

ARCHAEOLOGICAL WATCHING  
BRIEF AT  
WAITROSE, SALTWAY,  
DROITWICH, WORCESTERSHIRE  
SAM 30097

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21 March 2005

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Project 2516  
Report 1303  
WSM 33531

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## **Archaeological watching brief at Waitrose, Saltway, Droitwich, Worcestershire (SAM 30097)**

**James Goad**

**With contributions by Adam Mindykowski, Katie Head, Andy Mann and Angus Crawford**

### **Part 1 Project summary**

*An archaeological watching brief was undertaken at Waitrose, Droitwich, Worcestershire (NGR SO 9005 6343; SAM 30097). It was undertaken on behalf of CgMs Consulting who were acting as agents for the John Lewis Partnership, at the instruction of Moss Construction. The client was constructing a Waitrose supermarket partially on a Scheduled Ancient Monument, following the approval of a mitigation strategy (CgMs 2002) by the Department of Culture, Media and Sport, English Heritage and Worcestershire County Council, which ensured preservation in situ of medieval and earlier remains. The project aimed to record any archaeological deposits affected by the groundworks, determining what their location, date and nature were. In addition the project aimed to document, as far as possible, the impact of the vibroplacement system on the archaeology, which was included in the development strategy as part of the mitigation.*

*The project covered all the groundworks that were excavated across the site. Predominantly the groundworks revealed layers of demolition material and made-ground dating to the 19<sup>th</sup> and 20<sup>th</sup> centuries. The saltworks in 19<sup>th</sup> and early 20<sup>th</sup> century Droitwich produced a vast amount of waste from the large industrial furnaces, the ash from which seems to have been eventually spread over a large part of the riverside area as a levelling material. A number of brick walls and floors were located throughout the groundworks, along with several brine shafts. Most of these were related to the salt works, which covered most of the area on either side of the River Salwarpe from the mid 19<sup>th</sup> to the early 20<sup>th</sup> century.*

*An area of deeper excavation on the southern side of the site, outside of the SAM, was subject to salvage recording and revealed deposits and features dating to the Roman period. Two distinct phases of activity were identified, mostly ditches, which were possibly part of a water-management system, along with a possible episode of landscaping. Environmental evidence pointed to an area which was subject to a period of probable abandonment. Medieval artefacts and post-medieval and modern structures were also found.*

*Cobbles located in Trench 2 in the western car park area were possibly associated with a late Saxon or medieval trackway, which is thought to run along the course of the current Rickett's Lane. These remained undated, however.*

*A programme of vibroplacement ground stabilisation work was undertaken across the site. This process involved inserting a vibrating probe into the ground in the area of the new store, using the vibration of the probe to remove voids in the surrounding soil and placing gravel into the void left after the vibration. It is understood that this process has not previously been undertaken on a Scheduled Ancient Monument and the opportunity was taken to document this technique in order to add to a growing body of information on the effect of modern construction methods. A separate report is being prepared by English Heritage.*



## Part 2 Detailed report

### 1. Background

#### 1.1 Reasons for the project

An archaeological watching brief was undertaken at an area of land just off Saltway (NGR SO 9005 6343), in Droitwich (Figure 1), on behalf of CgMs Consulting and the John Lewis Partnership, at the instruction of Moss Construction. The client intended to construct a Waitrose supermarket on the site and submitted a planning application to Wychavon District Council (reference W/01/1700) who considered that a site of archaeological interest was affected (SAM 30097). An application for Scheduled Monument Consent was made to DCMS and English Heritage, as the northern half of the development area was scheduled (SAM 30097). This was granted following approval of a mitigation strategy (CgMs 2002). This watching brief documented conformance to the depth restrictions applied by DCMS and English Heritage to the Waitrose construction project over the scheduled area, and by the County Council over the remainder of the development site.

#### 1.2 Project parameters

The project conforms to the *Standard and guidance for an archaeological watching brief* (IFA 1999). The project also conforms to a project specification (CgMs 2004), which was used as the Written Scheme of Investigation based on a mitigation strategy (CgMs 2002). The project specification took into account information included in a desk-based assessment (Hurst 2002) along with information gained from two evaluations on the site (Kenney 2002 and Williams *et al* 2002).

#### 1.3 Aims

The aims of the watching brief were to clarify the presence/absence and extent of archaeological artefacts and remains; identify, within the constraints of the archaeological monitoring, the date, character, condition and depth of any surviving remains within the site; assess the degree of existing impacts to sub-surface horizons and to preserve by record the surviving archaeological remains (CgMs 2004).

In addition to the aims specified in the Written Scheme of Investigation, the project aimed to synthesize the available data from boreholes and archaeological excavation work and establish the depth of buried deposits across the site. Profiles of the deposits from north to south along the course of the brine channel, as well as east to west, were made in order to establish the nature of the subsidence and the effect it has had on the buried strata.

### 2. Methods

#### 2.1 Documentary search

Prior to fieldwork commencing relevant existing information was obtained for use by the project team. In addition the following sources were also consulted in the preparation of this report:

##### *Cartographic sources*

- Early Ordnance Survey map editions
- “Map of the Town and Borough of Droitwich” 1786

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*Documentary sources*

- Hurst 2002
- Williams, Hurst, Pearson and Darch 2002
- Kenney 2002

## 2.2 **Fieldwork methodology**

### 2.2.1 **Fieldwork strategy**

Fieldwork was undertaken between 9<sup>th</sup> February and 1<sup>st</sup> December 2004. The Historic Environment Record activity reference number and site code is WSM 33531.

Fifty-eight trenches and areas of ground reduction, amounting to approximately 3818m<sup>2</sup> in area, were excavated over the site area of over 1.5ha, representing a sample of approximately 24%. The location of the trenches is indicated in Figures 2-3. Excavation was generally undertaken by 360° tracked excavator using both toothed and flat ditching buckets as appropriate. The trenching and re-grading was undertaken under archaeological supervision. The groundworks included re-grading of ground, the excavation of trenches for drainage and other services and the installation of a large foul water tank and pumping station on the southern edge of the site (Trench 21). The upper levels of Trench 21 were not readily observable as groundwater and their unconsolidated nature resulted in their excavation as a semi-liquid material. It was only with the more consolidated lower levels and pumping of water that recording became feasible. It is highly probable that other features associated with this phase were present throughout the trench and would have been removed during excavation. The digging of the service trenches were limited to 1.50m in depth, with the exception of Trench 21. In areas of the site, digging exceeded the 1.50m limit, but only in areas of previous disturbance, in order to establish services, and where DCMS approval had been given. Despite this occasional necessity the groundworks did not impact on layers of significance, owing to the fact that they were excavated through the fills of late post-medieval and modern services. Trench 21 was a larger area outside the SAM. The area was intended for the construction of a sewer diversion pumping chamber and excavated to a depth of 6.60m (22.25m OD). Observation was also undertaken for the vibroplacement works.

#### *Summary of vibroplacement*

Work was needed to remediate the poor ground conditions in advance of the construction of the new store building. The ground was to be improved *in situ* by introducing a foreign material to increase the overall strength of the soil (Davis *et al* 2004).

In this case the system used was of dry vibroplacement using standard crane hung vibrator. This method entailed the vibrator, which is suspended from the crane, being lowered onto the ground. Penetration of the underlying deposits was effected by a combination of the weight of the vibrator, high frequency vibrations and compressed air. Horizontal pressure was exerted on the surrounding deposits, compacting the weak soil. After reaching the required depth, the vibrator was held in the ground for a short time and then removed. A small charge of inert, clean stone aggregate (in this case 40mm grade stone) was tipped into the hole and the vibrator lowered again to compact the stone and interlock it with the surrounding soil. By adding successive small charges of stone and compacting each one, a dense column of stone is built up to ground level (ground improvement method statement in CgMs 2002).

On most sites underlain by made-ground, such as this one, the fill is generally a mixture of soil types. The formation of dense stone columns at appropriate intervals beneath the applied loadings strengthens the soil mass and generally ensures that total and differential movements are well within acceptable limits (ground improvement method statement in CgMs 2002).

In the area occupied by the 20<sup>th</sup> century pumping station adjacent to the north end of Gurneys Lane it was planned to sink 20 probes to a depth of 6.00m. In the event very few reached this depth due to obstructions that related to the demolished pumping station. The final result was a layer of compacted soil of at least 2.00m in thickness across the footprint area of the new building. The vibroplacement programme was subject to archaeological observation the results of which are described in Section 4.2.

#### 2.2.2 **Structural analysis**

All fieldwork records were checked and cross-referenced. Analysis was effected through a combination of structural, artefactual and ecofactual evidence, allied to the information derived from other sources.

### 2.3 **Artefact methodology, by Angus Crawford**

#### 2.3.1 **Artefact recovery policy**

The artefact recovery policy conformed to standard Service practice (CAS 1995 as amended).

#### 2.3.2 **Method of analysis**

All hand retrieved finds were examined. A primary record was made of all finds on a Microsoft Access 2000 database. Artefacts were identified, quantified and dated.

Pottery was examined under x20 magnification and recorded by fabric type and form according to the fabric reference series maintained by the service (Hurst and Rees 1992).

### 2.4 **Environmental archaeology methodology, by Andy Mann and Katie Head**

#### 2.4.1 **Fieldwork and sampling policy**

The environmental sampling policy was as defined in the County Archaeological Service Recording System (1995 as amended). Samples of 10 litres were taken from three contexts of Roman date (2122, 2124 and 2130) all representing the organic waterlogged fills of drainage ditches.

#### 2.4.2 **Plant macrofossils**

##### *Processing and analysis*

For each of the samples a sub-sample of 1 litre was processed by the wash-over technique as follows. The sub-sample was broken up in a bowl of water to separate the light organic remains from the mineral fraction and heavier residue. The water, with the light organic fraction was decanted onto a 300µ sieve and the residue washed through a 1mm sieve. The remainder of the bulk sample was retained for further analysis.

The residues were fully sorted by eye and the abundance of each category of environmental remains estimated. The flots were fully sorted using a low power EMT stereo light microscope and plant remains identified using modern reference collections maintained by the Service, and seed identification manual (Beijerinck 1947; Table 1). Nomenclature for the plant remains follows the Flora of the British Isles, 3<sup>rd</sup> edition (Clapham, Tutin and Moore 1989). As species diversity was low, further material was not processed following initial assessment.

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### 2.4.3 **Pollen methodology**

#### *Sampling policy*

Pollen samples were selected from three contexts from ditches of Roman date.

#### *Processing and analysis*

Three pollen samples were selected from contexts, which appeared to be high in organic matter (contexts 2122, 2124, and 2130). Sediment samples of 2cm<sup>3</sup> were measured volumetrically. The samples were soaked for 24 hours and then boiled in tetra-Sodium Pyrophosphate for 1 hour, sieved through a 120 µm mesh, washed onto a 10 µm mesh, and the residue collected. The samples were then digested by Potassium Hydroxide for 20mins in a boiling water bath to break up the soil matrix and dissolve any humic material. 10% Hydrochloric acid was then added in order to remove any calcium carbonate within the samples. Due to the siliceous nature of the sediments, the samples were digested using Hydrofluoric Acid in a hot water bath for 1 hour, with the chemical refreshed every 30mins. The samples were then washed and sieved onto a 10µm mesh to remove any remaining clay or silica material. As the samples also contained a large amount of organic matter, they were acetolysed for 2mins to break down the cellulose material. Finally the pollen pellet was stained with safranine, washed in alcohol to dehydrate the sample, and preserved in silicon oil.

Pollen grains were counted to a total of 250 land pollen grains (TLP) for assessment purposes, on a GS binocular polarising microscope at 400x magnification, and identification was aided by using the pollen reference manual by Moore, Webb, and Collinson (1991). Nomenclature for pollen follows Stace (1997) and Bennett (1994).

### 2.5 **The methods in retrospect**

The methods adopted allow a high degree of confidence that the aims of the project have been achieved.

## 3. **Background**

### *Geography, geomorphology, topography and archaeology*

The town of Droitwich is located on the River Salwarpe and is situated in the middle of a band of Mercian Mudstone (Keuper Marl). Within the marl are saliferous beds deposited during the Triassic period, probably when the area was covered by a shallow sea (Northolt and Highley 1973, 4; Woodiwiss 1992).

At Droitwich the saliferous beds are covered by breccias formed by the collapse of the surrounding rock (Poole and Williams 1981, 4). Groundwater percolating through the beds takes up salt in solution until it forms saturated brine and is forced to the surface under artesian pressure. The resulting springs are today restricted to the low river floodplain in the area of the town. This may have been the main location for brine springs in the past, though salt derived from the saliferous beds has probably had localised effects outside this area, for example at Upton Warren, 5km to the north-east of Droitwich (Woodiwiss 1992).

The area of the development is directly over a brine channel that is orientated north to south across the site and under the location of the new store. The ground above this brine run has been severely affected by subsidence since the late 19<sup>th</sup> century (Poole and Williams 1981). An area in the centre of the High Street just to the south of the new store has been visibly affected by such ground movements. Under natural conditions the flow of brine is from the higher ground around Droitwich towards the lower lying areas of town, where it comes to the surface in the form of brine springs. When the brine reaches the springs in Droitwich the

solution is so strong it's saturated, and so not able to dissolve the salt beds directly under the town (Woodiwiss 1983).

In the 18<sup>th</sup> century the rate of industrial brine extraction increased dramatically (Pillans 1906, 262) with the use of steam power to pump up the brine and large brick-built facilities to process larger quantities. Consequently the flow of brine increased to such an extent that the brine flowing beneath Droitwich became unsaturated and began to dissolve the beds of salt directly under the town (Poole and Williams 1981, 4). Removal of the underlying salt beds led directly to subsidence of the overlying strata. Even though salt production was in decline by the earliest years of the 20<sup>th</sup> century, continued extraction of brine at Stoke Prior was enough to maintain the flow of unsaturated brine beneath the town. It's only since the closure of the Stoke Prior works in 1972 that the natural regime was restored along with a return to minimal subsidence (Woodiwiss 1983).

The subsidence has affected buildings on the High Street and Queen Street to the east, indicating a total area of subsidence stretching from Rickett's Lane to Queen Street (Woodiwiss 1983). An archaeological excavation in Gurney's Lane (WSM 004099) was undertaken to improve knowledge of the nature of the subsidence and the depth of archaeological deposits. The excavation established that at a depth of 26.74m OD the proposed construction of the Market Hall (demolished as part of the present development) was not going to have an impact on layers of archaeological significance. Brick and cobble surfaces were found within the trench, along with walls enclosing them. These were found between 27.55 and 27.74m OD. Layers of ash and brick rubble were also present in the trench. The building was dated to between 1786 and 1884. Guttering and drainage showed the floor had been nearly level with the contemporary ground surface. The difference between the level of the building's floor and the present ground surface (c1.20m) showed the effect of two centuries of subsidence. Ash and rubble had been used to raise the ground level of the area after it subsided (Woodiwiss 1983).

