BURTON UPON TRENT FLOOD ALLEVIATION SCHEME, STAFFORDSHIRE

Archaeological Watching Brief

Oxford Archaeology North

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ENVIRONMENT AGENCY

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SUMMARY

Oxford Archaeology North (OA North) were commissioned in June 2006 by Jacobs Babtie, on behalf of the Environment Agency, to undertake an archaeological watching brief at specified locations along the River Trent on the eastern side of Burton-upon-Trent (from NGR SK 2620 2590 (north) to SK 2480 2150 (south)), during groundworks undertaken for the purposes of a Flood Alleviation Scheme (FAS). Previous archaeological investigations, including a desk-based assessment (Jacobs Babtie 2004) and trial trenching (OA North 2006), had identified nine sites of archaeological potential that could be affected by the proposed scheme. These included, from north to south, Meadow Lane, Wetmore Hall Farm, Library Street, Memorial Gardens, Burton Abbey, Green Street, Burton Technical College, and Upper Mills Farm. However, groundwork at the Library Street and Green Street sites were cancelled or modified, thereby not requiring any archaeological mitigation; at Burton Abbey the archaeological mitigation took place under scheduled monument conditions and entailed both excavation and watching brief, the results of which will be reported separately (OA North forthcoming).

Elsewhere, the existing earthworks along Derby Road and Meadow Lane required repair and modification to increase the bund height and width. This consisted of the removal of topsoil by mechanical excavator along the length of the proposed bund extension, with some deeper excavations for walls and piling, although the excavation of unsuitable underlying material was also necessary. Consequently, the groundworks were carried out under a permanent archaeological presence at the remaining five sites between June and October 2006

Only one site, the Memorial Gardens, produced significant archaeological remains; during excavations of wall foundations, five skeletons (***3***, ***4***, ***7***, ***8*** and ***19***) were revealed and are most likely to be associated with an eighteenth- and nineteenth-century burial ground immediately to the north of the site. Upon discovery, the human remains were cleaned with minimal disturbance and recorded *in situ* before being covered over. Several later post-medieval features of archaeological interest were noted at Upper Mills Farm, including a shallow boundary ditch, ***17***, which had been re-cut as ditch ***1***; a pit or depression with accumulated material, ***13***; and an insubstantial brick structure, ***18***. At the College Site a mid-twentieth-century garden wall, ***24***, was identified as well as a modern retaining wall for redeposited rubble ***32***. At Wetmore Hall Farm the only feature observed was a brick-lined cesspit, ***29***, which was used during the mid-twentieth century by the present family, but may date originally to the nineteenth century. At Wetmore Road part of a substantial nineteenth-century building, probably an engine house, was exposed.

The impact of the FAS upon the archaeological resource will be minimal. The significant archaeological remains comprising the inhumations at the Memorial Gardens will be protected from the development by raising the levels of construction. Elsewhere, across most sites only the upper topsoil deposits were stripped, with little or no disturbance of any subsoil and, therefore, of any potential below ground archaeological remains. Those archaeological features or deposits that were identified during the watching brief relate to later post-medieval recent local land use and have been adequately recorded as part of the present scheme of works.

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The fieldwork was undertaken by Paul Clark, Chris Healey, Andy Lane, Andrew Bates and Kelly Clapperton. The finds were assessed by Rebekah Pressler. The report was written by Kelly Clapperton, and the drawings were produced by Karl Taylor and Mark Tidmarsh. The project was managed by Emily Mercer who also edited the report, together with Stephen Rowland.

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1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

1.1.1 Jacobs Babtie, on behalf of the Environment Agency, commissioned Oxford Archaeology North (OA North) to undertake a programme of archaeological watching brief during groundworks associated with the Burton-upon-Trent Flood Alleviation Scheme (FAS). The aim of the scheme was to repair and strengthen the existing flood defences along the River Trent, to the east of the town of Burton-upon-Trent, Staffordshire (from NGR SK 2620 2590 to SK 2480 2150; Fig 1), by increasing the bund height and width, as well as the construction of new bunds. The groundworks consisted mainly of topsoil stripping with some removal of unsuitable underlying deposits, together with some deeper excavations for walls and piling.

1.1.2 Previous archaeological investigations, including an archaeological desk-based assessment undertaken for the scheme (Jacobs Babtie 2004) and subsequent trial trenching along Derby Road and Meadow Lane (OA North 2006), identified nine areas of archaeological potential that may be impacted upon by the scheme (Figs 2a and 2b). These nine sites comprised, from north to south: Meadow Lane (SK 2630 2600), possibly on the course of Roman Ryknild Street; Wetmore Hall Farm (SK 2570 2500), where aerial photography has identified the presence of a number of cropmarks of possible prehistoric and Roman date; Wetmore Road (SK 2540 2360), close to Nether Hall; Burton-upon-Trent Library (SK 2530 2280); the Memorial Gardens (SK 2490 2260), where there was a known burial ground; Burton Abbey (SK 2510 2270), a medieval foundation; Green Street (SK 2470 2230); Burton Technical College (SK 2500 2260) where there were numerous listed buildings in close proximity; and Upper Mills Farm (SK 2460 2160), near to which had been found a number of Roman remains and also the former site of a post-medieval colour mill. However, work at the Library and Green Street sites were cancelled or modified, thereby not requiring an archaeological presence. At Burton Abbey, mitigation carried out under scheduled monument conditions comprised an excavation and watching brief; the results, therefore, will be reported separately (OA North forthcoming).

1.1.3 The watching brief at the five remaining sites was undertaken in accordance with the requirements detailed in a Written Scheme of Investigation (WSI) produced by Jacobs Babtie (*Appendix 1*) and was carried out between June and October 2006. This report details the results of the fieldwork.

1.2 LOCATION, GEOLOGY AND TOPOGRAPHY

1.2.1 The town of Burton-upon-Trent, Staffordshire, lies approximately 16km south-west of Derby, 32km east of Stafford and is located at the narrowest point of the Trent valley, with the Needwood plateau on the west, and the South Derbyshire plateau to the east. The town centre sits to the west of the floodplain on a terrace consisting of a variety of fluvio-glacial, periglacial and

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river deposits, mainly gravels and sands, which overly basal Triassic (251 to 210 million years ago) mudstones and outcrops of Permian Old Red Sandstone (298 to 251 million years ago) and Triassic New Red Sandstone (Institute of Geological Sciences, 1979). There is a substantial contrast between the sandy-loam on the river terraces and the clay-loam of the floodplains, which has influenced settlement patterns and land use, with extensive areas of arable land within low hedges and few hedgerow trees (Countryside Commission 1998, 103). Further to the west is the Trent and Mersey Canal, from here the land rises to Shobnall Grange, before ascending sharply to an escarpment at 61m OD. To the east the land rises to a height of 122m OD, where Ashby Road passes into Derbyshire (Jacobs Babtie 2004).

1.3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

1.3.1 ***Introduction:*** a desk-based assessment undertaken by Jacobs Babtie (2004) has already investigated the historical and archaeological background of the area to be affected by the FAS. The following is intended only as a summary of the information from that document, together with any additional information from the recent fieldwork programme (OA North 2006) in order to provide an archaeological and historical context for the results of the present fieldwork.

1.3.2 ***Prehistoric period:*** evidence for human activity during the Mesolithic around Burton-upon-Trent is scarce, although chance finds of flints, and a burial of a female on an elevated platform beside the river Trent at Branston are thought to date from this period and indicate activity in the locale (*ibid*). During the Early Bronze Age burial activity seems to have concentrated on the river terraces but it is not until the Late Bronze Age and Early Iron Age that settlement remains have been identified, exemplified by that to the south of Catholme Farm. Probable Bronze Age objects have been recovered north of Burton and there seems to have been an Iron Age cremation cemetery south of Stretton village (*ibid*). Cropmarks, including boundaries and pit alignments located to the north of Wetmore Farm and close to the watching brief area, may be prehistoric in origin.

1.3.3 ***Roman period:*** the course of the Roman road known as Ryknild Street follows Derby Road, immediately to the north-west of the FAS, and runs through the Meadow Lane site. The Roman Road ran diagonally through the later parish of Burton, linking Wall, near Lichfield, and the fort at Little Chester, near Derby. This road at Meadow Lane was targeted during trial trenching (OA North 2006), but the evaluation found only made ground containing mortar, brick, concrete and metal, believed to be associated with the construction of the existing flood defences. Whilst it is possible that later disturbance/truncation has removed all evidence of the road, it is also possible that the road may have been positioned outside the bounds of the trench and, therefore, could not be located (*ibid*). Chance finds of Roman date within, or close to, the watching brief area include a key, a 'weapon' and mortaria fragments from Branston Road, close to Upper Mills Farm (*ibid*). Spurious documentary sources suggest the existence of a Roman fort at Branston, south of Burton, deriving from a Roman settlement in an area called '*Ad Trivonam*' (Jacobs Babtie

2004). At Clay Mills, in Stretton, a first- or early second-century AD bronze torc was recovered, whilst within the Burton area Romano-British settlements were located at Stapenhill and Catholme, both of which may have continued to exist in the early Anglo-Saxon period (*ibid*).

1.3.4 ***Early medieval period:*** after the end of Roman administration in the early fifth century AD, Britain devolved into a series of small kingdoms with tribal origins that developed under a number of internal and external cultural influences; by the early seventh century the powerful Anglian kingdom of Mercia enveloped most of the Midlands. During the 660s, several monasteries or minsters were established in Mercia by Bishop Wilfred of York, probably including one at Burton. Andresey, or 'Andrew's Isle', an island in the River Trent, was named after its church dedicated to St Andrew, reputedly built by St Modwen, who gave her name to the early medieval settlement at Burton: 'Mudwennstow' (Modwen's holy place). The present name of Burton, coined in the eighth century, refers to a fortified settlement and may have been focussed on the Stapenhill bank of the Trent, where Modwen is supposed to have built a second church, an (albeit interrupted) antecedent of the present parish church (*ibid*; Roe 2002). Burton's Benedictine Abbey is thought to have been founded by Wulfric Spot, Earl of Mercia, around the turn of the eleventh century (Jacobs Babtie 2004).

1.3.5 ***Medieval period:*** the abbey had an important influence on the development of Burton and its surroundings, with granges at Bond End and Shobnall, on the edge of town (*ibid*). Surveys of the early twelfth century show that smallholdings had been created in the outlying settlements (Branston, Stretton, Wetmore, and Winshill) and in Burton itself (*ibid*). The abbey also played a significant role in the English cloth trade and, in the 1340s, the abbey acquired a fulling mill on the Trent (*ibid*).

1.3.6 ***Post-medieval period:*** the reformation saw control of Burton transferred from ecclesiastical to secular hands. The site of the college and all its lands, including the manor of Burton, were duly granted to the Paget family in January 1546 (*ibid*). The textile trade, then the main industry in Burton, expanded in the second half of the sixteenth century, with the existing medieval fulling mill on the River Trent supplemented by two new ones, built in the mid-1550s and 1574. The town's strategic position and lack of defences meant that the English Civil War had a severe impact on the town and its industries and, by 1700, the fulling mills were in poor repair, and shortly thereafter all three ceased cloth production (*ibid*).

1.3.7 Economic revival was stimulated in the early 1710s when the Trent was made navigable for boats, allowing the town to become a nodal point for trade and encouraging riverside development (*ibid*). The transport network was also a significant factor in the expansion of the brewing industry, which had developed as a result of the local mineral-rich groundwater; by 1880 there were 30 breweries in the town, although now only five survive. Mills of various types were located along the Trent, including the colour mill, close to the Upper Mills Farm watching brief site. This now demolished mill, which apparently used water power to grind pigments, is shown on Spooner's map of

1857, but is recorded as 'disused' on the first edition Ordnance Survey map of 1884 (o*p cit*, 25)

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2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 The OA North project design (*Appendix 2*), produced to meet the requirements of the Jacobs Babtie Written scheme of Investigation (*Appendix 1*), was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.2 WATCHING BRIEF

2.2.1 The groundworks undertaken at six separate sites along the Trent (Figs 2a and 2b) required an archaeological watching brief for the purposes of repairing or modifying the existing flood defences. All topsoil stripping and/or removal of overburden was undertaken mechanically. Any soil horizons exposed were examined and all archaeological features and finds identified and recorded. The exact configuration of groundworks varied from site to site, as follows:

2.2.2 ***Meadow Lane Farm*** (Fig 3): a mechanical excavator was used to strip the topsoil and modern overburden from the south side of the existing bund; these works were undertaken prior to the arrival of the archaeologist, whom was able to inspect the exposed soil horizons.

2.2.3 ***Wetmore Hall Farm*** (Fig 4): a topsoil strip was undertaken of an area to the north and east of Wetmore Hall Farm. A bulldozer was used to remove the upper deposits of topsoil, while a 360° mechanical excavator followed on behind removing the final inches of material to facilitate visibility.

2.2.4 ***Memorial Gardens*** (Fig 5): a small three-ton mechanical excavator fitted with a 0.5m wide toothed bucket was used to open up the area around the existing boundary wall. Once the concrete foundations were exposed (measuring 0.4m depth and 0.65m width) a hydraulic breaker, fitted to the excavator, was used to remove the remains of the wall (Phases 1 and 2). The foundations became shallower and wider (0.25m depth and 1.4m wide) enabling a mini-digger to lift the foundations with little or no prior excavation to expose them (Phase 3-5).

2.2.5 ***College Site*** (Fig 6): a five-ton excavator fitted with a 2m wide ditching bucket was used to strip an area of topsoil, *c* 4m wide by *c* 0.3m deep, from the existing earthwork bund. A small trench measuring 0.35m in width and 0.2m in depth was excavated into the bund for the installation of an electricity conduit. The final phase required a small tracked excavator fitted with a 0.8m wide ditching bucket to grub up six tree stumps and excavate a narrow trench along the line of the bund.

2.2.6 ***Upper Mills Farm (wetland scrapes)*** (Fig 7): the site was divided into five fields. Two bulldozers were used to removed the upper deposits of topsoil and a 360° mechanical excavator followed behind, stripping remaining topsoil and

subsoil down to the natural clay geology, although visibility was much reduced.

2.2.7 ***Wetmore Road*** (Fig 8): although the area was not part of the original WSI (*Appendix 1*), minor groundworks off the Wetmore Road, on the immediate western side of the river Trent, exposed some sections of archaeological structural remains and deposits. These remains were recorded as though the area was subject to watching brief conditions.

2.2.8 ***Recording:*** recording was by means of OA North's standard context recording system, with trench records and supporting registers and indices. The site archive included both a photographic record and accurate large-scale plans and sections at an appropriate scale. A full and detailed photographic record of individual contexts was maintained and, similarly, general views from standard viewpoints of the overall site at all stages of the evaluation were generated. Photograph records were maintained on *pro-forma* sheets.

2.3 FINDS

2.3.1 All exposed finds were lifted, cleaned and bagged in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition). All identified finds and artefacts were retained from all material classes; these were hand collected from stratified deposits for processing and assessment.

2.4 ARCHIVE

2.4.1 A full professional archive has been compiled in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The archive will be deposited in the Potteries Museum and Art Gallery, Stoke-on-Trent, with a copy of the report being submitted to the Staffordshire Historic Environment Record (HER).

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3. FIELDWORK RESULTS

3.1 INTRODUCTION

3.1.1 The results of the watching brief undertaken during the groundworks for the FAS are presented below by site, from north to south (Figs 3-8). The contexts are listed in *Appendix 3*, with details of the human remains encountered at the Memorial Gardens presented in *Appendix 4*. The finds are discussed in *Section 3.8* and a detailed list provided in *Appendix 5*.

