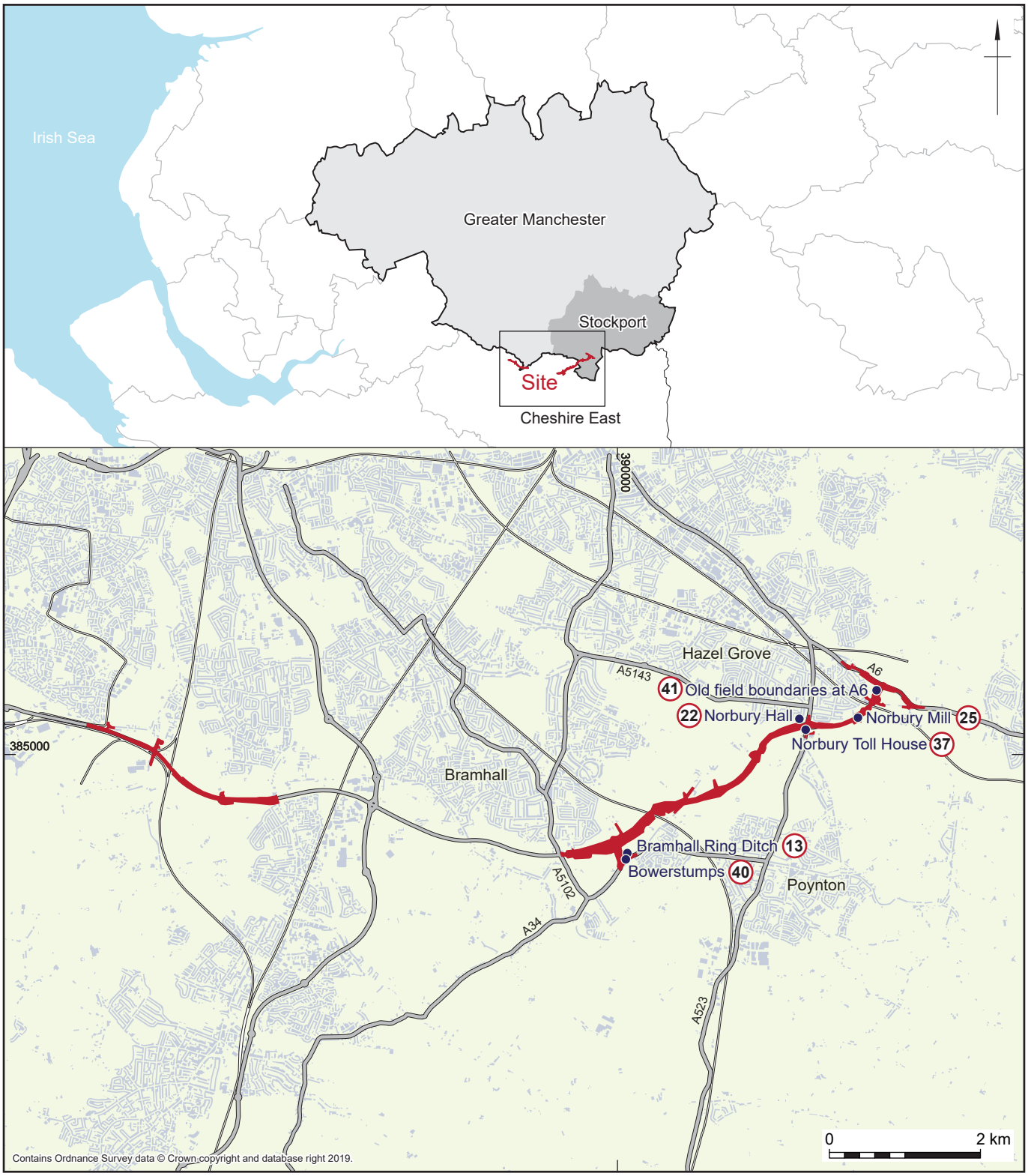
GREATER MANCHESTER'S PAST REVEALED
• 26 •

LIFE ON MARR

ARCHAEOLOGICAL REMAINS ALONG THE MANCHESTER AIRPORT RELIEF ROAD


Irish Sea
Greater Manchester
Stockport
Site
Cheshire East
380000
385000
Hazel Grove
A5143
A6
41 Old field boundaries at A6
22 Norbury Hall
Norbury Mill 25
Norbury Toll House 37
Bramhall
Bramhall Ring Ditch 13
Bowerstumps 40
A5102
A34
Poynton
A523
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2 km
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Foreword

The Manchester Airport relief road has provided archaeologists with a unique opportunity to examine a swathe of historic landscape south of Manchester. This 'slice through time' has yielded some surprising and important results, casting light on previously poorly understood aspects of our history in this area. Two highlights are a previously unknown Bronze Age monument and the extensive remains of Norbury corn mill. More mundane and common features have also been recorded, such as boundary ditches, cottages and road features, which are representative of what has been a predominantly agricultural landscape through history.

This booklet sets out the key findings of Wessex Archaeology's investigations undertaken in the early stages of the road's construction. It explains how the archaeology was carried out in stages through a carefully considered methodology, operating within the planning system. It gives an insight into highways archaeology through the eyes of a modern archaeologist, and also introduces a range of scientific techniques that can transform our understanding and interpretation of archaeological deposits and finds. This booklet is the first one in the *Greater Manchester's Past Revealed* series to report on a large-scale highway scheme and makes a welcome addition to the collection.

Contents

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Introduction

Built between 2015 and 2018, the Manchester Airport relief road provides a vital link across Stockport, Manchester and Cheshire East. The road was designed to boost the regional economy by improving access and connectivity around the airport, and to ease congestion on existing nearby roads. Described as 'one of the most complex local road schemes in the UK', it involved the excavation of 1.2 million cubic metres of soil and the construction of 11 new and upgraded junctions, 11 bridges, and includes a cycle- and pedestrian path along the whole 10-km route.

Years in the planning, the road was designed so that the effects of its construction and traffic on the local environment would be minimised as much as possible. Archaeological remains were one such consideration, and thanks to funding from Carillion Morgan Sindall Joint Venture, who built the road on behalf of Highways England, Wessex Archaeology was able to take the opportunity to explore the historic remains along the course of the new road.

The archaeological work has shed new light on the lives of the people who inhabited this landscape before us: how they earnt a living, used the land, the comforts they enjoyed and, for some, how they were treated in death. The earliest features were two Bronze Age (2200–700 BC) pits, one with pottery and the other with cremated human bone. These were found near a ring-shaped ditch monument, probably of the same date, that lay between Poynton and Bramhall. At Norbury, a possible moat may have revealed the site of the medieval forerunner of the present Norbury Hall. However, the majority of the discoveries date to the 18th and 19th centuries and speak of the population growth and demand for food and other resources that the Industrial Revolution created in the region. Remains include field boundaries, turnpike roads, coal workings and the traces of buildings previously known only from old maps. Of perhaps highest significance was the work at Norbury corn mill, which uncovered structural details of the mill building and its water supply. New tree-ring dates from timbers found at the mill add to the mystery surrounding the date of its construction. Broken pottery was the commonest type of artefact found along the road, this was also mostly of post-medieval date, and its prevalence is again due to the growing population and rapid spread of everyday manufactured goods once industrialisation got underway.

The route

The construction of some form of ring road to the south of Greater Manchester has been discussed from at least the 1940s, and land in the area was reserved for such use. This foresight paid off as it provided a corridor of undeveloped, open land to ease the impact and cost of road construction.

An initial survey of known archaeological remains along the road corridor (known as 'desk-based assessment' – see below) was produced by Mouchel Ltd in 2013. The survey found very few records of prehistoric material along the route, but noted the proximity of Oversley Farm, Styal where an important Neolithic (4000–2200 BC) and Bronze Age (2200–700 BC) site was excavated in the 1990s in advance of the expansion of Manchester Airport. Evidence for settlement in the Roman period was similarly scarce, although the survey did identify three possible Roman roads, which would have linked *Mamucium* (the fort and settlement at Castlefield, Manchester) to neighbouring towns at *Deva* (Chester) and *Aquae Arnemetiae* (Buxton).

Place-name evidence and records in *Domesday Book* indicate settlement in the area around the time of the Norman Conquest of AD 1066, although direct archaeological traces of the Anglo-Saxon period are very rare. During the Middle Ages the market towns of Stockport and Macclesfield developed, with smaller settlements at Wilmslow, Poynton and Bramhall. However, most of the evidence recorded by Mouchel's initial survey for this period is agricultural, mainly the earthwork remains of old fields ('ridge and furrow') – although these may often belong to later periods. Human impact on the land became more marked from the 16th century onwards, and increased ever more rapidly as the Industrial Revolution took hold. This led to the construction of canals, turnpike roads and railways across the area, along with the development of coal mining and clay quarrying. Sites of the post-medieval and modern period (AD 1500+) noted within the road corridor by the Mouchel survey include a corn mill at Norbury, golf courses at Bramhall and Hazel Grove, a Second World War military depot east of Handforth, along with a scatter of farmhouses and other dwellings. The built heritage included four Grade II listed buildings (three 17th–18th-century houses and a generator house) and another 17 buildings recorded as being of some historical or architectural significance (mostly farms, cottages and pubs).

Place Names

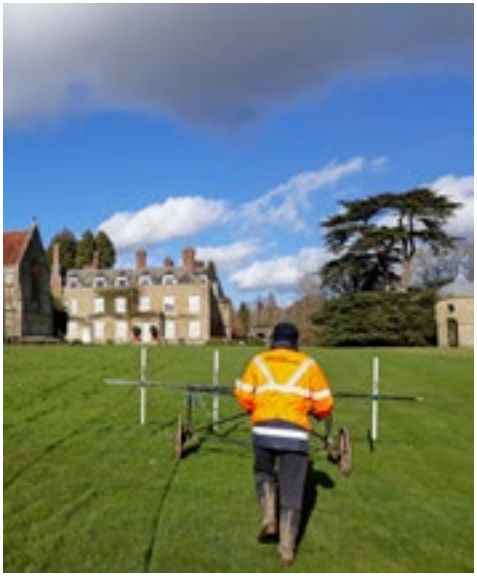
Place-names for the local settlements are redolent of a now-vanished well-wooded landscape with a scatter of small farms and villages.

Bramhall	The valley where the broom grows
Cheadle	The clearing in the woods
Handforth	The ford of the cocks/ford with boundary stone
Moss Nook	A small, marshy hollow
Norbury	Northern stronghold or manor house
Poynton	The farmstead of the people of Pūn or Pūna
Stockport	The stockade in the woods/market at outlying hamlet
Wilmslow	Wighelm's or Wilhelm's burial mound

A Staged Approach

'You lot could shut this job down, couldn't you?' – archaeologists often hear this from workers on construction sites. There are many misconceptions about archaeological fieldwork and the belief that the unexpected discovery of buried remains can stymie a development is a particularly stubborn one. In reality, within well-managed projects, archaeological implications are considered from day one. With appropriate consultation with archaeological experts within local authority planning departments, developers can follow a tried and trusted sequence of investigations to minimise the likelihood of such unexpected discoveries.

The focus of early work is to identify the quality and quantity of archaeological remains likely to be affected by a new development. The usual first step is to carry out a 'desk-based assessment', a review of known sources of archaeological information relating to the development's location and setting. Local authority planning departments host a 'Historic Environment Record', a computerised map and database of known finds and sites, and this should be the first port of call. Researchers will also consult other sources, such as historic maps and aerial photographs, in order to re-discover forgotten remains. Walkover visits may also be undertaken to check for the survival and condition of known sites, and to attempt to identify new ones.



Geophysical survey allows archaeologists to 'see beneath the soil' and so identify sites of which no surface trace is visible. Techniques include gradiometer and resistivity survey, which can detect buried remains due to the different magnetic or electrical properties of some types of archaeological deposit compared to the surrounding soils. Readings can be overlain on a plan and so create a map of a previously unknown site.

Geophysical survey is an effective technique that can be carried out with little disruption, but drawbacks include the fact that the accuracy of the results can depend on the nature of the local geology, and the fact that it may struggle to detect certain types of insubstantial site, such as ones dated to the earlier prehistoric period.