The location of the new Waitrose store and the eastern portion of the development; the extent of the archaeological strata below it, the effects of the subsidence and the results of previous archaeological investigation on the buried deposits there, are further detailed in a desk-based assessment (Hurst 2002). However, a number of archaeological investigations have taken place in the area since the production of the desk-based study, adding further knowledge about the archaeological strata on that part of the site.

An evaluation trench was excavated at NGR SO 9009 6339 and a series of deposits and features deposits were encountered (WSM 31174; Figure 3). The earliest remains comprised a pit cut into natural clay, which contained preserved timberwork. This was probably the remnant of a brine reservoir tank dating to the late Iron Age or early Roman period, although no dating evidence was retrieved to confirm this. A medieval layer incorporated industrial waste sealing the earlier remains. The layer was associated with finds suggesting earlier cultivation. A cobbled surface dating to the later medieval period related to a lane joining the High Street to Hogg Lane (later known as Gurneys Lane). Salt-production buildings and deposits of the 18<sup>th</sup> to 19<sup>th</sup> centuries lay below modern levelling at the top of the trench sequence (Williams *et al* 2002).

A second evaluation (WSM 31683; Figure 3; SO 9009 6339) involved the excavation of two trenches on the proposed development area. The trenching was limited to the base of the post-medieval deposits. The evaluation revealed a substantial brick structure and a depth of made-ground, both dating from the post-medieval period (Kenney 2002).

On the northern periphery of the area where the new store is constructed a large trench was excavated along Saltway, 100m long by 3m wide by Severn Trent Water, which was subject to archaeological watching brief. The groundworks, over 2.50m in depth, revealed two hollowed-out timber brine pipes at the western end of the trench, along with a collection of brick walls and floors. Most of these walls could be dated to the 19<sup>th</sup> century and are in the

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vicinity of industrial buildings located on the frontage of the former Post Office Lane, though few could be correlated with mapped buildings (Vaughan 2003; Figure 3).

A watching brief was undertaken (WSM 33588; Figure 2) at the same time as the Waitrose project started and was adjacent to the Waitrose site at the junction of Rickett's Lane and the High Street. Works to the rear of the existing premises revealed a considerable overburden of post-medieval make-up material but also Iron Age and early Roman artefacts within an alluvial matrix at the base of the trench (29.20m OD). Overlying the alluvial layers were the remnants of a cobbled surface (29.67-29.30m OD), possibly either a yard surface or the remnants of an extant trackway leading down to the river, dating either to the late Saxon or early medieval period (Sworn 2004).

The central and western portions of the development were not covered by the desk-based study. However, the area of the development's west car park has previously been subject to archaeological excavation. Two large trenches were excavated on the former Old Bowling Green area just to the west of Rickett's Lane and in the route of Saltway. The Old Bowling Green site (WSM 00600; Figure 2) lay just to the west of a former meander of the river Salwarpe. The river was straightened to its present position in the mid 19<sup>th</sup> century when it was canalised. Evidence of early to mid Iron Age activity was found in the form of small numbers of residual flints and pottery sherds. Evidence of salt production became established on the site in the late Iron Age, with a number of large brine tanks (27.00m OD), along with a large array of waste briquetage, indicating large-scale production. Salt production continued through to the early Roman period, though exactly for how long is uncertain. In addition to salt manufacturing, evidence of the processing of animal products was found. Processes such as tanning would have required salt for curing hides, indicating a growth of secondary industry on the site in the late Roman period (Woodiwiss 1992).

The central area of the site, which is taken to be 70m from the east of Rickett's Lane, and from the Saltway down to the High Street, has not been subject to similar large open area excavations like that at the Old Bowling Green. There have been a number of investigations on the periphery of the area, however. A major excavation was undertaken on the site of a major brine well at Upwich on the north side of the Saltway. The Upwich brine well was a focus for salt production from the late Iron Age onwards and seems to have intensified in the Anglo-Saxon period. The excavation at Upwich produced a virtually continuous sequence of salt making from the Roman period onwards. The significant archaeological deposits (26.50-25.00m OD) were waterlogged, and produced a wealth of well preserved wooden and leather artefacts, as well as *in situ* timber structures. The site revealed the extent of flooding in the middle Saxon period, and demonstrated the value of deposits buried beneath the alluvium. The 13<sup>th</sup> century saw the establishment of a new brine well at Upwich and the development of the town into a major industrial centre. In the 18<sup>th</sup> century the area around the well was cleared of buildings that had surrounded it during the previous 500 years. (Hurst 1997). The Upwich well had fallen out of use by 1737 (Blewitt and Field 1994).

The development area has been the subject of much alteration in the modern period. The concentration of brick-built salt works that clustered around the canal in the 19<sup>th</sup> and early 20<sup>th</sup> century fell into disuse and disrepair after salt production ceased in 1922. The salt works across the area were gradually cleared as dereliction took hold. The Old Bowling Green excavation took place in the late 1970s prior to the construction of Saltway, an inner ring road of the town that cut through the area of the salt works and passed over the course of the canal. The relocation of the canal to its present position gave rise to the Upwich excavation in the 1980s (Hurst pers comm).

The abundance of early salt-production remains over the area south of the River Salwarpe led to the site being scheduled (SAM 30097). The site is unique in that it is an area where multi-period production of salt has formed a sequence of activity from the prehistoric through to the modern period. The policy regarding the Scheduled Ancient Monument is detailed in the archaeological mitigation strategy document (CgMs 2002).

## 4. Results

### 4.1 Structural analysis

The trenches and features recorded are shown in Figures 2 and 3. The finds and environmental tables are presented in Appendix 1.

#### 4.1.1 Phase 1 Natural deposits

In only one location during the watching brief were natural deposits made visible. The excavations in Trench 21 (Figure 4) removed all the archaeological strata, down to the natural layers. Three distinct natural deposits were observed. Red Mercian Mudstone was uncovered at a depth of 6.60m below ground surface. This was overlain by a relatively thin layer of river terrace gravels (2119), over which, was a layer of bluish grey silty alluvial clay (2118). A similar clay river-borne material was recorded during the Upwich excavation just to the north (Hurst 1997). The clay at Upwich was incorporated into the archaeological sequence, existing just above the Roman and early to middle Saxon deposits, representing various depositional events. However, the blue clay in Trench 21 definitely pre-dated the Roman sequence of activity, proving that it belonged to an entirely different, earlier sequence of deposition.

The only other times during the project that natural material was reached was during the boreholing. A diagram of the deposits reached across the site has been produced in Figures 5 and 6. This has synthesized data from previous boreholing and archaeological excavation to establish the depth of deposits over the brine run that flows north to south through Droitwich. The results have established a profile of deposits along the length of the brine run and across it, demonstrating the extent of the subsidence that has occurred along its length.

#### 4.1.2 Phase 2 Roman deposits

Deposits of this date were located solely in Trench 21, given the greater depth of excavation (Figure 4). This earliest phase of activity comprises two ditches (Plate 5): a small north-east by south-west aligned ditch (2123) with remnants of a possible wooden lining, cut by a larger curvilinear ditch (2125) with two postholes (2127 and 2129), cut into its north-western edge, and still containing well-preserved wooden posts. Once again, as the latter feature was cleaned it became apparent that some thin strips of wood were visible in places along this edge, suggesting a wooden lining held in place with posts.

Two small ditches or gullies were observed in a remnant of the west facing section (2131, 2134). These features were cut into a layer (2132) that clearly overlies the first phase of activity. This layer appeared to have been made ground. The hard compacted top edge of this layer suggests it was exposed as a surface for the lifetime of the cut features. Evidence from this phase was limited and based on a remnant of material located at the eastern edge of the trench.

#### 4.1.3 Phase 3 Medieval deposits

Deposits from this period were discovered in Trench 21. No features were observed belonging to this phase, which was limited to a layer of apparently dumped material over the Roman features. Dating is based on one sherd of medieval pottery and based on stratigraphic relationships. All other artefacts recovered were residual Roman pottery sherds and one undated tile fragment. This layer appeared to be heavily disturbed suggesting some re-deposition and truncation has taken place, perhaps, as a result of industrial post-medieval activity at this location.

Deposits in Trench 2 may also have been medieval. A large area of re-grading took place in the southern half of the western car park. Trench 2 was a long and relatively deep excavation in an area that was largely unaffected by the subsidence of archaeological material generally

visible on the east side of Rickett's Lane. Occasional large smooth cobbles were recorded at the base of the trench. They were quite diffuse and formed no discernable pattern, but were concentrated mostly at the eastern end of the trench. No finds were associated with this level so dating was not possible, but previous excavation at the Old Bowling Green (WSM 00600) indicated that the base of the trench was probably near or within the general level of Saxon and medieval archaeological significance.

#### 4.1.4 Phase 4 Post-medieval structures and deposits

The vast majority of the deposits and structures found during the groundworks dated to the post-medieval period. Historically the area of the development was covered by buildings related to the salt manufacturing industry. Most of the brick walls and floors uncovered during the groundworks are of 19<sup>th</sup> century date and can be related to the salt works shown on the 1885 Ordnance Survey map (Figure 9).

At the western end of the development area, to the west of Rickett's Lane is an area of car park (Figure 2). This was heavily trenched for services, tree pits and a retaining wall. There was also re-grading over a large area. The chance of finding significant archaeological deposits or features was higher in this area than over the rest of the site as it was less affected by subsidence. However, all the archaeological layers and structures found dated to the post-medieval period.

Trench 2 comprised a large wide trench excavated for a retaining wall and an area of re-grading for the new car park (Figure 2). The area revealed a number of walls: 216, 230, 211, 212, 230 and 202. These can be associated with a large building that stood on the site in the 19<sup>th</sup> century. The 1885 OS map shows this building with an irregular plan (Figure 9). It was located in between an area of gardens on the west side and another building to the east that fronted directly onto what was then called Asylum (now Rickett's) Lane. Given the fairly sizeable nature of this building, it could possibly be the actual asylum itself. Although the remains of the walls were fairly fragmentary, this is explained by the fact the machining removed much of the brick structures, which were mostly recorded in section. Landscaping of the area after the building's demolition probably resulted in some of the building foundations being removed. Judging from the Ordnance Survey maps the building underwent substantial alteration between 1885 and 1903, but had disappeared, and been replaced by a different building partly on the same site by 1927 (Figures 9-11).

The building that existed on the east side of the previously mentioned building had a street frontage on to Asylum Lane. Wall 2210 (Figure 2) was possibly part of an internal wall in this building. Walls 219, 2211 and 1903 seem to belong to small outbuildings on the north side of this building (Figure 10). These also had a street frontage. Wall 202 is probably the northern outer wall of the building. This building seems to have been demolished by 1927 (Figure 11).

Wall 1204 was exposed in Trench 12 at the far western side of the car park. This is possibly a fragment of boundary wall, which is visible on the Ordnance Survey maps (Figures 9-12).

Nearly all the trenches in the west car park area had a layer of dark grey ashy, silty sand just below the modern layers of make-up aggregate (Plates 2 and 6). This was a feature not just of the trenches at this end of the site but throughout the whole development. This layer seems to have been material that was spread around the area of the 19<sup>th</sup> century salt works, as it was material that was produced as waste from the furnaces under the salt pans. It seems mostly comprised of ash and coal waste that had been used in the large brick furnaces throughout the salt works. In most areas the material contains brick and brick fragments, charcoal, mortar fragments and occasional sherds of glass. The material has incorporated demolition waste in the years after the 1920s, which saw the demolition of the saltworks and the disappearance of Droitwich's industrial landscape. The dark grey silty sand varies in depth across the site but has been used as levelling and landscaping material.



The western car park area did not show much evidence of single phases of wholesale demolition, which might have shown up in the form of layers of abundant brick rubble. This is probably because the northern half of the car park wasn't developed, as shown on the 1786 map (Figure 13) and the Ordnance Survey maps (Figure 9-12). Although the southern half of the present car park did have upstanding buildings on them, the demolition rubble might have been taken away from the site or used as levelling material elsewhere.

Figure 3 shows the location of the trenches within the central area of the site, located from the east side of Rickett's Lane and the west side of Gurney's Lane. Trench 1 crossed the area from Rickett's Lane to the middle of the area. This trench found the remains of two walls, 102 and 103, between 9 and 13 metres in from the eastern edge of Rickett's Lane (Figure 3). The wider wall, 103, is probably the eastern outer wall of one of a series of buildings that fronted directly on to what was Asylum Lane. Cartographic evidence does not positively identify these buildings as being part of the salt works, but given their location, a function associated with the salt industry is quite likely.

Fifteen metres further east of walls 102 and 103 was a square, timber-lined brine shaft, 104 (Figure 3). Located during the trenching this proved a hazard due to its positioning within the trench. The area was unstable around and just above the shaft, as layers of later aggregate and make-up had slumped into the shaft, leaving a void not far below the modern tarmac. A small area was cut into the tarmac around the shaft to expose its full extent. The construction was square, with very large, substantial timber beams forming the sides (Plate 1). Machine excavation within the shaft was undertaken down to 2.80m, although the shaft was not visible clearly at this depth because of water inundation. Access down to the trench floor adjacent to the shaft was forbidden for health and safety considerations, but the timber beams lining the shaft measured approximately 2m in length.

Trench 34 contained a north-east to south-west oriented wall. Looking at the location of the wall it would appear to be an internal feature of a building present on the 1885 Ordnance Survey Map (Figure 9). Although other buildings were present in this area, most of them fronting directly onto the canal, no trace of them were found during the trenching. Trenches 16, 17 and 32 (Figure 3) did not locate any *in situ* brick walls.

Trench 1A showed a small north to south oriented wall, 110, in the west section (Figure 3). This is in the location of the Salt Works shown on the 1885 Ordnance Survey map (Figure 9) as is wall 3104 revealed in Trench 31. Wall 110 would seem to be the east side of a building whilst 3104 would appear to be an internal wall given its position.

A series of tree pits, Trenches 35-41 were excavated in a line, south to north, from the edge of the High Street (Figure 3). Trench 35 was the only one of this series to have part of an intact wall within it. Wall 3504 (Figure 3) seemed to be the foundation of a wall that lined the north side of the High Street. The date of demolition for this wall is uncertain. Most of the rest of the trenches had layers of brick demolition rubble at similar levels. The bricks usually existed under a layer of dark grey industrial waste material, 3503, which seemed to have been used as a levelling and make-up layer. This area of the site has been free of buildings on all the historical maps. Perhaps the demolition material was imported for landscaping purposes after the demolition of the nearby salt works in the 1930s.

The eastern end of the development area saw the most dense concentration of brick structures within the groundworks. Historically one of the densest areas of occupation was on the High Street and the area to the north of it. The back plots of the properties fronting onto the street reached back a substantial distance in many cases, given that they were formerly medieval burgrave plots. Between the rear of the burgrave plot areas and the canal lay the area of saltworks. Maps show that an area of car parks and the now-demolished market hall replaced these.

Trench 21 was excavated to a depth of 22.00m OD (Plates 4 and 5). This trench lay outside the area of the Scheduled Ancient Monument. At a depth of approximately 26.00m OD the

tops of a series of walls were found. The walls point to an area where two buildings seem to back on to one another at a junction that is probably located at the back wall of a burgage plot. The southern-most building resided as a separate entity in the grounds of one of the buildings that fronted on to the High Street. The northern building was a narrow, rectangular structure that extended northwards onto the area of the former Market Hall.

