

## Archaeological Services & Consultancy Ltd

**WATCHING BRIEF:  
STABILITY CHAMBER BUILDING  
GLAXOSMITHKLINE  
PARK ROAD  
WARE  
HERTFORDSHIRE**

NGR: TL 35280 14550

*on behalf of GlaxoSmithKline*



David Kaye BA AIFA

March 2011

ASC: 1380/WSC/2



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## Site Data

<i>ASC project code:</i>	WSC	<i>ASC Project No:</i>	1380
<i>OASIS ref:</i>	archaeol2-96940	<i>Event/Accession no:</i>	
<i>County:</i>	Hertfordshire		
<i>Village/Town:</i>	Ware		
<i>Civil Parish:</i>	Ware		
<i>NGR (to 8 figs):</i>	TL 34872 14352		
<i>Extent of site:</i>	c.730 sq. m.		
<i>Present use:</i>	Car park and adjoining landscaped area		
<i>Planning proposal:</i>	Construction of two-storey building		
<i>Planning application ref/date:</i>	10/1774/FP		
<i>Local Planning Authority:</i>	East Herts District Council		
<i>Date of fieldwork:</i>	11.01.11 - 03.02.11		
<i>Client:</i>	GlaxoSmithKline Park Road Ware Herts SG12 0DJ		
<i>Contact name:</i>	Dale Adams, GSK Ltd		

## Internal Quality Check

<i>Primary Author:</i>	David Kaye BA AIFA	<i>Date:</i>	24 <sup>th</sup> March 2011
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<i>Revisions:</i>		<i>Date:</i>	
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<i>Edited/Checked By:</i>		<i>Date:</i>	24 <sup>th</sup> March 2011
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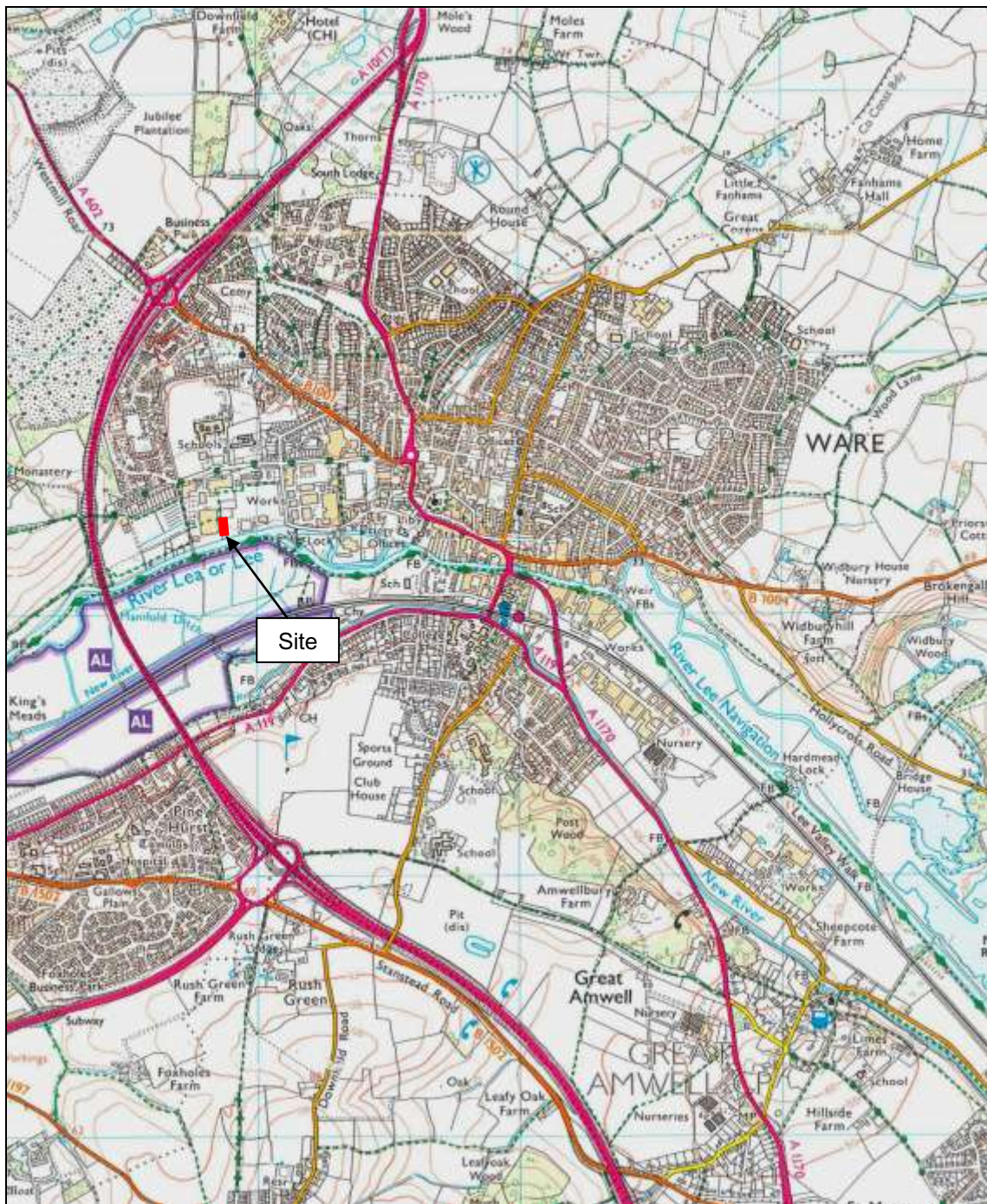


