the enclosure was sited within a woodland glade (Huntley & Daniell 2000). The species identified from Brook House Farm, Bruen Stapleford, are comparable to those from Halewood, and it is possible that the two communities were similar in character.

Late Mesolithic and Late Neolithic/Early Bronze Age deposits at two sites in the valley at Ditton, north of the Halewood site, also provided palynological evidence of oak (*Quercus* sp), alder (*Alnus glutinosa*), hazel (*Corylus avellana*) but also included elm (*Ulmus* sp) and pine (*Pinus* sp) (Innes 2000). These deposits appeared to predate any significant human impact on the landscape.

Conclusion

Charcoal deposits from contexts associated with six roundhouses at the Brook House Farm settlement almost certainly derived from domestic hearth debris. The analysis of the charcoal demonstrated that firewood consisted predominantly of oak (*Quercus* sp) and alder (*Alnus glutinosa*), although numerous other species were also recorded including hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), the hawthorn/*Sorbus* group (Pomoideae), blackthorn (*Prunus spinosa*), holly (*Ilex aquifolium*) and willow (*Salix* sp) or poplar (*Populus* sp). Given the location of the settlement on low-lying ground prone to waterlogging, the frequency of oak and, particularly, alder in these deposits probably reflects their high distribution in the environment. Evidence from this and other local sites suggests that deciduous oak woodland was prevalent in the region at this time. Consequently woodland management may have been minimal and perhaps used mainly for artefactual purposes, eg hurdle-making, basketry and fish traps. The fuel deposits were too degraded (because of poor preservation) to enable an assessment of the use of coppice stems.

Radiocarbon determinations

The large number of radiocarbon dates from Brook House Farm will provide a useful benchmark for other sites in the region in the future. Dating programmes must recognise the problems of the calibration curve between *c* 800–400 cal BC, but we should not exaggerate them. Using a large enough number of AMS dates and multiple samples can overcome many of the difficulties. In the North West and many other regions, using radiocarbon dating simply to differentiate earlier Iron Age sites or occupation phases from those of later Iron Age (or late Bronze Age) date is a major advance.

There was one radiocarbon date that could be considered to be an outlier for the settlement: the cremated bone sample from the ditch outside Structure 1, 0-AD 240 (AA-49647). The bone (the structural carbonate, not the organic fraction) was used for radiocarbon dating in the absence of any suitable charcoal. This single date might suggest that the settlement continued into the Roman period. However, it must be reiterated that there was no evidence of any other Roman material on the site.

After examining the radiocarbon dates, Alex Bayliss of English Heritage has suggested that although there are insufficient measurements to be certain of a Bronze Age settlement at Brook House Farm, it is highly likely that there was activity on the site between *c* 1000 cal BC and *c* 800 cal BC. Bayliss also suggests that as there were no radiocarbon dates spanning the Early Iron Age calibration curve plateau, the absence of probability in the period 800–400 cal BC makes it unlikely that the settlement was occupied throughout the first millennium BC. It therefore seems likely, on the basis of the radiocarbon dates, that the settlement was in use from *c* 400 cal BC–*c* 100 cal AD in the Iron Age. This date span ignores the outlying date, and statistically would suggest that the settlement did not continue beyond 1 cal BC.

Other sites nearby which have also provided early first millennium radiocarbon dates include Maiden Castle, Bickerton (middle of the fifth century BC) and Beeston Castle, (Ellis ed 1993, 85–6).