Immediately to the west of Trench 21, Trenches 56, 45, 29 and 30 opened up a large area of ground that was located within Gurney's Lane. The 1885 Ordnance Survey map (Figure 9) shows the area to be densely occupied with a series of narrow buildings to the rear of the High Street properties. Gurneys Lane is shown as a triangular area of land with a sub-triangular area of buildings centrally within it. Walls 5603, 4514, 4508 and 4510 in Trenches 56 and 45 can be associated with buildings to the east side of and fronting on to Gurney's Lane. The brick floor 4562 and walls 4527, 4520, 4561 and 5809 seem to be related to the triangular area of buildings that stood in Gurney's Lane. Given the size and location of these buildings just off the High Street they might have been shops and tradesmen's dwellings. The presence of these buildings had also been noted in previous archaeological work (Woodiwiss 1983).

Trench 49 (Figure 3) exposed walls 4905 and 4906. Although 4906 cannot seem to be tied to any buildings on the Ordnance Survey maps, 4905 is probably a wall of the salt works compound on the east side of Gurney's Lane (Figures 9 and 10), which in the 19<sup>th</sup> century terminated on the southern side of the salt works.

Trench 50 ran roughly parallel to Saltway, in an area where there was a concentration of trenching activity. This was in the location of the new supermarket store. Walls 5004 and 5005 along floor 5202 of Trench 52 and wall 5304 of Trench 53 probably all belonged to two north to south oriented buildings, whose north end fronted on to the canal. These buildings belonged to the salt works.

A second brine shaft was located in Trench 51. Unlike shaft 104, brine shaft 5105 had a cast iron cylinder mounted vertically (Plate 7) which was associated with an internal cast-iron pipe assembly. Cast iron pipes were also leading from the cylinder away from the shaft. This cylinder was based within its own pumping house (Figure 3: Plate 7), which Trench 51 exposed, including wall 5108, which was probably the eastern wall of the building, as well as an adjoining wall with the rectangular building alongside. The shaft itself was not exposed to a degree that made it possible to record.

Trench 28 exposed several walls; 2806, 2808 and 2811. The first wall 2806 seemed to be one of the northern corners of the building alongside the pumping house. Walls 2808 and 2811 were further to the east and belonged to the outer wall and curving boundary wall of salt work buildings that fronted on to what was then Post Office Lane (Figures 9-12).

Trench 47 exposed a series of walls angled in the same direction. These were part of the buildings that lay a little recessed back from Post Office Lane at a slight angle to it.

This area of the site also displayed a redeposited layer across it, a dark brownish grey silty sand containing brick fragments, glass sherds and mortar. As mentioned earlier, the material was derived as waste from the brine processing. It would seem to be 19<sup>th</sup> or early 20<sup>th</sup> century in origin. Almost invariably it has been laid down as levelling material. The modern layers of aggregate and make-up for the car park lay directly on top of it.

#### 4.1.5 Phase 5 Modern

There was a substantial amount of modern material excavated during the project. Most of this was in the form of layers of light grey sub-angular aggregate used as make-up for the tarmac car park surfaces. Car parks covered the majority of the site from the late 1970s onwards, after the construction of the Saltway road that separates the site from the canal. This material

almost invariably lay directly on top of the dark grey silty sand, which was dateable to the late post-medieval and early modern periods.

The trenching did come across at least one building that was positively identified as having come from this period. Two small 2m x 2m tree pit holes, Trenches 23 and 24, both revealed brick structures. Trench 23 revealed a brick culvert, 2303, and Trench 24 exposed lengths of walls, 2403 and 2404, most likely associated with the Drill Hall shown on the 1927 Ordnance Survey map (Figure 11). It is likely that the Drill Hall appeared sometime between 1903 and 1927, when it appeared on the Ordnance Survey map (Figure 11). The building was still present on the 1938 map (Figure 12) and was probably demolished in the post-war period.

The construction of the new store required the demolition of various modern buildings, namely the Market Hall and adjacent toilet block, nos. 8-10 Gurneys Lane and the brewery building, which was located approximately 80m west of the Market Hall (Figure 3; Plate 3). The market hall and the other buildings demolished on Gurney's Lane date to the 1980s. The brewery building seems to have dated to the 19<sup>th</sup> century.

#### 4.2 **Observations of vibroplacement programme**

Limited excavations were undertaken around the eastern edge of the site once vibroplacement had been completed. These were to a depth of around 1.20m allowing limited observations to be made of the modified upper deposits (Plate 10). This plate illustrates some of the effects of vibroplacement and clearly demonstrates the horizontal compaction and some localised downward compaction of deposits about the probe hole. Exposed sections were examined to establish the level of compaction, with most horizontal deposits within the 1.20m section appearing moderately compacted. The amount of compaction seemed consistent between each probe, which clearly demonstrated how the method works. One notable exception concerned occasional pockets of dark sandy clay. Here the consistence was soft or even loose, although these deposits were infrequent and dispersed.

Beyond the standard observations, it was difficult to quantify the detailed effects of vibroplacement on the deposit structure. In many areas across the site the 19<sup>th</sup> century made-ground was already hard-compacted which rendered pre- and post-vibroplacement observations inconclusive. With the agreed 2m excavation limit it was not possible to observe the effects on deposits below the vibroplacement. A buffer of 0.80m was integrated into the foundation design in order to allow for the possibility of any vertical compaction. Any excavations on this site below a 2m depth, should assess the extent of any compaction both within and below the buffer zone.

#### 4.3 **Artefact analysis**

A summary of the artefacts recovered can be seen in Table 1. The assemblage recovered from the watching brief came from both stratified and unstratified contexts. Recovered artefacts dated from the Roman to modern periods. Pottery was the largest group recovered totalling 37% of all material recovered. Ceramic building material, such as roof tile and brick, was the second consisting of 34% of the assemblage. The pottery, totalling 44 sherds, dated from the Roman to modern period.

The pottery was identified and grouped by fabric (see Table 2). The majority of the sherds were undiagnostic but could be dated between the mid 1<sup>st</sup> and 20<sup>th</sup> century by fabric type.

Other finds consisted of unworked flint, fragments of clay pipe, field drain fragments, modern bottle glass, slag, modern ironwork and leather.

##### 4.3.1 **Discussion of the artefacts**

The discussion below is a summary of the finds and associated location or contexts by period. The importance of individual finds has been commented upon as necessary.

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## Prehistoric

There were no artefacts from the prehistoric period found during the course of the groundworks.

## Roman

The Roman assemblage consisted of 21 sherds of pottery (total of 380g), a single fragment of brick (18g) and two large fragments (264g) of tile. The dominant fabric was Severn Valley ware (fabric 12) with a single sherd from each of contexts 2102 (modern layer), 2121 (medieval layer), 2122 (Roman layer) and 2133 (fill of Roman gully); two sherds from each of context 2124 (fill of Roman ditch) and 2130 (fill of Roman gully) and four sherds from context 2117 (post-medieval layer) all datable to the mid 1<sup>st</sup> to 4<sup>th</sup> century. Four sherds of oxidised organically tempered Severn Valley ware variant (fabric 12.2, two from context 2122 and one each from context 2117 and 2132, which was a Roman levelling layer) could also be placed broadly within the Roman period of manufacture. The sherd from context 2117 was also identified as the partial body and rim sherd of a tankard dating from the 2<sup>nd</sup> to 3<sup>rd</sup> century (Webster type-form 41). Of the two sherds from context 2122 one is the partial base of a carinated beaker with an early form of base ring dating it to the late 1<sup>st</sup> to early 2<sup>nd</sup> century (D Hurst, pers comm).

Other Roman period fabrics were represented by single sherds of the following. A single sherd of hand made Malvernian ware (fabric 3, context 2124) and a single sherd of briguetage, which is predominantly dated to the Iron Age but also to the early Roman period (fabric 2, context 2124), a vessel type used in the drying and transportation of salt, single sherd of Samian (fabric 43, context 2122) dating to the middle 1<sup>st</sup> to middle 3<sup>rd</sup> century and a single sherd of miscellaneous Roman ware (fabric 98, context 2124). A sherd of *mortaria* was identified as Oxfordshire *mortaria* (fabric 33.1 or 33.2) of 2<sup>nd</sup> to 4<sup>th</sup> century date.

As it is generally thought that the usage of ceramic material in Romano-British buildings declined after the 3<sup>rd</sup> century, the floor tile can only be dated to within the earlier Roman period. One fragment does exhibit traces of an animal paw print, possibly a dog, which does give evidence for exposed drying of the tiles prior to firing.

## Saxon

A small sherd of Stamford ware (fabric 46, context 2124) weighing 2g was identified as late Saxon dating to between the 9<sup>th</sup>-11<sup>th</sup> century. No further Saxon material was represented within the assemblage.

## Medieval

The medieval assemblage consisted of seven pottery sherds. There were no dominating fabrics with only two sherds of oxidized glazed Malvernian ware (fabric 69, context 2117) dating to the 13<sup>th</sup>–17<sup>th</sup> century and single sherds of Worcester-type unglazed ware (fabric 55, context 2102) dating to the late 11<sup>th</sup>–middle 14<sup>th</sup> century, Cotswolds unglazed ware (fabric 57, context 2117) dating to middle 11<sup>th</sup> to 12<sup>th</sup> century, Worcester-type sandy glazed ware (fabric 64.1, context 2121) dating to the late 11<sup>th</sup> to 14<sup>th</sup> century and Glazed sandy white ware (fabric 64.2, context 2117) dating to the 13<sup>th</sup>–14<sup>th</sup> century.

Eight fragments of medieval roof tile were recovered in abraded condition, with six from context 2117 and two unstratified finds. While their condition was generally poor it was possible to date them between the 13<sup>th</sup>–15<sup>th</sup> centuries. The small amount of medieval material recovered suggests that this ridge tile is residual rather than indicative of a medieval period structure on site.

### Post-medieval/modern

The post-medieval-modern assemblage consisted of seventeen sherds of pottery. The fabrics are typical of this period and include modern stone china (fabric 85), post-medieval red sandy and buff wares (fabric 78 and 91), porcelain (fabric 83) and a rim sherd of 17th century white salt glazed stoneware.

#### 4.3.2 Environmental results

Context (2122, fill of a Roman gully ) the earliest of the deposits contained few identifiable seeds, and the assemblage produced was of low species diversity. The majority of the seeds recovered, fat hen (*Chenopodium album*), blackberry/bramble (*Rubus fruticosus* agg), knotgrass (*Polygonum aviculare* agg) and small nettle (*Urtica urens*), are representative of disturbed or neglected waste ground. Seeds of crowfoot (*Ranunculus* sbgen *Batrachius*), fool's watercress (*Apium nodiflorum*) and spike-rush (*Eleocharis* sp) suggest this feature often contained standing water long enough for a diverse bank side vegetation, reliant on muddy damp ground, to establish. Only a single cultivar was preserved in this sample, a charred oat grain (*Avena* sp), although other edible plants were present including blackberry/bramble (*Rubus fruticosus* agg) and elder (*Sambucus nigra*) that could have been gathered from the surrounding habitation.

Context (2124, fill of Roman ditch) produced a small assemblage dominated by seeds of cultivated or disturbed ground, including fat hen (*Chenopodium album*), orache (*Atriplex* sp) and knotgrass (*Polygonum aviculare* agg). Two aquatic species present, crowfoot (*Ranunculus* sbgen *Batrachius*) and fool's watercress (*Apium nodiflorum*), again suggest this feature contained standing water. This is also supported by the presence of sedge (*Carex* sp), although this species is not truly aquatic. A single example of spelt wheat chaff (*Triticum spelta* glume base), indicates crop processing, food preparation or disposal of crop waste in fires nearby. A single hazelnut fragment also provides evidence for the use of natural edible resources.

Species diversity was also low in the latest sample in the sequence (context 2130, fill of Roman gully). This sample was dominated by species typical of waste, scrubby ground including common nettle (*Urtica dioica*), elder (*Sambucus nigra*) and hemlock (*Conium maculatum*). The presence of elderberry is more prominent in this sample suggesting a more shrubby environment during the later phase of ditch deposits sampled. As with context (2124), charred spelt wheat chaff, *Triticum spelta* glume bases, had survived in low numbers.

#### 4.3.3 Discussion

These deposits appear to have formed during the Roman period in an area of largely open, disturbed ground with only slight evidence for crop processing or disposal of crop waste in fires. Many of the plants identified in these assemblages grow best on neglected waste ground where human occupation has enriched the soil (Colledge and Grieg, 1992), suggesting some patches of waste ground. However, the later deposit (2130) seems to have formed during a period of abandonment and neglect. This reinforces the suggestion that these deposits formed during a period of abandonment.

Similar assemblages from the Roman period have also been recovered from the Old Bowling Green site (Colledge and Greig, 1992) and from Bays Meadow Roman Villa (Greig, 1991) in Droitwich. Assemblages from both sites contained numerous seeds of weeds and ruderals that would have become established around the damp and disturbed margins of features within settlements, or in areas of neglected and abandoned ground. Spelt wheat (*Triticum spelta*) was the only cultivated grain to be identified from the Bowling Green site, and as

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with the samples from the Waitrose development these were only identified as a result of the chaff surviving. Spelt wheat was also the dominant crop at Bays Meadow (Grieg, 1991) and is typical of the crop plants of this period.

#### 4.4 Pollen results

##### 4.4.1 Phase 1: Roman: Context 2122, sample 1

This context comprised a fill of dark grey silty clay with wood inclusions, which had originated from a shallow gulley (context 2123) believed to have been lined with wood. This has been interpreted as a water management feature. The pollen assemblage was dominated by grasses (Poaceae indet), making up 70% TLP (Table 4). There were a number of other herbs present in very low percentages including dandelion (*Taraxacum officinale*), chamomile (*Anthemis* type), Rosaceae, (Lact.) *cichorium* type, aster (*Aster* type), and Apiaceae. There were also fewer numbers of Chenopodiaceae, thistle (*Cirsium* type), and tormentil (*Potentilla*). The herbaceous vegetation, primarily dandelion, tends to reflect the riverine location of the site. There were a number of meadowland plants such as cornflower (*Centaurea cyanus*), buttercup (*Ranunculus acris* type), and meadowsweet (*Filipendula*), which may suggest that there was managed hay meadowland elsewhere. Indications of arable cultivation may be found by the presence of corn crowfoot (*Ranunculus arvensis*), a common cornfield weed, although no cereal pollen was recorded and it appears that agriculture was occurring some distance from the site. Trees and shrubs were low, but dominated by hazel (*Corylus*), as well as fewer numbers of alder (*Alnus*), pine (*Pinus*), birch (*Betula*), oak (*Quercus*), ash (*Fraxinus*), holly (*Ilex*), and lime (*Tilia*). The low presence of arboreal species suggests that most of these taxa were colonising rural areas some distant from the site, with the possibility of occasional stands of hazel or alder colonising the river edge. Spores comprised just ferns (*Pteropsida* (mon) indet) including polypody fern (*Polypodium*), and bracken (*Pteridium*), most probably inhabiting wasteland close to built-up/industrial areas of the site.