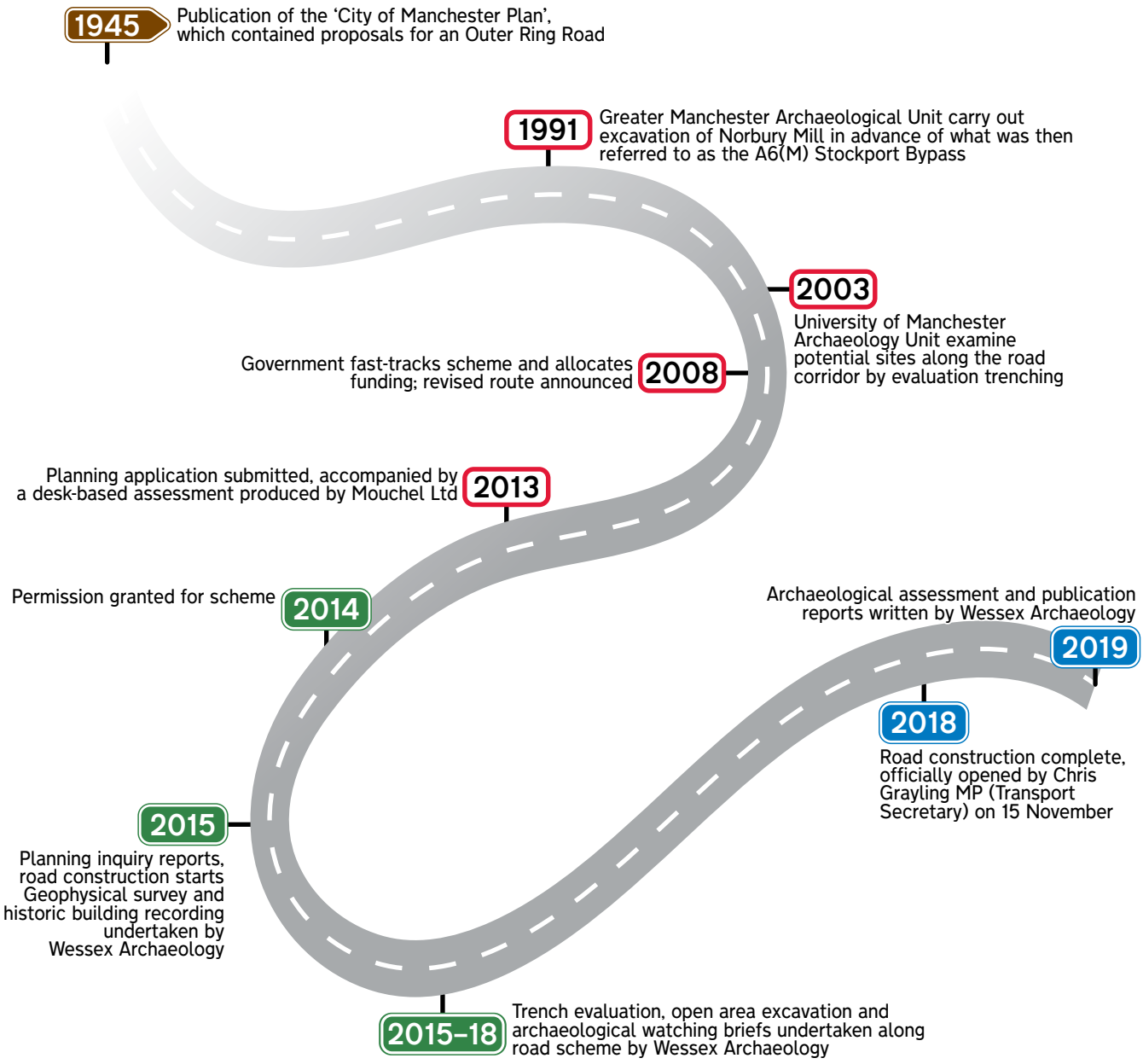
Fieldwalking may also be carried out, if field conditions allow. Archaeologists search along defined gridlines and collect any artefacts lying on the surface. Such finds have their own value, but concentrations of material may also betray the presence of buried features. When considered together, the results of the desk-based assessment, geophysical survey and fieldwalking can reveal a great deal about the likely archaeological remains within a proposed development, without a shovel ever entering the ground.

Subsequent stages typically involve some form of digging, however. Dependent on the results of the earlier work, field evaluation may occur, involving the excavation of relatively small trial trenches. These will target remains detected during the early surveys in an attempt to learn more about

them, and also to check seemingly 'blank' areas to ensure they really are lacking in evidence. Field evaluation offers the chance to learn how deeply buried and well-preserved archaeological features are, and to determine their date by collecting artefacts from them. This information allows the significance of the buried remains to be established.

Once equipped with the results of the non-intrusive surveys and field evaluation, the local authority archaeological advisors will be able to recommend what further works need to be carried out. This may range from nothing, through a watching brief to monitor groundworks during construction, to open area excavation so that remains can be studied and recorded prior to construction.

A less glamorous but no-less vital stage then follows, whereby the results from all of the preceding stages are studied, assessed, analysed and reported on. Archaeological excavation is destructive and only through some form of publication can the results be made available and contribute to the emerging picture of our common past. The final stage of an archaeological project involves handing over the 'archive' (the excavation finds, paperwork and digital data) to a museum, so that it is available for study and review by future researchers. The booklet that you are currently holding relates to the publication stage of the Manchester Airport relief road project, and marks the culmination of a series of earlier stages of excavation very similar to those outlined above.


1945
Publication of the 'City of Manchester Plan', which contained proposals for an Outer Ring Road
1991
Greater Manchester Archaeological Unit carry out excavation of Norbury Mill in advance of what was then referred to as the A6(M) Stockport Bypass
2003
University of Manchester Archaeology Unit examine potential sites along the road corridor by evaluation trenching
Government fast-tracks scheme and allocates funding; revised route announced
2008
Planning application submitted, accompanied by a desk-based assessment produced by Mouchel Ltd
2013
Permission granted for scheme
2014
Archaeological assessment and publication reports written by Wessex Archaeology
2019
2018
Road construction complete, officially opened by Chris Grayling MP (Transport Secretary) on 15 November
2015
Planning inquiry reports, road construction starts Geophysical survey and historic building recording undertaken by Wessex Archaeology
2015–18
Trench evaluation, open area excavation and archaeological watching briefs undertaken along road scheme by Wessex Archaeology

Early Remains

Foraging and farming

As the ice melted around 12,000 years ago, a glacial landscape was replaced first by tundra and then by dense woodland. For thousands of years these forests would have been visited by small bands of nomadic hunter-gatherers, possibly moving through on a seasonal circuit. This period is termed the Mesolithic (or 'Middle Stone Age') and lasted between about 8500 and 4000 BC. Evidence for this period is rare in our area, mostly occurring as chance surface finds of stone tools. During this period the Mersey Valley may have served as a route by which hunter-gatherers travelled between the west coast and the Pennines, both of which offered different food sources at different times of the year. Similarly, the fringes of the wetlands or mosslands in the area may have been attractive places for longer-term camps, although there is as yet little clear evidence of this. Changes to tree cover, detectable in pollen records from the 5th millennium BC, may have been caused by folk making woodland clearings, possibly to make it easier to hunt, or to encourage the growth of certain types of edible plant.

Nationally, the introduction of farming in the 4th millennium BC marks the beginning of the Neolithic ('New Stone Age') period. Again, evidence for this period is rare in the North West and mostly limited to surface finds of worked stone. The change to a reliance on farming, rather than occurring as a 'revolution', seems to have been a long and gradual affair in our region, with many or most people probably not living in a fixed spot until some time in the Bronze Age, or perhaps later. In the North West, as elsewhere, the first farmers are detectable by increasing evidence of grass and cereal pollen, at the expense of pollen from trees, along with burnt grains and weed seeds, the bones of domesticated animals, and stones for grinding grain.

Prehistoric scraper from Norbury Hall

The urban development of the land around the road corridor in the 19th and 20th centuries was to the detriment of its archaeological record, but some indications of the local activity in the Neolithic and Bronze Age do survive. The evidence mostly consists of surface finds of stone artefacts, and includes a polished stone axe from Cheadle, a flint axe from Heald Green, and a further two stone axes along with a perforated stone mace head from Gatley. A similar mace head was found in river gravel at the sewage works at Cheadle Heath. Further prehistoric finds near Bramhall indicate a potential focus of activity around the Lady Brook, and a flint scraper was found during the road construction near Norbury Hall.

Oversley Farm, Styal, perhaps the most significant early agricultural site in the region, lies very close to the road scheme. Discovered when the second runway at Manchester Airport was constructed in the 1990s, the site was situated on a promontory overlooking a ford across the River Bollin and occupied a small area of drier sands and gravels in a largely damp and clayey landscape. The site was used for farming and settlement between the Early Neolithic and Early Bronze Age, with a system of trackways and bones of livestock (mostly sheep) suggesting that livestock were an

important part of the economy. The site's location may have been to do with the ongoing importance of travel between the uplands and lowlands, in this instance forming a stopping or gathering point when moving herds between the two.

Late Bronze Age socketed axe

The introduction of metal working marks the beginnings of the Bronze Age (2200–700 BC), which also saw new types of flintwork and pottery, and a shift towards burying the dead, usually cremated, in earthen mounds known as barrows, or ring-shaped cairns. There are antiquarian records of at least seven Bronze Age cremation urns being unearthed from in and around Stockport in the 19th century; although few details are known, it is likely that some of these were discovered when barrows were inadvertently disturbed. The most significant Bronze Age monument in the Borough of Stockport is Shaw Cairn, on the summit of Mellor Moor to the north of New Mills. Excavations here exposed several cremation burials and flintwork, alongside an outstanding amber necklace.

Settlement sites are rarer than the mortuary monuments, although local activity at Oversley Farm extended into the Middle and the Late Bronze Age. Another 'local' settlement site is known at Cinder Hill (Cutacre Country Park), where a roundhouse and four-post structures have been radiocarbon dated to the Middle–Late Bronze Age. The latter site lies almost 30 km north-west of the road scheme, a distance which speaks of the general rarity of traces of Bronze Age settlement in the Greater Manchester area. In lieu of architectural traces, pits filled with charcoal and fire-cracked stone may reveal Bronze Age settlements. A couple of examples were excavated on the road scheme between Bramhall and Poynton (see below) and on Styal golf course; some contained struck flint. Further afield, a group of such pits was found near a Bronze Age barrow ahead of the A556 road improvements at Bucklow Hill, near Knutsford. One of the pits was radiocarbon dated to the Early Bronze Age and another contained Neolithic–Bronze Age pottery.

Pit with fire-cracked stone near Bramhall ring ditch

Settlement in the region may have been encouraged by the copper ores available at Alderley Edge, which were exploited for the production of bronze at this time. The distribution of barrows and surface finds suggest that the favoured areas for activity in the

Bronze Age were the western fringes of the Pennines, the lower reaches of the Mersey Valley, and areas of sand and gravel, especially along the flanks of river valleys. Ancient pollen grains found on Cheshire barrow sites appear to show a fairly open landscape, with widespread evidence of the cultivation of arable crops; pollen studies from the Pennine peats also indicate forest clearance at this time.

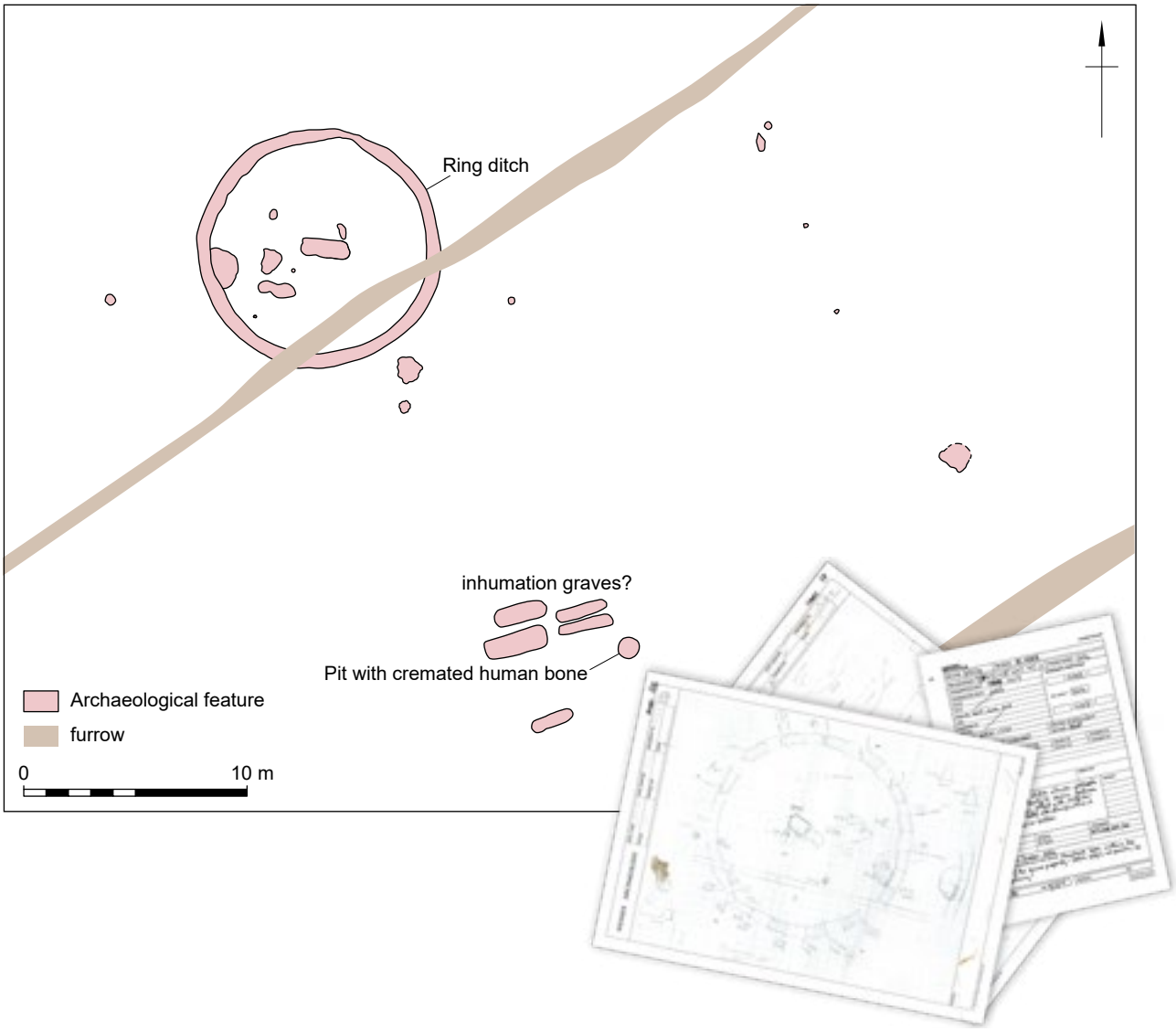
Notwithstanding the reasonably substantial remains at Cinder Hill, settlements at the time were probably so ephemeral as to be hard to detect and it is likely that many have therefore been lost or have so far eluded us. Nevertheless, the lack of evidence probably also reflects very low levels of population at the time, with perhaps only a handful of family groups occupying the land around the road scheme during the Bronze Age.