3.2 MEADOW LANE

3.2.1 Prior to an archaeologist arriving on site, a 2m wide strip for the new bund, together with a 1.2m deep pit at the western end of the strip, had been excavated (Fig 3). This pit had flooded and, whilst complete recording was not possible, an examination of the excavated material showed this to consist of large quantities of nineteenth- and twentieth-century fuel ash, brick fragments and heavy hydrocarbon contamination, which correlates with the results of trial trenching undertaken previously (OA North 2006). It appeared as though this pit had been used by the occupants of the farm as a convenient dumping site.

3.3 WETMORE HALL FARM

3.3.1 Approximately 0.2m of topsoil was removed, although the natural geology was rarely exposed and there was thus little opportunity to observe features of archaeological interest (Fig 4; Plate 1). To the west of the stripped area, much of the exposed material comprised made ground consisting of modern building rubble likely to be associated with the construction of the nearby housing estate. The topsoil, ***35***, comprised dark brown humic sandy silt with <10% building debris, including brick, metal, ceramics and plastic. The natural geology, ***36***, was an orange/brown silty clay with discrete deposits of glacial sand and gravel throughout.

3.3.2 In the north-east corner of the site (Fig 4) a small brick-lined cesspit, ***29***, was observed (Plates 2 and 3). It was aligned east/west and measured 2m x 1.25m, reaching an internal depth of 1m. It was constructed from mortar-bonded handmade bricks. A slot cut through the western end revealed that is was ten courses deep, and the walls two skins thick. An inflow/outflow pipe was noted in the western wall, and may well be duplicated in the eastern wall. The upper fill, probably a deliberate backfill, comprised an orange/red iron-stained silt matrix, with 60% medium to large iron slag inclusions, ***30***. The lower deposit, most likely relating to the structure's original function as a cesspit, was a brownish-orange gritty silt with occasional small fragments of iron slag, ***31***. Deposit ***31***. Discussions with the farmer revealed that the cesspit had been used by his family in the mid-twentieth century; it is unlikely that the structure pre-dates the nineteenth century.

3.4 MEMORIAL GARDENS

3.4.1 ***Phase 1*** (Fig 5): the exposure of 5m of foundations for the existing garden wall, 0.65m wide by 0.4m deep, was observed. The material within the foundation cut was most likely backfill from the original construction cut, and comprised light brown sandy silt heavily disturbed by plant and animal activity; no finds were recovered. The wall was then dismantled and removed, but no features of archaeological significance were identified.

3.4.2 ***Phase 2*** (Fig 5): a 30m section of foundation for the existing garden wall, 1.4m wide by 0.25m deep, was removed, with a 1.1m square trench machine-excavated to the north. There had been little disturbance during the construction of the wall, and similar stratigraphy was observed behind the wall and within the trench. The lowest observed deposit comprised 0.1m of compact dark brownish-grey clay, which was overlain by a 0.08m thick deposit of compact back clinker, itself overlain by a 0.17m thickness of firm yellow sandy clay, lying beneath the 0.1m deep light brown sandy silt topsoil. No finds or archaeological features were observed.

3.4.3 ***Phase 3*** (Fig 5): the excavation of foundations for a new garden wall involved the removal of loose gravely topsoil and subsoil deposits of dark brown humic clay and red/brown sandy clay. This revealed two east/west aligned graves, ***3*** and ***4***, containing skeletons ***5*** and ***6***, respectively (Plate 4). These were cleaned and recorded, but were left *in situ*. A further two graves, ***7*** and ***8***, containing skeletons ***10*** and ***12***, respectively, were discovered approximately 27m to the west (Plate 5). Graves ***7*** and ***8*** measured 1.1m x 0.73m and 0.75m x 0.3m respectively, and both were backfilled with red/brown loose clayey sands with *c* 12% inclusions of disarticulated human bone, ***9*** and ***11*** respectively. Again, these graves were cleaned and recorded *in situ* before being covered over. No finds or dating evidence were recovered from any of the graves.

3.4.4 ***Phase 4*** (Fig 5): essentially a continuation of the Phase 3 foundation trench, excavation of a 40m stretch revealed a 0.5m thickness of paving slabs above concrete in the northern half of the trench, with topsoil and a light yellow-brown sandy clay subsoil to the south. Towards the eastern end of the trench this subsoil contained 15% building debris, whilst that at the western end contained localised deposits of clinker and building material up to 0.7m deep. Towards the southern limit of the trench a brick-lined grave, ***19***, was exposed (Plate 6). Within the trench the grave measured 1.2m x 0.8m and was lined with mortar-bonded unfrogged bricks and capped with stone slabs: several coffin fragments were also observed, together with a shield-like coffin plate. As in Phase 3, the grave was recorded and left *in situ*.

3.4.5 ***Phase 5*** (Fig 5)***:*** during the excavation of a 6.2m water sump (Plate 7), a sandstone and brick wall was revealed, as well as two service trenches. The wall, for which no sign of a construction cut was observed, ran north-east/south-west, before returning north-west/south-east as part of the existing Memorial Gardens wall. The underlying deposits comprised red/brown sandy silt to a depth of 1.76m, which to the north-east of the wall was overlain by layers of black clinker, white mortar and tarmac.

3.5 COLLEGE SITE

3.5.1 Approximately a 0.3m depth of material was removed during groundworks in this area (Fig 6). Removal of dark grey fine sandy silt and clay topsoil, ***27***, overlying the existing flood defence bund, ***26***, revealed the composition of this feature to consist of mid-orange/grey redeposited clay with inclusions of rubble and coal fragments, ***28***. One possible garden feature, ***24***, was identified cutting into the bund near the north-eastern end of the trench and consisted of a single course sandstone footing measuring 3.3m x 0.3m. A modern storm drain was also located during the final phase of the topsoil removal.

3.5.2 The grubbing-up of six tree stumps and the excavation of a trench, following a proposed piling line, were undertaken during a permanent archaeological presence, to the east of the College (Fig 6). Tree grubbing to a depth of 0.5m indicated that the ground had been recently made-up, and the subsequent excavation of the piling trench confirmed this. A 1.5m long section of a 0.5m wide east/west aligned stone wall, ***32***, was revealed within the trench and was seen to be abutted by the existing brick wall (Plate 8). Wall ***32*** survived to a height of 0.75m and comprised brick, stone rubble and mortar foundations capped with reused sandstone blocks. No construction cut was identified, and the wall was probably constructed to help retain the surrounding made ground.

3.6 UPPER MILLS FARM (FIG 7)

3.6.1 ***Field 1:*** only the first few inches of light brown sandy-silt topsoil were removed, occasionally exposing the light yellowish-orange sandy clay natural. Although bricks and post-medieval pottery were observed in the topsoil, no features of archaeological significance were identified.

3.6.2 ***Field 2:*** again archaeological visibility was low due to the insufficient removal of topsoil, within which the occasional fragment of post-medieval brick and pottery was observed. No features of archaeological significance were identified, although some north-east/south-west aligned field drains were observed running from Field 3

3.6.3 ***Field 3:*** topsoil comprised a light brown sandy silt, and natural a light yellowish-orange sandy clay. Modern land drains were observed running north-east/south-west, although no features of archaeological significance were identified or finds recovered.

3.6.4 ***Field 4:*** the topsoil consisted of a dark brown clay silt approximately 0.3m in depth, while the natural drift geology was a light pinkish-brown sandy clay. A ditch was observed running north-west/south-east next to a hedge boundary, and was probably recently backfilled, as the upper fill contained plastic and building rubble. In the western part of the field the truncated remains of an insubstantial brick structure, ***18***, were exposed across an area measuring approximately 11.3m by 1.3m (Plate 12). Aligned north/south with a western return, the surviving structure consisted of two skins of unbonded handmade bricks.

3.6.5 ***Field 5:*** topsoil comprised a light brown sandy silt, while natural geology was a light brown sandy clay. Fragments of post-medieval pottery were found in the topsoil and, in the north-east corner of the field a brick-filled ceramic drain was observed whilst a modern land drain was identified running east/west across the field. An east/west aligned ditch, ***1***, was identified in the south-eastern part of the field (Plates 10 and 11). It measured over 60m long and was 1.4m wide, with slightly concave sides and base. The ditch entered the stripped area from the east before turning northwards towards the centre of the field (Fig 7). Ditch ***1*** was a re-cut of an earlier ditch, ***17***, which was filled with a patchy dark grey/brown loose silty sand, ***15***, which contained frequent fragments of rubble, ceramics and ash (Plates 10 and 11). At the northern extent of Field 5, a possible pit, ***13***, was recorded. Irregularly sub-rectangular in form, this feature could represent the accumulation of relatively modern material in a depression.

3.7 WETMORE ROAD

3.7.1 Minor groundworks comprising the excavation of a trench 3.5m wide had taken place adjacent to the canal wall (Fig 8). These exposed what appeared to be part of a nineteenth-century engine house, constructed from handmade bricks. It was a necessarily sturdy construction at five skins (0.6m) thick. Two cast iron steam pipes had been exposed alongside deposits of fuel ash, which had backfilled the bays formed by the walls.

3.8 FINDS

3.8.1 *Quantification:* in total, 22 finds were recovered during the watching brief. The assemblage is characterised and assessed for potential for further analysis below; a catalogue of the finds is presented in *Appendix 5*.

3.8.2 ***Post-medieval pottery:*** seventeen fragments of pottery, all of post-medieval date, were retrieved from the site. Ditch fill ***2***, from Upper Mills Farm, produced four sherds in total, including two fragments of brown-glazed buff-coloured earthenware of roughly eighteenth-century date. Two sherds from dump deposit ***15*** at the same site were more broadly dated to the eighteenth to twentieth centuries. At the College site seven fragments of a fine nineteenth- to early twentieth-century transfer-printed creamware plate and two sherds of eighteenth- to nineteenth-century blackware were recovered from bund make-up ***28***.

3.8.3 ***Glass:*** a single modern bottle (possibly for tabasco/brown sauce) was recovered from the make-up of bund ***28***.

3.8.4 ***Clay pipe:*** four clay pipe fragments were recovered from two contexts. Ditch fill ***2*** produced a single bowl with rouletted decoration at the rim, dating from the last quarter of the seventeenth century to the first quarter of the eighteenth. Deposit ***15*** produced three fragments comprising a piece of stem and a complete undecorated bowl/part stem with an impressed maker's mark,

together with a press mould-decorated bowl fragment of broadly eighteenth-century date

3.8.5 ***Assessment:*** although none of the finds derived from primary contexts, they are at least of some use in providing some dating information for the contexts from which they were recovered and for providing more general dating evidence for activity in the wider area. However, the small size of the assemblage together with its provenience, means that it has no potential for further analysis.

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4. DISCUSSION AND IMPACT

4.1 DISCUSSION

4.1.1 All of the archaeological features identified during the Burton Flood Alleviation Scheme watching brief date to the post-medieval and modern periods. The most significant features were graves ***3***, ***4***, ***7***, ***8*** and ***19*** identified in the Memorial Gardens (Fig 5; Plates 4-6). Although no datable finds were recovered from any of the graves, features such as the brick lining of grave ***19*** and the accompanying coffin plate would tie in with the documentary evidence provided by the Jacobs Babtie desk-based assessment (2004), which records the Memorial Gardens as the site of an eighteenth- and nineteenth-century graveyard.

4.1.2 The remainder of the identified archaeological features date to the later post-medieval period and individually are not of great significance. The small brick structure identified at Wetmore Hall Farm, ***29***, was used in the twentieth century as a cesspit by the local farming family, and is unlikely to pre-date the nineteenth century. Given the shallow depth of the groundworks in the area, it is unsurprising that no evidence was encountered for the possible prehistoric and Roman cropmarks identified within the area by aerial photography. Walls ***24*** and ***32*** observed at the College site probably post-date the mid-twentieth century and relate either to garden features or to aid retention of the made ground in the area (Fig 6; Plate 8). At Upper Mill Farm, ditches ***1*** and ***17*** are hard to date, since the recovered eighteenth-century pottery could have been present in the topsoil long before it entered the backfill of the feature. As such, they probably relate to post-medieval parliamentary enclosure, but the possibility that they pertain to earlier land divisions cannot be completely discounted. If pit ***13*** is indeed an archaeological feature rather than natural in origin, then it is most likely to relate to fairly recent activity associated with Upper Mills Farm (Fig 7: Plates 9-12). Structure ***18*** seems unlikely to relate to the post-medieval colour mill after which the farm was named; the structure is too insubstantial to be the mill itself and in any case lies a good 150m or so to the north-west of the colour mill's location as shown on the Jacobs Babtie desk-based assessment map. Instead, it may represent some sort of shed, barn or coop for the later farm. The location and industrial character of the structure identified at Wetmore Road means that is clearly nothing to do with Nether Hall, the principal site of historic interest in the area. Additional map regression analysis might be able to identify the structure more exactly, but the 1888 first edition Ordnance Survey map shows this area to be heavily developed by the end of the nineteenth century, with a profusion of railway sidings, industrial buildings and, not unexpectedly, malthouses.

4.2 IMPACT

4.2.1 The impact of the FAS upon the archaeological resource will be minimal. The significant archaeological remains comprising the inhumations at the Memorial Gardens will be protected from the development by raising the

levels of construction. Indeed, the programme of fieldwork has been of use in highlighting the presence and location of human remains for any future groundworks in the area. Elsewhere, across most sites only the upper topsoil deposits were stripped, with little or no disturbance of any subsoil and, therefore, of any potential below ground archaeological remains. Those archaeological features or deposits that were identified during the watching brief relate to later post-medieval recent local land use and have been adequately recorded as part of the present scheme of works.

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APPENDIX 1: WRITTEN SCHEME OF INVESTIGATION

ENVIRONMENT AGENCY

JACOBS BABTIE

Burton upon Trent Flood Alleviation Scheme

Archaeological Watching Brief

Volume 1: Written Scheme of Investigation

B1990800 May 2006

REGISTERED ORGANISATION IFA

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ENVIRONMENT AGENCY

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Date	Revision	Status
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1 Introduction

1.1 Jacobs Babtie has been commissioned by the Environment Agency to manage a programme of archaeological evaluation works on the Burton upon Trent Flood Alleviation Scheme.

1.2 An Asset Condition Survey that included an Archaeological Desk-based Assessment was undertaken by Jacobs Babtie in 2004. Geophysical and earthwork surveys were made of land adjacent to the Abbey Inn in November 2005 by Archaeological Services WYAS (ASWYAS) and Jacobs Babtie respectively (ASWYAS 2005; Jacobs Babtie 2005). Trial Trenching in the Meadow Lane and Derby Road areas was undertaken by Oxford Archaeology North (OAN) in December 2005 (OAN In Prep.).

1.3 This specification sets out the requirements for a programme of archaeological works to be undertaken on areas defined in section 3 below, and Figures 3 and 4. The works comprise two elements:

- Archaeological Watching Brief during construction at 8 locations; and
- Archaeological Excavation at the site of Burton Abbey in advance of construction.

1.4 There are existing earthworks flood defences at Derby Road and Meadow Lane. It is proposed to repair and raise these such that the bund height and footprint width may increase. Where the footprint increases it is only proposed to remove the topsoil at the existing bund toe and surcharge the underlying material with the wider bund. Excavations below topsoil level are not generally proposed. There is a risk that the underlying soil may, at local spots, not be suitable for surcharge. In such cases excavation of unsuitable material may be required.