##### 4.4.2 Phase 1: Roman: Context 2124, sample 2

Context 2124 comprised dark grey silty clay, the fill of a large ditch (context 2125), again, believed to be lined with wood. This was found to cut the gulley (context 2123) mentioned previously and again, possibly indicated a water management feature. This context was primarily composed of grasses (Poaceae indet), making up 77% TLP, while other herbs were in very low numbers (Table 3). Species included Apiaceae, chamomile (*Anthemis* type), and cornflower (*Centaurea cyanus*), as well as single examples of mugwort (*Artemisia vulgaris*), (Lact.) *cichorium* type, dandelion (*Taraxacum officinale*), *Aster* type, Brassicaceae, meadowsweet (*Filipendula*), knotgrass (*Polygonum aviculare*), raspberry (*Rubus* e.g. *R. idaeus*), and common sorrel (*Rumex acetosa*). Trees and shrubs were present in only low values, being dominated by hazel (*Corylus*), while other taxa of this group comprised alder (*Alnus*), pine (*Pinus*), willow (*Salix*), birch (*Betula*), and oak (*Quercus*). It appears that this area was slightly drier, as many of the herbs present, prefer drier or open conditions such as mugwort. Grasses are also exceptionally high in number. This may indicate waste ground, as herbs such as raspberry, common sorrel, and knotgrass are also present. It is unlikely that the former two taxa reflect cultivated areas or provide clues to diet, as pollen is very sparse.

##### 4.4.3 Phase 2: Roman: Context 2130, sample 3

This context was believed to be later in date, comprising black, silty clay filling a small, steep-sided gulley (context 2131). As with the other two contexts, context 2130 was dominated by grasses (Poaceae indet), while other herbs were slightly more prominent (Table 3). These primarily consisted of (Lact.) *cichorium* type, including a significant number of dandelion (*Taraxacum officinale*), while other herbs were less prominent, comprising Apiaceae, *Aster* type, Chenopodiaceae, meadowsweet (*Filipendula*), tormentil (*Potentilla*), Rosaceae, chamomile (*Anthemis* type), cornflower (*Centaurea cyanus*), and buttercup

(*Ranunculus acris* type). Although values were low, species diversity amongst trees and shrubs was relatively high. The primary taxa were holly (*Ilex*) and willow (*Salix*), while other plants were only occasionally represented, and included alder (*Alnus*), hazel (*Corylus*), pine (*Pinus*), birch (*Betula*), oak (*Quercus*), and ivy (*Hedera*). There was also a single example of heather (*Calluna vulgaris*). Spores were only recorded in low numbers, comprising just ferns (*Pteropsida* (mon) indet) such as polypody fern (*Polypodium*). There was also one aquatic example, that of water lily (*Nuphar*), reflecting the vegetation close to the river's edge where water would be slower moving. This context is comparable to context 2122, both dominated by wetland and meadowland herbs. In contrast to context 2122 however, it appears that there were more trees and shrubs, which colonised the river area, with willow, alder, and hazel able to exist on wetter soils. These species were most probably colonised by climbing shrubs such as holly and ivy.

## 5. **Synthesis**

### 5.1 **Prehistoric**

There were no deposits, features or artefacts recovered from this period from any part of the development area.

### 5.2 **Roman and Saxon**

Although limited information was available, due to the salvage nature of the recording outside the SAM in Trench 21, it is clear from observations that ditches 2123 and 2125 would have served as water management features. The much larger and later 2125 curves towards the north and may therefore have drained into the River Salwarpe, which earlier studies have suggested may have meandered well to the south of its current canalised route in this part of Droitwich (Hurst 1997, 5). Whether the features relate to riverside settlement, were associated with salt production or craft activities such as textile dyeing or tanning is not clear. However, the observed dimensions of ditch 2125 are substantial enough to suggest a significant volume of water or waste was being channelled along this feature. The alignment of the smaller ditch 2123 suggests it may have at one time drained into the larger ditch. Observations indicated the larger ditch had cut the smaller example, which would typically indicate it is a later feature, however, it may be that the large ditch continued in use for longer and therefore continued to be cleared-out after the small ditch became silted-up. It is unclear whether the postholes (2127, 2129) were used to support an internal structure within the larger ditch, such as a timber lining, or some kind of overhead structure, perhaps even a bridge. The posts were clearly sturdy enough to have supported a fairly substantial structure. Similar lined ditches were noted at the Old Bowling Green (Woodiwiss 1992).

Following abandonment of these features a layer of organic clay (2121) was deposited over, at least, part of the area observed with a phase of later small ditches cut into this (2131, 2134). A surface had clearly developed on top of the layer, which may have been in use for some time. The limited data recovered from this Phase 2 restricts the possibilities for wider interpretation. Nonetheless, as this activity followed either a period of abandonment or a deliberate remodelling of the local area then it might suggest these smaller features are representative of possible domestic or commercial activity associated with a phase of riverside redevelopment. Perhaps, by this time attempts were being made to control the width of the river and reclaim land adjacent to its southern foreshore for building land.

In applying dates (*terminus post quem*) only one context was identified as Roman with a date of middle 1<sup>st</sup> to 2<sup>nd</sup> century (context 2122). In consideration of the stratigraphy and the distribution of material from latter periods the remaining Roman material is residual. Although much of the Roman material was residual it does indicate archaeological activity within the period. The presence of Roman tile may also indicate the presence of a Roman building within the immediate area. Preservation of both pollen and plant macrofossil

remains as a result of waterlogged conditions was good, with all three samples selected particularly organic. The results reflect a mosaic of open, disturbed (and to some extent probably cultivated) ground, and more neglected areas, probably in the immediate vicinity of the ditches as might be expected. Both the plant macrofossil and pollen results, however, suggest that the later ditch deposit (2130) formed in a much more overgrown and shrubby environment, probably when the site was abandoned.

The most comparable site to Saltway, is that of Old Bowling Green (WSM 00600; Figure 5), Droitwich (Colledge and Greig 1992), where evidence for pollen and plant macrofossil was found. Because the site had supported a salt working industry in Roman period, vegetation was generally sparse and open, due to the constant activity of trampling, burning, etc. As areas of the site became disused then weeds of wasteland were able to colonise. This is also comparable to another Roman site in Droitwich, Bay's Meadow Villa, where there was an abundance of weed seeds recorded (Greig 1991). As with the current Saltway site, pollen and plant macrofossil remains at these Roman sites in Droitwich included weeds of *Rumex* type (docks), *Chenopodiaceae*, and *Anthemis* type.

Pollen studies have been rare in Worcestershire and at present the nearest comparable site is that of Mill Street, Leominster, in Herefordshire, which has been analysed for pollen (Head, forthcoming). This is similar to Saltway, Droitwich in that it is a Roman riverine site. At Mill Street however, there was a predominance of alder, believed to be growing close to the river's edge, and evidence of seasonal flooding. It appears that Mill Street was not an urban industrial site, where trees and shrubs would have still been able to colonise areas unused by the local community.

As the Saxon period is represented by a single sherd of pottery, this does not denote significant activity during that time, though only a relatively small area was observable. Dates could also be applied to contexts 2124 which is late Saxon in date (9<sup>th</sup>-11<sup>th</sup> century) and context 2121, which is medieval in date (12<sup>th</sup>-15<sup>th</sup> century).

### 5.3 Medieval

No distinctive evidence was observed from this phase except for the disturbed layer 2121. Even this must be treated with caution, given the constraints on artefact recovery during excavation of the trench. Trench 21 is located within an area of medieval and post-medieval tenement plots fronting onto High Street (WSM 21432). Previous observations recorded late medieval deposits in the nearby area of Gurney's Lane at a depth of 2.50m below the present ground surface (Woodiwiss 1983), however, the location of Trench 21 falls further within the Droitwich brine run, and thus, the area of greatest subsidence. In this instance, the depth to the top of significant medieval deposits is likely to be in the region of 3.50m to 4.00m. Layer 2121 was observed at between 4.70m and 4.85m depth. The depth of these deposits reflects the subsequent subsidence that took place during the 20<sup>th</sup> century. Due to the lack of information from this deposit no real significance can be attached to it.

Overall, Trench 21's lack of medieval deposits is puzzling given the proximity of the trench to the rear of the properties fronting onto High Street. The trench is located well within the area of any burgrave plots associated with medieval properties on High Street (cf Woodiwiss 1983, figure 5). Several possible explanations can be offered for the lack of evidence. First, if back-plot activity was present within the trench this may have been limited to rubbish pits, which would have been difficult to identify during the machining process. It is less likely that any structural remains of buildings would have been located this far back from High Street. Alternatively, it is possible that construction of the 19<sup>th</sup> century buildings and the large east to west aligned sewer may have truncated, or greatly disturbed late medieval deposits. Of the later buildings, a 19<sup>th</sup> century wall appears to respect what would have been a medieval burgrave boundary. Secondly, the salvage nature of the recording made it very difficult to spot archaeological features, and the layer (or collection of layers/pits/ditches) was not noticed during machine excavation. One final possibility for the lack of observed medieval deposits may be that no medieval structures were built along this part of High Street. Hilleson has



suggested this part of High Street may not have been built up until the 17<sup>th</sup> century, although he does state the evidence is not conclusive (1985, 6). It is, however, noteworthy that unexplained gaps have been identified within the medieval built environment elsewhere in Droitwich (Hurst 1997, 33).

The small number of a range of medieval fabric types is indicative of general domestic rubbish discard or midden dispersal through horticultural or agricultural activity. The post-medieval and modern artefacts also seem to indicate the general discard of domestic detritus.

Trench 2 provided some possible evidence, though not confirmed by any dating evidence, of the presence of a possible late Saxon or early medieval trackway running from the present location of the High Street and down towards the river. Occasional large, smooth cobbles located in the eastern half of the trench are consistent with cobbling found at a similar depth to the rear of number 1A on the High Street (WSM 33588; 30-35m to the south-east). The impression gleaned from the groundworks of that project suggests they were a little denser in concentration than those in Trench 2. The absence of dating evidence associated with the cobbles in Trench 2 can't tie the two events together with any certainty.

#### 5.4 **Post-medieval**

The vast majority of the features found that pertained to this period were 19<sup>th</sup> century and related to the brick-built salt works that dominated the area in that century until the 1920s. The whole range of walls, floors and brine shafts found across the area were almost entirely related to buildings where the brine was evaporated in huge industrial size pans over furnaces. The salt works in the study area were often built in long buildings which were divided into two areas; the brine pans with the furnaces beneath them situated in one room, with the salt stacked and sorted and left to dry in the other room, the heat from the furnaces piped into the drying room using a series of flues. Many of the buildings had their own brine shaft, usually with a cast iron cylinder at the head, as recorded in Trench 21. Many of the brick walls and remnants of the buildings found during the excavation work were locatable on the Ordnance Survey Maps (Figures 9-12).

The trenching revealed three brine shafts (two of them seen on Plates 1 and 7), of which two were almost certainly in use in one of the 19<sup>th</sup> and early 20<sup>th</sup> century salt works.

The waste products from the salt extraction industry were also quite apparent throughout the site in the form of dumped layers of dark grey ashy waste. This waste material could only have been derived from the many industrial furnaces that occupied most of the buildings in the salt works.

The 1885 Ordnance Survey map (Figure 9) shows piles of such waste in almost every available spare plot of land. The waste was subsequently spread out over the whole area and mixed in with brick demolition rubble, especially after the demolition of the salt working buildings before the Second World War. The subsidence across the site caused by the dissolving of the salt beds under the town necessitated ground to be made up in the area between Rickett's Lane and Queen Street. Layers, composed mainly of ash and coal waste, were spread across the area.

#### 5.5 **Modern**

There were some brick walls and culverts found during the course of the groundworks to the east side of Rickett's Lane. These almost certainly are the remnants of the Drill Hall that appeared on Rickett's Lane between 1903 and 1927. This seems to have disappeared in the years after the Second World War.

The landscape south of the Salwarpe has undergone quite radical transformations in the years following the Second World War. After the clearance of the salt works much of the area had

reverted to waste ground, with the western car park being used as a bowling green. The construction of Saltway saw Post Office lane widened and extended into an inner ring road. This passed over the course of the canal and over the site of a number of dockside salt works buildings. The new road also removed the northern end of Rickett's Lane. The area to the south of Saltway became car parking. This necessitated introducing hard standing surfaces to the area, which saw a thick layer of light grey aggregate laid down over the dark grey industrial waste dumped as make-up layers over the whole site. Tarmac was then laid over the aggregate to form the current ground level over most of the area around the new Waitrose store (Plate 6). Context 2117 contained modern material indicating that contexts 2110 to 2116 are modern disturbances as are contexts 2100 to 2102.

The subsidence that is quite visible in this zone today, running in a line from south to north through the High Street and the development area, developed during the 20<sup>th</sup> century as a result of excessive brine pumping in Droitwich and elsewhere. The drop in ground surface as a result of this movement resulted in material being redeposited in the sunken areas to level off the constantly subsiding ground. Using the results of boreholes in advance of this project (borehole locations on Figures 5 and 6) and the results of excavations in the past 25 years it is possible to establish profiles of the depths of archaeological deposits across the study area (Figures 7 and 8). The depth of made ground increases from the line of Ricketts Lane to under the location of the new store.

The commercial developments of the early 1980s were demolished within the development area. The Market Hall lay on the site earmarked for the new store, along with a public toilet block and a building orientated west to east at the north end of Gurney's Lane (Figure 3).

## 5.6 Research frameworks

The project aimed to inform the local and regional research cycles, including the West Midlands Research Framework. The aim of the *West Midlands Regional Research Framework for Archaeology* is to produce an archaeological research framework for the region that will provide a viable, realistic and effective academic basis for undertaking archaeological intervention, either as a result of development-related operations or to underpin future research designs (<http://www.arch-ant.bham.ac.uk/wmrrfa/intro.htm>). The preservation of waterlogged pollen from Roman deposits was good, with all the samples selected particularly organic. As little (with exceptions) pollen work has been undertaken in this area, the study is of regional significance, providing an insight into the Roman urban riverine vegetation of Droitwich. The collection of pollen samples forms the basis for a future frame of reference for such samples throughout Worcestershire. Being a watching brief and the limited size and depth (specifically designed to avoid any negative impact) of the areas observed militates against much further contribution to research questions. The project does, however, document the survival of early (Roman) deposits in the deeper areas excavated and a rare opportunity to record later structures over a very wide area of the town. It will therefore provide a useful basis for the consideration of the management of the Scheduled Ancient Monument and its vicinity with regard to future development.

The project also aimed to continue the English Heritage initiative to study the effect of construction mitigation strategies on archaeological remains (Corfield *et al* 1998). The observed displacement of archaeological deposits will form a part of a growing body of information regarding the effects of modern construction methods, though the opportunity to observe deposits beneath the vibroplacement was not presented.

## 6. Publication summary

The Service has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, the Service intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication.