Table II.4 Brook House Farm: radiocarbon determinations

Field	*Context*	*No of cut and description*	*Sample no*	*Material*	*Radiocarbon age*	*Calibrated date range 95% confidence*	*Lab ref*
2/27	(9032)	(9000) Ditch terminus	19003	Bread wheat grain	645 ±50	AD1280—1410	AA-49263 (GU-9972)
2/28	(9609)	(9608) Pit inside Structure 3	20000	Seed	2295 ±60	520BC—170BC	AA-49264 (GU-9973)
2/28	(9863)	(9860) Firepit inside Structure 5	20032	Emmer/spelt wheat grain	2740 ±55	1000BC—800BC	AA-49265 (GU-9974)
2/28	(9634)	(9633) Outer gully Structure 2	20005	Emmer/spelt wheat grain	30,700 ±700		AA-49266 (GU-9975)
2/28	(9785)	(9784) Outer ring gully Structure 6	20023	Barley grain	2345 ±50	800BC—350BC	AA-49267 (GU-9976)
2/29	(10017)	(10016) Pit near Structure 1	22009	*Salicaceae* charcoal	2765 ±55	1020BC—800BC	AA-49268 (GU-9977)
2/28	(9871)	(9643) Outer ring gully Structure5	20030	*Alnus* charcoal	2240 ±55	400BC—170BC	AA-49269 (GU-9978)
2/28	(9842)	(9643) Outer ring gully terminus Structure 5	20027	*Corylus* charcoal	2035 ±35	120BC— 60AD	AA-49270 (GU-9979)
2/28	(9783)	(9618) Inner ring gully Structure 3	20016	*Salicaceae* charcoal	2665 ±45	920BC—780-+BC	AA-49271 (GU-9980)
2/28	(9719)	(9700) Ring gully Structure 2	20008	*Alnus* charcoal	2080 ±40	200BC—AD20	AA-49272 (GU-9981)
2/28	(9744)	(9643) Ring gully Structure 5 near pottery	20012	*Alnus* charcoal	2970 ±55	1320BC—1010BC	AA-49273 (GU-9982)
2/28	(9656)	(9655) Ring gully Structure 4	20007	Pomoideae charcoal	2035 ±40	170BC—AD60	AA-49274 (GU-9983)
2/28	(9613)	(9612) Pit outside Structure 3	20001	*Alnus* charcoal	2145 ±40	26BC—50BC	AA-49275 (GU-9984)
2/26	(2062)	(2033) Large boundary ditch	7011	*Corylus* charcoal	2775 ±70	1130—800BC	AA-49276 (GU-9985)
2/29	(10007)	(10000) Ring gully Structure 1	22007	*Quercus* charcoal	2195 ±40	390BC—160BC	AA-49277 (GU-9986)
2/29	(10027)	(10026) Pit in centre Structure 1	22010	*Alnus* charcoal	2185 ±55	390BC—90BC	AA-49278 (GU-9987)
2/28	(9764)	Pottery from Structure 5 ring gully	N/A	Pottery: food residue	2775 ±55	1050BC—800BC	AA-49298 (GU-10020)
2/29	(10024)	(10018) gully outside Structure 1	22015	Burnt bone	1915 ±50	0—AD240	AA-49647 (GU-10021
2/28	(9634)	(633) Outer gully Structure 2	20005	Emmer/spelt wheat grain	37,260 ±920		AA-51420 (GU-10391)
2/28	(9634)	(9633) Outer gully Structure 2	20005	*Alnus* charcoal	2185 ±55	390BC—90BC	AA-51421 (GU-10392)

Beside the possible outlying radiocarbon date from Structure 1, two other radiocarbon dates fall outside of the projected lifespan of the settlement: these are the dates from the grain from Structure 2. The grains gave dates of 37,260±920 BP (AA-51420) and 30,700±920 BP (AA-49266). It is difficult to provide an explanation for these dates, particularly as a further date of 390–90 cal BC (2185±55 BP AA-51421) was obtained using *Alnus* charcoal taken from the same sample as the grain.

Discussion

Interpretation of late prehistoric sites and particularly Iron Age settlement in northern England has in the past tended to use inappropriate models and data derived from studies of sites in southern Britain. This bias has unfortunately clouded the picture of the late prehistoric period in the North West: because the region does not fit in with the southern models it has been considered to be an economic backwater: aceramic, with a small population of technically backward pastoralists (Cunliffe 1991).

However, new studies and examination of recent excavations in the region, combined with the knowledge gained from this excavation, confirm that the southern model is not relevant and that the region should be viewed as having its own distinctive identity which is anything but peripheral to the social and economic developments taking place during the first millennium BC.

The results of the excavation at Brook House Farm at long last bring some perspective to the late prehistoric period in the region and allow some tentative views on settlement and social and economic developments to be put forward for these periods in the North West.

Late Bronze Age settlement in the North West

In the North West, as in other parts of Britain, the surviving remains of human activity and settlements which can be clearly assigned to the Late Bronze Age, present a great contrast to those of the Early Bronze Age. The foundation of our information for this period in the region comes from palaeoenviromental sources, especially the evidence from peat bogs for climatic changes. The other source of information is stray finds of metalwork, but these are difficult to place into a settlement context.

During the Late Bronze Age there seems to have been some sort of social upheaval, possibly due to climatic deterioration, resulting in the need to construct defended enclosures. This led to probably the most important development of the period, aside from the typological changes in the metalwork — the emergence of the hillfort. Early examples of large defended enclosures have been identified at Dinorben, Flintshire (Gardner & Savory 1964), Moel y Gaer, Flintshire (Guilbert 1976), The Breiddin, Welshpool (Musson 1991) and Old Oswestry (Varley 1948) with dates starting around 1000BC. Societies also began investing heavily in weapons as strong socio-political control was established with the construction of these sites. The Breiddin and Moel y Gaer both give early signs of the emerging social and economic order through the settlement patterns within their interiors. However, it is probable that occupation at these two sites did not last very long.