1.5 The proposed works also include construction of a new flood bank in the grounds of the Abbey Inn, a Scheduled Ancient Monument. It is proposed to construct a new flood bank within the grounds of the Abbey Inn, involving topsoil removal across the footprint of construction and excavation of a 30 m long trench.

1.6 The archaeological contactor who will be appointed under the terms of the ICE Conditions of Contract for Archaeological Investigation (first edition, September 2004). The Instructions for Tendering, the Conditions of Contract, Bill of Quantities, Form of Tender and Form of Agreement are included in Volume 2.

1.7 Although there will be only two parties to the Contract (the Employer and the Contractor), there are four key roles relevant to its operation, as set out below:

The Employer	means Jacobs Babtie, who will manage the project on behalf of the Environment Agency;
The Consultant	means a named individual appointed by Jacobs Babtie to fulfil this role on behalf of the Environment Agency;
The Contractor	means the archaeological organisation appointed by the Employer to carry out the work defined in this specification;
The Curator	means the County Archaeologist or their representative on this project.

1.8 The Consultant on this project will be Dan Johnston (Technical Director, Jacobs Babtie). The Consultant's Representative will be Rob McNaught (Senior Archaeologist, Jacobs Babtie), to whom full delegated powers are granted in accordance with Clause 2.2 of the Conditions of Contract.

2 Archaeological Background

2.1 Location, topography and land use

2.1.1 Burton lies at the narrowest point in the valley through which the River Trent flows north between the Needwood plateau on the west and the South Derbyshire plateau on the east; the town centre lies on a terrace on the west side of the river, only a few feet above the flood plain. Further west, beyond the line of the Trent and Mersey canal, the land rises gently to Shobnall Grange and the site of Queen's Hospital and then more sharply up to an escarpment, marking the 61m contour line. To the east of the river the land rises steadily to 122m near the point where Ashby Road passes into Bretby (Derbyshire).

2.2 Geology and soils

2.2.1 The river terrace is covered with alluvium and glacial drift, and the gravels contain pockets of hard water, rich in inorganic deposits as a result of percolating through gypsum-bearing rocks embedded in the Keuper Marls of the Needwood plateau west of the town. It is that hard, rich water which enabled Burton brewers to produce their distinctive product. Beneath the marl is mudstone, and further down Bunter Pebble Beds. Sandstone outcrops on the east side of the river, especially in Winshill, where it has been quarried. The soil on the river terrace is mostly a permeable loamy soil (Molyneux, 1982, 1983). Streams flow into the river from both east and west, notably Brizlincote Brook in Stapenhill, Dale Brook in Winshill, and Tatenhill Brook on Branston's southern boundary.

2.3 Archaeological background

2.3.1 Prehistoric Period – to 43AD

There is little evidence for human activity in the Burton area in the Mesolithic period, although flints have been found and the burial of a woman on an elevated platform beside the river Trent in Branston may also be Mesolithic.

Bronze Age burials took place at the river terraces in Barton, and there was a settlement in the late Bronze Age and early Iron Age south of Catholme Farm. What were probably Bronze Age objects have also been found north of Burton, and there seems to have been an Iron Age cremation cemetery south of Stretton village.

2.3.2 Roman Period – 43AD to 400AD

A Roman Road known as Ryknild Street ran diagonally through the later parish of Burton linking Wall, near Lichfield, and the fort at Little Chester, near Derby. The suggestion that there was a fort south of Burton at Branston is derived from the supposed existence of a Roman settlement in that area called 'Ad Trivonam'; the documentary source, however, is spurious.

A bronze torc found at Clay Mills, in Stretton, was possibly of Celtic origin, dating from the 1st or early 2nd century. Elsewhere in the Burton area, there were Romano-British settlements at Stapenhill and Catholme, in Barton, both of which may have continued to exist in the early Anglo-Saxon period.

2.3.3 Post Roman Period 400AD to 1066AD

In the years following the end of the Roman occupation, England was gradually taken over by Anglo-Saxon invaders and settlers from Germany. By the early 7th century, most of the Midlands lay in the newly formed Anglo-Saxon kingdom of Mercia. During the 660's, Bishop Wilfred of York established several monasteries or minsters in Mercia, probably including one at Burton. The name Andresey given to an island in the river Trent near the parish church means 'Andrew's isle' and refers to a church there dedicated to St. Andrew, known to be one of Wilfrid's favoured saints. Andresey came to be associated with the legendary St. Modwen, and 'Mudwennestow' (Modwen's holy place) was an early name for the settlement. The name Burton, coined in the 8th century, means 'a settlement at a fortified place' and indicates that it had acquired a civilian importance as a defensible site. By that date the main settlement was possibly on the west bank of the river, where a monastery was later established.

During the 9th century, England was subject to a series of major invasions by mainly Danish Vikings. Burton's fortified status may have attracted the attention of the Vikings, and after the dispersal of the 'great army' at Repton in 874 it seems likely that Burton fell under Viking control. Place names indicate Scandinavian influence, and several personal names of Scandinavian origin were still used in the area in the early 12th century. The royal grant of estates in the Burton area made by King Edmund about the time of the restoration of the Five Boroughs to English control in 942 may suggest that Burton too had only just been recovered. The estates were granted to Wulfsige the Black, possibly an ancestor of the Mercian nobleman Wulfric Spot, who owned Burton later in the 10th century and re-founded the minster there before the year 1000 as a Benedictine abbey, probably as a family mausoleum.

2.3.4 Medieval Period – 1066AD to 1500AD

Burton Abbey did not retain an area of privileged jurisdiction like some other large monasteries, and its manors around Burton were assessed for tax, being recorded in Domesday Book in 1086. There was also tax-assessed land at Burton itself. Surveys of the early 12th century show that smallholdings had been created in the outlying settlements (Branston, Stretton, Wetmore, and Winshill) and in Burton itself. The abbey also had two granges on the edge of the town, at Bond End and Shobnall, as well as ones in the outlying townships.

No parish church was established for the inhabitants of Burton, who had to make use of part of the nave of the abbey church. Indeed, even though the abbey was never large, with the number of monks ranging from 30 in the earlier 13th century to 12 at the dissolution in 1539, the abbey church and conventual buildings dominated the town.

The cloth trade was important to Burton and in the later 13th century the abbey was included in a list of English monasteries which supplied wool to the Florentine market, coming second only to Croxden Abbey in Staffordshire. There were clothworkers in the town in the 13th century and in the 1340s the abbey acquired a fulling mill on the Trent.

Because of its strategic relationship with the Lancastrian stronghold at Tutbury, Burton was involved in the rebellion of Thomas, earl of Lancaster, against Edward II. In March 1322 the earl barricaded the west end of Burton bridge to prevent its use by Edward II and his army. Although no

battle had taken place, a year later in March 1323 the king granted the advowson of the nearby church of Tatenhill to Burton Abbey in commemoration of 'the glorious victory' over his rebels at the town.

During his campaign against rebels in the Midlands, Henry IV stopped at Burton in 1402 and 1403, and in 1414 Henry V stayed in the abbey when supervising the work of justices of the king's bench sitting at Lichfield. It was probably from the latter king's visit that one of the rooms in the abbey was called the 'king's chamber', a name recorded in 1545.

2.3.5 Post Medieval Period – 1500AD to 1900AD

The Reformation saw control of Burton transferred from ecclesiastical to secular hands. The site of the college and all its lands, including the manor of Burton, were duly granted to the Paget family in January 1546, and the Pagets thereafter were content to use the remaining claustral buildings when they occasionally visited Burton.

Possessing a strategic river crossing that was noted in the 1640s as 'the chief passage from South to the North', and situated between parliamentary Stafford and Derby and royalist Lichfield, Tutbury, and Ashby-de-la-Zouch, it is not surprising that Burton was fought over throughout the civil war and lacking walls or, except on its east side, natural defences, it changed hands at least a dozen times between 1642 and 1646.

The main industry of 16th-century Burton was the production of woollen cloth, principally kersey, probably for the local market, and in 1610 Burton was described by its constables as 'a town using the trade of clothing'. The textile trade expanded in the second half of the 16th century, with the existing medieval fulling mill on the river Trent supplemented by two new ones, built in the mid 1550s and 1574. By 1700 the fulling mills were in poor repair, and shortly thereafter all three ceased cloth production. In the later 17th century the effects of the civil war were blamed for the collapse of the industry.

From the late 16th century, Burton was described as 'very much ruined and decayed in its buildings and the inhabitants in general much impoverished' (Shaw 1876). There were, for example, no notable new buildings in Burton between the Reformation and the late 17th century. Nevertheless, analysis of the hearth tax returns of the 1660s suggests that Burton contained no greater proportion of poor folk than other Staffordshire towns, and far fewer than some towns elsewhere.

The town's economy underwent a significant change after the river Trent was made navigable for boats in the early 1710s, under an Act of 1699. George Hayne, the Derbyshire merchant who effected the navigation, was particularly involved in transporting cheese and salt from Cheshire to London, and it was the cheese trade through Burton which attracted Daniel Defoe's attention in the mid 1720s, although Hayne also carried Burton ale. Writing in the 1730s the Staffordshire antiquary Richard Wilkes remarked that the navigation was of 'infinite service' to the town and its neighbourhood, making Burton a distribution point for goods sent to places in the Midlands and especially enabling the import of timber and bar iron chiefly from Scandinavia. A visitor to the town in 1801 thought that the mainly 18th-century houses along the riverside meadow on the east side of High Street were handsome and formed a pleasing picture. Several manufactures were conducted with 'briskness and success', and the town had a 'flourishing appearance'.

With the expansion of the brewing industry in the 19th century, the combined population of the town and Burton Extra was almost three times that in 1801, and a doubling of the 1861 figure had taken place by 1878, when a municipal borough was created to include the newly built-up areas of Horninglow, Stapenhill, and Winshill. A further doubling to 50,000 had taken place by 1900, enabling the adoption of county borough status in 1901.

2.3.6 Modern – 1900AD to present

In the modern period, Burton became famous for its breweries, many of which are shown lining the river banks on the first edition OS map. In 1902, it was described as "Beeropolis" for this reason and to this day, it still remains a major brewing centre.

The demolition of brewery buildings in the 1960s, and the removal of brewery railways in the 1970s opened up land for commercial development, notably the sidings between Hawkins Lane and Wetmore Road, which have been replaced by the district council with small-scale industrial units.

The removal of breweries and railway crossings in the historic town centre has helped in the regeneration of High Street and Station Street, with new shopping centres and recreational facilities, and the meadowland south of Burton Bridge has been laid out with paths as an attractive public space called the Washlands. Architecturally the most striking area, however, remains St. Paul's Square with its Victorian church and town hall, testimony to the period of Burton's pre-eminence (Tringham 2003).

3 Aims and Objectives of the Site Operations

3.1 The general aim of the Watching Brief is to ensure that any archaeological remains that may be present, including any remains that have not been identified by previous investigations, are identified during the course of construction, and to mitigate the impact of the construction of the scheme on any such remains by making a record of them. More specific aims and objectives are as follows:

- to identify, investigate and record any such archaeological remains to the extent possible by the methods put forward in this Specification;
- to identify archaeological remains which cannot be adequately recorded within the resources available and undertake consultation in respect of such remains with all interested parties to determine and implement the appropriate nature and scope of mitigation works required;
- to determine (so far as possible) the stratigraphic sequence and dating of the deposits or features identified; and
- to disseminate the results through deposition of an ordered archive at the local museum, the deposition of a detailed report at the Sites and Monuments Record, and publication at a level of detail appropriate to the significance of the results.

3.2 The general aim of the excavation is to mitigate the archaeological impact of the development by making a record of any archaeological remains that might be present. More specific aims and objectives are as follows:

- to identify, investigate and record any such archaeological remains by the methods put forward in this Specification;
- to determine (so far as possible) the stratigraphic sequence and dating of the deposits or features identified; and
- to disseminate the results through deposition of an ordered archive at the local museum, the deposition of a detailed report at the Sites and Monuments Record, and publication at a level of detail appropriate to the significance of the results.

3.3 The Contractor shall supply sufficient staff to undertake an archaeological watching brief, in accordance with the guidance set out below in paragraphs 4.1 – 4.3.2, and an archaeological excavation as set out below in paragraphs 4.4 - 4.4.12.

4 Methodology for Archaeological Works

4.1 Watching Brief Methodology

4.1.1 Except where modified by the terms of this Specification, all work shall be planned, managed and carried out in accordance with the requirements and standards set by English Heritage in their publication Management of Archaeological Projects (2nd edition) (MAP2) and by the Institute of Field Archaeologists in their Standard and Guidance for an archaeological Watching Brief.

4.1.2 It should be noted that ancillary or off-site works, could also affect archaeological remains. To the extent that such works would involve ground disturbance, they may also be covered by the watching brief requirements. Operations subject to the watching brief may include:

- all topsoil stripping;
- all stripping of any other overburden if the stripping operation, in the judgement of the Contractor's responsible archaeologist, may expose archaeological remains;
- any deeper excavations in areas where the Contractor's responsible archaeologist considers that remains of archaeological interest may still be present after stripping topsoil and any other overburden.

4.1.3 All such operations shall remain subject to the oversight of the Contractor's responsible archaeologists and no further construction operations may commence until they have issued in writing a clearance to proceed with construction in any specific area, defined by reference either to chainage or to plans. They may issue such clearance in any of the following circumstances:

- they are satisfied that no remains of archaeological interest are present in the specified area;
- they are satisfied that all remains of archaeological interest in the specified area have been identified, investigated and recorded in accordance with the requirements set out below;
- they are satisfied that, although there remains a possibility that unidentified archaeological remains are present in the specified area, no further ground disturbance will take place that would result in the exposure or disturbance of those remains.

4.1.4 Stripping of topsoil or other overburden and any relevant deeper excavations shall be undertaken by the Employer's (or their sub-contractor's) plant operating under continuous observation of the Contractor's qualified and experienced archaeologist. Where excavation is in progress at more than one location, at least one archaeologist shall be present at each location. Where more than one mechanical excavator is in use at any given location, sufficient archaeologists shall be present to ensure that all stripping is properly monitored.

4.1.5 The archaeological watching brief in any given location may cease under any of the circumstances set out in paragraph 4.1.3 above. In many areas, this may be immediately after removal of topsoil, but in other areas it may be necessary to remove other overburden before the watching brief can be satisfactorily completed.

4.1.6 During the archaeological watching brief, the Contractor's archaeologists shall endeavour to identify archaeological features or artefacts by visual inspection. Where potential archaeological remains are identified during the watching brief, the Contractor shall mark out the area of the remains in such

a manner that they are clearly visible and no plant shall enter the marked out areas until cleared to do so by the archaeologist. The Contractor shall investigate and record the remains according to the methodology set out below. If this is not feasible, the contingency arrangements set out below shall be implemented.

4.1.7 Where archaeological remains are identified which are of low density or complexity, and where they can reasonably do so without compromising the ongoing watching brief, the Contractor's archaeologists present on site shall investigate and record the remains according to the methodology set out below. Where this is not feasible because the remains are too complex or extensive to be investigated with the available resources or without compromising the ongoing watching brief, then the contingency arrangements set out in Paragraph 4.2 shall be implemented.

4.2 **Investigation and Recording of archaeological remains**

4.2.1 Further construction activity shall be suspended within the area, or below the depth defined by the archaeologist, pending a site meeting between the Curator, the Consultant and the Contractor to determine the need for, nature and scope of any further investigation and recording works or an alternative design solution to avoid or reduce the impact. If this meeting cannot be arranged to take place within four working days of the initial notification by telephone, then the remains shall be recorded according to the methodology set out below.