The climate appears to have deteriorated sharply around 1000 BC, from when there is evidence of the spread of upland peat bogs. In tandem, many of the types of artefact that characterised the Bronze Age appear to have fallen out of use, and a change in burial customs saw the end of barrow construction. Due to developments in metal working, the following centuries are known as the Iron Age, but this period is also characterised by the construction of landscape

Dug in difficult winter conditions, the ring ditch was located on the higher, drier land in the background. Courtesy of GMAAS

Surveying the ring ditch

boundaries, the setting out of field systems and the creation of enclosed settlements. Such remains seem to express a new concern with staking a claim to territory, perhaps also expressed through the construction of hillforts, of which at least four examples are known in Greater Manchester: at Great Woolden Hall and Barton Road (both in Salford), Castlesteads in Bury, and at Mellor. No sites or artefacts of definite Iron Age date were identified on the road scheme, although radiocarbon dating evidence found between Bramhall and Poynton does reveal a human presence in the landscape during the Iron Age (see below).



The Bramhall ring ditch

A Bronze Age monument near Bramhall

The only place that showed clear evidence of prehistoric activity was where the road passes between Bramhall and Poynton. An infilled ring-shaped ditch was uncovered, alongside pits, some of which contained Bronze Age pottery, cremated human bone radiocarbon dated to the Bronze Age and scorched, cracked stones. Some of the pits were found alongside grave-like features. Also seen were the lines of old ditches that had separated fields in more recent centuries.

The ring ditch was uncovered in the north-eastern corner the site and sat on a small area of high ground. The ditch formed a complete circle that measured around 11 m across. It was completely excavated by the archaeological team, but no finds were recovered. Nor were any finds present in the feature that lay in the centre of the ring. Plant remains from this feature were radiocarbon dated to the Iron Age (700 BC–AD 50) and medieval period (AD 1066–1500), suggesting that, whatever it was, it had been disturbed.

The pit containing cremated human bone lay 20 m south-east of the ring ditch. Only a handful of cremated bone was present, a tiny fraction of the amount you would get from one person. It was not possible to establish whether they represented the remains of a male or female, only that the person had been a teenager or older when they died. Radiocarbon dating revealed they had been alive in the Middle Bronze Age, that is around 3300 years ago.

Features nearby resembled inhumation graves by their size, shape and their shared (broadly east–west) alignment. However, no bones were found within them, although it is possible that they have been completely destroyed over time in the acidic local soils. Two pieces of worked flint came from one of the possible graves.

What do we think this site was? By their very nature, these prehistoric remains are difficult to interpret, with few finds, and much of what was originally present will not have survived, meaning we are only left with a small and perhaps unrepresentative proportion of what had first been there. Most importantly, people in prehistoric times have left us no written records to check our theories against. How much of our understanding of how people lived and thought in prehistory is therefore a reflection of our own modern-day assumptions, privileges and mind-sets? We know that in the Bronze Age thousands of barrows and other circular monuments such as the Bramhall ring ditch were constructed

across the country. Many of these were placed at points in the landscape that were already seen as important, although at Bramhall there was no evidence of any earlier use. Many barrows contain human remains (cremated or unburnt bone) but others do not, suggesting not all were built for the same purpose, with the use of many probably varying over geographic location and time. Some may have had more of a role in marking territories or as meeting points. Certainly, when excavated carefully, most barrows and similar monuments show signs of having been altered and adapted at times. Again, there is no clear evidence of this with our site, although the Iron Age radiocarbon date from the feature at the centre of the ring ditch raises the possibility.

The Bramhall ring ditch during excavation

Many Bronze Age monuments in Cheshire and Greater Manchester are sited close to rivers or on the sides of hills. Sat on a broad spur of land gently descending from the Pennines to the Mersey Basin, midway between the Lady Brook (which lies 2 km to the north) and the River Dean (2.5 km to the south), the Bramhall ring ditch is different. Perhaps the monument marked a boundary between different tribes or extended families based around the watercourses to the north and south. It may also have lain near some sort of track by which people and their livestock could move between the Pennine hills and the Mersey. Then, as now, human remains were likely to have been seen to carry special significance and perhaps some form of ritual potency. The cremated human bone may have been placed here to reinforce a ceremony related to defining the boundary or staking a claim to use of the route around 3300 years ago.

The potential inhumation graves

The potential graves seen to the south of the ring ditch are undated. Evidence from Shaw Cairn suggests at least one individual was buried intact as a complete corpse (ie, they had not been cremated), although their remains had decomposed and disintegrated to leave only a 'soil stain'. It is possible that these graves contained similar prehistoric 'inhumations' although their shape suggests the individuals would have been buried lying straight ('extended') as opposed to the crouched position seen at Shaw Cairn.

Better parallels for the possible graves were recorded at Southworth Hall Farm, Winwick, Cheshire (30 km to the north-west), where over 800 inhumation graves were found clustered around a Bronze Age barrow. Few bones survived, but enough to prove that these were indeed graves, forming a cemetery assumed to be early medieval (AD 410–1066) and Christian. In other parts of the country, Anglo-Saxon burial sites often target Bronze Age barrows. This may have been done to create a link with the past. If it is assumed that the people who were doing this were immigrants with Anglo-Saxon ethnicity, it might reveal a deliberate tactic by such newcomers to legitimise their claims to their new homes. Do the 'graves' at Bramhall represent early Anglo-Saxon settlers attempting to strengthen their territorial claims through some sort of spiritual integration with those thought to be ancient rulers?

The discovery of the monument near Bramhall complements the site at Shaw Cairn and the antiquarian records of cremation urns from Stockport, and so broadens the range of evidence for mortuary activities in the borough during the Bronze Age.

Barrow construction in Bronze Age Britain

Cremation pyre © Jacqueline McKinley

The cremation rite

Evidence for cremation is very rare in earlier prehistory, becomes more common around the Late Neolithic/ Early Bronze Age (2800–1600 BC) and was the dominant rite by the Middle Bronze Age (1600–1100 BC), before declining sharply in the Iron Age. Cremation pyres would have needed to have been long and wide enough to support the body, and around 1 m high to contain sufficient wood to burn long and hot enough to consume the body's soft tissues and organic components of the bone. Oak was widely used, because it was the commonest wood available in large enough form to construct the pyre, and being dense it is long-burning, especially when seasoned. Experimental reconstructions of prehistoric pyres have shown they were capable of producing temperatures of 1000°C, with modern cremators operating at 900–1000°C.

A common feature in the ancient cremation rite is that not all the bone that would have survived at the end of the cremation was included in the burial. The quantity of bone found in the undisturbed remains of burials varies widely, and they often contain only around half of the bone – or even less – that would have been present at the end of the cremation. Cremation graves that were added to existing monuments tend to contain smaller amounts of bone in comparison with the primary burial – the grave for the individuals for whom we might assume the monument was originally built. Evidence from the few pyre sites that have been found reveals that some of the bone not collected for burial was left at the pyre site, suggesting that it was often considered necessary to include only a representative selection of the bone within the burial, the cremation itself being the most important part of the funerary rite.

Following the gathering of the pieces of human bone – which experimental pyre cremations of animals have demonstrated would have taken several hours for one person to complete by hand – the pyre debris (mostly comprising charcoal/fuel ash, with some burnt soil and stones, uncollected human bone and

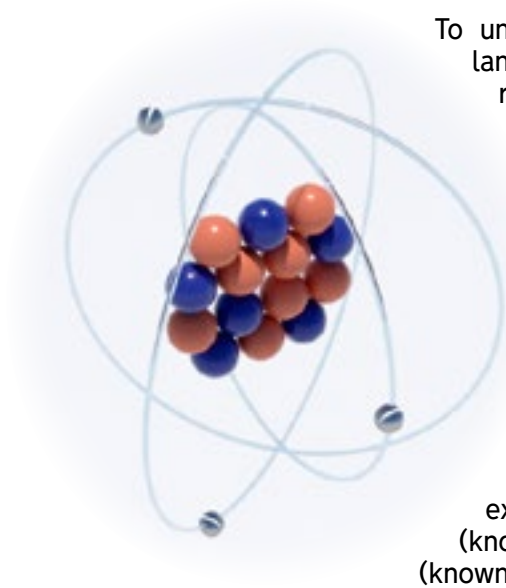
occasionally the remains of objects that had been placed on the pyre) was often cleared away. Frequently some of this material was used to partially backfill the grave, but it could also be deposited in other pits or ditches in the vicinity, or it might be formally disposed of in a pit of its own. The deposit from Bramhall, containing just 30 g of bone, is thought to represent such a formal deposit of pyre debris, rather than the 'burial' of the individual as such – the whereabouts of the grave is unknown.

By the close study of the evidence for cremation archaeologists have shed light on the complexity of the rite in prehistory: the human bone collected from the pyre was frequently buried fairly soon after cremation, but some or all could be stored, sub-divided, distributed as '*memento mori*', or scattered. A deposit of cremated bone might include the remains of animals cremated together with the person on the pyre, the remains of two individuals cremated together, or those of a second individual added to a stored collection.

The use of cremated human bone was therefore complex, and doubtless subject to local and regional variations, although within a more-or-less shared notion of the proper way of doing things. During the Bronze Age, many different sorts of object were subject to ceremonial treatment, discard and burial, and the cremated bones of the dead appear to have been no exception.

The Bramhall ring ditch

Environmental Sampling



To understand more about how the land along the course of the new road was used in the past and to better understand how its wider environment has changed over time, over a hundred soil samples were collected from the various archaeological sites. Around four buckets (40 litres) of soil were collected from each of the sampled deposits. Back at our offices, these were then 'washed' using water-filled tanks and various sieves to extract lighter floating remains (known as flots) and heavy objects (known as residues).

These flots and residues were then examined by specialists to extract small specimens not easily visible such as charcoal, cereal grains, seeds, insects and even industrial debris and small artefacts.

Radiocarbon Dating

The human bone and some of the other organic remains from Bramhall were dated by the radiocarbon method. This involves the measurement in specialised laboratories of the carbon content in any remains of biological origin (for example, a bone fragment or a seed). Carbon is an element present in the environment and it comes in several forms (isotopes). One isotope is C^{14} and it is radioactive, so decays over time and is known as radiocarbon. Any living being takes in carbon during its life until it dies. As time goes on after death, the amount of C^{14} decays at a known rate. By looking at the amount left and correlating the result with other information (such as the different amounts of carbon in the atmosphere in the past) we can tell how long ago that living thing died (ie, stopped taking in carbon from the environment). This information can help us establish the age of the features or sites where the radiocarbon samples were taken.

Snails, insects and eggs from water fleas were found in small quantities from the road scheme samples. These tell us about the local habitat in the past, as invertebrates such as these often thrive in very specific conditions.

Charred wheat, rye, oats and barley grains were found in the samples. Such remains tell us that these cereals were either farmed locally or were brought into the area, as food for people or livestock. Some species of cereal can help date a site, such as rye, which only became widely cultivated after the Roman period. The remains of several hazelnut shells were also found, a common wild food throughout many periods.