In Cheshire, hillforts which may also have served as tribal centres can be found at Beeston Castle, Eddisbury, Kelsborrow and Maiden Castle, Bickerton, implying that the focus of Late Bronze Age–Early Iron Age society lay on the Mid-Cheshire ridge between the Rivers Dee and Weaver, an area of high quality grassland perhaps worth defending. The elevated position of these sites suggests an element of control over the population and the landscape, especially the trade routes (of salt?) that must have passed through the area, and they may have been surrounded by socio-economic territories with defined boundaries. A number of these sites have been the subject of excavations, the most recent, and best published, at Beeston Castle (Ellis ed 1993).

Very little other settlement activity from this period is currently known in the region, at Beeston Castle, Brook House Farm (Halewood), Manchester Airport and Irby. At Beeston Castle there is a possible timber-revetted bank dating to 1160–920 cal BC (Ellis ed 1993, 22). At Brook House Farm, Halewood, there is a hint of possible Late Bronze Age activity with a carved wooden plinth producing a radiocarbon date of 1000–800 cal BC (Cowell & Philpott 2000, 49). There are also a couple of pits that were tentatively associated with a structure dated to 910–760 cal BC at Oversley Farm, Manchester Airport (Garner 2001, 53). Similar pottery to Brook House Farm has been found at Irby, Wirral (pers comm Rob Philpott), but the Irby assemblage is slightly earlier, *c* 1400–1100BC. Brook House Farm, Bruen Stapleford adds another site to this small collection of Late Bronze Age settlements in the region and provides some useful parallels for pottery and structures.

Iron Age settlement in the North West

In many areas of Britain we are faced with a profusion of sites and site types which have been assigned to the Iron Age on the basis of limited and potentially ill-founded parallels with sites in other regions. The main reasons for this uncertainty are the difficulty in close dating, due to the plateau in the carbon-14 calibration curve and the lack of pottery and metalwork sequences outside southern Britain. Consequently, social and economic developments in Britain in the Early Iron Age are much less understood than those after 300BC This is particulary true of the North West.

Iron Age settlement in the region is still known primarily from the hillforts and enclosures of the Mid-Cheshire ridge and western fringes of the Pennines. However, research on the late prehistoric and Roman periods in the North-West region has been revolutionised through persistent aerial reconnaissance and photography (eg Philpott 1994, Collens 1994 and 1998). This aerial photography, combined with archaeological investigation along large linear developments like the present one and the A5300 (Cowell & Philpott 2000), has shown that other remains of the prehistoric population survive to be located. Even so, since the extent of these rural settlements has become clearer, fieldwork has been struggling to catch up and supply dating evidence and indications of their economic character.

In the past, because of the apparent paucity of archaeological evidence, it has been assumed that the region had a thinly distributed population and was largely aceramic with a poorly developed economy (Higham 1993, 29). However, Matthews (1998) argued against this interpretation as there is clear evidence of trade or exchange between the region and other areas, eg in salt and VCP.

The Late Iron Age

Towards the end of the Iron Age the population may have outstripped the productive capacity of the surrounding land, leading to increased competition within social groups. The end result may have been the fragmentation of these groups and the replacement and total abandonment of the hillforts in favour of the independent, enclosed farmsteads and settlements that have been found in the region.

An alternative model of change in this period might be a change in the structure of the elite, which in turn led to a break up of the populations in the hillforts and to the establishment of the independent farmsteads. The settlement shift in the Late Iron Age could also be associated with a decrease in small-scale warfare and possibly a move by family units away from the control of the larger settlements. Brook House Farm shows elements of this Late Iron Age settlement expansion with increased activity around three buildings.

The excavations at Great Woolden Hall, Irby, Lathom and the A5300 settlements have begun to reveal that a small number of focal sites established during the later part Iron Age continued in occupation into the Roman period.

Settlement location

Most of the factors that influenced the location of settlements were based around natural features. The priorities of the early villagers were simple; food, water and defence. Without those, all of the other benefits of a potential site were meaningless.

There were a number of these positional aspects noticeable about the Brook House Farm site: firstly OS maps indicate that Brook House Farm is situated on a circular plateau of high ground (41m OD) — rather unusual for a river plain area — with currently (as it is no longer densely wooded) a good view of the surrounding area; secondly, three sides of the settlement sloped away, providing drainage and some degree of natural defence; thirdly, a water source, a tributary for the river Gowy, was located to one side of the settlement. It is therefore possible that the site may have been deliberately sited on the one piece of high ground on the route between the hillforts of Kelsborrow and Beeston. There is also a river ford nearby at Ford Farm. What is not clear, and could not be made clear by the excavation within the pipeline easement, was whether the settlement was enclosed. The possibility of partial enclosure of the settlement does exist as a large ditch (2062), 2.5m wide, running east–west was recorded in section in Field 26 just beyond the boundary of Field 27. It was not visible during the topsoil stripping as it was covered by a large amount of clay overburden.