*An archaeological watching brief on behalf of CgMs Consulting, who were acting on behalf of the John Lewis Partnership at the instruction of Moss Construction on the development of the Waitrose superstore in Droitwich, Worcestershire (NGR SO 9005 6343; WSM 33531; SAM 30097) following the approval of a mitigation strategy (CgMs 2002) by the Department of Culture, Media and Sport, English Heritage and Worcestershire County Council, which ensured preservation in situ of medieval and earlier remains. The project aimed to record any archaeological deposits affected by the groundworks, determining what their location, date and nature were. In addition the project aimed to document, as far as possible, the impact of the vibroplacement system on the archaeology, which was included in the development strategy as part of the mitigation.*

*The trenching exposed strata of ashy industrial waste material, which had originated as waste from the furnaces of the salt works that had covered most of the development area. Numerous brick walls were exposed throughout the trenches, which were mostly associated with the various salt works buildings that existed on the south side of the canal. Several brine shafts were also located in the trenches, two of them with cast iron capping. These existed inside the salt works adjacent to the brine pans and drying rooms. The site was successful in revealing significant parts of Droitwich's salt industry of the mid 19<sup>th</sup> to early 20<sup>th</sup> century.*

*Significant archaeology was located in Trench 21 on the southern side of the development area, outside the SAM. Features dating to the Roman period were revealed during the machining. The material from this period was sampled to reveal that after a period of occupation the site was briefly abandoned, given the presence of material consistent with waste ground. The trench showed that possible domestic or commercial settlement existed next to a water-management system. Two distinct phases of Roman activity were encountered, with a phase of ditching superseded by another. Possible wooden linings to some of the ditches were also identified. The pollen evidence pointed to open and disturbed land, which is consistent with an industrial landscape of the period. Saxon and medieval pottery was recovered during the salvage recording, but no distinct features from those periods were identified. The significant archaeology in this trench was buried some distance down from the present ground surface. This was due to the subsidence that has occurred across the development area, with the most acute area of subsidence running in a line, north to south directly beneath the new store. The presence of a blue alluvial layer just above the natural river terrace gravels pointed to an early episode of flooding. Excavations elsewhere in the area have similar events happening in the late Saxon period.*

*Trench 2 contained the only other possible area of significant archaeology, with the base of the trench possibly revealing the remnants of a cobbled surface. This might have been associated with a late Saxon or early medieval trackway believed to run from the Worcester road to a junction at the southern end of Rickett's Lane, where a branch headed towards the river.*

## 7. **The archive**

The archive consists of:

7	Context records AS1
92	Fieldwork progress records AS2
74	Trench record sheets AS41 10/99
32	Photographic records AS3
730	Digital images
4	Augerhole records AS26 05/01
2	Drawing number catalogue AS4 06/87
1	Sample records AS17

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59 Abbreviated context records AS40

2 Boxes of finds

The project archive is intended to be placed at:

Worcestershire County Museum

Hartlebury Castle

Hartlebury

Near Kidderminster

Worcestershire DY11 7XZ

Tel Hartlebury (01299) 250416

## 8. **Acknowledgements**

The Service would like to thank the following for their kind assistance in the successful conclusion of this project, Cathy Patrick (CgMs Consulting), The John Lewis Partnership, Neil Myers (Moss Construction), Ian George and Lisa Moffett (English Heritage), Mike Glyde (WHEAS) and Wychavon District Council.

## 9. **Personnel**

The report preparation was led by James Goad. The project managers responsible for the quality of the project were Simon Woodiwiss and Simon Griffin. Fieldwork was led by James Goad, Adam Mindykowski, Darren Miller, Anna Deeks, Simon Woodiwiss and Tom Vaughan, with finds analysis by Angus Crawford, plant macrofossil investigation by Andrew Mann and pollen analysis by Katie Head. Illustration was by Carolyn Hunt.

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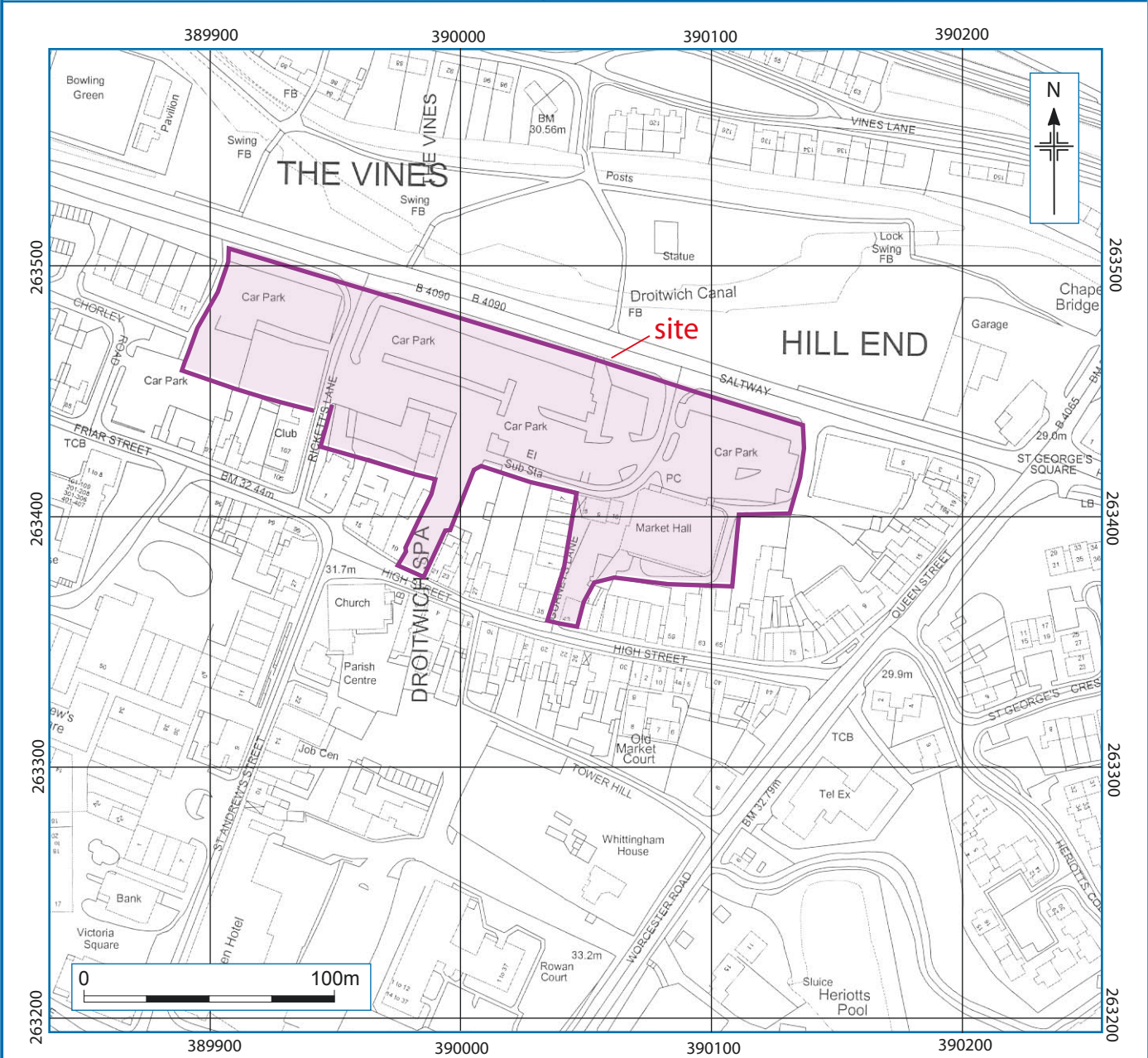
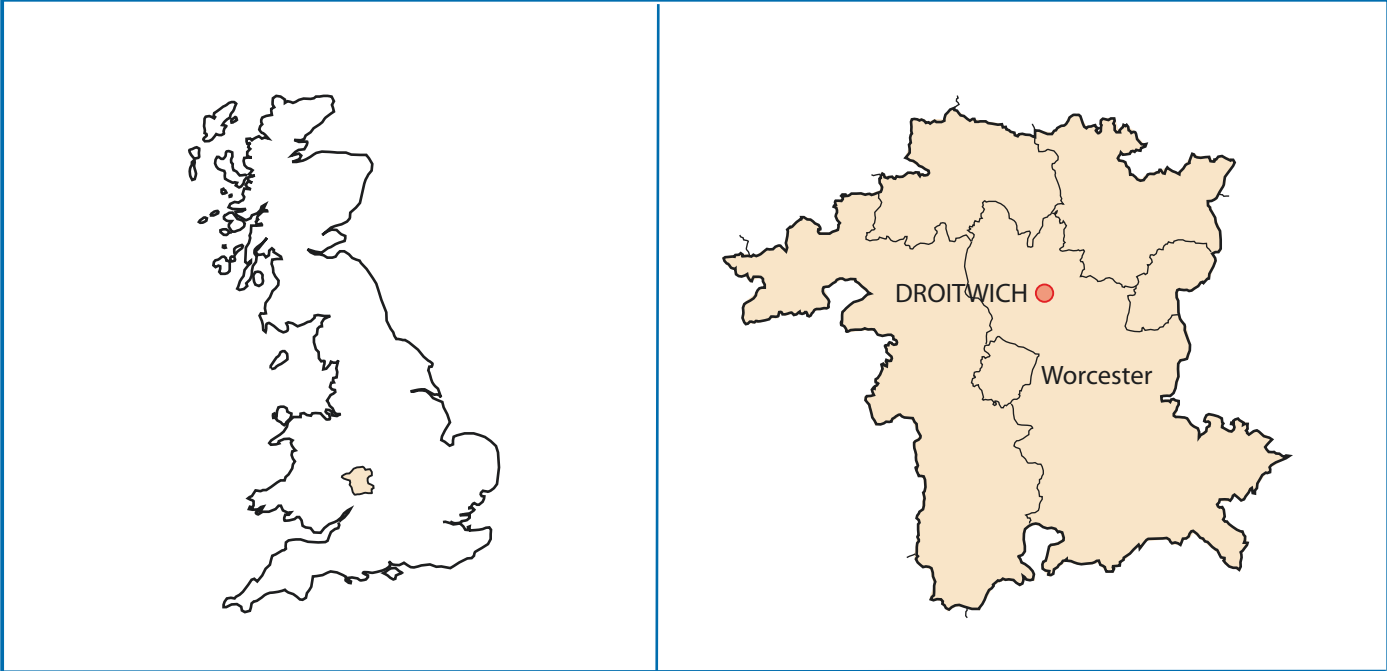
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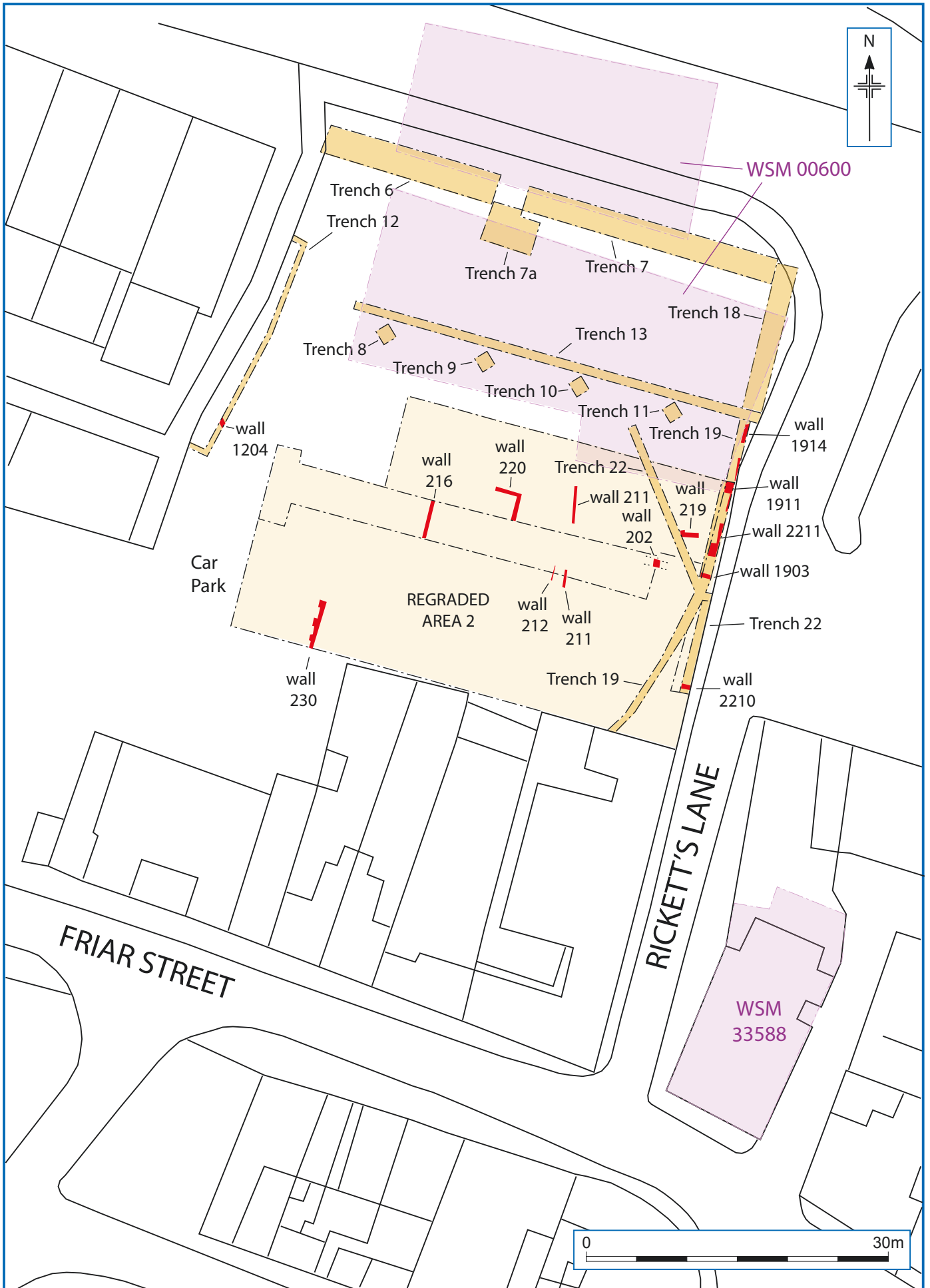
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Location of the site.