Figure 1: General location (scale 1:25,000)



## Summary

*In January and early February 2011 ASC carried out a programme of archaeological works at GlaxoSmithKline (GSK), Park Road, Ware, Hertfordshire during the ground reduction stage related to the construction of the Stability Chamber. The stratigraphy of the site consisted of topsoil overlying made ground, alluvium and the natural geology. The design of the proposed building required minimal stripping of the site, prior to the construction of a concrete slab supported by piles. Consequently, the made ground was not breached.*

*The initial stages of the piling were observed. However, as concrete was poured into the hole as the auger was extracted no significant data could be recorded.*

*A test pit was excavated close to the footprint of the proposed building in an effort to understand and record the stratigraphy and geology of the site.*

*No archaeological cut features or deposits were observed during the course of the ground works, and no artefacts were recovered from either the spoil from the ground reduction or the piling.*

## 1. Introduction

1.1 In January and early February 2011 *Archaeological Services and Consultancy Ltd* (ASC) carried out a watching brief at Park Road, Ware, Hertfordshire. The project was commissioned by GlaxoSmithKline, and was carried out according to revised specifications initially detailed in a Project Design prepared by ASC, which was approved by *Hertfordshire County Council Historic Environment Unit's* Archaeological Advisor (AA), acting on behalf of the local planning authority (LPA), *East Herts District Council*. The relevant planning application reference is 10/1774/FP.

### 1.2 *Planning Background*

This watching brief was required under the terms of *Planning Policy Statement 5* (PPS5), as a condition of planning permission for the development of the site. Initially, the requirement was for a Strip, Map and Sample excavation of the footprint of the proposed building. However, once the relatively shallow impact level of the development had been established the condition was down-graded to that of a Watching Brief, with the approval of the AA.

### 1.3 *Archaeological Services & Consultancy Ltd*

ASC is an independent archaeological practice providing a full range of archaeological services including consultancy, field evaluation, mitigation and post-excavation studies, historic building recording and analysis. ASC is recognised as a *Registered Organisation* by the Institute for Archaeologists and is also accredited ISO 9001, in recognition of its high standards and working practices.

### 1.4 *The Site*

#### 1.4.1 *Location & Description*

The GSK premises are located in Ware, in East Hertfordshire (Fig.1). The research division complex, within which the proposed excavation site is