Post-excavation examination of the collection of aerial photographs held by Cheshire County Council Sites and Monuments Record revealed an oblique 1935 RAF photograph (no 2192) that appears to show the ditch (2062) curving towards the dew pond and the farm. Further investigation with geophysical equipment may identify if there is an enclosure. The aerial photograph also appears to show a circular ditched enclosure about 150m east of Brook House Farm, which should be investigated as well as this may be another link to the settlement.

Settlement layout

Generally, comparatively little can still be said regarding the internal arrangement of settlements apart from hillforts during this period in Britain. This is particularly true of the North West, as there are no suitable settlement sites available for comparison. We can assume that, apart from the hillforts, settlements in the region at the beginning of the first millennium were probably dispersed, lightly defended by simple banks and ditches and undefined. Enclosed settlements probably only emerged toward the end of the first millennium BC, as seen at Irby, Wirral, Legh Oaks, Cheshire and Brook House Farm, Halewood.

Because of this shortage of comparable sites, it is difficult to know if the Brook House Farm settlement is typical, particularly as the full extent of the site is unknown. The concentration of structures in the excavated area suggests that this was only part of a much larger settlement; further work on the surrounding area would help to clarify both the overall extent and precise nature of activity and would establish if the settlement was enclosed. The site also has so few, short-lived, buildings that it does not allow for many chronological comparisons to made.

The structures: construction and function

Some variety in building types occurs amongst the houses in the settlement, with the double-ring roundhouses, Structures 3 and 6, being the most visible. The diameters of the roundhouses ranged internally from 8m to 19m, with Structure 5 the smallest and Structure 3 the largest.

Large roundhouses like Structure 3 appear to be a feature of several regions of Britain at the time of the Bronze Age–Iron Age transition, when hillforts and other large enclosures were first constructed. It has been suggested that the differences in size is an indication of their status, with the largest possibly representing the dwelling of the chief.

The importance of Structure 3 may also have been reflected by its almost monumental post pads. These are unique in the North West and were much larger than were functionally necessary. It is also possible that the door posts were made out stone instead of wood and given increased height to impress visitors; when the building fell into disrepair, presumably these would have been taken away and reused. It is possible that when the remains of the other double-ring roundhouse, Structure 6, are excavated this may prove to have had a similar entrance, but as it is much smaller building this is unlikely.

All of the roofs were probably thatched with straw, although turf, reeds, heather and gorse could equally have been used. The environmental evidence indicates that heather and reeds were being utilised around the buildings, but they could have been from floor coverings.

None of the buildings produced any evidence of rings of posts, so it is assumed that the gullies — except those interpreted as eavesdrips and the shallow gully of Structure 2 — served as wall foundation trenches. The walls may have been made from round posts, vertical planking or split logs. Alternatively, they may have been built from the local clay. A number of recent excavations in North Wales have located roundhouses that were

constructed using clay for their walls rather than stone or wattle and daub. These include Bryn Eryr, Anglesey, (Longley 1998), Bush Farm, Caernarfon, (Longley *et al* 1998) and Cefn Cwmwd, Anglesey (*pers comm* Andrew Davidson). It would have been quite easy to tie the roof supports to clay walls in the same way as wattle walls, as demonstrated on the reconstructed wattle-walled roundhouses at Castell Henllys. After the buildings went out of use, the clay collapsed and blended back into the natural clay.

None of the buildings produced any evidence for internal roof supports, although it is possible that they may have been set on stone post pads which were subsequently removed through ploughing or topsoil removal. It is more likely that were no internal supports and that the walls were strong enough to withstand the roof pressures. This has been adequately demonstrated in reconstruction of roundhouses elsewhere in the country, eg at Castell Henllys, Pembrokeshire.

There is also the possibility that, as some of the roundhouses did not contain hearths, they may have performed a non-domestic function and may even have been used for storage, although there is no positive evidence for this. It is, of course, possible that hearths could have been removed through farming methods.

Comparable structures on other north-west Iron Age sites

Structure 2 has some parallels with structures at Lousher's Lane, Wilderspool, Brunt Boggart and Court Farm, Merseyside, but the former has its origins in the Late Iron Age and the other structures cited are all Roman (*see* Ill II.10).

Double-ring roundhouses from the Late Bronze Age–Early Iron Age occur at Irby (*pers comm* Dr Rob Philpott). Other similar examples occur at several sites in the East Midlands, specifically Willow Farm, Castle Donnington, Leicestershire, at Ridlington in Rutland (Beamish 1997), and at Swarkestone Lowes, Derbyshire (Guilbert & Elliott 1999). There is also an example of a Middle Iron Age double-ring structure beneath the Roman fort at South Shields, Tyne and Wear (Hodgson *et al* 2001). Aside from Irby structures, there are no other examples in the North West.

There are a number of circular arrangements of post holes in the outer ward of Beeston Castle which are thought to be the remains of a number of roundhouses dating from the Late Bronze Age through to the Iron Age, but unfortunately they cannot all be closely dated (Ellis ed 1993, 35–9).