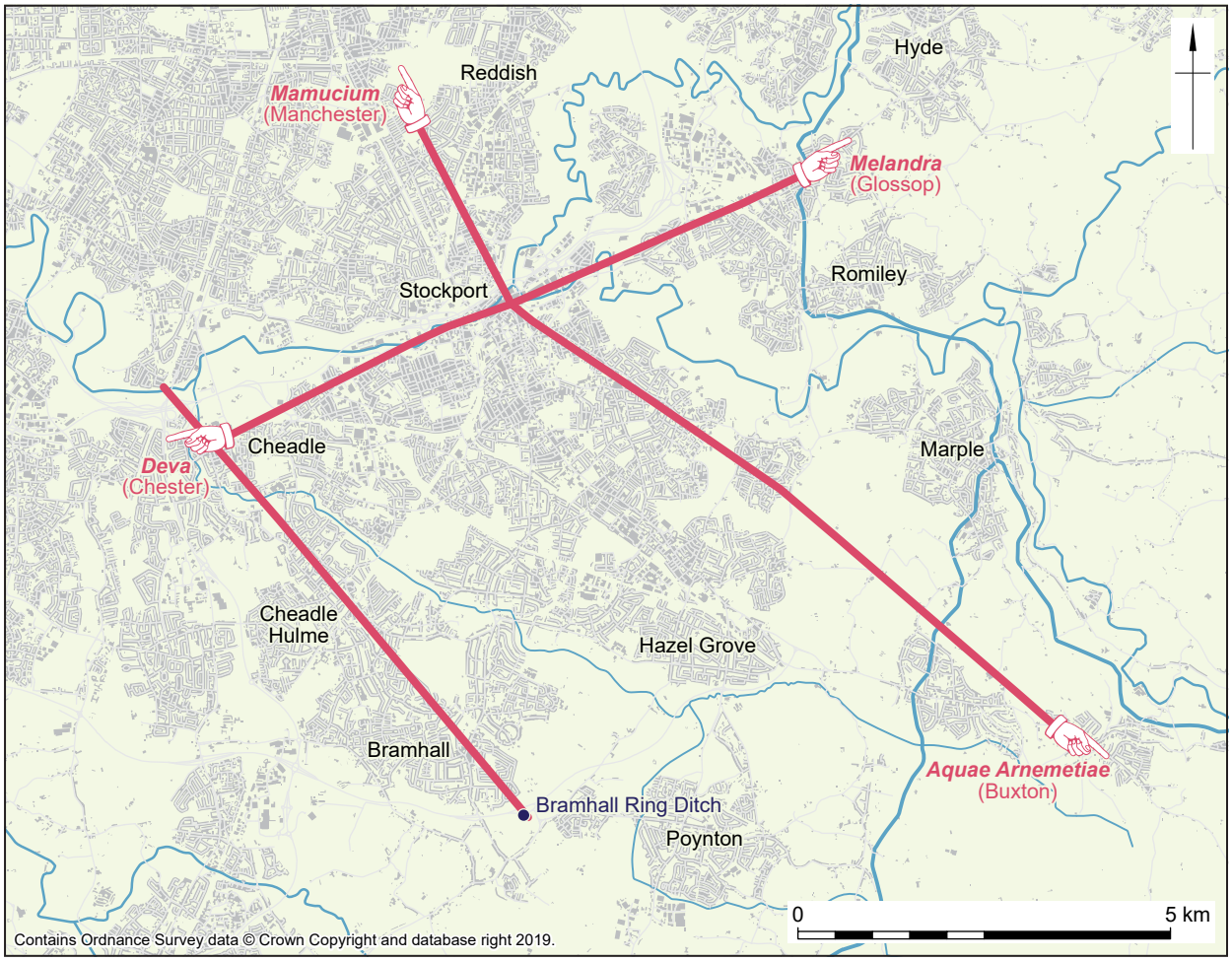
Seeds from weeds and wildflowers were also found. These include agricultural weeds, such as chamomile

Seeds identified through sampling

and corn spurrey, which relate to farming on site and tell us about the conditions of the cultivated fields (they had light, easily cultivated soils used for arable farming). Various sedge and rush seeds suggest parts of the local area would have been established wetlands. Charcoal indicates that wood from mature trees, but also small branches and twigs, was gathered as fuel.

A range of industrial debris was also found within the samples. These included coal, clinker and slag. The coal may relate to local mining or the use of coal-powered steam engines on the land in the past. Clinker may have come from such engines, household fires or industrial furnaces. Slag, an industrial waste material, could either relate directly to industry on the site or to the practice of soil improvement through the application of such mineral-rich material on fields to improve their fertility.

Roman Roads



The Roman fort of *Mamucium* (Manchester) formed a hub within the military road network, although the precise course of these roads in and around our area is largely hypothetical. The routes from *Mamucium* to *Deva* (Chester), *Aquae Arnemetiae* (Buxton) and *Melandra* (Glossop) would have lain close to the corridor of the Manchester Airport relief road, and these are thought to have been accompanied by a Roman road that ran south-eastwards from Cheadle to Buxton. Street Lane, the former name of Cheadle Road, may be evidence of this, as the place-name element 'Street' (or Stret-/Strat-) often coincides with former Roman roads. A track near Bramhall known as Lumb Lane is marked as the line of a Roman road on the 1872–5 Ordnance Survey map, and when the area to the south-east of Lumb Lane (ie, further along the projected course of the Roman road) was investigated by the University of Manchester ahead of pipeline construction in the 1990s,

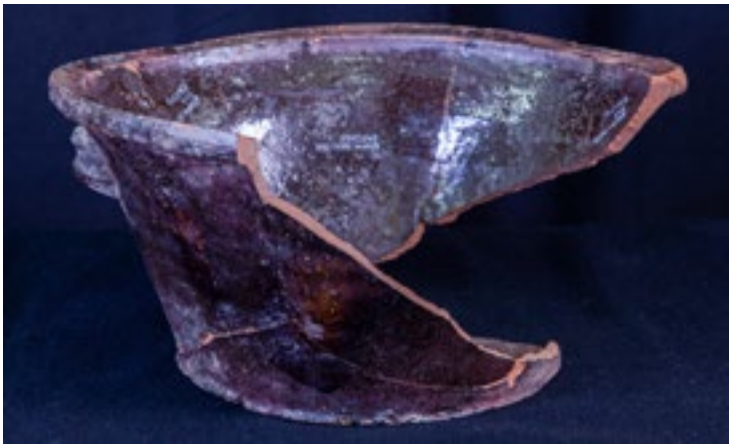
a 7.5 m-wide gravel surface accompanied by flanking ditches was exposed. These features were interpreted as the possible course of the Roman road, although no dating evidence was found to confirm this interpretation. As described in (volume 12 of the *Greater Manchester's Past Revealed* series) *An Ancient and Historic Place: The Archaeology of Cheadle*, a diverse collection of Roman finds including pottery, coins and a fragment of fine glassware has been recovered from Cheadle, supporting the idea that the area may have been served by a road. Much further to the south-east, in the hills around Pott Shrigley, earthworks have been identified and linked with this Cheadle–Buxton road.

The suspected Cheadle–Buxton Roman road was crossed by the new road very close to the site of the 1990s excavations. A watching brief was undertaken on construction activity in this area (during which the ring ditch described above was discovered) but no evidence of a road surface could be seen. A group of four or five parallel ditches was recorded; one was post-medieval and the rest were undated. These shared the north-west to south-east alignment of the proposed road and some were probably the continuation of the 'roadside' ditches identified in the 1990s. However, no Roman artefacts were recovered and so the course of the Cheadle–Buxton Roman road is yet to be established.

Similarly, it is thought that the Roman road from *Mamucium* to *Aquae Arnemetiae* (Buxton) may lie in or around the course of the A6 around Hazel Grove: evidence includes a 13th-century reference to a 'great highway' near High Lane. A watching brief was also carried out here. Cobbled 'setts' that would have formed an earlier, perhaps 19th-century, road surface were exposed beneath the modern tarmac, but no evidence of a possible Roman road was seen. In fact, not a single Roman artefact was recovered from the entire project, suggesting this area formed a sparsely populated rural hinterland during the Roman occupation.

Post-medieval cobbled 'setts' beneath A6 near Hazel Grove

A Medieval Moat at Norbury?



Black-glazed redware bowl (17th-18th century) from possible moat

Norbury is an Old English place-name meaning northern manor house or fortified place, and its appearance in the *Domesday* survey confirms its pre-Norman origins. Furthermore, the existence of some form of stronghold and the fact that the settlement gave its name to the manor of Norbury, which formed part of the barony of Stockport from the late 12th century, suggest it was a place of some importance. There are documentary records of Norbury Hall dating to the 17th century, from when Hearth Tax returns imply the hall would have been a large dwelling; indeed, it was 'one of the largest halls in the Borough' according to the historian Peter Arrowsmith. Norbury belonged to the major local landholding family the Hydes from the 13th century, and Norbury Hall, was reportedly their principal residence by the 17th century. A chapel lay to the east of the hall until the 19th century. The importance of Norbury Hall in the post-medieval borough probably had roots in earlier times but confirmed traces of its medieval predecessor have yet to be identified.

Records confirm that the chapel and the timber-framed hall had become ruinous by the 19th century, when the hall was replaced by the current Norbury Hall, a three-storey brick-built structure. Might the 17th-century hall have been similarly built on the site of its medieval predecessor? Evidence of possible relevance to the location of Norbury's medieval hall was recorded during the road construction.

At its closest, the edge of the new road lies approximately 30 m south of the current Norbury Hall. Due to the archaeological potential of the area, a watching brief was maintained on construction

Investigating a post-medieval pond near Norbury Hall (visible on horizon)

activities here. Various remains including undated minor features, a post-medieval pond and ditches, and a scraper of Neolithic or Bronze Age date, were recorded, alongside part of a large enigmatic linear feature.

The southern edge of this feature, probably a ditch, was exposed at the northern edge of the watching brief area. It extended beyond the northern limit of the site, and its western end was obscured.

The feature had a visible east–west length of 44 m and measured at least 5.75 m wide (north–south) and was 1.6 m deep. A complete profile across the cut could not be recorded within the site limits, but it may have originally been 10–12 m wide. Pottery from its fills predominantly dates to the 17th–19th century, with wares of 17th/18th-century date recovered from the lowest fill.

The feature does not tally with anything marked on historic maps, and its full form and purpose are unknown. The effort required to dig out such a large feature implies it was of some significance, and one possibility is that we have glimpsed the edge of the moat that once surrounded the medieval manorial hall of Norbury.

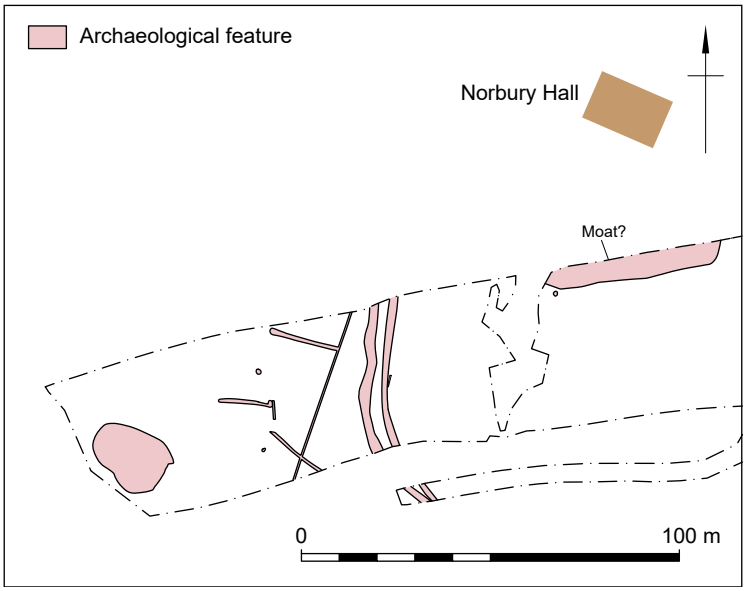
Moated manors are common across the country, and three examples are known in Stockport Borough (Torkington, Reddish Hall and Arden Hall in Bredbury). These sites typically date from the 13th–14th centuries, which is admittedly at odds with the pottery recovered from the Norbury feature. Perhaps this moat enclosed the hall that served Norbury from at least the 16th century until the 19th century. Later halls were less

The possible moat, with Norbury Hall behind trees in background

Deposits filling the possible moat

likely to be moated, however, and so another possibility is that the medieval moat was retained as an ornamental garden feature when its successor was constructed, and only became fully silted up in the 19th century, when the timber-framed hall fell into disrepair. Finally, it should be acknowledged that the feature may not represent a moat at all.

In 2003 the road corridor in the vicinity of Norbury Hall was examined by evaluation trenches dug by the University of Manchester Archaeology Unit. No sign of any moat or manor house was recorded; one trench encountered a possible dumping ground used by the hall in the 16th to 20th centuries, but there was no evidence of its medieval predecessor, or the Anglo-Saxon '*Nordberie*'. The mystery of Norbury's origins is yet to be solved.



Staffordshire-type slipware and salt glazed stoneware (17th–18th century) from possible moat

Redware bowl, 17th–18th century

Post-medieval Remains

Norbury Mill

During the medieval period most manors had a corn mill, where under the custom known as 'milling soke', tenants of the manor had to take their corn to be ground. The tenants were required to pay for this service, first in grain and later in coin. During this period, millers leased their mills from the lord of the manor, with many enjoying relative prosperity especially in years of bountiful harvest. The closest mill to the road scheme to be recorded in the *Domesday* survey lay at Macclesfield, but as the population grew more mills were built, with references to mills at Cheadle, Stockport and Mellor in the 12th, 13th and 14th centuries respectively.

Norbury Mill, from Manchester Evening Chronicle, August 1905

Documentary evidence suggests that a corn mill at Norbury was constructed in, or shortly after, the 1570s. This would make it of relatively late construction although this may have been a replacement for an earlier mill on the site or elsewhere in the manor. Norbury appears in the *Domesday* survey, but no mention is made of a mill. However, given the evident status of Norbury later in the medieval period (see above), it is likely that a mill did exist somewhere in the manor prior to the 1570s.