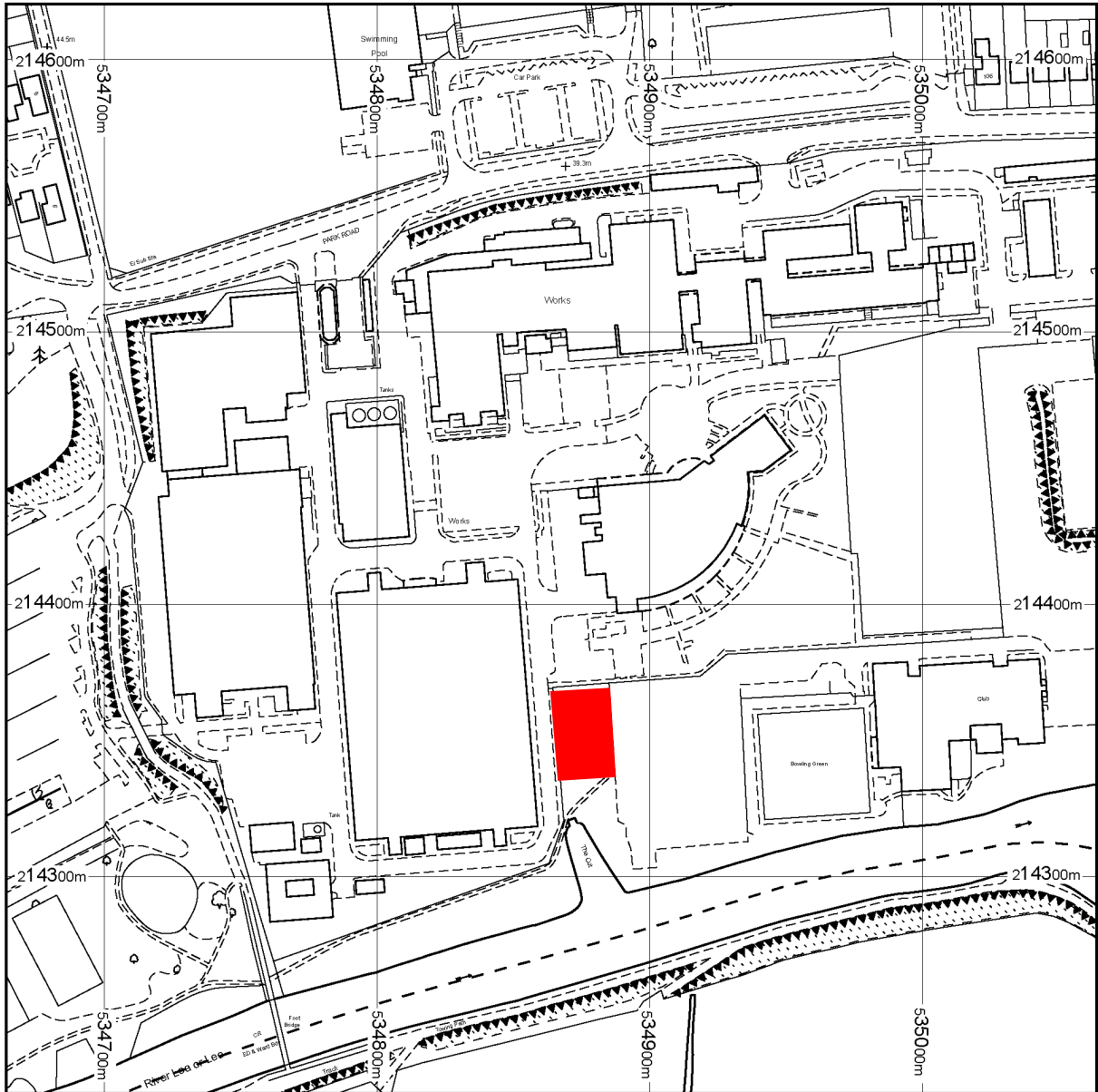
located, occupies a roughly rectangular area of *c.*6 hectares, bounded to the south by the Lea Navigation, to the east by Harris's Lane, to the north by Park Road and to the west by a footpath running southwards from Park Road (Fig. 2). Within this complex, the development site covers an area of *c.*730 sq m, between the Amenity Building to the north and an inlet from the river to the south.

#### 1.4.2 *Geology & Topography*

The present town of Ware lies on the lower northern slopes and flood plain of the valley of the river Lea, which at this point is at an elevation of *c.*35m AOD. The underlying geology of the valley slopes consists of a mixture of fine brickearths and pockets of soft sand. That part of the town nearest the river, which includes the GSK site, lies within the floodplain of the Lea, where the local soils consist of well-drained fine loams and brickearth overlying river gravels and alluvium (BGS Sheet 239).

#### 1.4.3 *Proposed Development*

GSK are proposing to construct a two-storey building on the site, as part of the *Stability Chamber* project. The building will be constructed on a concrete slab supported by 223 piled footings, 450mm in diameter (Figs 3 & 4).