Function and economy

Most late prehistoric settlements were farmsteads, and it would reasonable to assume that Brook House Farm was one also.

It is likely that, regardless of size, settlements in most areas of England operated a mixed farming economy. The balance, of course, varied with the local ecology, differing emphases being placed on crop production and pastoral husbandry. There appears to have been an increasing reliance on cereals in many areas, with spelt replacing emmer over much of eastern and southern Britain (Van der Veen 1992). The exact nature of regional

farming regimes is often poorly known, but complex patterns of local interdependence and transhumance are to be expected, with surplus products being stored and traded. However, storage pits seem to be restricted to the drier and warmer south of England, where the greatest amount of grain was grown.

Cultivated crops and other plants provided not only staple foods, but also fodder, fuel for the ever-essential fires and ovens, and bedding and roofing material (heather, reeds, rushes, straw, peat, turf). Managed woodland provided resources for construction, fencing, wattling and hurdling, wheels and carts.

Evidence for agricultural activities and food processing in and around the settlement at Brook House Farm was sparse, with the highly acidic nature of the soil leaving only a small assemblage of burnt bone and carbonised plant remains. Nevertheless, the emmer/spelt wheat grains at least provide evidence that cereal cultivation was taking place somewhere in the vicinity. The small quantity of the grain and lack of associated waste suggests that processing did not take place in the excavated area, and the grain could have been imported. No querns were found for milling and only one stone pounder was recovered.

The agricultural landscape around the settlement eludes us, with a lack of cultivation ridges and associated Celtic field patterns; this is probably the result of their destruction through intensive agriculture. However, there are supposed to be the remnants of Celtic fields at Kelsall, close to Kelsborrow hillfort (Bu'lock 1954), and there may be an association between them, so it is possible that these existed at Brook House Farm as well.

The burnt stone found around a few of the buildings and within the fills of their ring gully may have come from cooking activities. It is interesting to note that the burnt stone was mainly concentrated around the three Bronze Age buildings that provided the earliest radiocarbon dates, Structures 3, 5 (phase 1) and 6. There were, however, small amounts around the other buildings. Barber (1990) makes the point that burnt stone in the Bronze Age, in the form of burnt mounds, is found away from the settlements, but that in the Iron Age similar material is found within settlements. Although it is generally assumed that these spreads of burnt stone are the results of cooking, other interpretations have been suggested: saunas or baths (Barfield & Hodder 1987), ritual functions (Bradley 1978, 83) and even some form of industrial activity, like fulling and textile production (Jeffery 1991).

The pottery

The pottery from Brook House Farm can be simply divided into two categories: Middle/Late Bronze Age vessels and VCP. Later prehistoric pottery has been found only rarely in the region, with Cheshire VCP the main fabric reported. It is possible that wooden vessels were much more prevalent than ceramic in the Iron Age: there are five examples from the Breiddin hillfort (Musson 1991) and also one from Cors y Gedol (Griffiths 1958), a probable Iron Age hut group in Caernarfonshire.

With few local parallels, it is difficult to characterise the limited range of the Bronze Age pottery. The vessel forms are simple, probably bucket-shaped jars or urns, with few distinctive traits and no apparent decoration. There are no strictly comparable assemblages,

but parallels may be drawn with material from Beeston Castle (Ellis ed 1993), the Breiddin (Musson 1991), Mam Tor (Barrett 1979), Rhuddlan (Berridge 1994) and possibly Irby (*pers comm* Rob Philpott), although the Irby assemblage is slightly earlier, *c* 1400–1100BC. An assemblage of prehistoric pottery has also been recovered recently from the Manchester Airport site, but this contains mostly second millennium material (Garner 2001).

Salt

Production of salt is thought to start in the Late Bronze Age, intensify through the Iron Age and continue through to the Roman period. Salt was one of the most important commodities of the ancient world; its mining and trading certainly enhanced the economy of the Austrian settlement of Halstatt (Wells 1981). Production may have been seasonal, possibly linked with seasonal animal grazing, and was certainly centered away from the main domestic bases.

Archaeological evidence of Iron Age salt-making in Britain has been largely based on the discovery of remnants of the coarse pottery salt containers (VCP) referred to above, together with supporting pillars for boiling pans and vessels recognised as being connected with salt-making. Sea water or brine from inland salt springs was evaporated in these pans vessels over fires to give a residual lump of salt. Evidence has been found of Late Iron Age salt production in many areas of Britain, including Teesside, Tyneside, Worcestershire, East Anglia and Cheshire. Of these, only Cheshire still remains as a major centre for edible white salt production, although rock salt is still mined in Teeside and Northern Ireland.