Figure 1

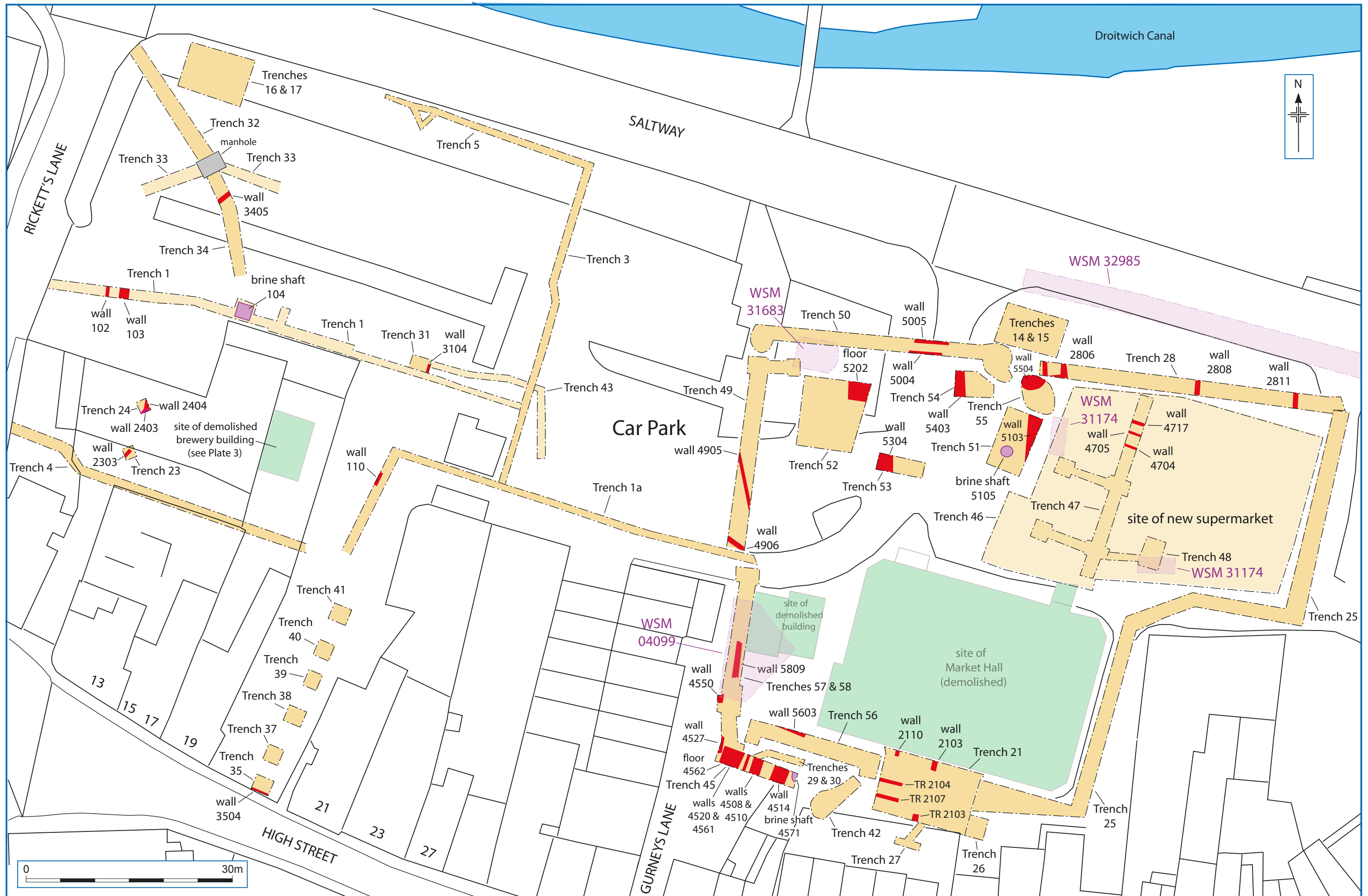


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Groundworks in west car park

Figure 2

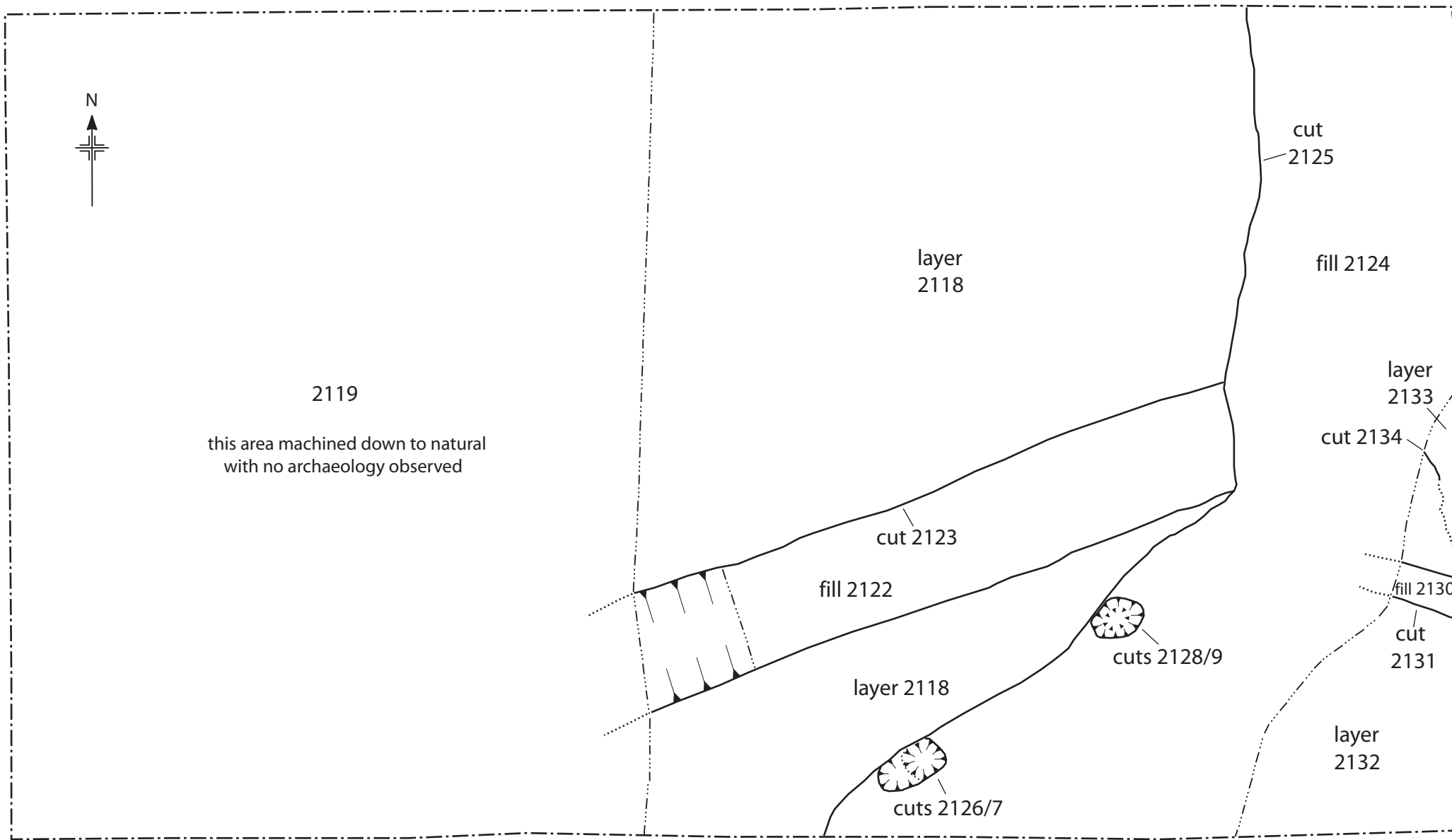




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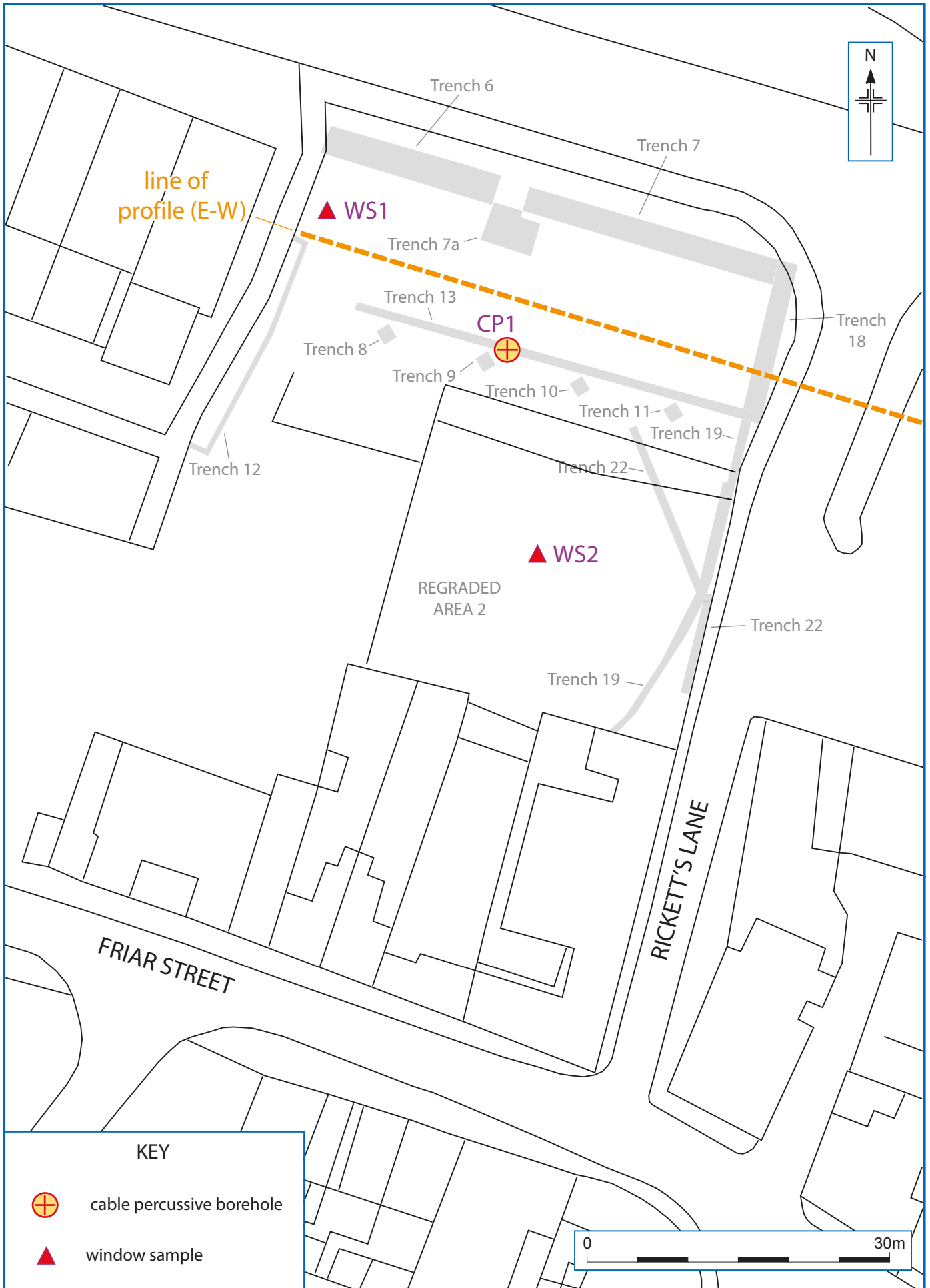
Groundworks in central and eastern areas of site

Figure 3



Trench 21

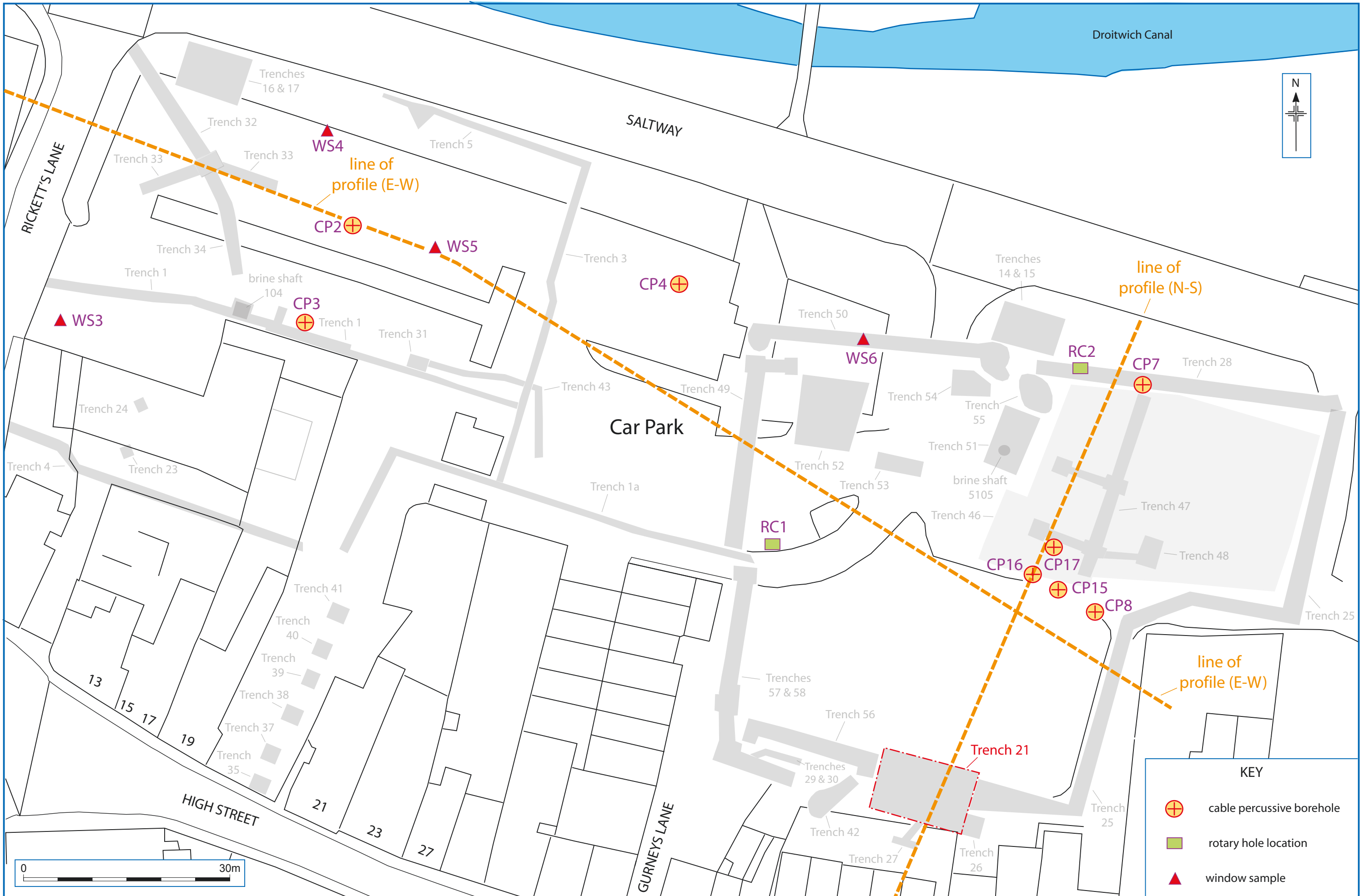
Figure 4



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Location of boreholes in west car park area