**Figure 2:** Site plan. Stability Chamber Building marked in red. (scale 1:2500)



**Figure 3:** Proposed development. Building footprint marked in red. (*not to scale*)



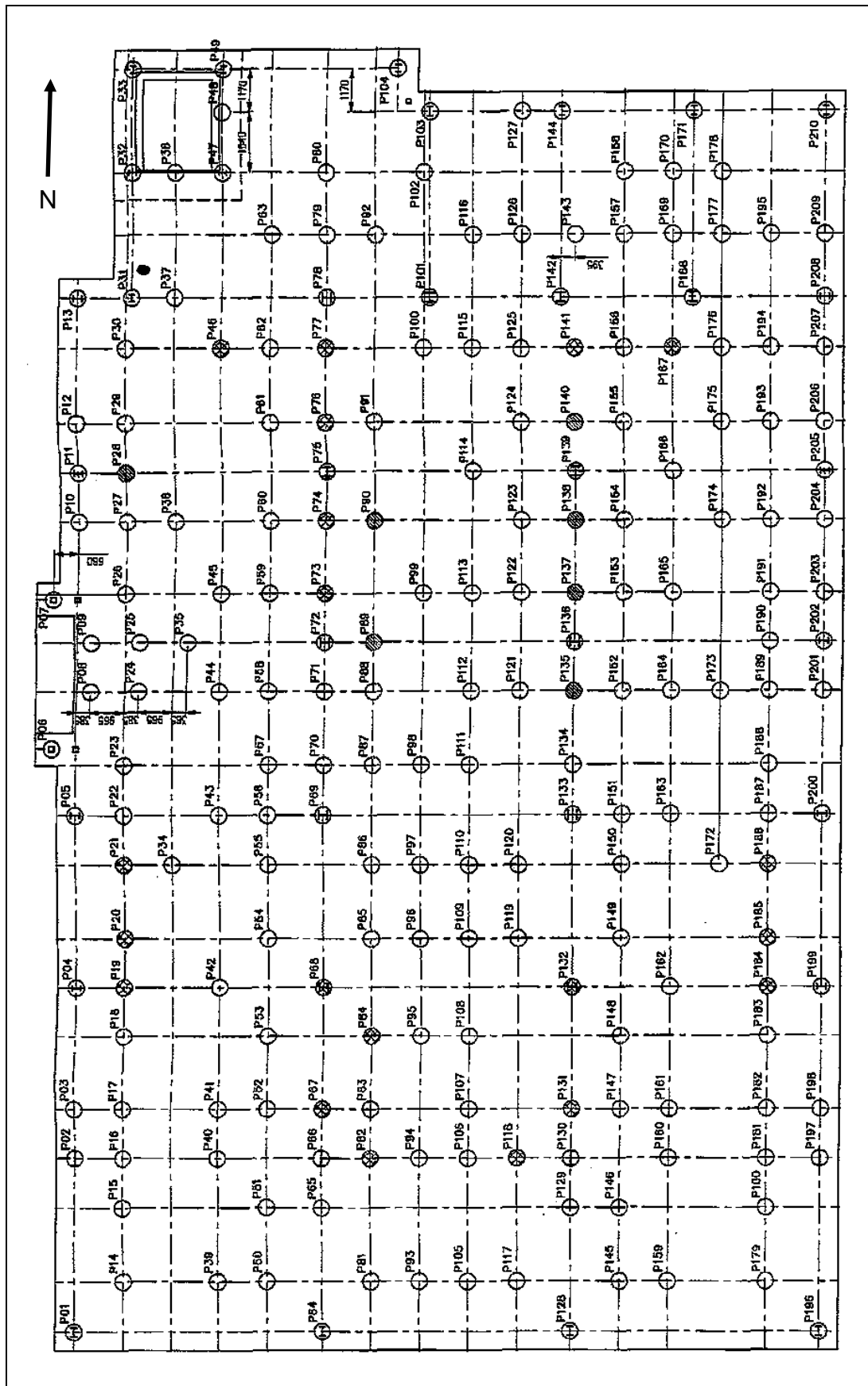


Figure 4: Piling layout (not to scale)

## 2. Aims & Methods

### 2.1 *Aims*

As agreed with the AA, the aims of the watching brief were:

- To ensure the archaeological monitoring of all aspects of the development programme likely to affect archaeological remains
- To secure the adequate recording of any archaeological remains revealed by the development programme
- To secure the analysis, conservation and long term storage of any artefactual/ecofactual material recovered from the site
- To provide an adequately detailed report that will place the findings of the project in their local and regional context, having made reference to the relevant regional research agendas (Brown & Glazebrook 2000), and through cartographic, documentary and other research.

### 2.2 *Standards*

The work conformed to the agreed specifications required by the AA, to the relevant sections of the Institute for Archaeologists' *Code of Conduct* (IFA 2000) and *Standard & Guidance Notes* (IFA 2001), to the Association of Local Government Archaeological Officers East of England Region *Standards for Field Archaeology in the East of England* (ALGAO 2003), and to the relevant sections of ASC's own *Operations Manual*.

### 2.3 *Methods*

In line with the standard requirements of a Watching Brief project design, and the agreement of the AA, the methods adopted for this project were:

- Removal of existing surfaces under archaeological supervision
- Stripping of overburden/made ground under archaeological supervision
- Inspection of the subsoil for archaeological features, deposits and artefacts, if appropriate
- Investigation and recording of any archaeological features or deposits present, including environmental sampling if appropriate, and the preparation of both drawn and photographic records
- Subsoil stripping under archaeological supervision, if appropriate
- Excavation of foundation and service trenches under archaeological supervision, and subsequent recording of any exposed archaeological remains
- Rapid examination of spoil heaps for archaeological material
- A programme of post-fieldwork analysis, archiving and publication.

### 2.4 *Constraints*

There were no significant constraints associated with this project.