The recovery of ceramic containers used to dry and transport salt indicates that it was an important mineral for human consumption, for the preservation of foodstuffs and for other processes. A by-product of meat production would be skins, and salt would again be required to dry these as part of the process of leather-making. Salt would also have been used to make cheese and thus preserve surplus milk. It may also have been used for ritual purposes during the later prehistoric period as it could have been recognised as a special phenomenon — invisible as part of brine found at special locations in the landscape through the action of springs from within the earth; revealed or created through heating by fire; and bearing the property of preservation by stopping or delaying natural decay.

It is also possible that the occupants of Brook House Farm were directly involved in the salt trade, either as workers or even controlling the trade and distribution. Three of the four inland sources of brine springs are located nearby at Northwich, Middlewich and Nantwich.

Occupation and abandonment of the settlement

Using the radiocarbon dates as a guide, it appears that the settlement was probably first occupied towards the end of the Middle Bronze Age. Occupation continued through the Late Bronze Age and perhaps into the Early Iron Age. The next definite period of occupation was from the Middle Iron Age to the end of the first millennium.

It is not certain when the site was abandoned, only that distinctively Roman pottery of the first century AD is absent. The radiocarbon dates from the settlement did give one possible Roman date of 0–AD240 (AA-49647). It is, of course, possible that there was a short period

of continued occupation in the first few decades of the first century AD, but without clear ceramic evidence occupation into the Roman period should not be considered. The factors behind the abandonment are uncertain. It is tempting to speculate that the settlement was abandoned during the Roman advance in to the area in the late 40s AD, with the more northerly Cornovii possibly linking up with the anti-Roman Deceangli, aggressive Ordovices and dissident Brigantes to fight the invaders, but this is, of course, pure speculation.

A collection of Roman pottery and other material, but no structures, was found 500m to the north of the Brook House Farm settlement during the construction of the pipeline. The date range of the assemblage falls within the first and second centuries, the exception being a mortarium sherd, which is a third–fourth-century form. It is not thought that there is any direct relationship with the settlement, but its presence and close proximity should be noted.

Conclusions

As has already been stated, the North West lacks comparable sites of the late prehistoric period. However, as excavations reveal more material, our knowledge of this period should improve and we should be able to construct a satisfactory chronological framework.

The Brook House Farm site is the first rural settlement with some Early Iron Age activity to be found in the region away from the hillforts of the Cheshire ridge; Secondly, it has provided some evidence of a mixed farming settlement, with both animal remains and agricultural activity. Thirdly, the location of the settlement may allow other sites to be identified by prospecting in similar places in the region. Finally, the settlement has revealed details of the range of structures we can expect to find on sites that span the Late Bronze Age and the Iron Age.

Clearly, further work is needed at Brook House Farm to provide answers to specific questions that have now been raised by this excavation, and in particular to provide information to further the study of settlement morphology, but it is clear that the site makes a major contribution to our understanding of the cultural sequence of the first millennium BC in the region.

Acknowledgements

Philip Knipe of Transco, Project Manager for the Birch Heath to Mickle Trafford Gas Pipeline for all his support during the excavation;
Other Transco project staff for all their assistance and to Phillipa Reynolds from ERM, Manchester;
Mr G Bebbington, the landowner, for continued access on to the site and for his working knowledge of the area;
David Bonner, Network Archaeology for his constant support and advice on the text;
Dr A J Campbell for discussions on the archaeology of the surrounding area;
Wendy Carruthers for useful discussions over the palaeoenvironmental evidence and her sievers, Evelyn Anderson and Donna Isaac, for processing the samples so efficiently;
The staff of Chester Archaeology, particularly Gill Dunn, Peter Carrington and Keith Matthews;

Dr Jill Collens at the Cheshire County Council Site and Monuments Record
Andrew Dutton for the site illustrations;
Rowena Gale for her help with the charcoal analysis;
Dr Rob Philpott, National Museums and Galleries on Merseyside, for useful discussions on the late prehistoric Romano-British period in the North West;
Sue Stallibrass, English Heritage Scientific Adviser for the North-West Region
All of the staff who were involved in the excavation, particularly Mark Ward who was monitoring the pipeline and who first noticed the site during the watching brief.

Bibliography

Barber, J 1990 — Burnt mound material on settlement sites in Scotland. *In:* Buckley, V ed. Burnt offerings: international contributions to burnt mound archaeology. Dublin: Worldwell, 92–104

Barfield, L H & Hodder, M A 1987 — Burnt mounds as saunas, and the prehistory of bathing. *Antiquity* **61**, 370–9.