4.2.2 Hand-cleaning of features or selected areas shall be undertaken only where necessary to clarify the extent of, or relationship between, features/ deposits. Discrete features shall be investigated by hand-excavation of a half section, or otherwise as appropriate. Linear features shall be investigated by excavation of one or more cross-sections as appropriate; where necessary, this may be done by mechanical excavation of the section followed by cutting-back the exposed face by hand excavation. Relationships between intersecting features shall be determined by hand-excavation. All hand-excavation shall be carried out in a stratigraphic manner in accordance with best industry practice.

4.2.3 All excavated contexts shall be fully recorded by a descriptive written context record for each stratigraphic unit, together with full photographic records and drawn plans and sections at appropriate scales, in accordance with best industry practice.

4.2.4 All finds shall be recorded by context as a minimum, significant finds being recorded individually. Soil or other samples for potential palaeoenvironmental analysis or scientific dating shall be collected from suitable contexts, including any waterlogged deposits, deposits visibly rich in charred or other organic materials or other deposits as appropriate, in accordance with the palaeoenvironmental sampling strategy set out in paragraph 4.5 below.

4.2.5 The Contractor is expected to be familiar with the relevant legislation relating to items of potential Treasure Trove and to finds of Human Remains, and shall notify the relevant authorities and obtain any necessary licences should such items be identified.

4.2.6 In areas of deep excavation, it is anticipated that features and deposits will largely be excavated by machine. Small-scale hand-excavation shall be undertaken where necessary to clarify the nature or significance of features or deposits, or to facilitate recording, or for hand-cleaning of sections or other surfaces as part of the recording process. However, it is considered unlikely that

archaeological remains will be present in the areas subject to the Watching Brief at sufficient depth to bring these provisions into force.

4.2.7 All finds of potential archaeological value shall be retained and removed from the site and cleaned, catalogued and appropriately packaged.

4.3 Contingency Arrangements

4.3.1 Where archaeological remains are identified which, for whatever reason, cannot be properly investigated and recorded with the resources available full-time on site without compromising the ongoing watching brief, then the responsible archaeologists shall mark-out the relevant area in an appropriate manner and notify the Employer, the Consultant and the Curator. Plant or vehicles shall not be permitted to enter the marked-out area except if given clearance to do so by the archaeologist, or along routes defined by the archaeologist. All further construction works within the marked-out area shall be suspended until completion of the archaeological investigation.

4.3.2 Notification of discoveries as set out above shall be made within 2 working days of the discovery, and shall include an estimate of the time and resources required to complete the investigation. Additional archaeological staff and other resources shall be available on an on-call basis and shall be required to arrive on site as soon as possible and in any case within one week of receipt of an instruction to proceed with the works.

4.4 Excavation Methodology

4.4.1 Except where modified by the terms of this Specification, all work shall be planned, managed and carried out in accordance with the requirements and standards set by English Heritage in their publication Management of Archaeological Projects (2nd edition) (MAP2) and by the Institute of Field Archaeologists' Standard and Guidance for Archaeological Excavation.

4.4.2 Topsoil and any other overburden shall be stripped from the defined areas by mechanical excavation to expose the archaeological remains. All mechanical excavation shall be undertaken using a tracked 360° back-acting mechanical excavator fitted with a toothless ditching bucket, operating under the direct and continuous supervision of an experienced archaeologist. Topsoil and subsoil shall be stored separately and shall not be intermixed. Spoil from the stripping operations shall be safely stockpiled in bunds adjacent to each excavation area. No plant, vehicles or machinery shall run on any part of the stripped surface. Mechanical excavation shall cease when the first archaeologically significant horizon is encountered, or when the absence of any such horizon has been adequately demonstrated. Any further use of mechanical excavation, or any change to this methodology, shall not be undertaken without the specific permission of the Consultant.

4.4.3 Within one week of the completion of mechanical excavation, the whole area stripped shall be inspected for archaeological features and an overall plan of all visible features shall be prepared by instrument survey and, where appropriate, hand planning. The survey data and any hand-drawn plans shall be accurately tied in to the Ordnance Survey National Grid and Ordnance Datum. The plan shall also show any areas of visible damage or destruction of the archaeology caused by recent activity e.g. service trenches, quarry pits etc. The overall plan shall show grid-references for at least two points and spot-heights related to Ordnance Datum as appropriate.

4.4.4 Any areas containing significant concentrations of features, particularly small non-linear features, or where the presence of such groups of features is suspected, shall be manually cleaned.

4.4.5 Features shall be hand excavated based on the following indicative approach:

- 100% of all positive features likely to obscure earlier archaeological features (it is anticipated that there will be few if any such features);
- 50% of each pit or post-hole (half-sections or two quarter-sections as appropriate). Where necessary to obtain dating evidence or sufficient material for soil samples, such features should then be emptied;
- 100% of each hearth;
- 100% of each grave or cremation;
- between 10% and 20% of each simple linear feature within the whole stripped area, depending on how closely each such feature relates to settlement or funerary rather than agricultural activity, with no individual section being less than 1m wide;
- in addition to the above samples, all intersections between features and all terminals of linear features.

4.4.6 All excavated contexts shall be fully recorded by detailed written context records giving details of location, composition, shape, dimensions, relationships, finds, samples, cross-references to other elements of the record and other relevant contexts, etc.

4.4.7 All excavated features and, where possible, all deposits shall be recorded on at least one hand-drawn plan, normally at 1:20 scale, and at least one section drawing, normally at 1:10 scale. During or immediately after the completion of hand excavation, the overall site plan shall be updated to show all features identified and all excavated sections. All hand-drawn plans and sections shall show at least two reference points which shall be tied-in by instrument survey and whose coordinates shall be marked on the drawing. All hand-drawn plans and sections shall show spot-heights related to the Ordnance Survey Datum and accurate to two decimal places.

4.4.8 All excavated features and deposits shall be recorded photographically using, as a minimum, both colour slide and black and white negative film. Additional illustrative photographs shall be taken as appropriate using colour slide and/or print film.

4.4.9 All unexcavated archaeological features and deposits shall be recorded to the extent possible by the above methods.

4.4.10 All finds shall be recorded by context; individually significant finds ("special finds") shall be recorded three-dimensionally using a sequence of unique numbers. All artefacts recovered shall be retained and removed from site for conservation (if necessary) and specialist examination/analysis. This shall include X-raying of all metalwork.

4.4.11 Cleaning of finds may take place on site or after removal, as appropriate. All finds-related work, whether in the field or at post-excavation stage, shall be undertaken in accordance with the Institute of Field Archaeologist's Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials and the relevant museum's conditions for the acceptance of archaeological archives. A strategy for the conservation of finds shall be agreed between the

Consultant and the Contractor, who shall employ a recognised archaeological conservation laboratory for this purpose. An assessment shall be made of the conservation needs of all finds, in addition to their potential for further investigation. All finds shall be stabilised and packaged in accordance with the receiving museum. As a guiding principle, only artefacts of 'displayable' quality would warrant full conservation.

4.4.12 The Contractor is expected to be familiar with the relevant legislation relating to items of potential Treasure Trove and to finds of Human Remains, and shall notify the relevant authorities and obtain any necessary licences should such items be identified.

4.5 Palaeoenvironmental Sampling Strategy

4.5.1 A programme of collection of soil samples and other appropriate materials shall be undertaken for scientific dating and the recovery of palaeoenvironmental evidence. The prices set out in the Bill of Quantities for the excavation and recording of the excavation trench shall be fully inclusive of the collection of all samples as necessary, while items are included in the Bill of Quantities for the processing and assessment of the samples. Tenderers may if they wish propose an alternative strategy in their tender documents, and in any such case both strategies shall be priced.

4.5.2 Before, during and after the completion of site works, the Contractor shall obtain specialist advice on the selection of deposits to be sampled, the nature of the samples to be collected and the methods of processing/assessment to be applied. The specialist advisor(s) shall be identified in the tender documents, together with details of their qualifications and experience. If the Contractor wishes to modify the sampling strategy on the advice of their specialist advisor(s) after appointment, or during the works, they shall make a written proposal to the Consultant setting out the nature and reasons for the changes and any additional costs or savings that would result, and shall not implement the changes without written authority from the Consultant. Subject to such variation, deposits shall be selected for sampling in line with the following guidelines:

- basal/primary fills of at least 50% of all cut features;
- all deposits in 50% of all positive features i.e. anthropogenic soil deposits not contained within a cut feature;
- all buried soils/old ground surfaces;
- organic rich units within the flood plain test pits;
- at least 25% of all other anthropogenic soil deposits (secondary fills etc), including all deposits containing any visible charcoal or other carbonised material and all deposits considered to be of particular interest on the basis of artefactual content or other characteristics, or which are considered to be of key interest in the interpretation of the site for any reason.

4.5.3 Subject to variations agreed in writing as set out above, samples to be collected shall include:

- a bulk sample of 30 litres (or, if the volume of the deposit is less than 30 litres, the whole deposit) for wet-sieving, from all sampled deposits;
- a soil monolith shall be collected, using a Kubiena tin or similar equipment, through all buried soils/old ground surfaces. This monolith shall include the whole relevant soil profile as advised by the relevant specialist, including part of the overlying and underlying deposits;
- where deposits of particular potential interest are identified, and on the advice of the relevant specialist, additional special samples shall be collected. These could include additional

monoliths, or other small samples for other special analyses, such as magnetic susceptibility, phosphates, and loss on ignition, other geochemical analyses, pollen identification or other as appropriate. Where waterlogged deposits are identified, more intensive bulk sampling shall be undertaken subject to the agreement of the Consultant and on the advice of the relevant specialist.

4.5.4 Between 50% and 100% of bulk samples shall be selected for processing. Selection shall be undertaken on the advice of the specialist advisor(s); the basis of this advice shall be agreed with the Consultant before implementation of the processing, and shall be summarised in the evaluation report. Processing and assessment of bulk samples is covered by Item A4 in the Bill of Quantities. Subject to variations agreed in writing as set out above, samples shall be processed and assessed in line with the following guidelines:

- bulk samples selected for processing shall be wet-sieved/floated and washed over a mesh size of 500m for the recovery of palaeobotanical and other organic remains, and refloated to maximise recovery;
- non-organic residues shall be washed through a nest of sieves of 10mm, 5mm, 2mm and 1mm mesh to maximise finds recovery;
- both organic and non-organic residues shall be dried under controlled conditions;
- the dried inorganic fractions shall be sorted for small finds or any non-buoyant palaeoenvironmental remains, and scanned with a magnet to pick up ferrous debris such as hammerscale;
- the dried organic fractions shall be sorted under a light microscope to identify the range of species or other material on a presence/absence basis, the degree of preservation of the bio-archaeological material and the rough proportions of different categories of material present;
- in the event that waterlogged deposits are identified and sampled, further processing shall be undertaken as appropriate and agreed, including paraffin flotation to recover insect remains. Any such remains shall be scanned to identify and assess their potential;
- selection of other types of sample for processing and the methods to be used for processing and assessment shall be undertaken on the advice of the relevant specialist and shall be agreed with the Consultant before implementation. A provisional sum has been allowed for this work in Section A of the Bill of Quantities (Item A6).

4.5.5 The methodology employed by the Contractor for the collection, selection, processing and assessment of palaeoenvironmental samples should be undertaken in order to meet the timescale for the completion of the on site and off site works. This may include processing samples on an ongoing basis and the Contractor should also explore the possibility of on-site processing of samples.

4.5.6 All aspects of the collection, selection, processing, assessment and reporting on the environmental archaeology component of the evaluation shall be undertaken in accordance with the principles set out in English Heritage's Centre for Archaeology Guidelines: Environmental Archaeology – a guide to the theory and practice of methods, from sampling and recovery to post-excavation (2002) and with reference to the Association for Environmental Archaeology's Working Paper No. 2, Environmental Archaeology and Archaeological Evaluations (1995).

5 Post-fieldwork Assessment, Analysis and Reporting

5.1.1 The Contractor shall provide verbal or written progress reports and shall provide interim plans or other data at any point during the contract, on request from the Consultant.

5.1.2 Each category of data and material recovered by the fieldwork (site records/stratigraphic data, each category of artefact or other find, each category of palaeoenvironmental/ economic evidence, any other data) shall be examined, quantified, catalogued and assessed by suitably qualified and experienced archaeologists or specialists. If possible and necessary to achieve the aims and objectives of the evaluation, dating evidence shall be obtained by the application of radiocarbon, dendrochronological or other scientific dating techniques.

5.1.3 A full report on the trial excavations will be required within two working weeks of the completion of the Site Operations. The report shall clearly acknowledge the role of the Consultant and the Employer, and shall show the logos of both Consultant and Employer on the front cover. In preparing the report, the authors shall take account of the results of previous archaeological work by reference to published reports and unpublished material available from the Sites and Monuments Record or elsewhere. All reports shall be prepared in line with the principles set out in the Institute of Field Archaeologist's Standard and Guidance on Archaeological Field Evaluations, and shall include as a minimum:

- a non-technical summary;
- an introduction, including a summary of the background to and circumstances of the work;
- a description of the aims and purposes of the evaluation;
- a summary of the archaeological background to the work, placing it in its regional and local context by reference to previously published archaeological surveys or other investigations;
- a description of the methodologies used;
- an objective, factual description of the results of the evaluation, including a summary description of each category of artefact and ecofact recovered;
- an interpretative discussion of the results of the evaluation, including an overall assessment of the archaeological potential and significance of each site with reference to each specific category of data. This should include a confidence rating in respect of the degree to which the results are likely to accurately reflect the archaeological potential of the overall area of the evaluation;
- supporting data, tabulated or in appendices, including a primary archive inventory, context inventory and summary descriptions/interpretations, artefact/ecofact inventories, sample inventories, survey location information, and any other appropriate data;
- a statement of storage and curation requirements and the location of the archive;
- general and detailed plans at appropriate scales, showing the location of each trench or group of trenches accurately positioned on an up-to-date Ordnance Survey base, with reference to any previously known archaeological information such as geophysical survey or aerial photograph plots;
- plans of each site and of each trench at appropriate scales, with reference to existing information as above;
- detailed plans and sections of individual features where necessary;
- representative drawings/photographs of significant artefacts;

- a complete matrix for each trench;
- all scales used on any drawings shall be standard scales such as would appear on a normal scale ruler, and the scale used shall be clearly stated. All maps and plans should include keys, scale bars and north points and, where appropriate, co-ordinate/spot-height information related to the Ordnance Survey National Grid and Ordnance Datum.

5.1.4 This report shall also include a post-fieldwork assessment. Each category of data and material recovered by the fieldwork (site records/stratigraphic data, each category of artefact or other find, each category of palaeoenvironmental/ economic evidence, any other data) shall be examined and assessed by a suitably qualified and experienced archaeologist or specialist in line with the principles set out in Chapter 6 of MAP2.

5.1.5 If possible and necessary to achieve the aims and objectives of the assessment, dating evidence shall be obtained by the application of radiocarbon, dendrochronological or other scientific or other scientific dating techniques. The application of such techniques shall be paid for out of item A5 in the Bill of Quantities.

5.1.6 The post-fieldwork assessment shall be prepared in line with the principles set out in Appendix 4 of MAP2, and shall include as a minimum:

- an assessment of each category of data ("statement of potential" in MAP2); and
- a statement of the storage and curation requirements for each category of data;

5.1.7 The report shall set also out the further analytical and further reporting works, if any, required to achieve the potential identified in the post-fieldwork assessment report.