### 3. Archaeological & Historical Background

- 3.1 This section has been compiled with information from a previous summary of the archaeology of the site (Zeepvat 1996), and more recent work undertaken by ASC, east of Harris Lane. All recorded archaeological interventions at GSK for which reports were produced are listed in Appendix 1. The Historic Environment Record (HER) enquiry reference is 245/10.
- 3.2 The site lies adjacent to *Area of Archaeological Significance* 177, as identified in the Local Plan. This includes the GSK site east of Harris Lane and the adjoining Buryfields recreation ground, encompassing the Roman urban settlement of Ware, and also remains of Mesolithic, Neolithic, Bronze Age and Iron Age date.
- 3.3 The earliest recorded discoveries of Roman material from the area west of Ware were made in the early 19<sup>th</sup> century. In 1802 four stone coffins and a Roman coin were found in Buryfields, and in 1831, when Ware Lock was being constructed on the Lea Navigation, two inhumations and a number of finds, all of Roman date, came to light (Mylne 1832). In 1899, when Allen & Hanbury's factory (now GSK) was being built, Roman coins and pottery were unearthed (Andrews 1900). In the 1940s further Roman finds were made on Allen & Hanbury's premises, including a burial found in the vicinity of the site entrance from Harris Lane. In 1952 a section was excavated across the Roman Ermine Street in Broadmead, south of Ware Lock (Holmes 1954). Excavations in 1974 for Hertford Museum/East Herts Archaeology Society (EHAS) on the south bank of the Lea on the line of Ermine Street revealed rafts of rammed chalk, presumed to be building foundations, adjacent to the road, indicating occupation south of the river (Wilson 1975, 260). Further evidence of chalk rafts was found in 1976 in trial trenches dug by EHAS adjacent to the lock (Partridge 1979), north-west of the 1974 excavation, along with piles and timber framing, possibly forming part of a river frontage.
- 3.4 In 1976 four inhumations, one in a lead-lined wooden coffin, were recovered by EHAS during redevelopment work at Allen & Hanbury's, 300m north of the lock (Frere 1977, 401). Between 1976 and 1979 EHAS carried out a series of excavations in the grounds of the factory, about 200m east of the burials, across and immediately west of the presumed line of Ermine Street. During this period, discoveries of Roman date included a sequence of timber-framed buildings fronting Ermine Street, cobbled yards, wells, evidence of ironworking and pottery-making, and further burials. Beneath the Roman levels, traces of Mesolithic activity were recovered (Partridge 1981). The excavations were followed by a watching brief on building construction and the provision of services.
- 3.5 In 1983-84, a watching brief with limited excavation was undertaken by the Hart Archaeological Unit (HAU) at the Glaxo site in response to development in its south-east corner. Further evidence was recovered of Roman activity similar to that found in the 1976-79 excavations. Beneath Ermine Street a large ditch was also located (Frere 1985, 293). Further evidence of Iron Age occupation was also found beneath medieval levels in Ware (Partridge 1981, 32), suggesting the presence of an extensive Iron Age settlement on the north side of the Lea valley.
- 3.6 Between 1986 and 1994 the Hertfordshire Archaeological Trust (HAT) carried out two limited area excavations on the Glaxo site, as well as a series of small-scale

- evaluations and watching briefs. These revealed further evidence of Roman and prehistoric activity, and provided further indications of the extent and nature of Roman occupation.
- 3.7 Between 1993 and 1997 HAT undertook a series of evaluations, excavations and watching briefs in connection with the Glaxo-Wellcome *Access Project*. This development affected an area at the east end of the factory complex, including the former grounds of Ware Football Club and part of the adjacent Buryfields. It comprised three elements: the diversion of Park Road to create a new access point, the provision of a new security gate on the east side of the complex, and the construction of a multi-storey car park and access road on the former football pitch site. Excavations revealed several areas of the Roman settlement, including a section of Ermine Street and related features; evidence of possible structures and ‘back yard’ features relating to plots of land fronting Ermine Street, and a late Roman inhumation cemetery (Zeepvat & Walker, forthcoming). The Access Project sites are listed in Appendix 1.
  - 3.8 In 2009, excavations by ASC during the removal of the floor slab of Building U revealed four Bronze Age cremations and a possible pond barrow, along with a medieval boundary or drainage ditch and a post-built structure of unknown date (Kaye 2009). The following year, excavations on the site of Buildings P8 and P10 have uncovered a section of Ermine Street, along with evidence for adjacent post-built structures, a pottery kiln, ovens and a timber-lined well, all of Roman date. These excavations are ongoing.
  - 3.9 In contrast to the former Allen & Hanbury’s site, that part of the GSK site west of Harris Lane, within which the development site is located, has not been subject to any great degree of archaeological investigation. During the 19<sup>th</sup> century the area was occupied by brick fields, with kilns along the north side adjacent to Park Road, served by a short ‘barge cut’ running northwards across the site from the Lea. The brickfields remained until the 1960s, following which the barge cut was largely infilled, and that part of the site adjacent to Harris Lane was developed as part of Glaxo / Glaxo-Wellcome from the 1970s onwards.
  - 3.10 In 1985, a watching brief carried out by HAU on the former barge cut revealed little of archaeological significance. Trial trench evaluations carried out by HAT in 1993-4 on the site of the Amenities Building, to the north of the development site, revealed a few prehistoric features. Trenching in 1993 on the Sports Field, at the far western end of the complex, revealed nothing of archaeological significance.
  - 3.11 During development of the western part of the GSK site, a number of buried services and other ground disturbances have taken place within the proposed development site. Many of these have been recorded: their locations and extent are shown in Figure 5.