Barrett, J 1979 — The pottery: discussion. *In:* Coombs, D G & Thompson, F H. Excavation of the hillfort of Mam Tor, Derbyshire. *Derbyshire Archaeol J* **99**, 7–51

Beamish, M 1997 — Wing to Whatborough: excavations along the water pipeline. *Trans Leicestershire Archaeol Hist Soc* **71**, 99–101

Berridge, P 1994 — Between the Mesolithic and the Iron Age with a study of a Bronze Age pottery group in pit C46. *In:* Quinnell, H & Blockley, M R. Excavations at Rhuddlan, Clwyd 1969–73: mesolithic to medieval. York: Council for British Archaeology. (CBA Res Rep **95**), 115–31

Bradley, R 1978 — The prehistoric settlement of Britain. London: Routledge & K P

Britnell, W 1989 — The Collfryn hillslope enclosure, Llansantffraid Deuddwr, Powys: excavations 1980–1982. *Proc Prehist Soc* **55**, 89–134

Bu'lock, J D 1954 — Possible remains of Celtic fields at Kelsall, Cheshire. *Trans Lancashire Cheshire Antiq Soc* **64**, 24–6.

Carrington, P ed 1994 — From flints to flowerpots: current research in the Dee–Mersey region. Chester City Council. (Archaeol Serv Occas Pap **2**)

Collens, J 1994 — Recent discoveries from the air in Cheshire. *In:* Carrington ed, 19–25

Collens, J 1998 — Flying on the edge: aerial photography and settlement patterns in Cheshire and Merseyside. *In:* Nevell ed, 36–41

Cowell, R W 2002 — Romano-British and late prehistoric excavations at Duttons Farm, Lathom, West Lancashire: second interim report, 1999–2001. Liverpool: National Museums and Galleries on Merseyside

Cowell, R W & Philpott, R A 2000 — Prehistoric, Romano-British and medieval settlement in lowland north-west England: archaeological excavations along the A5300 road corridor in Merseyside. London: National Museums and Galleries on Merseyside

Cunliffe, B 1991 — Iron age communities in Britain: an account of England, Scotland and Wales from the seventh century BC until the Roman conquest. Ed 3. London: Routledge

Edlin, H L 1949 — Woodland crafts in Britain. London: Batsford

Ellis, P ed 1993 — Beeston Castle, Cheshire: a report on the excavations 1968–85 by Laurence Keen and Peter Hough. London: English Heritage. (Archaeol Rep **23**)

Elsdon, S 1991 — The pottery. *In:* Sharman, J & Clay, P. Leicester Lane, Enderby: an archaeological evaluation. *Trans Leicestershire Archaeol Hist Soc* **65**, 1–12

Elsdon, S 1992 — The Iron Age pottery. *In:* Clay, P. An Iron Age farmstead at Grove Farm, Enderby, Leicestershire. *Trans Leicestershire Archaeol Hist Soc* **66**, 83–91

Gale, R & Cutter, D 2000 — Plants in archaeology: identification manual of vegetative plant materials used in Europe and the southern Mediterranean to *c* 1500. Otley: Westbury and Royal Botanic Gardens, Kew

Gardner, W & Savory, H N 1964 — Dinorben: a hillfort occupied in early Iron Age and Roman times. Cardiff: National Museum of Wales

Garner, D 2001 — The Bronze Age of Manchester Airport runway 2. *In:* Brück, J ed. Bronze Age landscapes: tradition and transformation. Oxford: Oxbow Books, 41–56

Godwin, H 1956 — The history of the British flora: a factual basis for phytogeography. Cambridge U P

Griffiths, W E 1958 — The excavation of a Romano-British hut group at Cors y Gedol in Merionethshire. *Bull Board Celtic Stud* **18**, 119–29

Guilbert, G 1976 — Moel y Gaer, Rhosesmor 1972–3: an area excavation in the interior. *In:* Harding, D W ed. Hillforts: later prehistoric earthworks in Britain and Ireland. London: Academic Press, 303–17

Guilbert, G & Elliott, L 1999 — Post-ring roundhouse at Swarkestone Lowes. *Derbyshire Archaeol J* **119**, 154–75

Higham, N J 1993 — The origins of Cheshire. Manchester U P

Hinchliffe, J *et al* 1992 — Roman Warrington: excavations at Wilderspool 1966–9 and 1976. Manchester University. (Brigantia Monogr **2**)

Hodgson, N *et al* 2001 — An Iron Age settlement and remains of earlier prehistoric date beneath South Shields Roman fort, Tyne and Wear. *Archaeol J* **158**, 62–160

Huntley, J P & Daniell, J R G 2000 — Pollen assessment: inner enclosure ditch. *In:* Cowell & Philpott, 54–7

Innes, J B 2000 — Pollen analysis. *In:* Cowell & Philpott, 19–23

Jeffery, S 1991 — Burnt mounds, fulling and early textiles. *In:* Hodder, M A & Barfield, L A eds. Burnt mounds and hot stone technology. Sandwell M B C, 97–108

Knight, D 1992 — Excavations of an Iron Age settlement at Gamston, Nottinghamshire. *Trans Thoroton Soc* **96**, 16–90