1990s excavation of the mill (GMAAS archive)

The mill required the construction of an artificial water channel some 0.5 km in length, which may explain its relatively late date: this was not a site naturally favoured for such use (assuming that the 1570s mill shared the site of the one illustrated here). In 1694 the mill was leased by the tenants of Norbury Hall from the eminent Legh family of Lyme Park for the annual sum of £15. By 1770 there were 10 water-powered corn mills in the borough of Stockport; demand continued to grow both from an expanding population and the need to supply the textile industry, which used flour paste to 'dress' (prepare) yarn prior to weaving. In 1842 it was said that Stockport's textile mills were consuming as much flour as the townsfolk.

Power to the mill stones and other mill machinery was provided by a waterwheel supplied with water diverted from Norbury Brook along a channel known as a millrace, leat or lade. In many mills this was stored up in a reservoir known as a headpond or millpond, although at Norbury the millrace merely deepened and widened a little as it approached the mill. From here the water was finally delivered to the waterwheel by means of a headrace, with a wooden gutter-like channel known as a launder used in the latter phases of the mill, when the wheel would have been of the breastshot design, meaning the water would have entered the buckets at about the 2 o'clock position. The water then drained out of the wheel-pit into a culvert known as a tailrace, which returned the water to the brook downstream of the mill.

The tailrace tunnel exposed during the watching brief

In the early 19th century new corn mills were built and existing ones upgraded, with steam engines installed as back-up power sources to be operated in either drought or freezing conditions. It is also thought that the effects of cutting and draining the coal mines, canal construction and drainage improvements to agricultural land, may have interfered with the local water supply. This made the provision of an alternative power supply a necessity for the area's water mills.

In 1841 Robert Sutcliffe was the miller at Norbury, with his son succeeding him the following year. The operation of Norbury Mill was put out to tender in 1842, when an advertisement in the *Stockport Advertiser* records it as being 'excellently fitted-up' with 'every necessary apparatus' including four pairs of grinding stones, a dressing (sieving) machine, a drying kiln of 'the best construction', a 30-foot diameter waterwheel and a 12-horse power steam engine.

© Cheshire Archives & Local Studies (EDT 301/2)

The keys to the mill had passed to Joseph H. Massy by 1861, and The Norbury Mill Company owned the building in 1890; a rival local miller is said to have bought and closed the mill in 1899. A photograph of 1905 shows it in a dilapidated condition, and an Ordnance Survey map of 1909 marks the mill as 'disused', with the demolition of one wing of the mill seemingly having occurred.

The site was used by the Manchester Athletes' Volunteer Force (a forerunner of the Home Guard) for military training exercises during the First World War, the structure gradually declined further and became overgrown in the succeeding years. The 4 m-deep wheel-pit was not backfilled until the 1980s, when it was noted that Norbury Mill 'is soon to disappear with its lade when a new motorway is constructed'. Some 10 years later the derelict and tree-shrouded mill site was intensively excavated by the Greater Manchester Archaeological Unit in advance of what was then referred to as the A6(M) Stockport Bypass.

Over 1000 tonnes of demolition rubble was removed from the ruins, exposing the footprint and floor surfaces of the mill. The best preserved walls stood over 4 m high.

The 1990s work identified four visible phases to the mill's operation. Despite the historical records for a 16th- and 17th-century corn mill at Norbury, no such evidence was encountered during the 1990s work.

Phase 1 – 18th century?
The foundations and lower courses of the main mill building (12.4 x 6.2 m) were of tooled sandstone with handmade bricks above. Brick walls divided the building into four separate rooms. This early mill had two waterwheels and stood three storeys high.

A corn-drying kiln (2.9 x 2.5 m) abutted the main building on its north-west side. The date '1803' was seen scratched into plaster on the west internal wall of the kiln. The base of a chimney stood in the south-west corner of the kiln building. A sketch dated 1878 shows the chimney around 12 m high.

The waterwheels stood in a wheel-pit which ran along the full length of the main mill building's east wall. Substantial drystone revetment walls were constructed to bridge the gap between the waterwheel and the western end of the earth-cut millrace, which lay on higher ground to the north.

Looking north across the wheelpit – 1990s excavation (GMAAS archive)

Phase 2 – early 19th century
The wheel-pit was enlarged to accommodate the new 9 m-diameter waterwheel. The pit walls were built using large stone blocks (unlike the brick construction used elsewhere in the mill), possibly to dampen vibration from the wheel's rotation. Various masons' marks were visible cut into these stone blocks. A massive masonry bed, 1.5 m square, supported the west end of the wheel axle. It is thought a rim-gear bolted to the external edge of the waterwheel drove a pinion wheel mounted on a shaft that entered the main mill body through the aperture through which the axle-tree of the northernmost of the two earlier waterwheels had been mounted. It is thought that the gearing of the new wheel made the mill machinery more efficient. At this time, the water supply had to be redesigned to accommodate the new larger wheel and so the headrace was raised by about 2 m. The millrace may also have been raised along its entire length back to the Norbury Brook, but there was no clear evidence for this.

The new steam engine and boiler were probably sited either in the main building or in the extension that had housed the corn-drying kiln, which is thought to have become redundant by this stage.

Phase 3 – third quarter of 19th century
The boiler house, which stood in the westernmost part of the mill, had a stone-paved ramp to the south for the delivery of coal. The boiler sat in a hole dug into the bedrock.

The engine house was built in the angle formed where the kiln's south wall met the west wall of the main mill building. The platform that the engine would have stood on was formed of masonry and brick and measured 5 x 1.5 x 1.5 m.

During this period a bridge was built from high ground to the west of the mill to the upper floor of the structure; this improved the supply of corn to the millstones as it did away with the need for hoisting sacks.

Phase 4 – late 19th century
One of the last known additions to the mill was the construction of a sluice-gate within the headrace. This led to a stone culvert that flowed directly downslope to the Norbury Brook. The recorded sluice-gate was probably the replacement of an earlier one, as it would always have been necessary to drain the headrace, especially when cleaning silt out of the wheel-pit or carrying out maintenance on the wheel. Worn-out millstones were reused in a wall associated with the new sluice-gate.

Overall, the 1990s excavation demonstrated that the owners/operators of Norbury Mill made ongoing efforts to improve its output and efficiency at a time of rising demand and rapid technological improvements. Two waterwheels of probable 18th-century date were replaced by a single larger wheel with more efficient gearing. Use was also made of steam engines to back-up the water supply in case of disruption. The mill possessed a small 12–horsepower engine in the early 19th century, with a larger engine installed later in the century. Ultimately, however, these efforts were not enough

to keep pace with competition from elsewhere, and the mill ceased operation at the end of the 19th century. A similar situation occurred at Cheadle; its two mills closed around the same time, with Cheadle Lower Mill converted into a bleach works in the 1870s. As detailed in *An Ancient and Historic Place: The Archaeology of Cheadle* (volume 12 of this series), the mill's two waterwheels were found sealed beneath the bleach works floor when the site was investigated by archaeologists in 2008.

Road scheme watching brief
During the road construction the mill site was revisited when a watching brief was maintained on its demolition, allowing a few details of the mill's construction not visible at the time of the earlier 1990s investigations to be recorded.

The headrace structure was demolished during the cutting of the new road. Approximately 2.5 m below the base of the Phase 2 headrace, and directly below where the Phase 4 sluice gate lay, a number of buried wooden planks and boards were found overlaying larger timbers in a criss-cross pattern. The wood had been reused, as some of the planks had ends with squared cut outs (as if they had once been originally placed around a beam), and some had peg holes. The timbers were set into a puddled clay. To the west, some of these timbers overlapped a massive timber aligned at a right angle to the headrace above. This was 6.5 m long, up to 0.78 m wide and up to 0.65 m thick. This timber had three rectangular mortise holes (each around 0.25 x 0.10 m), spaced at irregular intervals on its south-west side. Two of the mortises contained sawn-off tenons. The presence of these redundant joints indicates the timber was reused from an earlier structure.

Redware bowls, 18th-century or later, Norbury Mill

This wood probably formed a raft constructed to support the western end of the headrace, although it is uncertain to which phase of the mill this would have belonged: the Phase 1 bridging of the gap between the end of the earth-cut millrace and the wheel-pit, or the raising of the headrace to accommodate the new waterwheel, or an earlier phase altogether. Ten timbers recovered from this area and deriving from different trees were subjected to dendrochronological analysis ('tree-ring dating'). All were from trees with a felling date in the 16th century, most appear to have been felled in the later part of that century, with the two most securely dated timbers seemingly felled in the autumn or winter of AD 1570/71. Although this date tallies closely with the documentary evidence for a 1570s construction date for a mill somewhere at Norbury, it is probable that the reused timbers belonged to another structure. Moreover, the date of their reuse is unknown. Definite evidence for the pre-18th-century mill at Norbury was therefore not recovered.

During the building of the new road the opportunity was also taken to excavate sections across the millrace to investigate its construction. Once emptied of backfill, the cut of the feature could be seen to be wide and moderately sloping, perhaps 3 m across at its base, from where the sides flared gently outwards, with the full cut having a width of up to 5 m. There was no evidence of any formal lining to the millrace's base, so the natural ground must have held water well enough without the need for any lining. Upcast from the original excavation or subsequent cleaning out formed embankments on either side of the cut, with most lying on the southern (downslope) side of the cut. The outer edges of the northern and southern embankments lay some 10 m apart, with a 2.75 m height difference between the top of the embankment and the base of the cut. Only a single cut was visible with no sign of any raising of the millrace's base or banks here to match the reconfiguration of the western end of the millrace following the Phase 2 rebuilding of the wheel-pit. Such a redesign may have obliterated the earlier layout. Alternatively, as the excavated trenches lay 120 m to the east of the main mill complex, the original drainage fall of the millrace at this point may have been able to accommodate the new arrangements at the wheel-pit end of the race, and no re-design was necessary here.

Masons' marks at Norbury Mill (GMAAS archive)

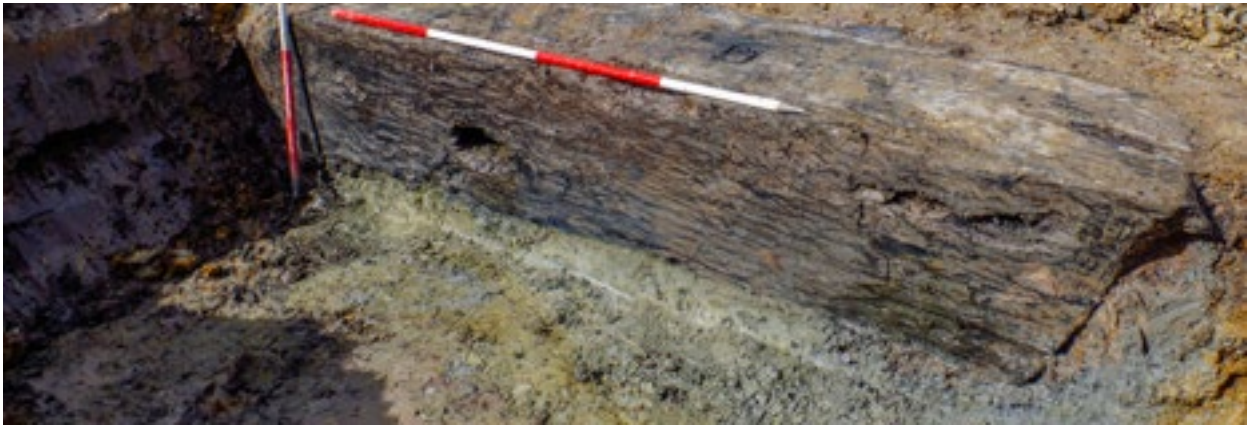
Masons' Marks

If you look in good light at the walls of many stone buildings you can often see inscribed symbols comprising straight and curved lines. These are termed 'masons' marks'. Most of these marks, in use from the medieval period through to today, are 'banker's marks': marks made by a mason in order to claim payment for their work. The mark may have been passed down through families or belonged to a master mason and their team. Modern marks are devised by newly qualified masons and are often based upon initial letters. Occasionally 'assembly marks' can be found on doorways and windows to aid construction. These can take the form of Roman numerals. It was once thought that masons' marks could be used to trace the work of an individual or groups of masons from building to building but this has proved not to be the case.

The marks seen at Norbury Mill mostly lay within the wheel-pit and headrace wall but follow no particular pattern. They probably represent banker's marks for individual masons, applied off-site and belonging to one yard; the on-site masons may have been employed by a different company.

Section through Norbury Mill race

Drinks bottles of late 19th- or 20th-century date, including one bearing the mark of Bell & Co Ltd of Stockport were found in the fill of the millrace. Pottery was the most common find from the watching brief at Norbury Mill, however. The majority of the assemblage consists of coarsewares, with fragments of at least three large, heavy-rimmed flared black-glazed redware bowls recovered. The remaining sherds include Staffordshire-type slipware, stoneware including a preserve jar, and factory-produced tea- and tablewares. The whole assemblage has a potential date range of the 18th to 20th centuries, and so matches the structural and map evidence for the lifespan of the mill, with no finds matching the documentary evidence for the 16th- and 17th-century mill. Perhaps that lay elsewhere? The dated timbers may once have been part of it, and were reused here, when the mill was re-sited.