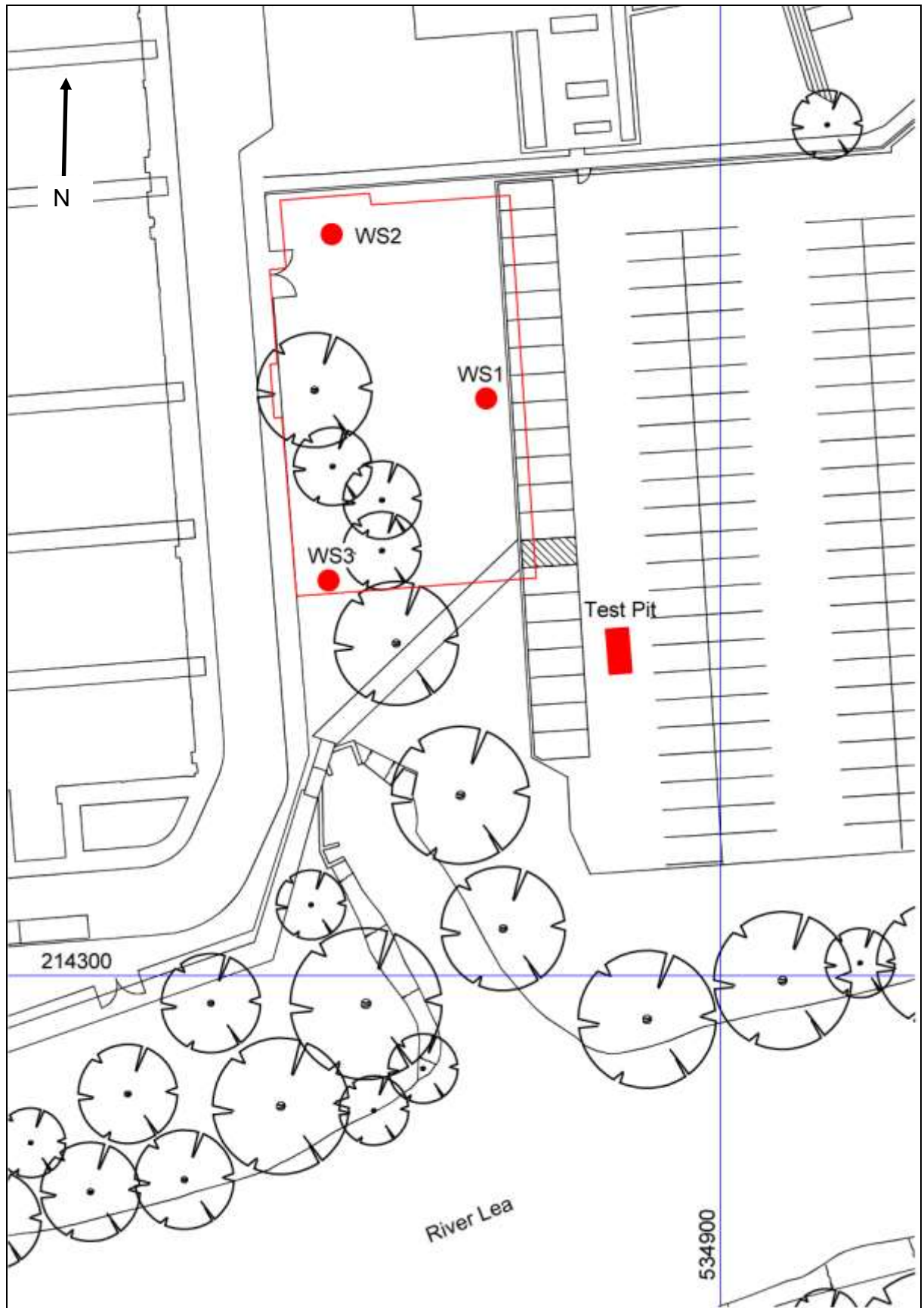


**Figure 5:** Buried services and other modern disturbances on the site (*not to scale*)



## **4. Results**

- 4.1 Borehole data indicated that the stratigraphy of the site consisted of made ground overlying alluvium on the south of the site, and flood plain gravel on the north (Appendix 2). Window Sample (WS) 1, located on the eastern side of the site, encountered alluvium at a depth of 2.4m, whilst WS 2, located on the northern side of the site, recorded flood plain gravel at the same depth, and no trace of alluvium. WS 3, located on the south western side of the site, encountered made ground, but no alluvium (Fig.6). A clear, visual indication of the stratigraphy was observed in the section of a test pit, excavated close to the footprint of the development (Plate 1).
- 4.2 As the impact level of the proposed building was in the region of 0.3m, the made ground was not breached and no archaeological cut features or deposits were observed during the ground reduction process. All services were of a depth that would not impact on any potential archaeology, or made use of the existing facilities.
- 4.3 The initial stages of the piling were monitored. However, it was quickly apparent that there was little archaeological value in continuing this process as concrete was poured into the borehole as the auger was extracted (Plates 2 & 3). However, 20<sup>th</sup> century artefacts were noted in the spoil of one of the piles on the western side of the site.