Knight, D 1999 — Iron Age briquetage and miscellaneous fired clay. *In:* Elliot, L & Knight, D. An early Mesolithic site and first millennium BC settlement and pit alignments at Swarkestone Lowes, Derbyshire. *Derbyshire Archaeol J* **119**, 79–153

Longley, D T 1987 — Prehistory. *In:* Harris, B E & Thacker, A T eds. A history of the county of Cheshire **1**. Oxford U P for London Institute of Historical Research. (Victoria History of the Counties of England), 15–236

Longley, D T 1998 — Bryn Eryr: an enclosed Iron Age settlement on Anglesey. *Proc Prehist Soc* **64**, 225–73

Longley, D T *et al* 1998 — Excavations of two farms of the Romano-British period at Bryn Eryr and Bush Farm, Gwynedd. *Britannia* **28**, 185–246

Marren, P 1992 — The wild woods: a regional guide to Britain's ancient woodland. Newton Abbott: David & Charles

Matthews, K J 1999 — The Iron Age of north-west England and Irish Sea trade. *In:* Bevan, B ed. Northern exposure: interpretative devolution and the Iron Age in Britain. Leicester U P. (Leicester Archaeol Monogr **4**), 173–96

Matthews, K J 2000–01 — The Iron Age of north-west England: a socio-economic model. *J Chester Archaeol Soc* new ser **76**, 1–51

Mitchell, A 1974 — A field guide to the trees of Britain and northern Europe. London: Collins

Morris, E L 1985 — Prehistoric salt distributions: two case studies from western Britain. *Bull Board Celtic Stud* **32**, 336–79

Morris, E L 1994 — Production and distribution of salt in Iron Age Britain: a review. *Proc Prehist Soc* **60**, 371–94

Morris, E L 1999 — Other ceramic materials. *In:* Hughes, G. The excavation of an Iron Age cropmarked site at Foxcovert Farm, Aston-on-Trent, 1994. *Derbyshire Archaeol J* **119**, 176–88

Morris, E L 2001 — Briquetage and salt production and distribution systems: a comparative study. *In:* Lane, T & Morris, E L eds. A millennium of saltmaking: prehistoric and Romano-British salt production in the Fenland. Sleaford: Lincolnshire Archaeology and Heritage. (Rep Ser **4**), 389–404

Musson, C R 1991 — The Breiddin hillfort. York: Council for British Archaeology. (CBA Res Rep **76**)

Nevell, M D 1988a — Great Woolden Hall: excavations on a late prehistoric/Romano British native site. *Greater Manchester Archaeol J* **3**, 35–44

Nevell, M 1988b — An aerial survey of southern Trafford and northern Cheshire. *Greater Manchester Archaeol J* **3**, 27–34

Nevell, M 1994 — Late prehistoric pottery types from the Mersey Basin. *In:* Carrington ed, 51–62

Nevell, M 1998 — Great Woolden Hall Farm: model for the material culture of Iron Age and Romano-British settlement in rural north-west England? *In:* Nevell ed, 48–63

Nevell, M ed 1998 — Living on the edge of empire: models, methodology and marginality. Late prehistoric and Romano-British rural settlement in north-west England. *Archaeology North-West* **3** (Issue 13)

Philpott, R A 1994 — New light on Roman settlement: recent aerial photography in Cheshire. *Cheshire Past* **3**, 6–7

Philpott, R A & Adams, M 1998	Excavations at an Iron-Age and Romano-British settlement at Irby, Wirral 1987–96: an interim statement. *In:* Nevell ed, 64–73
Royle, C & Woodward, A 1993	The prehistoric pottery. *In:* Ellis ed, 63–78
Soil Survey 1983	Soil map of England and Wales. Sheet **3**: Midlands and North-West England. Scale 1:250,000. Harpenden: Soil Survey of England and Wales
Stace, C 1991	New flora of the British Isles. Cambridge U P
Stanford, S C 1984	The Wrekin hillfort excavations 1973. *Archaeol J* **141**, 61–90
Tutin, T G *et al* 1964–80	*Flora Europaea*. 5 vols. Cambridge U P
Van der Veen, M 1992	Crop husbandry regimes: an archaeobotanical study of farming in northern England 1000BC–AD500. Sheffield University. (Sheffield Archaeol Monogr **3**)
Varley, W J 1936	Further excavations at Maiden Castle, Bickerton, 1935. *Ann Archaeol Anthropol Univ Liverpool* **23**, 101–12
Varley, W J 1948	The hillforts of the Welsh Marches. *Archaeol J* **105**, 41–66
Varley, W J 1964	Cheshire before the Romans. Chester: Cheshire Community Council. (A History of Cheshire **1**)
Wells, P S 1981	The emergence of an Iron Age economy: the Mecklenburg cave groups from Hallstatt and Sticna: Mecklenburg Collection Part 3. Cambridge (Mass): Peabody Museum of Archaeology and Ethnology. (American School Prehist Res Bull **33**)