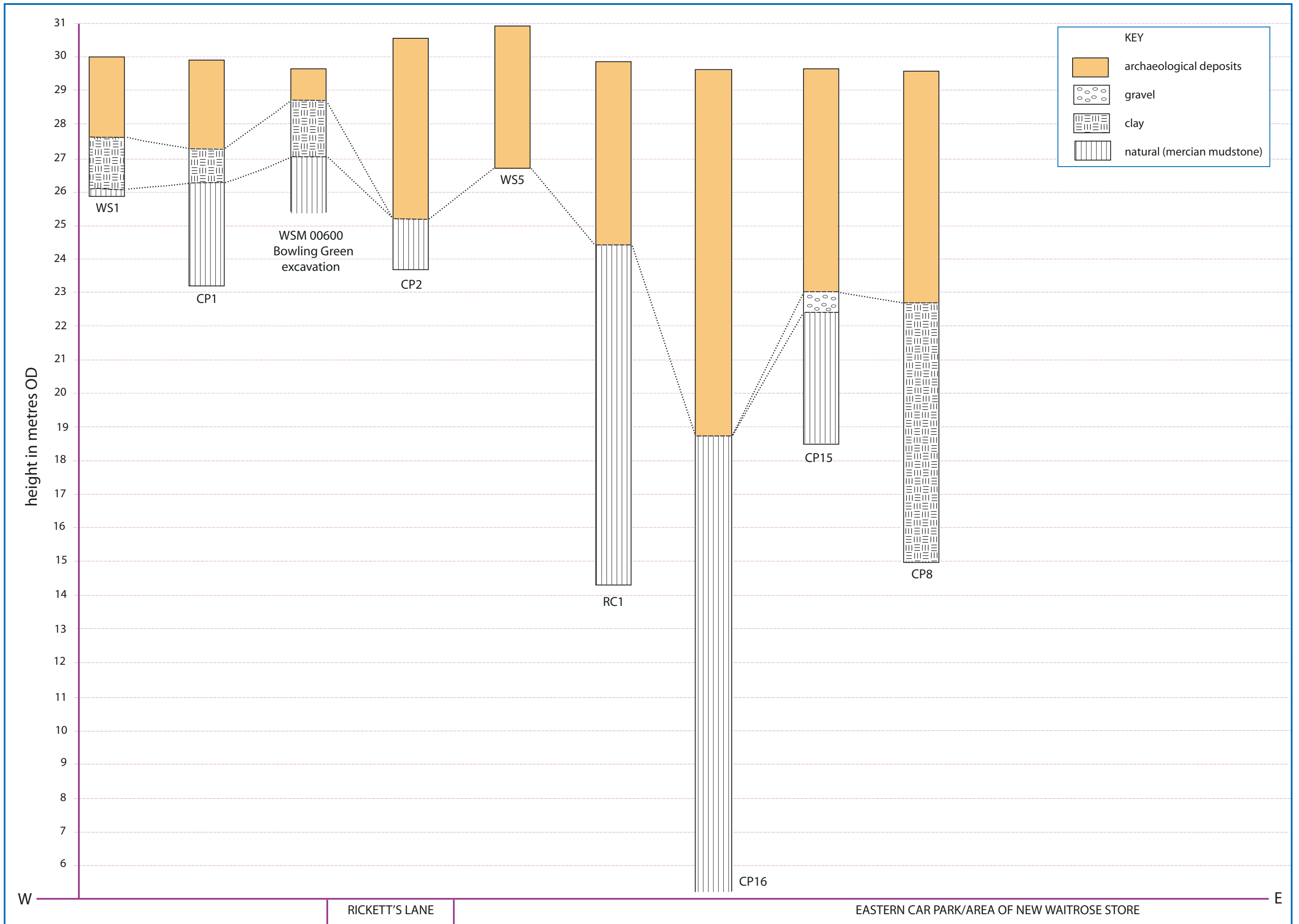
Figure 5



Location of boreholes and deposit profiles in central and eastern areas of site

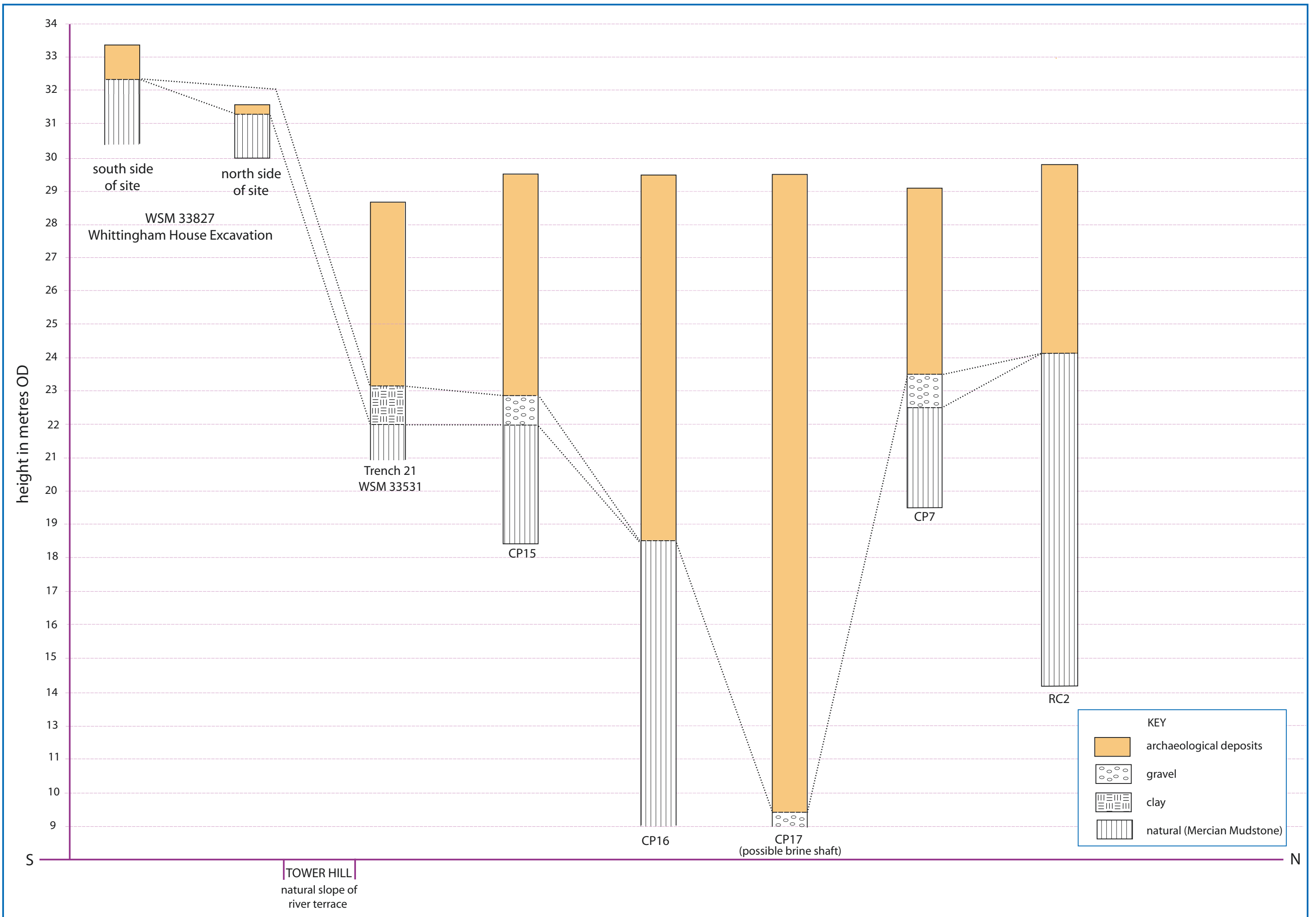
Figure 6

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E - W profile of deposit depths (data projected from nearest source of information)

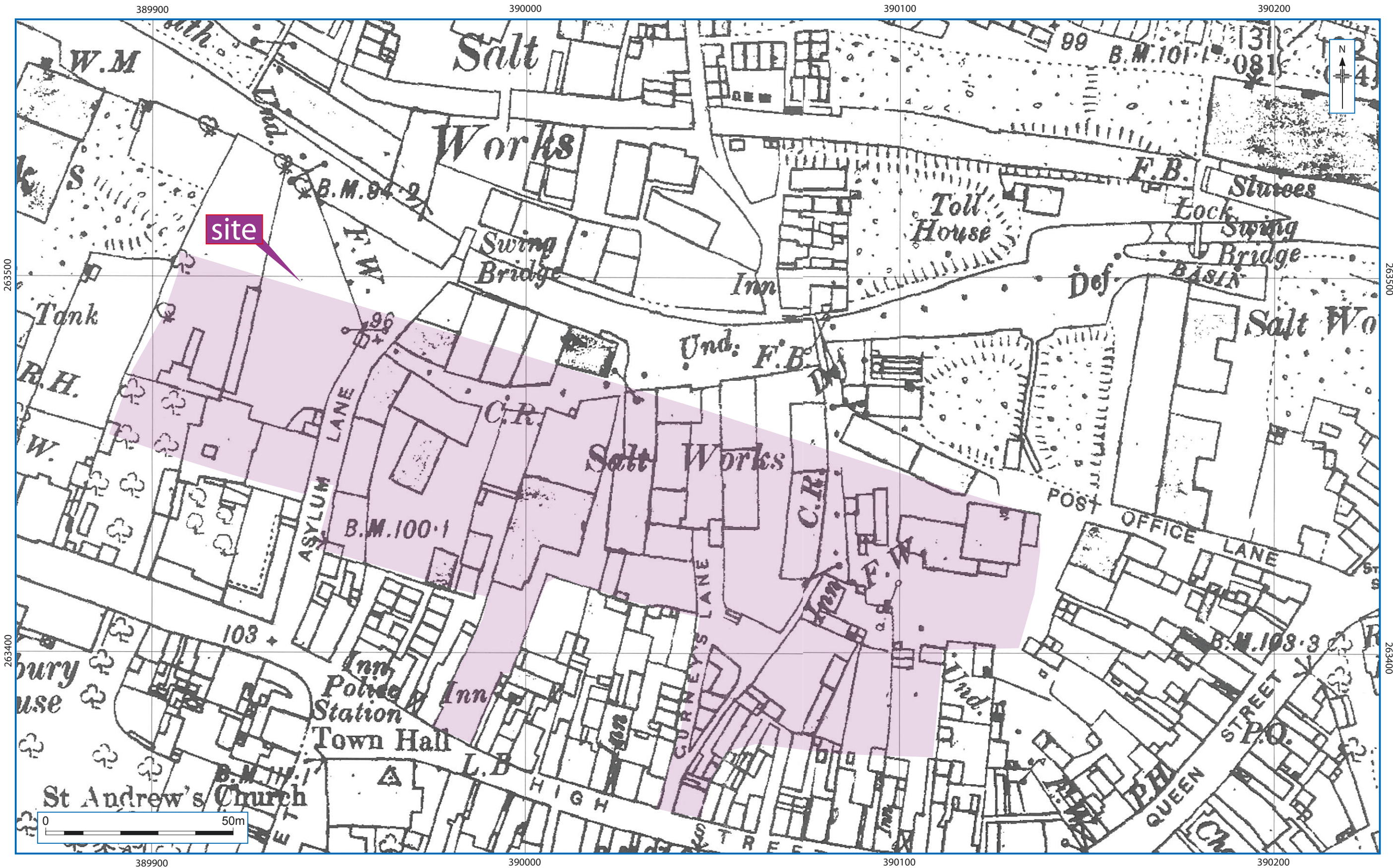
Figure 7



N - S profile of deposit depths (data projected from nearest source of information)

Figure 8





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Extract from 1st edition Ordnance Survey map, 1885 (scale 1:2500)

Figure 9



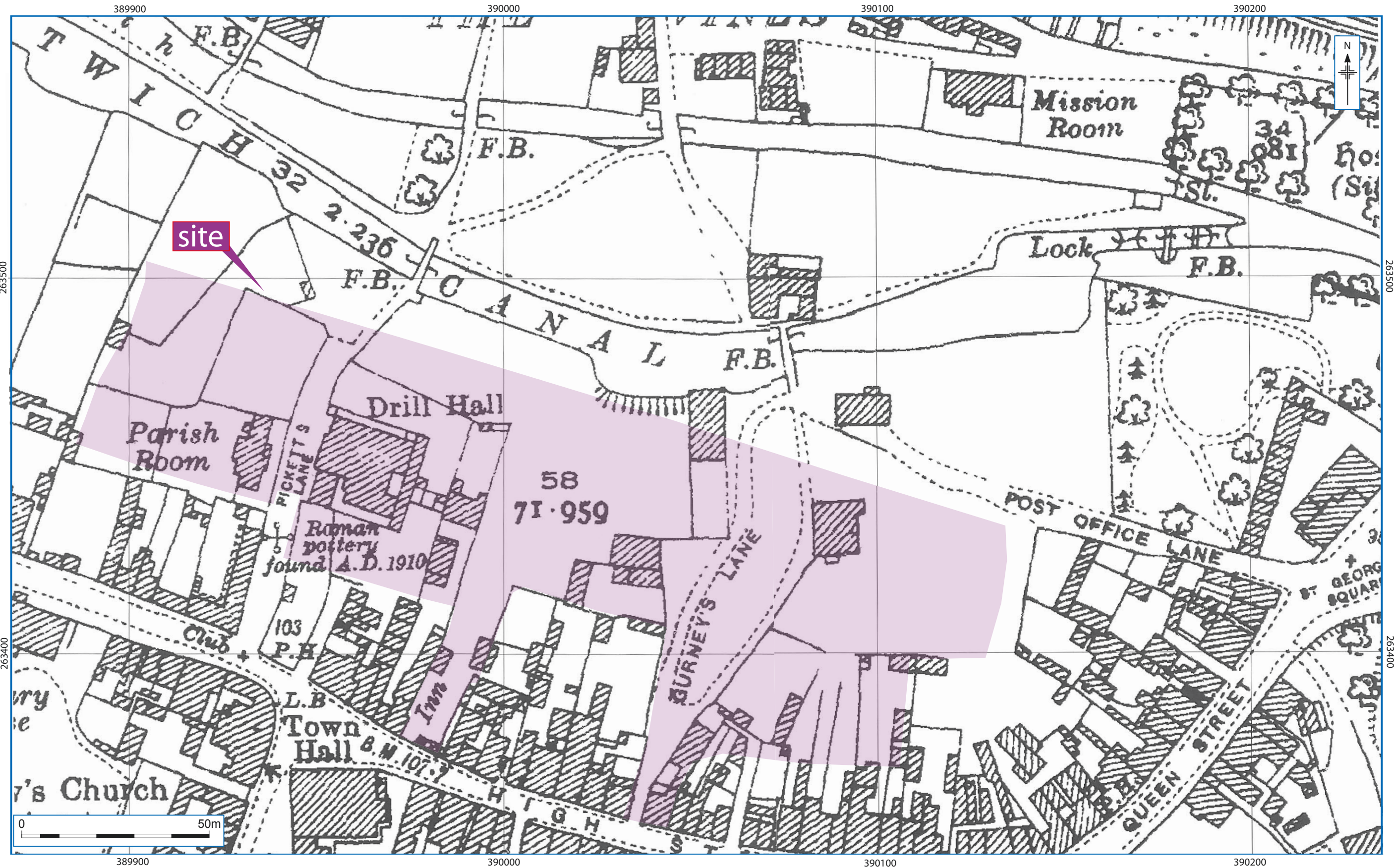


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Extract from 1:2500 Ordnance Survey map, 1903