**Figure 6:** Location of boreholes and test pit (scale: 1:500)



**Plate 1:** Stratigraphy of test pit



**Plate 2:** Piling



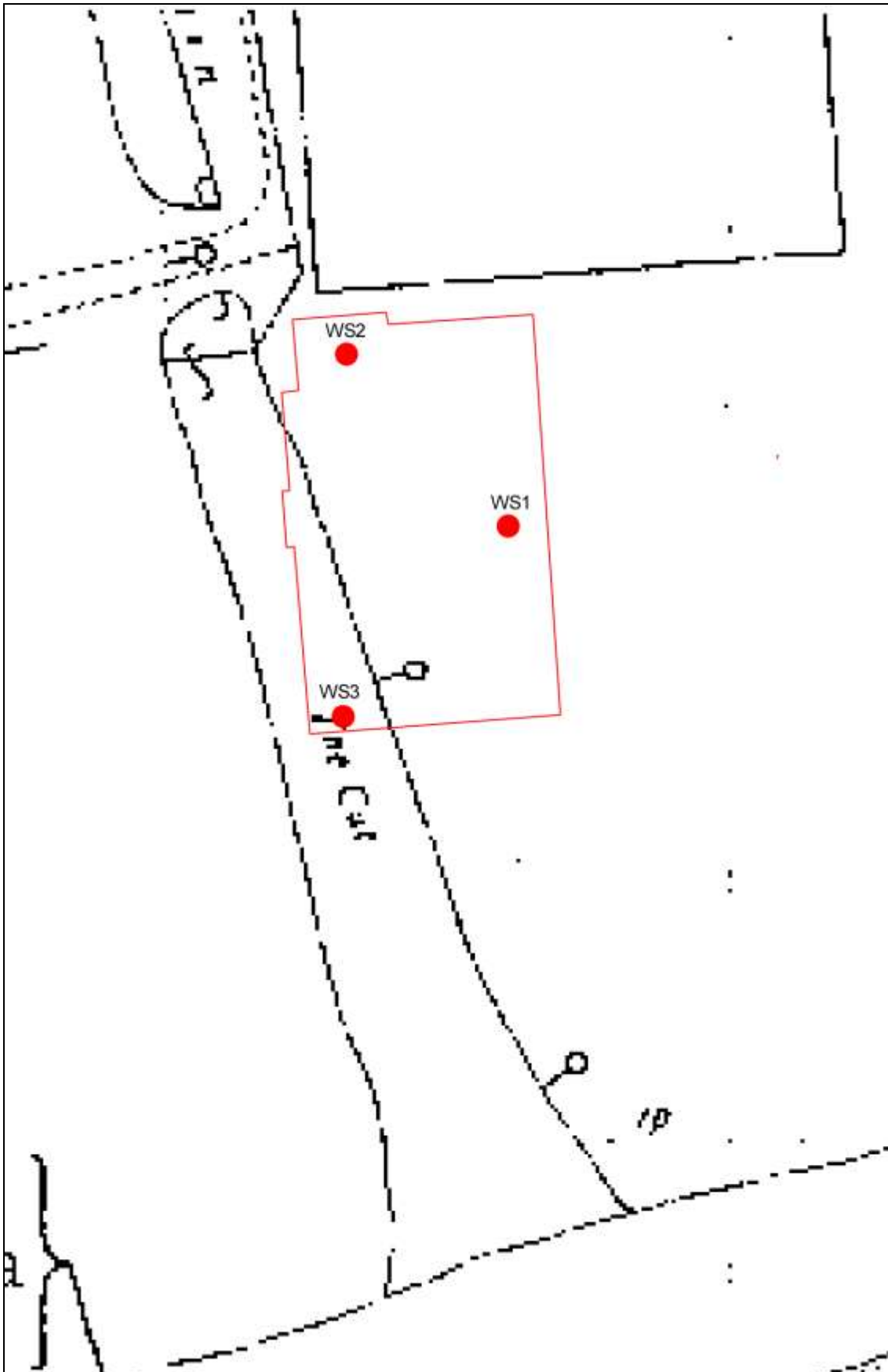
**Plate 3:** Piling close-up



**Plate 4:** Pouring

## 5. Conclusions

- 5.1 The site once formed part of brickworks which transported its products along the River Lea via a canal cut linking the north side of the site, close to Park Road, with the river. This cut was backfilled sometime after 1974, the last time it was represented on an Ordnance Survey map, leaving just the southern stub.
- 5.2 By overlying the proposed development on this map, it is clear that at least part of the cut runs onto the site, amounting to approximately 15% of the total area (Fig. 7). This is supported by the geotechnical data, and the artefacts observed in the spoil during the piling.
- 5.3 The presence of alluvium in WS 1 and its absence in WS 2 suggests that the flood plain extended somewhere between 58m and 76m north from the current river bank.
- 5.4 WS 3, located on the southwestern side of the site, approximately 47m from the river's edge, encountered made ground, but no alluvium. This would be consistent with sampling the backfill of the canal cut.
- 5.5 The made ground was probably laid down in the late 19<sup>th</sup> or early 20<sup>th</sup> century, as part of the industrial development of the site. It is of such a depth that it has provided a raised platform on which to build, and heightened the river bank, thereby forcing the Lea to flood only to the south at this point.
- 5.6 The size and quantity of the piles have resulted in 35.5 sq m, or approximately 5%, of the site being affected by intrusive construction techniques. As the piles were of a depth designed to penetrate the made ground and the alluvial deposits, providing a stable footing within the underlying natural geology, any archaeological features that may have been present, within the footprint of the piles, will have been destroyed. However, any potential archaeological features which fall between the piles will remain preserved *in situ*.



**Figure 7:** Site location and boreholes in relation to OS map of 1974 (scale: 1:500)



## **6. Acknowledgements**

The project was commissioned by GlaxoSmithKline. The writer is grateful to Dale Adams of GSK Ltd and Kevin Dykes of Wates Construction Ltd for their assistance. The project was monitored by Alison Tinniswood of Hertfordshire County Council Historic Environment Unit on behalf of the local planning authority.

The project was managed for ASC by Karin Semmelmann MA MIFA. Fieldwork was carried out by David Kaye BA AIFA. The report was prepared by David Kaye and edited by Bob Zeepvat BA MIFA.