5.1.8 Please note that, if only minor remains have been identified, there may be no value in further analysis, and in such circumstances this should be stated.

5.1.9 One copy of a complete draft report shall be submitted in the first instance for review/checking by the Consultant. In finalising the report, the Contractor shall take into account any comments made by the Consultant and remedy any faults identified by the Consultant. The Contractor should note that six bound copies, one unbound copy and a digital copy (including drawings) of the final report will be required. The finalised report shall be submitted to the Consultant within five working days of receipt of the Consultant's comments on the draft report.

6 Site Archive and Publication

6.1 Prior to the start of fieldwork, the Contractor shall determine and liaise with the appropriate museum, in order to:

- inform them of the intended work, including its nature, location, start date and intended duration;
- obtain the agreement in principle of the relevant museum to accept the archive for long-term storage and curation;
- identify any policies of the museum in respect of selection /retention of archive materials;
- identify any requirements of the museum in respect of the format, presentation and packaging of the archive records and materials; and
- determine a policy for the selection, retention and disposal of excavated material by consultation with the museum prior to excavation.

6.2 Adequate resources shall be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation shall be completed immediately after the conclusion of fieldwork, to ensure that the site record has been checked, cross-referenced and indexed as necessary and that all retained finds have been cleaned, conserved, marked and packaged as appropriate. The Contractor shall include the cost of deposition and long-term storage of the archive in their tender price.

6.3 Immediately after completion of fieldwork, all retained soil samples shall be appropriately processed in accordance with the sampling strategy agreed prior to the start of fieldwork or otherwise agreed during fieldwork, and appropriate records shall be kept.

6.4 A Site Archive shall be prepared in accordance with the standards set out in Appendix 3 of MAP2.

6.5 The Site Archive shall contain all the data collected during the investigation, including records and excavated materials. It shall be quantified, ordered, indexed and internally consistent. Adequate resources shall be provided during fieldwork to ensure that records are checked and internally consistent.

6.6 Archive consolidation shall be undertaken immediately following the conclusion of fieldwork.

6.7 The site record shall be checked, cross-referenced and indexed as necessary.

6.8 All retained finds shall be cleaned, conserved, marked and packaged in accordance with the requirements of the recipient museum.

6.9 All retained finds shall be assessed and recorded using pro-forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating shall be integrated with the site matrix.

6.10 The archive shall be assembled in accordance with the guidelines set out in English Heritage's *Management of Archaeological Projects 2* (MAP2; paragraphs 4.9, 6.8 and 6.10 and Appendix 3). In addition to the site records, artefacts, ecofacts and other sample residues, the archive shall contain:

- site matrices where appropriate;
- a summary report synthesising the context records;
- a summary of the artefact record; and
- a summary of any other records or materials recovered.

6.11 The integrity of the primary field records shall be preserved and the Contractor shall create security copies in digital, fiche or microfilm format of all primary field records.

6.11.1 Immediately upon completion of the finalised report, the report and any data or other documentation produced during the post-fieldwork assessment process shall be integrated into the site archive. The Contractor shall store the archive in suitable conditions in a secure location until instructions are received from the Consultant for the implementation of further analysis/reporting works or for the deposition of the archive in the museum or other transfer.

6.11.2 The results of the investigations may be such as to warrant publication of a summary report in an appropriate academic journal. The Contractor shall include in their report a proposal as to the need for, nature of and medium for publication, but shall only proceed after instruction from the Consultant. A provisional item has been included in Item C3 of the Bill of Quantities for summary publication.

7 Bibliography

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McKinley, Jacqueline I and Roberts, Charlotte 1993 "Excavation and post-excavation treatment of cremated and inhumed human remains", IFA Technical Paper No. 13.

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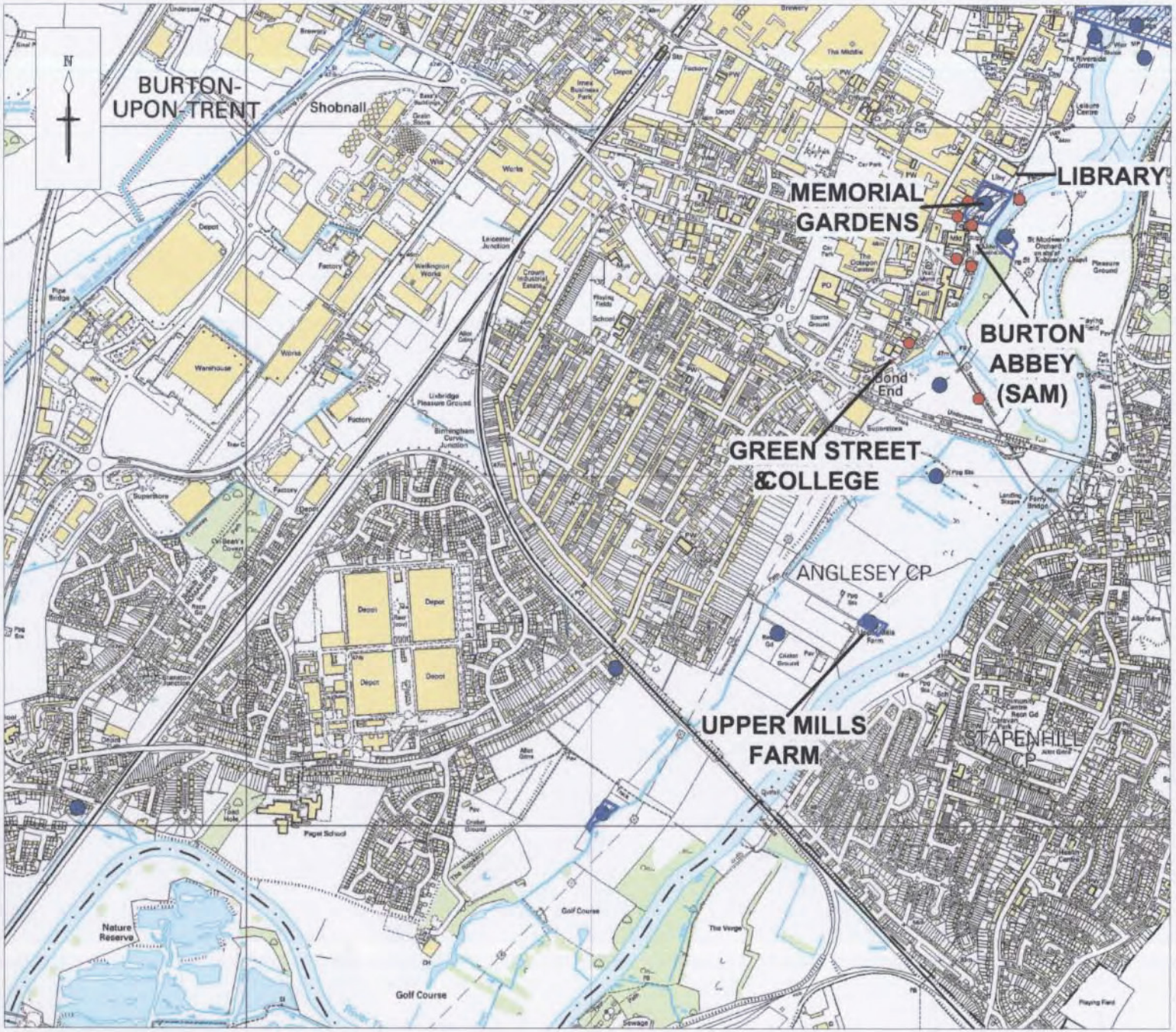

Drawing Number

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Notes

Key

- Listed Building
- Non statutory archeological site
- Non statutory archeological site
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JACOBS BABTIE

Client	Environment Agency
Project	Burton upon Trent Flood Alleviation Scheme
Title	Figure 2 Location of Construction Areas Requiring Watching Brief (12)

Drawing No.	19908\WB\002	
Scale	NTS	Date MAY 05
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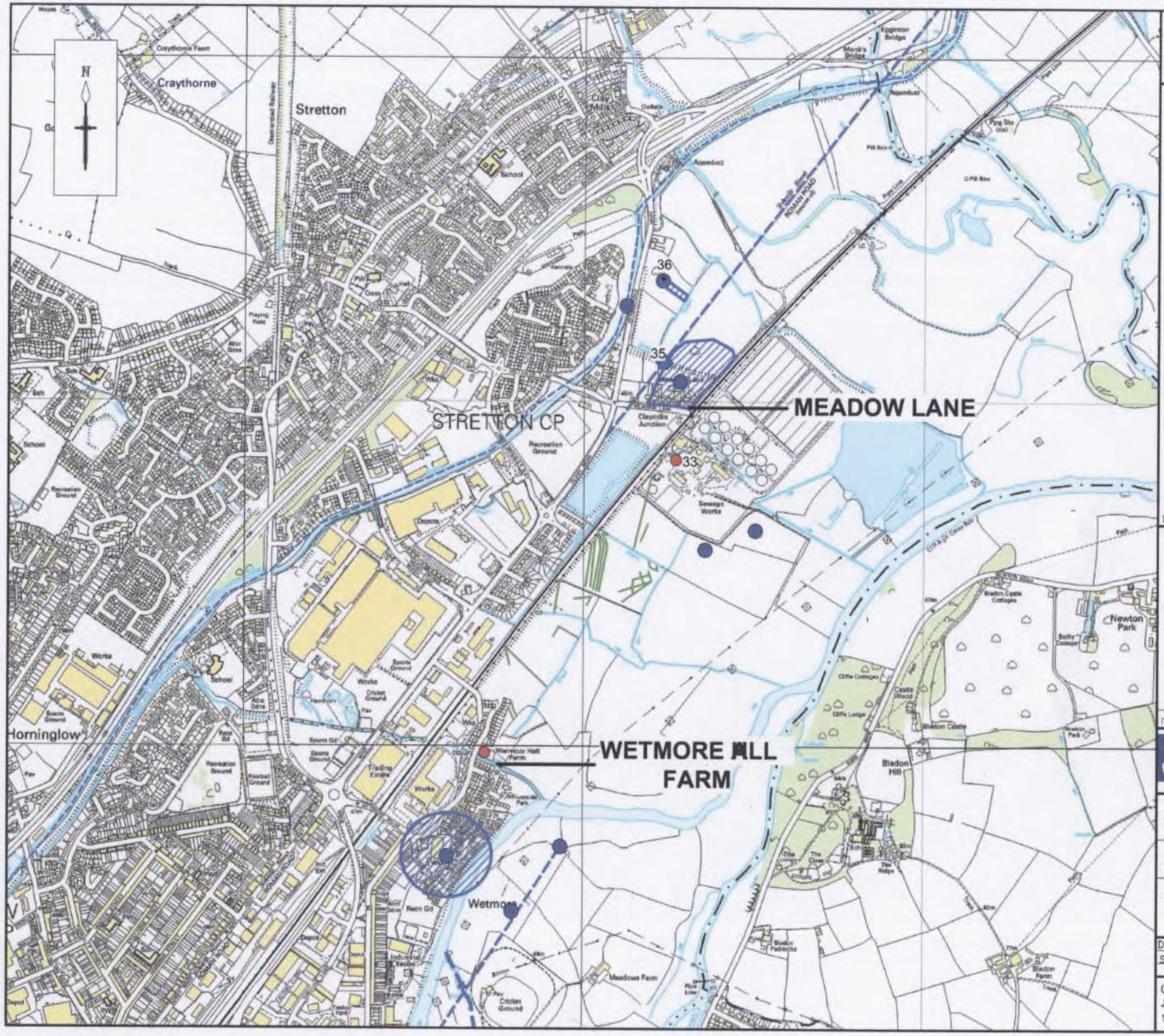

Drawing Number

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Notes

Key

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- Non statutory archeological site
- Non statutory archeological site
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JACOBS BABTIE

Client	ENVIRONMENT AGENCY
Project	Burton upon Trent Flood Alleviation Scheme
Title	Figure 2 Location of Construction Areas Requiring Watching Brief (22)

Drawing No.	19908\WB\003		
Scale	NTS		Date MAY 05
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JACOBS BABTIE

Client	ENVIRONMENT AGENCY
Project	**Burton upon Trent Flood Alleviation Scheme**
Title	**Figure 1 Site Location**

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APPENDIX 2: PROJECT DESIGN

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Jacobs Babtie (hereafter the 'client'), on behalf of the Environment Agency, has requested that Oxford Archaeology North (OA North) submit proposals for a programme of archaeological works associated with groundworks for the Burton upon Trent Flood Alleviation Scheme (FAS). The main element required, at this stage, is a watching brief at eight locations along the scheme at Derby Road and Meadow Lane during construction of the flood defences. The proposed scheme is to repair and raise the existing flood defences to increase the bund height and width. Although no excavation below topsoil is proposed, it is possible that in some areas the underlying soil may not be suitable for surcharge and may require removal.

1.1.2 The following proposals have been prepared in accordance with a detailed and comprehensive Written Scheme of Investigation (WSI) prepared by Jacobs Babtie (2006). In order to avoid unnecessary repetition, this project design should be read in conjunction with the WSI. A comprehensive archaeological background has also been provided in Section 2 of the WSI.

2. OXFORD ARCHAEOLOGY

2.1 QUALITY ASSURANCE

2.1.1 OA is a Registered Archaeological Organisation with the **Institute of Field Archaeologists (no 17)**. OA is not at present ISO certified but operates an internal QA system governed by standards and guidelines outlined by English Heritage and the Institute of Field Archaeologists. The following quality assurance and QA procedures are illustrated in the organograms presented in *Appendix 2*.

2.1.2 ***Standards:*** it is OA's stated policy to adhere to current professional standards set by IFA, English Heritage, Association of Local Government Archaeological Officers, Museums Organisations. OA helps the profession to develop and establish standards by serving on national working parties (eg recently on archives), and conforms with current legislation and national and local policy standards for archaeology health and safety and other relevant matters.

2.1.3 OA has established technical manuals, procedures and policies which control its work covering field recording, finds retention and discard, finds storage and handling, environmental sampling and processing, archiving and post-excavation. These have been developed to conform with best professional practice.

2.1.4 ***Staff:*** OA ensures that its staff are fairly recruited, fairly employed, and properly qualified for their work whether by formal qualification or by established and verifiable experience. OA have established terms and conditions of employment and a system of staff representation to ensure regular consultation on employment matters.

2.1.5 OA ensures that staff remain committed and enhance their abilities using annual staff appraisals, supporting formal and informal training and educational courses.

2.1.6 ***Procurement of services and materials:*** OA procures subcontracted work on the basis of value for money, considering quality, track record and service, as well as cost. OA regularly reviews quality of subcontracted work and uses tendering procedures for major sub-contracts.

2.1.7 Procurement of materials is on the basis of quality and availability, as well as cost, especially in respect of long-term storage of archives (OA adheres to archive quality photographic materials and processes, archive quality boxes etc).

2.1.8 ***Working Practices:*** management procedures ensure that all work conducted within the Company and all end product reports to clients are monitored and evaluated whilst they are in progress, during compilation, and after completion.

2.1.9 ***Data Acquisition and Security:*** for fieldwork projects OA always removes records and finds from site every day, and ensures equipment is secured.