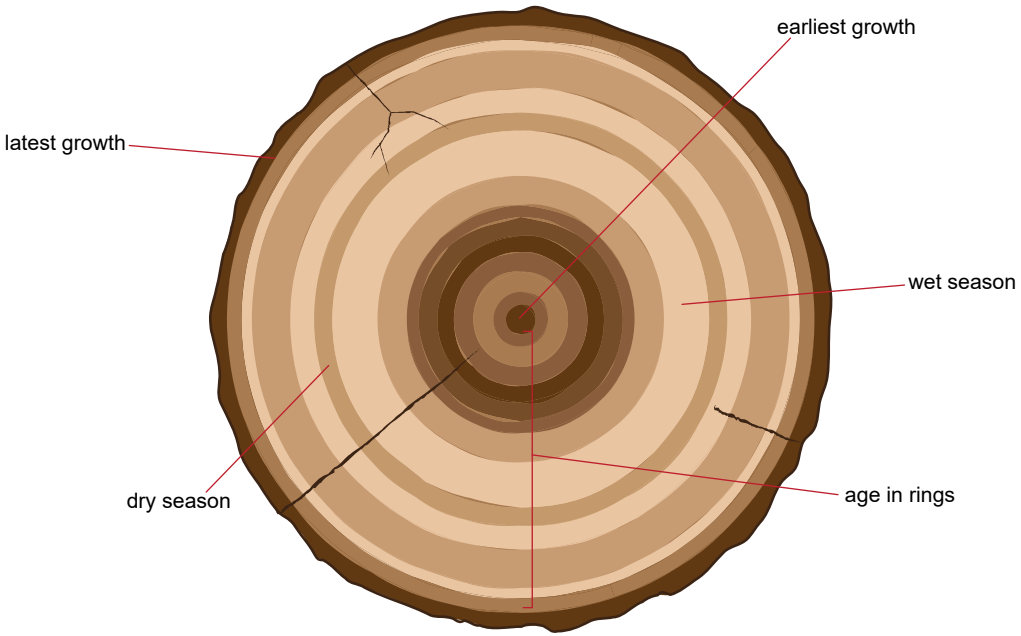


The massive reused timber found beneath the headrace

Dendrochronology

Dendrochronology, or tree ring dating, is one of the more accurate dating methods used within archaeology. As a tree grows it does not just become taller, but also wider. This is evident through tree growth rings, one for each year of the tree's life, growing from inside out. In most species, the width of each growth ring depends on two environmental factors: moisture and temperature. During a wet season the growth ring will be wider than a dry season where the tree will struggle to grow; these patterns will be shared by all same species of trees within the same climatic zone. If the sequence of growth rings can be matched with an existing chronology of tree rings, and the bark or the last ring of the life of the tree is preserved, then we can determine the exact year and even the season that the tree was felled.

Using this method, we can date various wooden artefacts based on their growth rings. However, there are some disadvantages with this dating tool. Only some species of trees, usually long-lived ones such as oak and pine, are suitable for dendrochronological dating. A large number of growth rings are needed for an accurate date. Therefore, a wooden fragment needs to be of a certain size to be dated in this way. In addition, where the wood is poorly preserved, it also cannot be used for dendrochronological dating (although it could still be used for the sometimes less precise technique of radiocarbon dating). It is important to note that the date of when the tree was felled is not necessarily the same as the date when its timber would have been used. It may have been stored before its initial use, and then reused numerous times before finally coming to rest in an archaeological deposit. A dendrochronological date therefore provides what is termed a *terminus post quem* date (or earliest possible date) for the use of the timber.



Coal Mining

Following the archaeological work at Norbury Mill, a coal mining shaft leading to arched tunnels was exposed nearby in the cutting for the road. The shape of the tunnels suggests a pre-18th-century date. No supports or other structural remains were seen. The shaft was only 1.2 m in diameter, and 11.5 m deep. These remains illustrate the former importance of coal mining in the local area.

There is evidence for the small-scale mining of coal from the 16th century in Poynton, with one pit lease dating to 1589 only 1 km from our site. Much of this early mining would have relied on small shallow vertical shafts like the one exposed near Norbury Mill. The early extraction of coal was carried out to meet local demands for fuel, with coal appearing in Stockport inventories from the 1590s onwards.

In the 18th and 19th century the market for coal grew with the expansion of Stockport, just as new machinery became available for draining deeper pits and more efficient transport of coal. There are fascinating records of Boulton and Watt, early steam engineers, discovering a pirate copy of their engine being used at a Norbury pit. The engine, erected by one Nathaniel Wright in 1795, had to

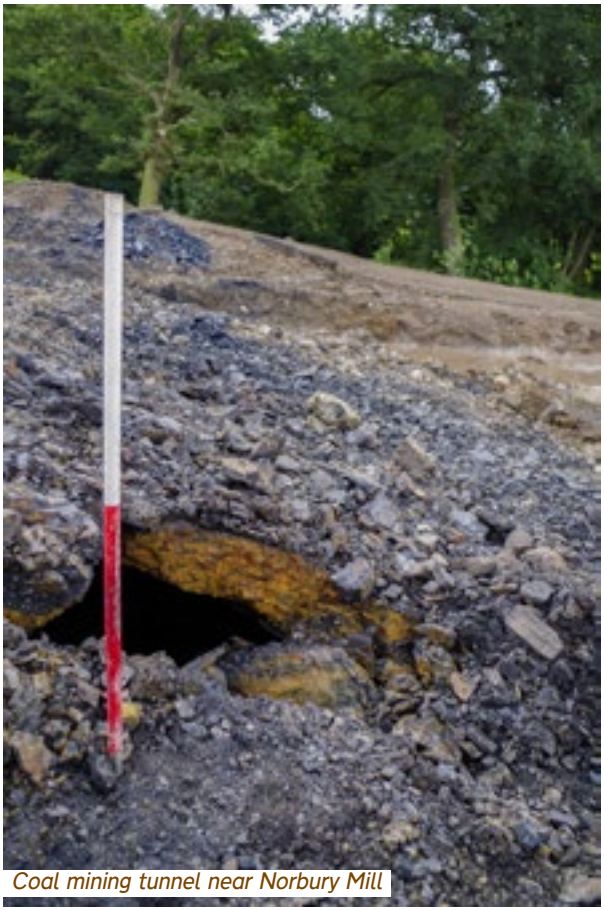
be converted to a more primitive 'atmospheric' engine to avoid paying the high fees demanded by Boulton and Watt for infringement of their copyright.

Between 1723 and 1841 the percentage of Poynton men working as miners rose from under 10% to around 50%, turning the formerly agricultural community into a major pit village. Output increased accordingly: Norbury pits produced about 635 tonnes in 1707–8; by 1765–6 the figure was just over 9000 tonnes. Smaller pits with less developed technology persisted alongside larger workings, however. At least five local pits still used horse-powered pumps and winding engines called gins in 1826, but by this point all pits would have had horizontal workings and railroads to transport coal from seam to shaft. There was certainly some discontent during this period with a notable act of sabotage in 1822, when a winding rope was cut, endangering the mine's operation and the miners. Still, by 1825 Norbury was named as contributing to the 'abundance of coal' in Stockport.

A railway link was established in 1845, allowing easier transport and creating an even larger market; two years later there were 18 pits employing 633 men and boys, making it a dominating industry in the area. Production peaked in 1859 at 221,056 tonnes: a whopping 110 Olympic swimming pools in volume!

The American Civil War and the recession in the cotton industry in the 1860s hit the mines hard, and 1862–3 saw a production of only 102,367 tonnes. Shortly after, in order to profit from the coal dust otherwise seen as waste, coke production began. This enterprise failed to turn any real profit and stopped in 1868. In the latter 19th century wage reductions and strikes were seen. The last pit at Poynton was sunk in 1885, and the pits at Norbury were closed a few years later. By the early 1900s the Poynton pits were largely exhausted and unprofitable. Strikes in the 1920s cut production further. In 1935 the final pit in the area closed.

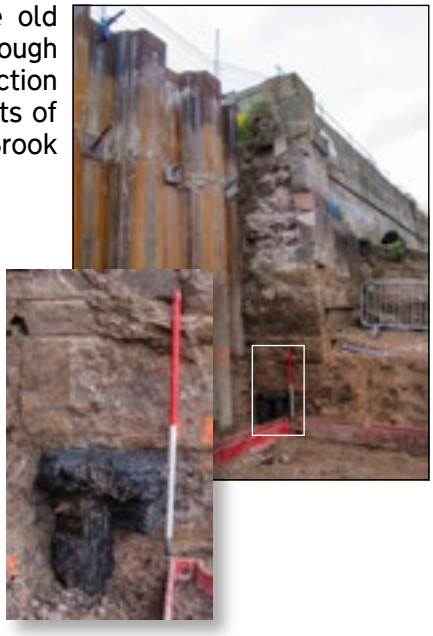
Coal mining doubtlessly boosted the economic development of the area, providing jobs for many and impressive profits for the lessees and owner alike. Mining also stimulated other local industries, such as brickmaking, needed for the construction of miners' housing and other industrial buildings.



Coal mining tunnel near Norbury Mill

Turnpike Remains at Norbury

The Manchester Airport relief road crosses the course of the old turnpike (or toll) road between Macclesfield and Stockport. Although the turnpike is now covered by the modern A523, the construction works offered the opportunity to investigate some other elements of the old toll road, namely the bridge that carried it over Norbury Brook and the site of the nearby toll house.

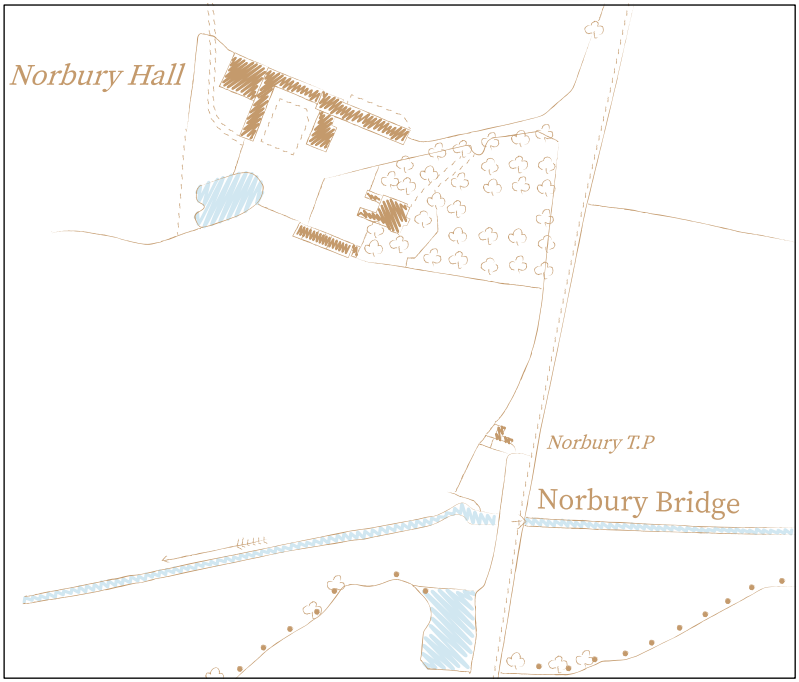


Norbury Bridge

In the early 1760s the existing road was upgraded to a turnpike and Norbury Bridge was widened and renovated, with the toll house constructed at around the same time. By the 1820s traffic over the bridge was substantially greater and improvements to the bridge were carried out, with a new arch, weir and foundations constructed.

As part of the Manchester Airport relief road scheme, the ground surface on the western side of the bridge was temporarily lowered by around 6 m, which exposed the lower foundations and later additions to the bridge.

Under the lowest stone foundations, a vertical timber post could be seen. This projected from the natural red sand and supported a timber cross beam. Sitting over the top of the post and the beam and fixed in position with iron pins was a thick (12 cm) plank, which the base of the stonework rested on. During the bridge widening in the 18th century, deep foundations were sunk to locate a solid base upon which to build. As the sand extends to a considerable depth this did not prove possible and a series of closely spaced wooden posts were sunk as piles to support a timber framework on which the stone bridge was constructed. The modern road construction therefore allowed these forgotten details to be exposed once more.



Toll house

Although no trace of the toll house remained above ground when the archaeological works took place, its location could be identified from old maps: the toll house is marked on the 1850 tithe map of the Township of Norbury and it also appears on the First Edition Ordnance Survey map of 1873–83. Tolls were no longer being collected by 1881 and the structure was demolished sometime between the production of the 1899 and 1909 maps.

The excavation successfully revealed the footprint of the toll house, with its walls surviving to a maximum of eight courses. Its main room (Room 1) measured approximately 5 m square and contained a small fireplace against the southern wall. Off this central room three smaller rooms were revealed.

Room 2 contained a possible brick base for scullery sinks and a brick-built floor. Turning to Room 3, lime plaster was preserved on the interior of all its walls, with a 1 m-wide doorway with a flagstone threshold seen in the eastern wall. This appears to form the outer eastern wall of the L-shaped structure depicted on the historic maps. Room 4 had a brick and flagstone floor, which was covered with a coal-rich silt layer, suggesting it was a coal store.