Figure 10



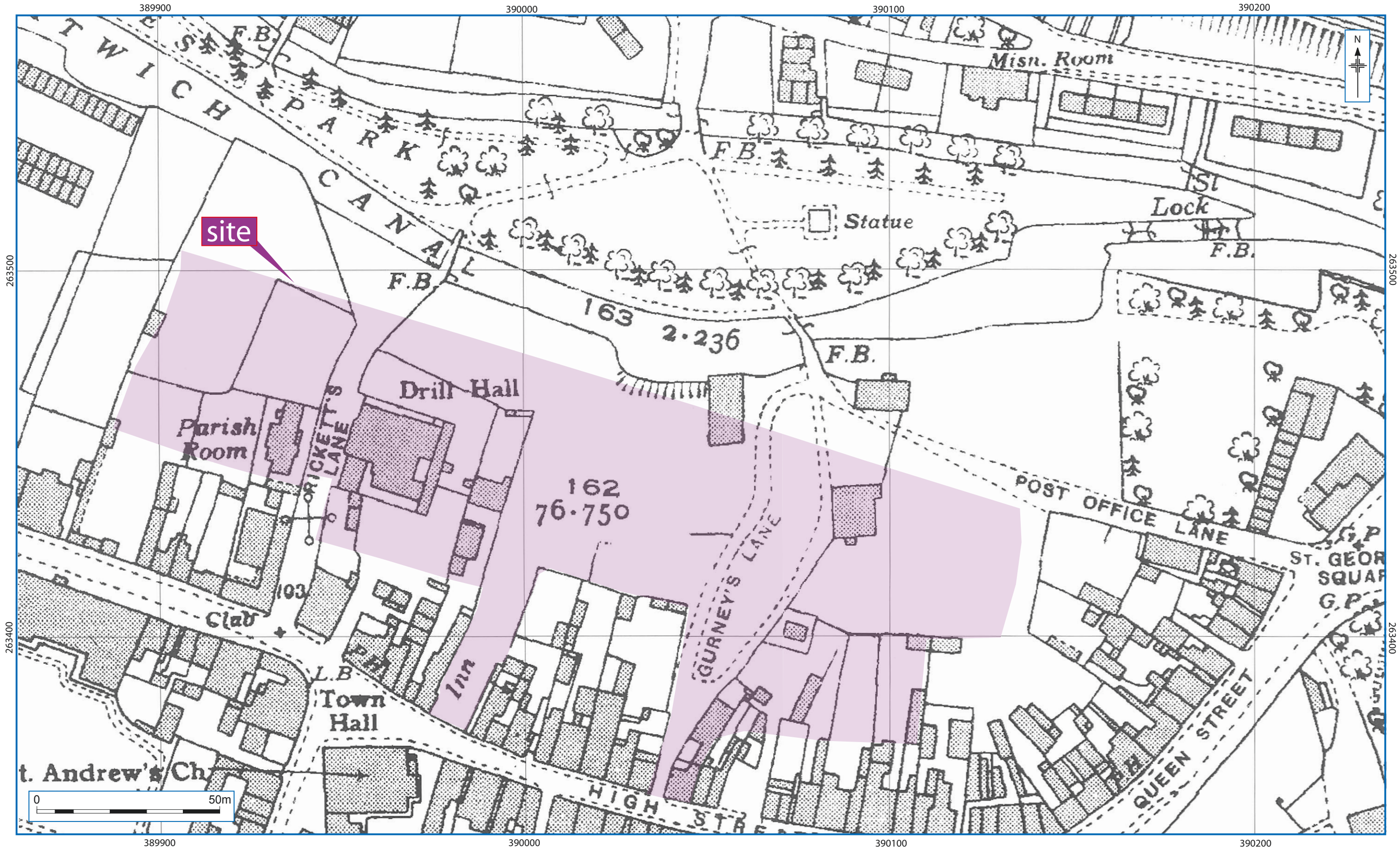


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Extract from 1:2500 Ordnance Survey map, 1927

Figure 11



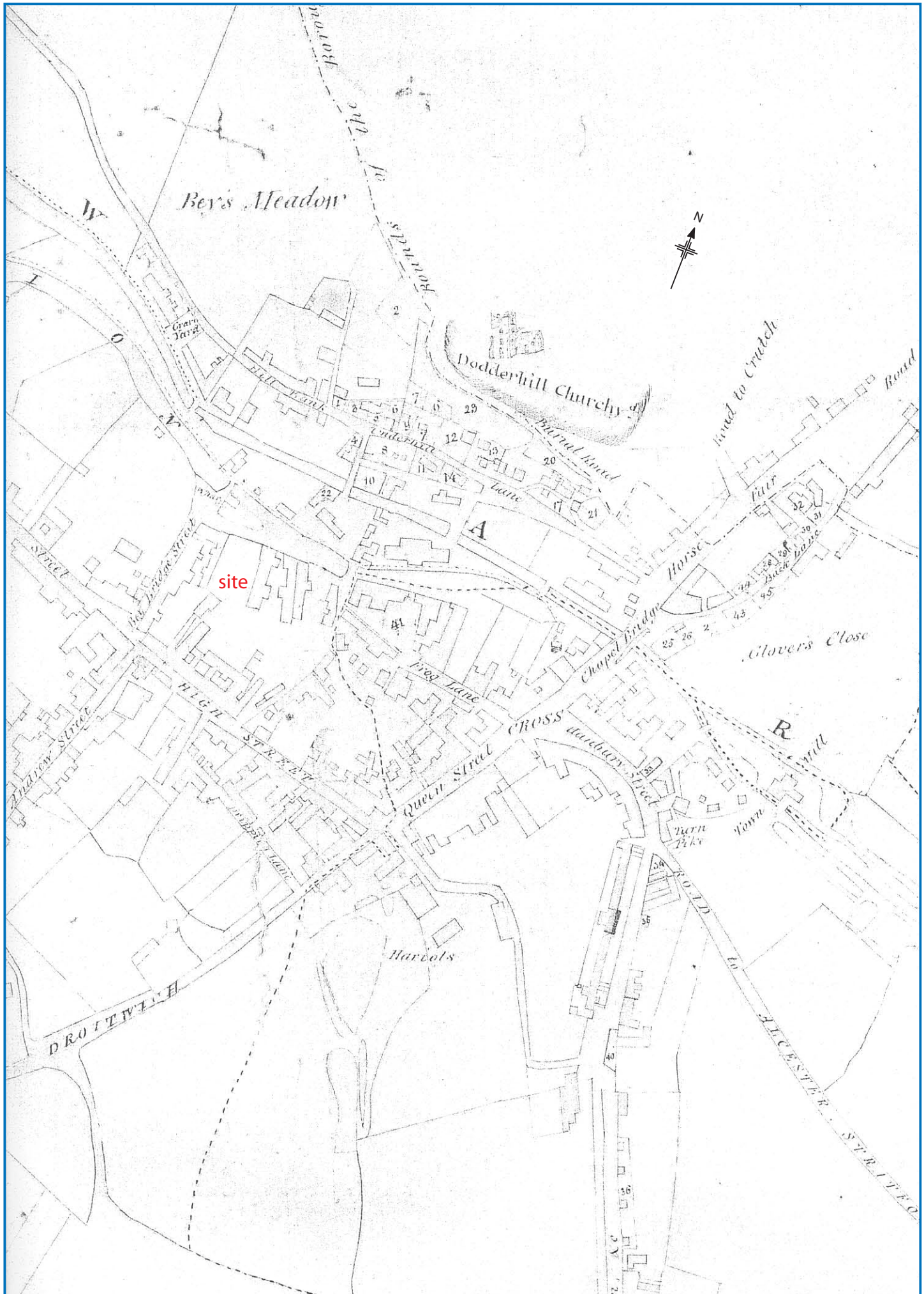


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Extract from 1:2500 Ordnance Survey map, 1938

Figure 12





Extract from Map of the Town and Borough of Droitwich, 1786

Figure 13





*Plate 1: Top of brine shaft 104 in Trench 1*



*Plate 2: Trench 2 facing east*

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*Plate 3: "Brewery building" prior to demolition*



*Plate 4: Trench 21. Note depth of post-medieval deposits indicated by brick rubble*

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*Plate 5: Features dated to the Roman period present in Trench 21*



*Plate 6: Trench 25 showing typical profile of stratified deposits across the site*

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*Plate 7: Bring shaft with cast-iron lining in Trench 51*



*Plate 8: Vibroplacement works taking place*





*Plate 9: Hopper being loaded with aggregate*



*Plate 10: Profile of pile shaft in Trench 46 showing displacement of adjacent archaeological deposits*

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## **Appendix 1 Tables**

**Table 1: Quantification of artefact assemblage.**

Material	Type	Total	Weight (gm).
Iron	Slag	6	77
Brick	Modern	3	2874
Brick	Post-medieval	12	3000
Brick	Roman	1	18
Ceramic	Drain	5	835
Clay	Fired	1	36
Concrete	Modern	1	1256
Flint	Unworked	1	3
Glass	Vessel	6	615
Iron	Fastner	1	31
Iron	Hinge	1	842
Iron	Slag	2	1084
Iron	Unidentified	1	351
Leather	Tie/lace	1	0.2
Clay pipe	Bowl	2	10
Clay pipe	Stem	3	7
Plastic	Pipe	1	36
Plastic	Pottery	2	13
Pottery	Medieval	7	115
Pottery	Modern	12	762
Pottery	Post-medieval	4	37
Pottery	Roman	21	386
Stone	Limestone	1	589
Tile	Floor	2	95
Tile	Post-medieval	2	283
Tile	Roof	22	2526
Wood	Stake	1	112

**Table 2: Quantification of ceramic assemblage fabrics.**

Fabric	Fabric name	Total	Weight (gm)	Period
12	Severn Valley ware	12	233	Roman
12.2	Oxidized organically tempered Severn Valley ware	4	102	Roman
2	Organic briquetage	1	17	Roman
3	Hand made Malvernian ware	1	15	Roman
33.2/3	Oxfordshire red mortaria	1	10	Roman
43	Samian ware	1	6	Roman
46	Stamford ware	1	2	Medieval
55	Worcester	1	23	Late Saxon
57	Cotswolds unglazed ware	1	8	Medieval
64.1	Worcester-type sandy unglazed ware	1	20	Medieval
64.2	Buff sandy ware	1	5	Medieval
69	Oxidized glazed Malvernian ware	2	57	Medieval
78	Post-medieval red sandy ware	2	17	Post-medieval
81.5	White salt glazed stoneware	1	4	Post-medieval
83	Porcelain	1	17	Modern
85	Modern stone china	11	745	Modern
91	Post-medieval buff wares	1	16	Post-medieval
98	Miscellaneous Roman wares	1	3	Roman

Table 3: Pollen species counts from selected contexts

Context	2122	2124	2130
<b>Sample No</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Trees</b>			
<i>Betula</i>	2	3	2
<i>Pinus</i>	4	5	1
<i>Quercus</i>	1	1	1
<i>Tilia</i>	1		1
<i>Alnus</i>	4	8	4
<i>Fraxinus</i>	1		
<b>Shrubs</b>			
<i>Corylus</i>	15	20	3
<i>Salix</i>		4	8
<i>Hedera</i>			1
<i>Ilex</i>	1		7
<b>Heaths</b>			
<i>Calluna vulgaris</i>			1
<b>Herbs</b>			
Poaceae	177	193	171
Apiaceae	4	3	3
<i>Anthemis</i> type	6	2	1
<i>Artemisia</i>		1	
<i>Aster</i> type	4	1	3
Brassicaceae		1	
<i>Centaurea cyanus</i>	2	2	1
Chenopodiaceae	2		3
<i>Cirsium</i> type	2		
<i>Filipendula</i>	4	1	3
(Lact.) <i>cichorium</i> type	5	1	12
<i>Polygonum aviculare</i>		1	
<i>Potentilla</i>	2		5
<i>Ranunculus acris</i> type	3		1
<i>Ranunculus arvensis</i>	1		
Rosaceae	5		2
<i>Rubus</i> (e.g. <i>R. idaeus</i> )		1	
<i>Rumex acetosa</i>		1	
<i>Taraxacum officinale</i>	9	1	17
<b>TOTAL LAND POLLEN</b>	<b>255</b>	<b>250</b>	<b>251</b>
<b>Aquatics</b>			
<i>Nuphar</i>			1
<b>Spores</b>			
<i>Polypodium</i>	1		1
<i>Pteridium</i>	2		
<i>Pteropsida</i> (mon) indet	7		4
<b>Damaged pollen</b>	<b>7</b>	<b>9</b>	<b>10</b>

Table 4. Plant remains from selected contexts

Latin name	Family	Common name	Habitat	2122	2124	2130
<b>Charred Plant Remains</b>						
<i>Triticum spelta</i> glume base	Gramineae	spelt wheat	F		1	3
<i>Avena</i> sp grain	Gramineae	oat	AF	1		
<b>Waterlogged Plant Remains</b>						
<i>Ranunculus acris/repens/bulbosus</i>	Ranunculaceae	buttercup	CD		1	
<i>Ranunculus</i> sbgen <i>Batrachius</i>	Ranunculaceae	crowfoot	E	6	1	
<i>Chenopodium/Atriplex</i> sp	Chenopodiaceae	goosefoot/orache	ABCD	29		
<i>Chenopodium album</i>	Chenopodiaceae	fat hen	AB	7	8	4
<i>Atriplex</i> sp	Chenopodiaceae	orache	AB		1	
<i>Rubus fruticosus</i> agg	Rosaceae	blackberry/bramble	CD	4		2
<i>Conium maculatum</i>	Umbelliferae	hemlock	BC			44
<i>Apium nodiflorum</i>	Umbelliferae	fool's watercress	E	4	1	
<i>Euphorbia helioscopia</i>	Euphorbiaceae	sun spurge	A			1
<i>Polygonum aviculare</i> agg	Polygonaceae	knotgrass	AB	8	4	
<i>Polygonum persicaria</i>	Polygonaceae	red shank	ABE		1	
<i>Rumex</i> sp	Polygonaceae	dock	ABCD	12		
<i>Urtica urens</i>	Urticaceae	small nettle	AB	4		
<i>Urtica dioica</i>	Urticaceae	common nettle	CD			205
<i>Corylus avellana</i> shell frag	Coryllaceae	hazel, cob-nut.	C		1	
<i>Prunella vulgaris</i>	Labiatae	selfheal	CD	2		
<i>Marrubium vulgare</i>	Labiatae	white horehound	BD	1		
<i>Sambucus nigra</i>	Caprifoliaceae	Elder	BC	1		55
<i>Valerianella dentata</i>	Valerianaceae	narrow-fruited cornsalad	A	1		
<i>Carduus</i> sp	Compositae	thistle	ABCD		1	
<i>Eleocharis</i> sp	Cyperaceae	spike-rush	E	4		
<i>Carex</i> sp	Cyperaceae	sedge	CDE		2	