2.1.10 ***Experience:*** OA North has considerable experience of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 24 years. Evaluations, assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

2.2 KEY STAGES IN QA PROCEDURES

2.2.1 The following procedures cover technical aspects of OA's work:

- critical review of previous work;
- analysis of how archaeological issues are dealt with in the brief, including consideration of uncertainty and risk, and consideration of whether different approach would be more cost-effective;
- development of method statements (Project Designs/Written Schemes of Investigations);
- detailed consideration and documentation of logistical aspects, including H + S procedures, plant logistics, staff logistics;
- compilation of Briefing Document for site director/supervisor to include all relevant background data and information, procedures, technical specifications and logistics;
- execution of field work guided by technical Manual, incorporating unique site codes and numbering systems;
- recording systems on *pro formas* cross-referenced and identified to individuals dealing with descriptions, finds, samples, drawings, photographs;
- finds system designed to track where objects are, and to establish museum destination and legal ownership of finds;
- PX Assessment procedures to establish exactly how much work needs to be done to achieve academic objectives within budget;
- no automatic writing of interminable PX reports: tasks and methods focussed on aims and objectives;
- constant review and monitoring to ensure objectives are being met, with the flexibility to reassign priorities in light of important discoveries;
- monitoring of progress of PX projects by members of staff not directly involved, as well as project manager.

3. OBJECTIVES

3.1 The following programme has been designed to identify any archaeological deposits or features that may be present that were not previously identified during evaluation investigations. The work will be undertaken in order to mitigate the impact of the scheme by preservation by record of any such archaeological

3.2 The information will be finally disseminated through the deposition of the archive at a local museum, and report at the Sites and Monuments Record, and possibly at publication level. The work will be carried out in line with current IFA guidelines and in line with the IFA Code of Conduct.

3.3 ***Archaeological Watching Brief:*** to maintain a permanent archaeological presence during associated ground disturbance.. The purpose is to identify, investigate and record any archaeological remains in accordance with the WSI (2006), over eight locations along the Derby Road and Meadow Lane

3.4 Where such remains cannot be adequately recorded under watching brief conditions it will be necessary to undertake consultation with all interested parties to determine and implement the appropriate mitigation.

3.5 ***Report:*** the results of the fieldwork and any post-excavation assessment will culminate in a final report to be submitted as a draft within two weeks of completion of the fieldwork (subject to any specialist reports outstanding). A final report will follow comment/suggestions for amendment from the client.

3.6 ***Archive:*** a site archive will be produced to English Heritage guidelines (MAP 2 (1991)).

4. METHOD STATEMENT

4.1 HEALTH AND SAFETY

4.1.1 A full health and safety project plan has been provided to accompany this project design, and also includes an outline risk assessment. However, for brevity a summary is provided below.

4.1.2 ***Risk assessment:*** OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). OA North will liase with the client to ensure all health and safety regulations are met. The outline risk assessment to accompany these proposals will be updated in advance of any on-site works, with continuous monitoring during the fieldwork.

4.1.3 All project staff will be CSCS qualified. Archaeological contractors have not yet been recognised for the receipt of CSCS cards. However, proof of qualification can be provided.

4.1.4 ***Services:*** full regard will, of course, be given to all constraints (services etc) during the evaluation trenching as well as to all Health and Safety considerations. It is assumed that the client and main contractor on site will have identified and hold full information as to the location of services.

4.1.5 ***Contamination:*** any contamination issues must also be made known to OA North in order that adequate PPE can be supplied prior to commencement. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Any specialist safety requirements may be costed as a variation.

4.1.6 ***Fencing requirements:*** any areas of archaeological sensitivity discovered during the watching brief will be protected with netlon-style fencing whilst open, and adequate and appropriate signage.

4.2 ARCHAEOLOGICAL WATCHING BRIEF

4.2.1 ***Introduction:*** a programme of field observation will accurately record the location, extent, and character of any surviving archaeological features and/or deposits during the ground disturbance for the construction of the flood defences along derby Road and Meadow Lane. These groundworks will be carried out under constant archaeological observation unless, with consultation and agreement of the client, the County Archaeologist and other interested parties, it is identified that a more targeted and timetabled archaeological investigation would be more appropriate.

4.2.2 ***Methodology:*** the following methodology is in accordance with the WSI (2006), which should be referred to for further detail. The watching brief will cover eight areas along the proposed flood alleviation scheme that are of archaeological sensitivity. These areas will be disturbed by the development, and operations subject to a watching brief will include;

i) all topsoil stripping

ii) stripping of any other overburden - should it be apparent on site that the removal of further overburden may expose archaeological remains, this decision will be the responsibility of the attending archaeologist

iii) deeper excavations - it may be necessary to excavate further following i) and ii) above, should the attending archaeologist decide that remains of archaeological interest may still be present.

4.2.3 This work will comprise archaeological observation during the excavation for these works, the systematic examination of any subsoil horizons exposed during the course of the groundworks, and the accurate recording of all archaeological features and horizons, and any artefacts, identified.

4.2.4 Discovery of archaeological remains will require stoppage of the clearance/construction work. Areas of potential archaeological remains will require fencing-off from any construction works with netlon-type fencing to allow OA North archaeologists sufficient time to undertake adequate recording under safe conditions. This will be carried out as efficiently as possible in order to minimise disruption. Depending on the deposits revealed, it is anticipated that the average time for the suspension of works will be approximately 2-4 hours.

4.2.5 Clearance will be given for construction to proceed once the archaeologist is satisfied that either no remains are present, or that they have been adequately recorded, or that the level of impact will not disturb any deeper remains that can be preserved *in situ*.

4.2.6 ***Complex or extensive remains:*** should the remains be too complex or extensive to be investigated and recorded under watching brief conditions then the area will be fenced-off with netlon-type fencing and the client and County Archaeologist will be immediately contacted in order to determine the requirements for further investigation (see WSI *4.2.1.*). All further construction works within the marked area will cease until clearance is given to proceed. All further works would be subject to a variation to this project design.

4.2.7 ***Investigation and recording:*** (to be read in conjunction with WSI *Section 4.2)* putative archaeological features and/or deposits identified by the machining process, together with the immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and where appropriate sections will be studied and drawn. Any such features will be sample excavated (i.e. selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).

4.2.8 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to the large-scale digital plan provided by the client. A photographic record will be undertaken simultaneously.

4.2.9 Levels will be recorded and reduced to their OD heights, with all benchmark and TBMS to be shown. The location of all features excavated will be recorded by Total Station with appropriate spot heights and tied into the OS grid. Altitude information will be established with respect to OS Datum. The location of the remains within the areas of construction will be based on site plans provided by the client containing OS information.

4.2.10 A plan will be produced of the areas of groundworks showing the location and extent of the ground disturbance and one or more dimensioned sections will be produced.

4.3 GENERAL PROCEDURES

4.3.1 ***Environmental Sampling:*** the following sampling strategy is in line with the Wsi, *Section 4.5*. Environmental samples (bulk samples of 30 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). Monolith samples will be collected from freshly exposed sections through all buried soils/old ground surfaces by trained staff. These will be returned to OA North's offices regularly for processing.

4.3.2 Deposits of particular interest may incur additional sampling, on advice from the appropriate in-house specialist.

4.3.3 The WSI provides guidelines with regards to deposits selected for sampling (*para 4.5.2*). This will be adhered to during excavation.

4.3.4 The location of all samples will be recorded on drawings and sections with heights OD etc.

4.3.5 Between 50%-100% of bulk samples shall be selected for processing, based on the advice from OA North's in-house environmental manager. However, the basis of the advice will be agreed with the client prior to processing commences, which will be included in the final report. An assessment of the environmental potential would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, the samples would be assessed for plant

macrofossils, insect, molluscs and pollen from waterlogged deposits. The methodology would follow that detailed in the WSI.

4.3.6 In order to achieve the aims of the programme of work, it may be required to obtain dating evidence through radiocarbon dating, dendrochronological or other such techniques. This would only be undertaken in consultation with the County Archaeologist and client.

4.3.7 ***Faunal remains:*** if there is found to be the potential for discovery of bones of fish and small mammals a sieving programme will be carried out. These will be assessed as appropriate by OA north's specialist in faunal remains, and subject to the results, there may be a requirement for more detailed analysis.

4.3.8 ***Human Remains****:* any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. The client, curator and the local Coroner will be informed immediately. If removal is essential the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations. Any delays caused by unforeseen and complex excavation of inhumations may be subject to a variation to the cost of the contract and will be agreed with the client.

4.3.9 ***Finds:*** all finds recovered during the evaluation investigation (metal detecting and trial trenching) will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.

4.3.10 Finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines) and subject to expert advice. OA has close contact with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham, or else through an external specialist Alison Walster of Aardvark Conservation Services.

4.3.11 Neither artefacts nor ecofacts will be collected systematically during the mechanical excavation of the topsoil unless significant deposits, for example clay pipe waster dumps, are encountered. In such an eventuality, material will be sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts, although any ensuing studies will not be regarded as a major element in any post-excavation analysis of the site. Other finds recovered during the removal of overburden will be retained only if of significance to the dating and/or interpretation of the site. It is not anticipated that ecofacts (eg unmodified animal bone) will be collected during this procedure.

4.3.12 Otherwise, artefacts and ecofacts will be collected and handled as per specification. All material will be collected and identified by stratigraphic unit during the evaluation trenching process. Hand collection by stratigraphic unit will be the principal method of collection, but targeted on-site sieving could serve as a check on recovery levels. Objects deemed to be of potential significance to the understanding, interpretation and dating of individual features, or of the site as a whole, will be recorded as individual items, and their location plotted in 3-D. This may include, for instance, material recovered from datable medieval pit groups.

4.3.13 Finds will be processed and administered at regular intervals (on a daily basis) and removed from the site. All finds will be treated in accordance with OA standard practice, which is cognisant of IFA and UKIC Guidelines. In general this will mean that (where appropriate or safe to do so) finds are washed, dried, marked, bagged and packed in stable conditions; no attempt at conservation will be made unless special circumstances require prompt action. In such case guidance will be sought from OA North's consultant conservator.

4.3.14 All waterlogged finds will be treated as appropriate. In the case of large deposits of waterlogged environmental material (eg unmodified wood), advice will be sought with the OA North consultant with regard to an appropriate sampling strategy.

4.3.15 Where possible, spot dates will be obtained on pottery and other finds recovered from the site. Artefacts will be examined and commented upon by OA North in-house specialists. Initial artefact dating shall be integrated into the site matrix.

4.3.16 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

4.4 REPORT

4.4.1 ***Interim reports:*** regular progress reports and plans will be produced for the client, and submitted by email, on request.

4.5.1 ***Final Report:*** following the completion of all fieldwork a draft report will be submitted to the client within two weeks, for approval. This will follow the specific client requirements set out within the WSI, paragraphs 5.1.3, 5.1.4, 5.1.6-5.1.8.

4.5.2 A copy of the draft report should be returned to OA North with comments, and any amendments will be rectified within five days. The finalised report will include six bound copies, one unbound copy, and a digital copy.

4.5.3 ***Confidentiality:*** all internal reports to the client are designed as documents for the specific use of the Client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

4.6 ARCHIVE

4.6.1 ***Museum contact:*** it is preferable that before commencement of the fieldwork, the Potteries Museum and Art Gallery, Stoke-on-Trent will be contacted to inform them of the intended work and obtain agreement for the acceptance of the archive. However, given the short timescale involved before the watching brief commences, it will be attempted to achieve the information from the museum as soon as possible.

4.6.2 ***Content:*** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, Appendix 3, 2nd edition, 1991). The archive will contain site matrices, and summary reports of the artefact record, context records, and any other records or materials recovered.

4.6.3 All primary field records need to be copied in digital, fiche or microfiche to create security copies.

4.6.4 This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the Staffordshire HER (the index to the archive and a copy of the report). OA North will deposit the original record archive of projects (paper, magnetic and plastic media), and a full copy of the record archive (microform or microfiche), together with the material archive (artefacts, ecofacts, and samples) with the Potteries Museum and Art Gallery, Stoke-on-Trent.

4.6.5 ***Publication:*** the results may warrant publication of a summary report in an appropriate academic journal. Such a proposal will be included in the evaluation report but will not completed until instruction from the client.

5. OTHER MATTERS

5.1 ***Project Monitoring:*** whilst the work is undertaken for the client, monitoring will also be undertaken by the County Archaeologist for Staffordshire County Council. Notification will be provided as soon as OA North receive commission.

5.2 Monitoring visits will be allowed to the client or representatives, including the curator, who will be afforded access to the on site records.

5.3 ***Access:*** site access for all elements of the fieldwork will be arranged by the client for OA North. However, should there be any other arrangements, the OA North project manager will need to be notified as soon as this information is available.

5.4 ***Site Welfare Facilities:*** health and safety regulations require access to adequate handwashing facilities to be provided for the duration of the fieldwork. Therefore, a portable toilet has been included, and a site office for the laying out of plans and the secure storage of tools.

6. WORK TIMETABLE

6.1 ***Archaeological Watching Brief*** the duration of the archaeological presence for the watching brief is as yet unknown, being dictated by the schedule of construction works.

6.2 ***Report:*** the draft client report will be completed within approximately two weeks following completion of the fieldwork, subject to any outstanding specialist reports.

6.3 ***Archive:*** the archive will be deposited within six months.

7 STAFFING

7.1 THE PROJECT TEAM

7.1.1 The project will be under the direct management of **Emily Mercer BA (Hons) MSc AIFA** (OA North Senior Project Manager) to whom all correspondence should be addressed. She will provide strategic project management, financial and resource management, with the aid of OA North's Operations Manager **Alan Lupton**, and will co-ordinate the provision of specialist input, liaising externally with sub-contractors and internally with OA staff and managers. Forms A-C in *Appendix 2* provide organograms of OA North's management structure for undertaking the project.

7.1.2 It will be the SPM's responsibility to manage the project from design and delivery of the fieldwork component through to report production. The OA North Director, **Rachel Newman**, will provide an academic overview.

7.1.3 Due to the limited notice for the commencement of the watching brief, day to day fieldwork will be managed initially on-site by a Senior Project Officer, **Paul Clark**. However, depending on the construction programme this is likely to change depending on OA North's current work schedule.

7.1.4 All elements of the fieldwork will be undertaken by either an OA North project officer or supervisor experienced in this type of project. All OA North project officers and supervisors are experienced field archaeologists capable of carrying out projects of all sizes. Due to scheduling requirements it is not possible to provide firm details at the present time. The designated Project Officer or Supervisor will be responsible for liaison with the site contractors, the client, County Archaeologist and other relevant interested parties with regards to on-site work and procedures.

7.1.5 The site teams will be supported by specialist staff based both on site and at offices in Oxford and Lancaster. Finds management will be undertaken by **Christine Howard-Davis** who will also provide specialist input on certain finds categories. The Finds team includes specialists from OA (both Oxford and Lancaster based) and externals (see below). A supervisor will co-ordinate on-site and off-site finds processing, finds data entry and data feedback to the site teams. Any necessary advice on finds conservation will be sought from Alison Walster.

7.1.6 Environmental management will be undertaken by **Elizabeth Huckerby**, who will also provide specialist input on charred remains and pollen. Elizabeth will advise on site sampling procedures and co-ordinate the processing of samples and organise internal and external specialist input as required.

7.1.7 IT support will be supplied by OA North's IT co-ordinator **Jo Cook**. Once the site archive has been prepared by the relevant field staff, any further requirement for long term storage and/or deposition will be undertaken by OA North's in house archives co-ordinator, **Joanne Levey**.