Turnpike milestone in Poynton © Phil Cunningham

It is presumed the house would have faced on to the road. To the west (rear) of the property, remnants of a flagstone surface overlaid with a mixed flagstone and brick surface were recorded. A nearby linear feature matched the plot boundary marked on historic maps and was probably the footing of a fence. In front of the house, a cobble surface was found, which would have formed part of the turnpike road surface or yard to the toll house. A stone-built soakaway and a brick-sided, stone-capped drain were found, which would have drained this area.

Turnpikes

Prior to the 18th century the construction and maintenance of roads were undertaken on a piecemeal basis by labourers paid for by richer ratepayers within each parish. As a result, the roads were generally in a poor state, with the route linking Stockport to Macclesfield being described as 'deep and ruinous... narrow, and cannot be sufficiently widened, altered and repaired by the ordinary course of events'. Such poor communications hampered economic development, and so from the early 18th century onwards turnpike trusts were established. Each was backed by an Act of Parliament, which gave the trustees the power to collect tolls from use of a particular section of road to pay for its upkeep and improvement. The Norbury toll house was the northernmost toll collection point on the turnpike between Stockport and Macclesfield, which received its Act of Parliament in 1762. A local family, the Pickfords, were instrumental in improving this route, as they had a business transporting goods and passengers, and later mail, between London and the Midlands and Manchester. Based in Poynton, the firm had much to gain from improving the main road through the village. The firm still exists, with Pickfords removals lorries being a familiar sight on British roads.

The toll road was initially a great success, not least because of the need to transport coal from local mines (see above). The Norbury toll bar was one of the busiest on this road. In 1803 the right to collect tolls at the bar cost £350, 33 years later this had increased to £2060. However, the coming of the canals and then the railways slashed the profitability of the turnpikes; toll bars came to be seen as hindrances to free trade, whilst local people had long resented having to pay to use roads that had hitherto been viewed as 'free'. For example, the New Mills toll gates were repeatedly destroyed. Local government reforms at the end of the 19th century saw responsibility for road maintenance pass to local councils. This spelled the end for the turnpike system, and the removal of toll gates was often accompanied by a fete or celebration.

The interior of the house and the area around it were filled with rubble, presumably generated from the building's demolition. Relatively few roof slates/tiles were present, suggesting these had been stripped off and carted away for reuse elsewhere before the house was razed. The majority of finds from the toll house derived from the demolition rubble and comprised everyday domestic items including pottery (plates, bowls, a teapot spout and pieces of a possible washstand jug), glass, clay pipe, textiles and iron objects (nails, bolts etc). The sole from a small (woman's or child's) round-toed, heeled shoe or boot was also found. One stoneware bottle (for mineral water or ginger beer) is stamped with the mark of '[...] Howard of Ardwick'.

Two glass bottles marked '(C RAY) / HERBALIST / MACCLESFIELD' were recovered from the floor surface in Room 3, with another glass drinks bottle, embossed 'D CLIFTON / STOCKPORT', found nearby. The latter bottle had a Codd closure system. This is named after Hiram Codd who in 1872 patented a method of sealing bottles of fizzy liquid using the pressure of the gas in the contents to push a marble against a rubber washer in the neck of the bottle. Such bottles, which were often broken by children who wished to play with the marbles, are still produced in some parts of the world.

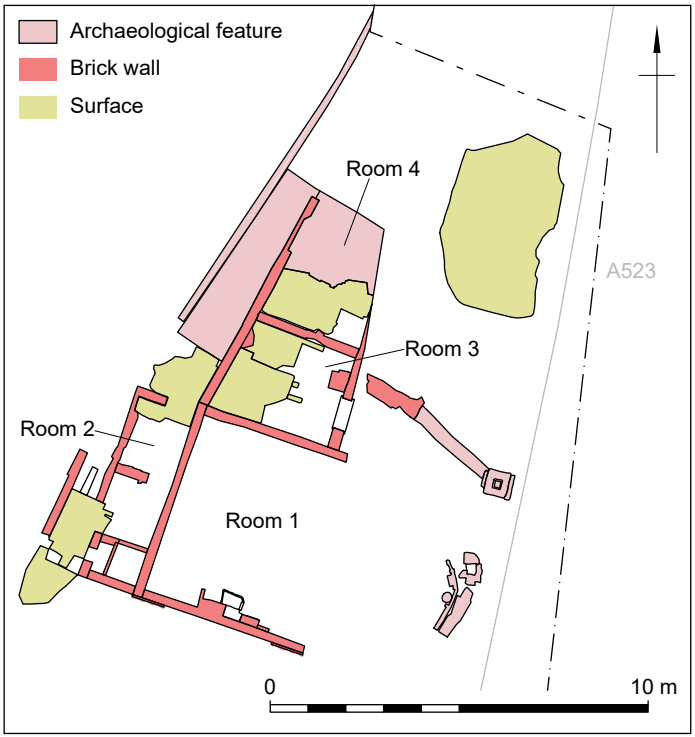
The finds from the toll house almost all belong to the 18th–20th centuries, which matches the map evidence for the lifespan of the building.

The Arnold family

Who might this material have belonged to? Parish records and census returns reveal that two generations of the Arnold family lived and worked at the toll house. Thomas Arnold was born in 1798, and married Betty Clough at St Mary's church, Stockport, 14 January 1822.

They had at least three children: Nancy, Martha Elizabeth and Sarah, but Betty died in 1836, a year after the birth of Sarah. The 1851 census records that Thomas Arnold, who had been an agricultural labourer, was the 'Toll Bar Keeper' at Norbury, where he lived with his three daughters. Nancy and the middle sister were silk handloom weavers. The youngest sister, Sarah, was 16, with no occupation listed. All three daughters were unmarried. Also in the household in 1851 was Thomas' nine-year-old niece, also called Betty Arnold. A possibility is that this niece was in fact the child of one of his daughters. Death records tell us that a Thomas Arnold died in Norbury in 1866 aged 68. By the 1871 census, Nancy Arnold was the head of the family at the toll house.

Accompanying Nancy in the household was her sister Sarah. It appears that by 1881 the building had ceased to function as a toll house, serving as a residence only. The building is described in the census of that year as 'The Old Toll House', and Nancy's occupation is listed as 'Formerly Toll Collector'. Sarah Arnold died aged 46 and was buried on 21 April 1881, a mere 18 days after the census was taken. Four years later on the 26 May 1885 Nancy (aged 65) followed her younger sister. Both sisters were buried in the same burial ground as their mother Betty, at St Thomas', Hazel Grove. Two herbalist's bottles were recovered from the remains of the toll house, and it is tempting to connect these bottles with the last days of the Arnold sisters. In 1891 and 1901 there were no census records for the building, which may have stood empty or derelict following the removal of the toll gate and the deaths of the sisters who had lived and worked there.

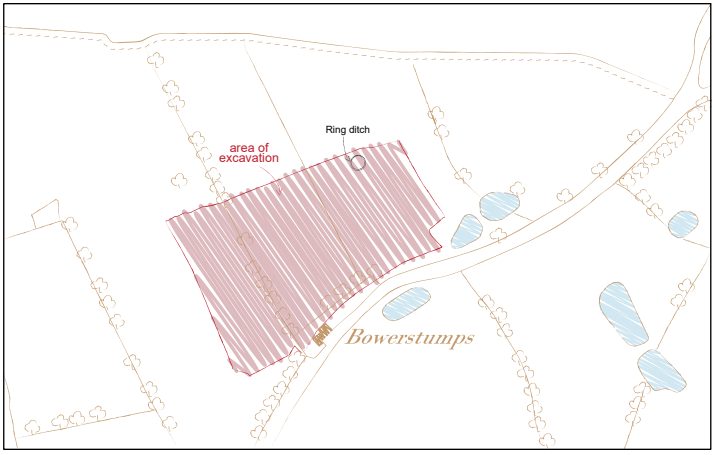


Looking north across the toll house

Bowerstumps: a Lost Post-medieval Dwelling

Pottery, particularly in the post-medieval period, is invariably the most common find on an archaeological site. This is because of its durability and the fact that it was widely used by all levels of society. When associated with individual layers in the ground (stratigraphic deposits) pottery is useful for dating and can be an indicator of trade, industry and social status. Pottery dating has cast some light on the early history of one of the houses from along the road corridor.

The site of a dwelling known as 'Bowerstumps' lay immediately to the south of the site where the Bramhall ring ditch (discussed above) was discovered. Bowerstumps is referred to in historic documents from 1770 and was demolished in the 1890s. Although the footprint of the building could not be examined during road construction, its backyard or garden area was investigated, when finds of domestic refuse from Bowerstumps' occupation were recovered. Artefacts included a 17th-century pipe bowl and pottery of the 17th to 18th century, including kitchen and tablewares such as black-glazed redwares, trailed slipware and Staffordshire-type feathered slipware. The date of this material could mean the Bowerstumps site was occupied up to 100 years before the first known written evidence relating to the property.



Pottery and clay pipes from Bowerstumps

Agriculture

Farming methods changed during the post-medieval period, as a growing population demanded more food and other agricultural produce. Developments included new machinery, more productive varieties of crop and livestock and new systems of cropping that enhanced the fertility of the soil. Also, of particular relevance to the rainy North West, the productivity of land was also enhanced by a more systematic approach to drainage, partly enabled by the introduction of mass-produced clay drainage pipes. Local brickworks were producing drainage goods from the early 1850s.

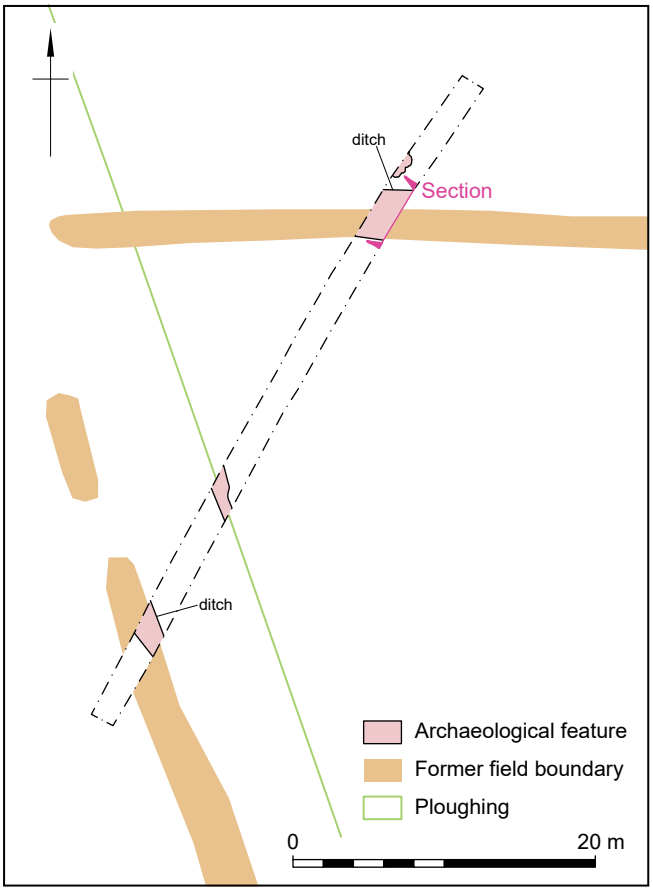
A local textile manufacturer, Samuel Oldknow experimented with mechanised irrigation, fertilizers (including 'nightsoil' – sewage and ashes from domestic fireplaces – shipped from Manchester) and cross-breeding of farm animals at his Mellor estate in the early 19th century. Oldknow received awards from the Manchester Agricultural Society for his efforts to improve local farming, and became President of the Derbyshire Agricultural Society.

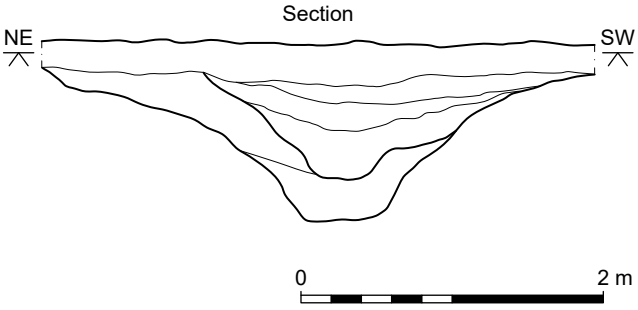
'The articles of milk and butter, which used to be supplied by the dairy farmers in the vicinity, at moderate rates, are now, from the increase of population, become as dear as in the metropolis'

John Aikin, 1795 'A Description of the Country from thirty to forty miles round Manchester'

Although many of these changes were underway in earlier centuries, the pace of change accelerated during the Industrial Revolution. At the same time the legal process of enclosure, whereby the ownership of open fields, commons and waste ground passed from communal to private hands (usually leading to the erection of field boundaries) enabled enterprising landowners like Samuel Oldknow to introduce these more efficient

Investigating a post-medieval field boundary near Moss Nook





methods of farming. Again, although piecemeal enclosure had been occurring for centuries, the process was accelerated by Acts of Parliament in the 18th and 19th centuries. Tithe maps, produced following a Parliamentary Act of 1836, record the agricultural landscape at this time and are an invaluable resource for studying the development of farming and the local landscape. Many of the field boundaries and structures encountered during the road scheme excavations appear on tithe maps.

Numerous land drains and field drainage/ boundary ditches were exposed along the road scheme, and are testament to the changes in agriculture in the post-medieval period. A number of such remains were found at the junction of the new road and the A6, where an area of agricultural earthworks was examined by means of three evaluation trenches. The most prominent feature was a backfilled field boundary ditch (3 x 1 m) that crossed the southernmost trench on an east–west alignment. A recut within the ditch showed that it had been emptied out at least once to prolong its use. The ditch matches the mapping evidence: the boundary which it marked is visible on the 1850 tithe map of the Township of Norbury but had been erased by the time of the production of the 1898 Ordnance Survey map. Records accompanying the tithe map record that in 1850 these fields belonged to the prominent local landowner Thomas Legh, and contained grassland. A second ditch at the opposite end of the trench (around 2 x 0.4 m) similarly matches a boundary shown on the map. Although such remains may appear humdrum, they are relics of a process that fed and clothed the people who were making our modern world.

Paula's Story

Paula Whittaker was born and grew up in Poynton, and now lives in Disley. She graduated in archaeology in the mid-1990s and has a wealth of experience from commercial field archaeology and research projects, both in this country and abroad. She joined Wessex Archaeology to work on the A6 Manchester Airport relief road, where she directed much of the fieldwork. But, in her own words...

It was 2015 and I'd just finished working for a company in Leeds when I heard construction of the airport road was starting, which was right in my neck of the woods and had been a rumour for over 50 years! I got straight on the phone and managed to get a job with Wessex Archaeology on the project. I could not believe my luck: I was so chuffed to get to work on such a long-running project in my homeland, and my parents' homeland before me.

The first site that I worked on was the Norbury Toll House. This was exciting as it lay next to Norbury Hall, a 'Scooby Doo' scary house that loomed large as a mystery in my early childhood and later as a teen when I worked at the Fiveways fish and chip shop just across the road. During the project I ended up leaning across the fence separating the site from the Hall, showing the grandchildren of the actually rather nice old lady who lived there a lovely prehistoric flint scraper [see above] *I'd found – not so scary after all!*

The Bramhall ring ditch lay a few hundred metres from my mum and dad's house on Chester Road, where I was born. A very faint curvilinear feature showed up in the initial topsoil strip. I have done a lot of digging in Cambridgeshire and the south-east where prehistoric features are the norm and so I was used to spotting such ephemeral colour changes in the ground. This was extremely exciting, imagining my ancestors who may once have visited the site, and were maybe even buried there? It's amazing what a difference it makes when it's your heritage that you're digging up, right on your doorstep, on the same road that you were born.

One of the most impressive finds from the whole project was the gigantic oak timber at Norbury Mill, which I found. Three, four, five metres, it just kept going, to over six metres in length, as I shovel-scraped along it. Oh, my goodness it was already six o'clock and I had a basketball match to get to, but the diggers didn't want to stop so I stayed on to get its location recorded and photographed.

Paula at the Bramhall ring ditch

The project was a privilege to work on and I was chuffed that I managed to leave a small personal legacy behind when I persuaded the construction engineers to leave part of the Norbury Mill stone boiler house wall exposed in the road embankment. In our family this wall is known for evermore as 'Mummy's wall', as we drive past it frequently. In fact, I think the kids are getting fed up with me mentioning it now!

Staying Safe on Site

In their high-visibility clothing, hard hats and safety boots, the archaeologists working on the A6 Manchester Airport relief road bore little resemblance to the tweed-clad pioneers of archaeology. Working practices have also been transformed as health and safety has become paramount in the profession: photographs from early excavations show cloth-capped workers standing below large unsupported walls of soil. Such techniques have led to fatal accidents in the past.

Archaeological sites can be hazardous places: from powerful earthmoving machinery, through contaminated materials and live electricity cables in the soil, to the ever-present risk of slips, trips and falls, each of these hazards requires measures to improve our working safety. As is standard for modern workplaces, risk assessments were carried out for the A6 road scheme sites, identifying and reducing the chance of harm as we worked. This shift has been brought about by health and safety legislation but also reflects the greater focus on professionalism and compliance that accompanied the development of commercial archaeology from the early 1990s onwards.

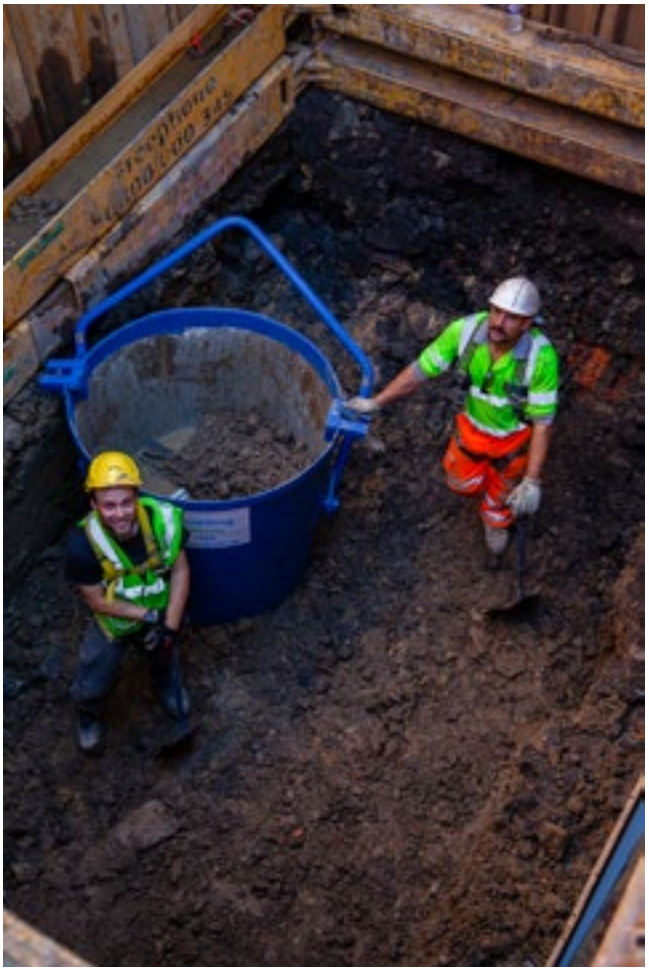
Minimal trench shoring and no protective clothing on an excavation c.1927–1930 © Museums Sheffield

Ground reports giving details on the past use of a site are consulted and used to draw up plans dealing with any contamination that may be found. We always check utility records for known electricity cables and gas mains and, also as standard, use a sophisticated 'cable avoidance tool' to scan for uncharted services before excavation. If we find dangerous materials such as asbestos or unexploded munitions, work is halted and the site cleared, with removal left to experts. In the case of excavation machinery, we use a trained worker to guide operators and keep the machines a safe distance away from people on foot. All our fieldworkers are certified in one or more health and safety in construction schemes, and our supervisors and managers undergo more advanced training, so that

everyone can carry out their work more safely. Each Wessex Archaeology site team contains at least one qualified First Aider.

Our work requires a high degree of physical labour, which can result in sprains, strains and other injuries. To prevent this, our fieldworkers are trained to use tools safely and take regular breaks in purpose-built cabins with seating, heating and a water supply. The use of sun cream is also strongly encouraged, as the risk of skin cancer is high with any outdoor working. In recent years 'toolbox talks' have become a standard way to pass on such safety information to workers.

As the focus of the nation turns toward mental, as well as physical, health we too recognise the problems within our industry. Mental health issues are common in archaeology: long periods working away from our loved ones in tough conditions can lead to loneliness, depression and other conditions. To help support our staff Wessex Archaeology has a mental health and wellbeing strategy, and all staff have access to trained counsellors. The training of mental health 'First Aiders' is also being undertaken as Wessex Archaeology addresses this issue.



Trench shoring and protective clothing, including harnesses, on a modern excavation

The Future of Transport

With its possible Bronze Age tracks and Roman roads, and the clear evidence for Industrial-era toll roads, canals and railways, the local landscape – itself studied ahead of the construction of a relief road improving access to an airport – reminds us that people and goods will always need to be transported from A to B. How that occurs in the coming years remains to be seen. In 2016 the UK government signed the Paris Agreement, which aims to limit the rise of global temperatures to 2°C above pre-industrial times by reducing greenhouse gas emissions. Recent figures reveal that emissions in the UK are falling, and a switch from the use of coal to gas and renewables for electricity generation means that it is the transport sector that is now the largest producer of greenhouse gases. On 1 May 2019 MPs approved a motion to declare an environment and climate emergency, and under the 'Road to Zero' programme, the government is investing in cleaner road transport. It seems clear that vehicles powered by fossil fuels will eventually be replaced by cleaner alternatives. However, future shifts may see a low-emissions approach 'designed in' to the economy and transport network, through decreasing the need for the movement of people and goods. This is already occurring: many people now work from home at least part of the time, and faster internet connections and developments in cloud-based platforms permit remote yet collaborative working. As a result, some organisations now operate without any fixed office location. A recent government-funded review of 'induced demand' (the process whereby improvements to the transport network are diminished by the extra traffic enabled by those improvements) found that it is most marked in urban areas or on highly congested routes, and that this should be factored in on future road building. How these environmental challenges, technological advances and improvements in the understanding of transport networks will affect how we travel remains to be seen. Perhaps the Manchester Airport relief road will itself, one day, be a relic of days gone by?

Glossary

Barrow	An upstanding earthwork monument, usually prehistoric in date, and typically but not always containing human remains
Dendrochronolgy	The dating of wooden structures or objects by the counting and measuring of tree-growth rings
Desk-based assessment	A report summarising existing sources of information concerning the built and buried heritage of a specific geographic area
Domesday Book	The surveys of the taxable assets of parts of England and Wales carried out by the new royal administration following the Norman Conquest
Environmental sampling	The collection of preserved plant and animal remains, typically within soil samples, to study human–environment interrelationships in the past
Geophysical survey	The systematic use of specialist scientific instrumentation to determine the presence or absence of sub-surface archaeological features, usually by detecting the different electrical or magnetic properties of such remains in comparison with the surrounding soil
Industrial Revolution	The use of new power sources and working practices to improve efficiency, primarily in resource extraction and manufacturing. In Britain, the Industrial Revolution is commonly dated to the late 18th-early 19th century and led to population growth, urbanisation, and social and political change
Millrace	A channel by which water flowed from a body of water to a waterwheel used to power machinery within a mill
Post-medieval	Relating to the period following the mid-16th century
Radiocarbon dating	The dating of organic material by measuring the decay of the C^{14} (radiocarbon) isotope
Tithe map	A map produced to establish what cash payments were required when tithe collection (the ancient system whereby 1/10 of local produce was paid to the Church) was discontinued in the 1830s. Tithe maps detail landholdings and name the owners and occupiers of land within a parish or township
Toll house	A building, usually accompanied by a physical barrier, where a toll was collected to allow passage along a turnpike. Toll houses were often domestic dwellings, inhabited by the toll collector and their family
Turnpike	A toll road, established by an Act of Parliament, with tolls used to pay for the upkeep of the road and provide a financial return for the road's investors
Watching brief	The monitoring of ground-disturbing works within a specified area, where there is a possibility that archaeological deposits may be disturbed or destroyed, leading to the investigation and recording of any remains found

Further Reading

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Copies of the detailed archaeological reports relating to the Manchester Airport relief road have been deposited with the Greater Manchester Historic Environment Record, which is maintained by the Greater Manchester Archaeological Advisory Service (GMAAS).

Earlier pdf volumes in the Greater Manchester's Past Revealed series can be downloaded at https://diggreatermanchester.wordpress.com/publications/

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The excavation team included Jonathan Buttery, Nick Woodward, Luke Roberts, Jack Peverall, Maria-Elena Calderón, Adam Green, Martina Tenzer, Jack Fox-Laverick, Andrew Swann, Hannah Holbrook and Sam Birchall, with much work carried out under the on-site direction of Paula Whittaker. Much of the information in this booklet draws on finds and environmental work carried out by Inés López-Dóriga (environmental remains), Lorrain Higbee (animal bone), Jacqueline McKinley (human remains), Ian Tyers (dendrochronology), and Lorraine Mepham (pottery and other finds) with contributions from Otis Gilbert, Gwen Naylor, Andrew Swann and Paula Whittaker. Ashley Tuck undertook the genealogical research on the Arnold family and wrote the text relating to the same. Additional finds photography was undertaken by Maria Marinou. The project was managed by Lucy Dawson, Chris Swales and Andrew Norton.

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The construction of the Manchester Airport relief road provided an opportunity for archaeologists to investigate the historic landscape on the southern fringes of Greater Manchester. The earliest remains were a Middle Bronze Age (1600–1100 BC) pit containing cremated human bone lying alongside an enigmatic ring-shaped monument, found between Bramhall and Poynton. The majority of the discoveries, however, dated to the post-medieval and Industrial periods, and include a former corn mill, a turnpike toll house and a possible medieval moated manor, all near Norbury. This well-illustrated booklet, generously funded by roadbuilders Carillion Morgan Sindall Joint Venture, presents a summary of the most significant sites and their broader context in the local landscape. It also provides an insight on archaeological methods, along with the experiences of some of those who carried out the fieldwork.

ISBN 978-1-911137-20-7

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Front cover: Yard area near site of Norbury toll house
Back cover (upper): Post-medieval land drainage ditches near Moss Nook
Back cover (lower): The Bramhall ring ditch

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