7.2 OA INTERNAL SPECIALISTS

Specialist	Subject
Christine Howard-Davis	Metalwork

Alistair Barclay	Prehistoric pottery
Paul Booth	Roman pottery
Ian Miller	Medieval pottery
Jo Dawson	Post-medieval pottery
Alistair Barclay	Daub and other building materials
Christine Howard-Davis	Tile (Roman and medieval)
Christine Howard-Davis	Glass
Dan Elsworth	Lithic analysis
Julian Munby	Worked Stone/Post-Medieval Materials
Andrew Bates	Animal Bone
Kerry Boston	Osteoarchaeologist
Christine Howard-Davis	Worked wood
Elizabeth Huckerby	Pollen analysis/charred and waterlogged plant remains
Liz Stafford	Geoarchaeology
Joanne Levey	Archives

7.3 EXTERNAL SPECIALISTS USED BY OA

Specialist	Subject
SURRC/Kiel	C14 dating
Alison Walster (Aardvark Conservation Services)	EH Conservator
Dr Nigel Cameron (UCL)	Diatoms
Quita Mould	Leather
Mark Robinson (Oxford University Museum of Natural History)	Molluscs
Dr Mark Robinson (Oxford University Museum of Natural History)	Insect remains
Dr Gerry McDonnell (Bradford University)	Slag and industrial residues
Dr Richard Macphail (UCL)	Soil micromorphologist

7.4 PROJECT CVS

7.4.1 Relevant CVs are presented in *Appendix 1*.

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English Heritage, 1991 *The Management of Archaeological Projects,* 2nd edn, London

Institute of Field Archaeologists (IFA), 1992 *Guidelines for data collection and compilation*

Jacobs Babtie, 2006 *Burton upon Trent Flood Alleviation Scheme Archaeological Watching Brief Written Scheme of Investigation*, unpubl

SCAUM (Standing Conference of Archaeological Unit Managers), 1997 *Health and Safety Manual*, Poole

United Kingdom Institute for Conservation (UKIC), 1990 *Guidelines for the preparation of archives for long-term storage*

United Kingdom Institute for Conservation (UKIC), 1998 *First Aid for Finds* London

APPENDIX 3: CONTEXT REGISTER

Context	Site	Depths	Description
1	Upper Mill Farm, Field 5	0.25m	Cut of ditch
2	Upper Mill Farm, Phase 5	0.25m	Fill of ditch ***1***
3	Memorial Gardens	Unexcavated	Cut of grave
4	Memorial Gardens	Unexcavated	Cut of grave
5	Memorial Gardens	Unexcavated	See Skeleton Register ***1***
6	Memorial Gardens	Unexcavated	See Skeleton Register ***2***
7	Memorial Gardens	Unexcavated	Cut of grave
8	Memorial Gardens	Unexcavated	Cut of grave
9	Memorial Gardens	Unexcavated	Fill of ***7***
10	Memorial Gardens	Unexcavated	See Skeleton Register ***3***
11	Memorial Gardens	Unexcavated	Fill of ***8***
12	Memorial Gardens	Unexcavated	See Skeleton Register ***4***
13	Upper Mill Farm, Field 5	0.12m	Cut of possible pit
14	Upper Mill Farm, Field 5	0.12m	Fill of ***13***
15	Upper Mill Farm, Field 5	0.05-0.03m	Dump of material spreading in and over ***17***
16	Upper Mill Farm, Field 5	As ***15***	Same as ***15***
17	Upper Mill Farm, Field 5	0.5m	Cut of ditch
18	Upper Mill Farm, Field 4	Unexcavated	Brick structure
19	Memorial Gardens	Unexcavated	Cut of brick-lined grave
20	Memorial Gardens	Unexcavated	See Skeleton Register ***5***
21	Memorial Gardens	Unexcavated	Brick lining for grave ***19***
22	Memorial Gardens	Unexcavated	Backfill of grave cut ***19***
23	Memorial Gardens	Unexcavated	Limestone capping stones of grave ***19***
24	College, Phase 1	0.3m	Sandstone footing
25	College, Phase 1	0.3m	Backfill of construction cut ***26***
26	College, Phase 1	0.3m	Construction cut for structure ***24***
27	College, Phase 1	0.3m	Topsoil
28	College, Phase 1	N/A	Twentieth century bund
29	Wetmore Hall Farm	1m	Brick-lined cesspit
30	Wetmore Hall Farm	0.65m	Upper fill of cesspit ***29***
31	Wetmore Hall Farm	0.35m	Lower fill of cesspit ***29***
32	College, Phase 2	0.75m	Brick and mortar rubble foundations
33	Wetmore Hall Farm		Construction cut for cesspit ***29***
34	Wetmore Hall Farm		Backfill of construction cut ***33***
35	Wetmore Hall Farm	0.2m	Topsoil
36	Wetmore Hall Farm	n/a	Natural geology

APPENDIX 4: SKELETON REGISTER

Skeleton No	**Contexts**	**Description**
1	***5*** and ***3***	Partially exposed skeleton, not excavated, aligned north-east/south-west. Although the coffin had disintegrated impressions were still identifiable surrounding the body. Most of the skeleton was *in situ*, but partially disturbed during machine excavation, particularly the ribs and skull. The feet and fingers were missing.
2	***6*** and ***4***	Only half of the skull was exposed, positioned along the western edge of the trench. The remains were left *in situ* and not exposed. It is assumed that it ran under the limit of excavation.
3	***10*** and ***7***	Only fragments of a damaged skull were identified, and the rest of the skeleton was not exposed. The grave cut, ***7***, was very distinct, and therefore the remains could be avoided and left *in situ* without further disturbance.
4	***12*** and ***8***	The skeleton was not exposed, although fragments of skull, humerus and rib were identified. The size of the grave suggested an infant burial. It was left *in situ*.
5	***20*** and ***23***	Reasonably undisturbed skeleton within brick-lined grave revealed lying in a supine position. Several coffin fittings were identified beside the body, including four handles, and a broadly shield-shaped tin plate over the chest, showing a possible female figure. The remains were left *in situ* and the capping stones, ***23***, replaced.

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APPENDIX 5: FINDS SUMMARY

OR No	Context No	Material	Quantity	Description	Date range
1001	***2***	Clay pipe	1	Clay pipe bowl with rouletted decoration	C17th-18th
1002	***15***	Pottery	2	Transfer printed whiteware	C20th
1002	***15***	Pottery	1	Stoneware	C19th-C20th
1002	***15***	Pottery	1	Blackware	C18-19th
1003	***15***	Clay pipe	3	One stem, two bowls	C18th
1004	***2***	Pottery	1	Jackfield/blackware	C18th
1004	***2***	Pottery	1	Unglazed red earthenware	C18-19th
1005	***2***	Pottery	2	Brown glazed buff coloured earthenware	C18th
1006	***28***	Pottery	7	Transfer printed creamware (plate)	C19th-C20th
1006	***28***	Pottery	2	Blackware	C18-19th
1007	***28***	Glass	1	Bottle	Modern

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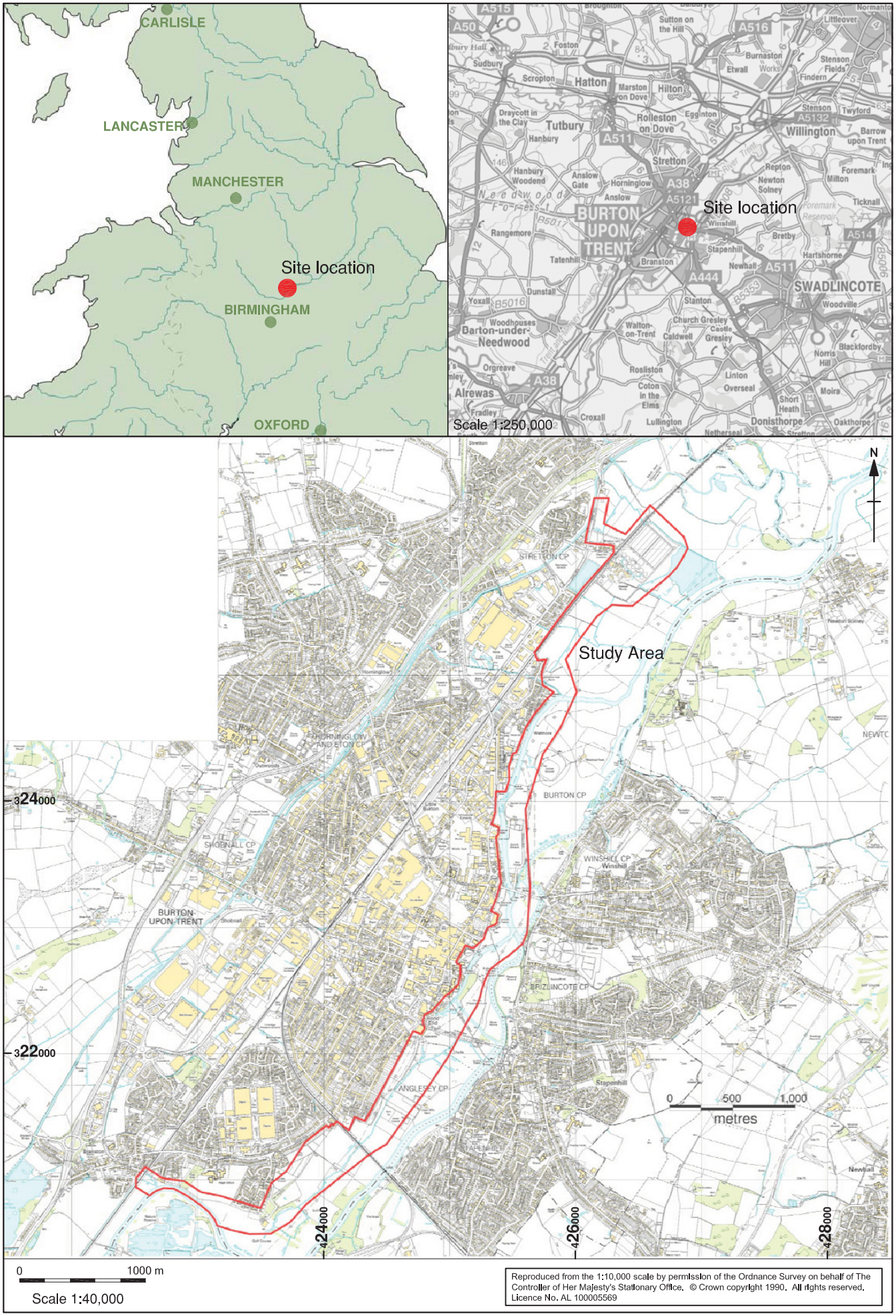

Figure 1: Site Location

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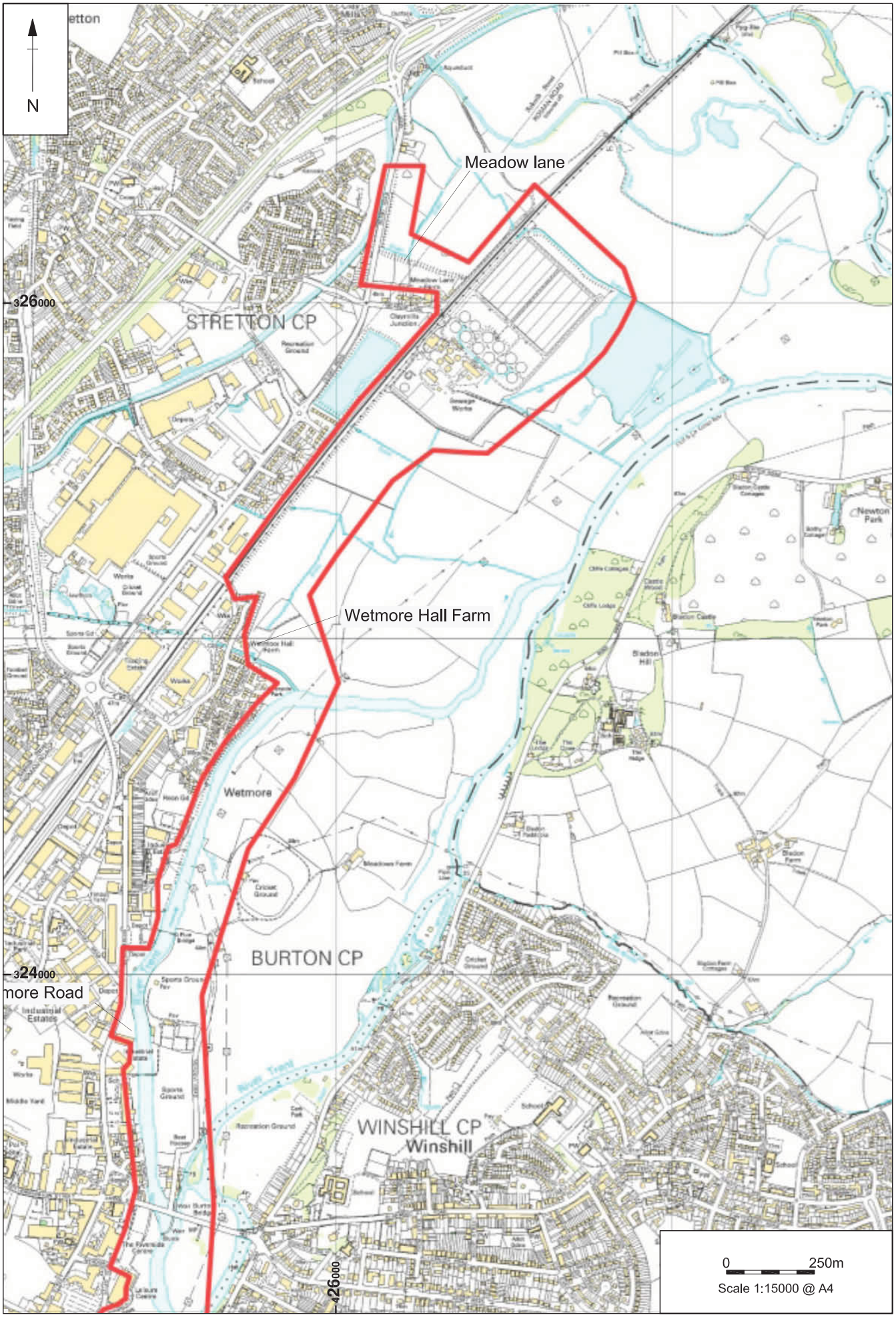

Figure 2a: Location of sites at north extent of flood alleviation scheme

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Figure 2b: Location of sites at south extent of flood alleviation scheme

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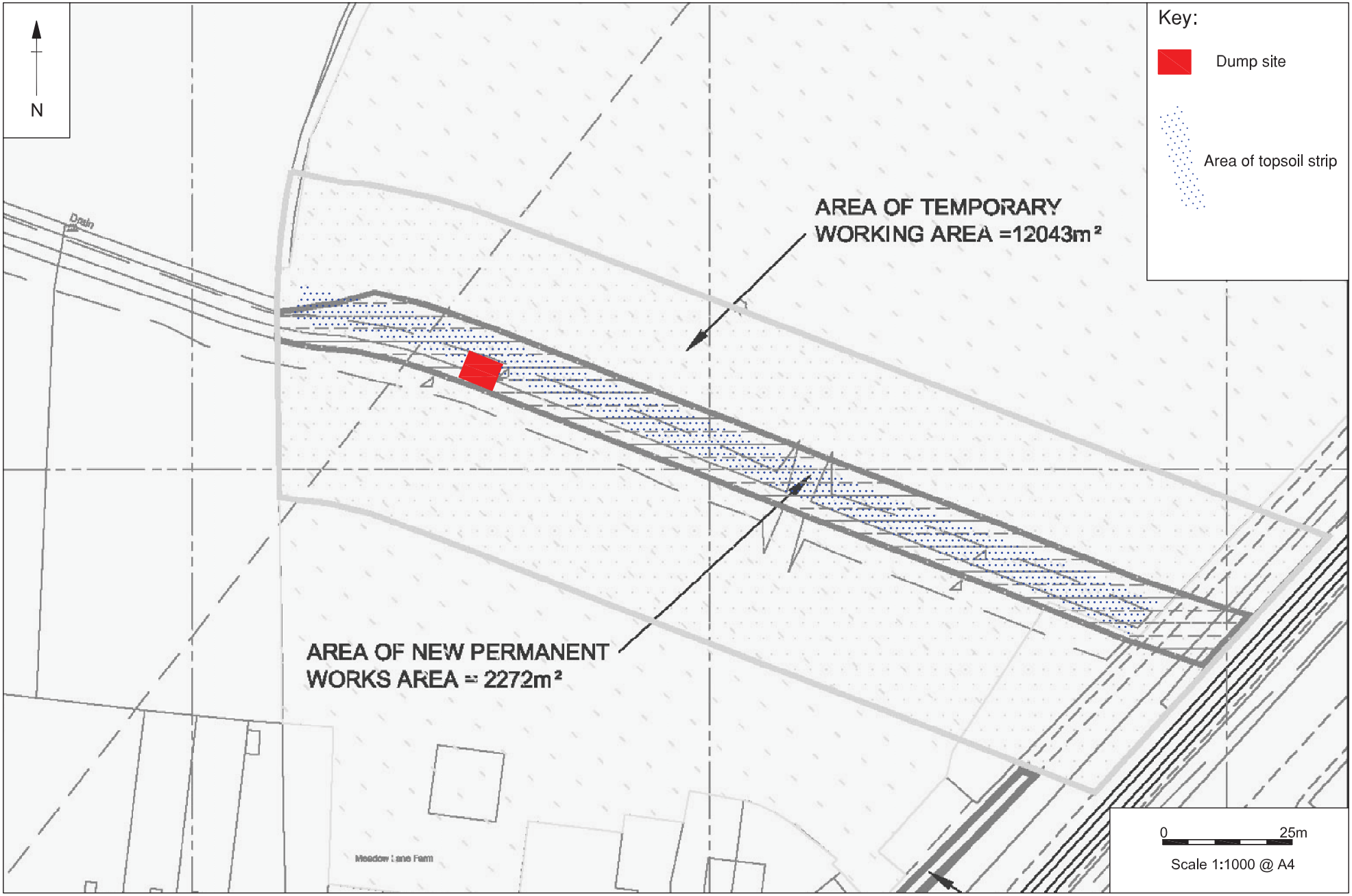

Figure 3: Plan of Meadow Lane site showing location of groundworks

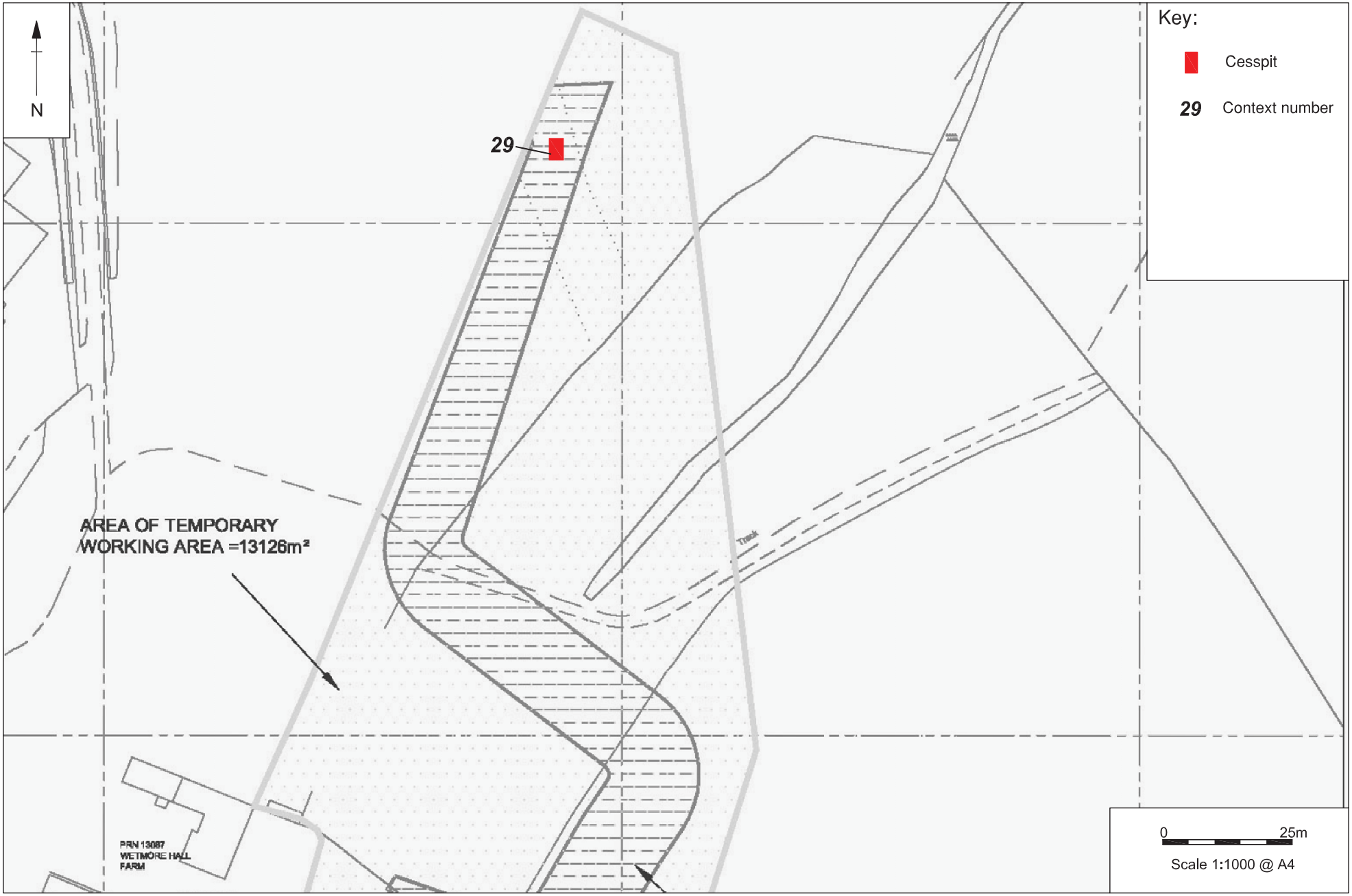

Figure 4: Plan of Wetmore Hall Farm showing location of groundworks and position of brick-lined cesspit, ***29***

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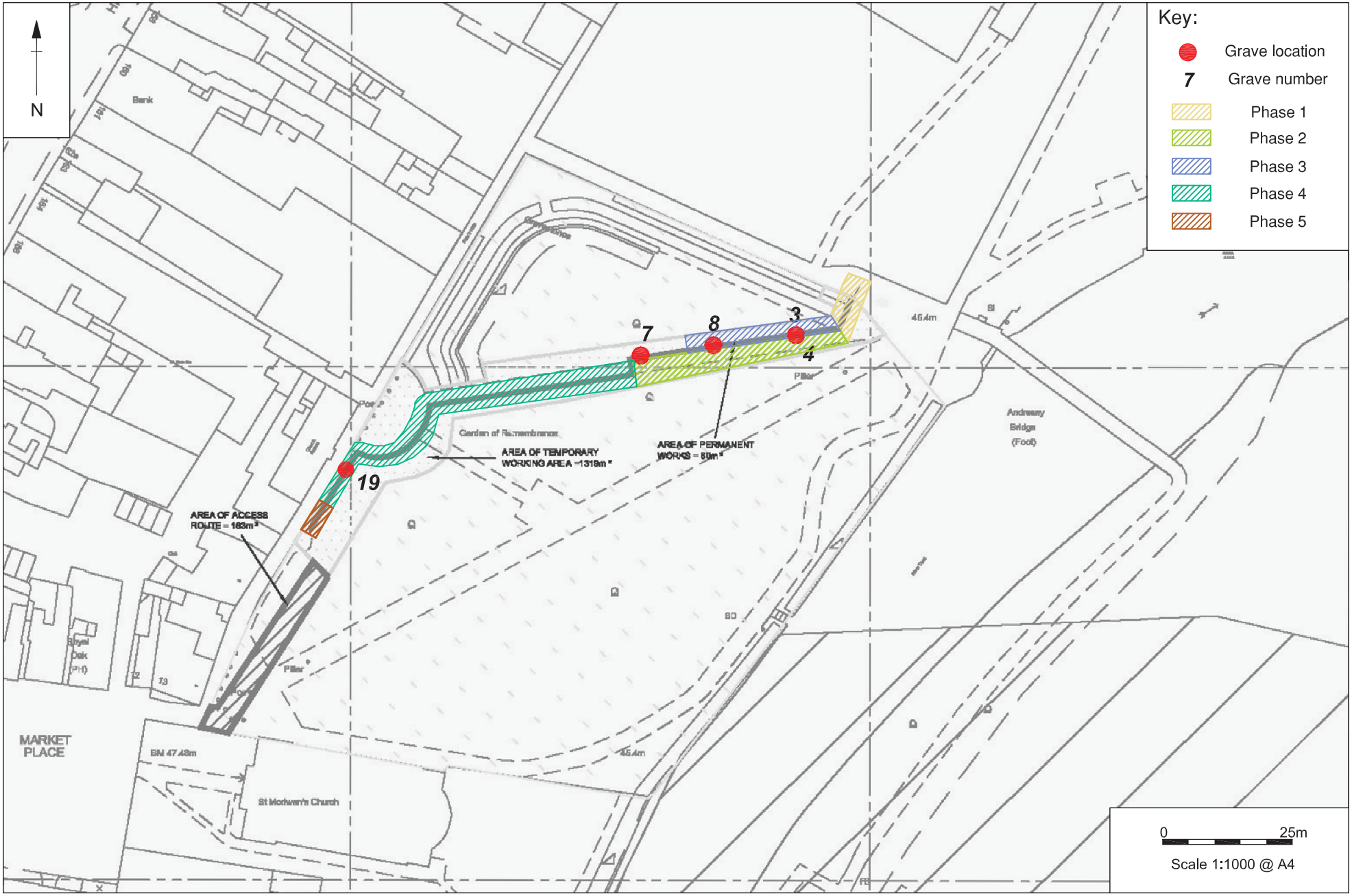

Figure 5: Plan of Memorial Gardens showing location of groundworks and approximate locations of graves

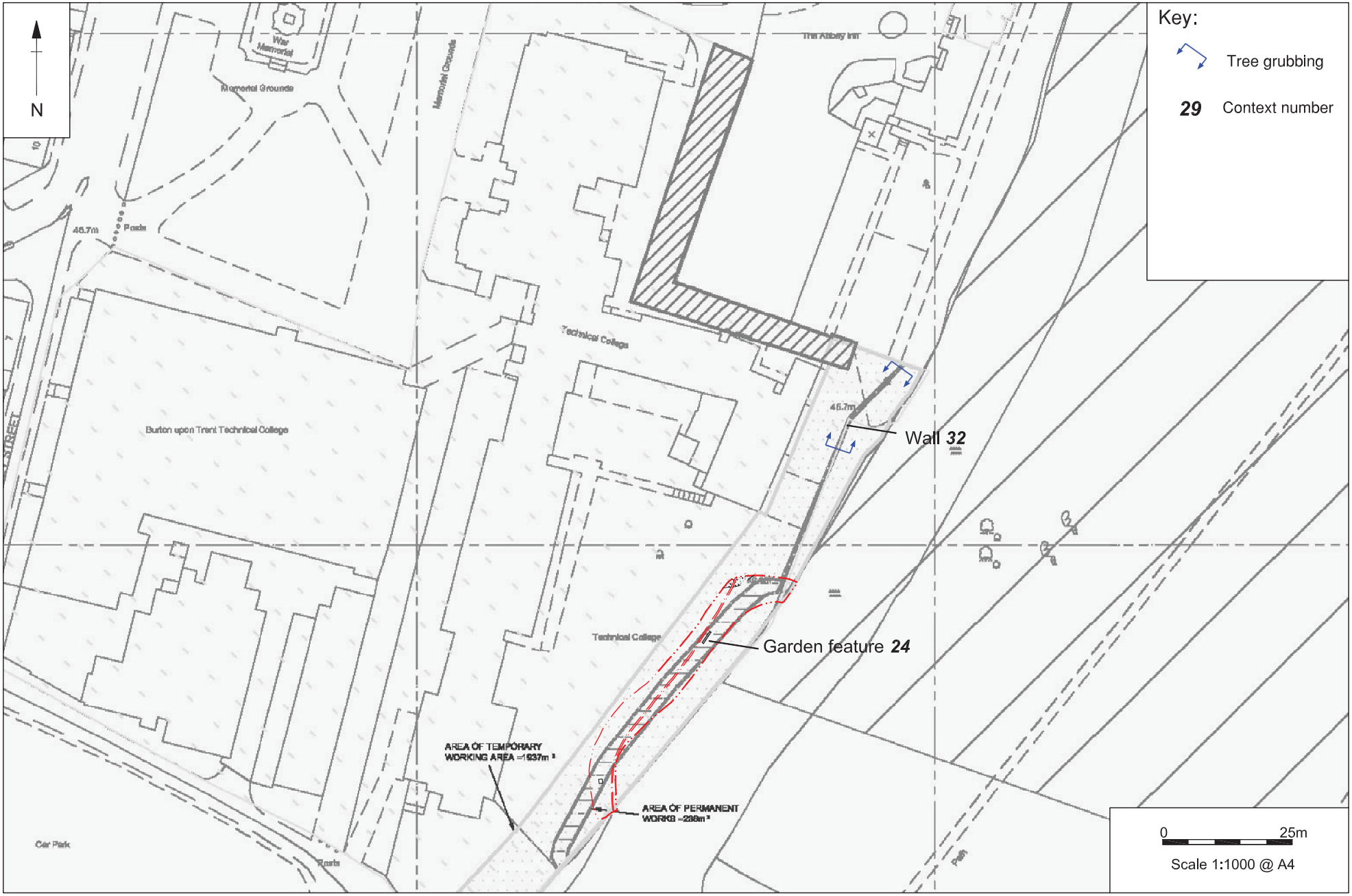

Figure 6: Plan of College site showing location of groundworks and position of features ***24*** and ***32***

Figure 7: Plan of Upper Mills Farm showing location of groundworks and position of features ***18*** and ***1/17***

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Figure 8: Plan of Wetmore Road site showing location of groundworks and position of brick structure

Plate 1: Wetmore Hall Farm; topsoil strip, looking east

Plate 2: Wetmore Hall Farm; cess pit ***29***, looking south-east

Plate 3: Wetmore Hall Farm; cess pit ***29***, looking south-west

Plate 4: Memorial Gardens; skeleton ***3***, looking east

Plate 5: Memorial Gardens; skeletons ***7*** and ***8***, looking south-west

Plate 6: Memorial Gardens; skeleton ***19***, looking north-west

Plate 7: Memorial Gardens; excavation of wall trench, looking south-west

Plate 8: College Site; wall ***32***, looking west

Plate 9: Upper Mills Farm; topsoil strip, looking north-east

Plate 10: Upper Mills Farm; ditch ***1*** and ***17***, looking south-east

Plate 11 Upper Mills Farm; ditch ***1*** and ***17***, looking north

Plate 12: Upper Mills Farm; structure ***18***, looking south