## **7. Archive**

7.1 The project archive will comprise:

1. Project Design
2. Initial Report
3. Clients site plans
4. Site Monitoring Sheets
5. List of photographs
6. B/W prints & negatives
7. CDROM with copies of all digital files.

7.2 The archive will be deposited with Ware Museum.

## 8. References

### *Standards & Specifications*

- ALGAO 2003 *Standards for Field Archaeology in the East of England*. East Anglian Archaeology Occasional Paper **14**.
- EH 1991 *The Management of Archaeological Projects*, 2<sup>nd</sup> edition. English Heritage (London).
- IFA 2000a Institute of Field Archaeologists' *Code of Conduct*.
- IFA 2000b Institute of Field Archaeologists' *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology*.
- IFA 2001 Institute of Field Archaeologists' *Standard & Guidance documents (Desk-Based Assessments, Watching Briefs, Evaluations, Excavations, Investigation and Recording of Standing Buildings, Finds)*.
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### *Secondary Sources*

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- BGS *British Geological Survey 1:50,000 Series, Solid & Drift Geology*.
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- Soil Survey 1983 *1:250,000 Soil Map of England and Wales, and accompanying legend* (Harpenden).
- Wilson D.R. 1975 'Roman Britain in 1974', *Britannia* **6**, 220-294.

Zeepvat B 1996 *Roman Settlement, Glaxo, Ware: Application for Archive & Assessment, & Preparation of Updated Project Design*. Herts. Archaeol. Trust.

Zeepvat R.J & Walker C, forthcoming *The Access Project: Excavations at Glaxo-Wellcome, Ware, 1993-96*. *Hertfordshire Archaeology?*

## Appendix 1: Archaeological Investigations

**TABLE 1:** Archaeological Interventions, 1959-94

<b>Date</b>	<b>Site Code</b>	<b>Site name</b>	<b>Extent</b>
1959-64	A+H 59-64	Allen & Hanbury's I	Watching briefs
1976	A+H 76	Allen & Hanbury's II	Rescue
1976-79	A+H 76-79	Allen & Hanbury's III	Excavation/watching brief
1979	A+H 79	Allen & Hanbury's IV	Watching brief
1983-85	A+H 83-85	Allen & Hanbury's V	Excavation/watching brief(s)
1989	HAT 11	Pharmacy	Evaluation
1989	HAT 39	Warehouse (P11) Building	Excavation
1992	HAT 54	Millside	Evaluation
1993	HAT 57	Liftshaft	Evaluation
1993	HAT 106	Bulk Storage (Y1/Y2 Building)	Watching brief
1993	HAT 108	Sports Field	Evaluation
1993-94	HAT 113	Amenities Building	Evaluation

**TABLE 2:** The Access Project sites, 1993-95

<b>Site code</b>	<b>Site name</b>	<b>Extent</b>
HAT 111	Ware Football Club, Phase 1	Evaluation
HAT 143	GMS Access Project, Phases I-III	Evaluation & excavation
HAT 156	GMS Access Project, Phases I-III	Evaluation & excavation
HAT 164	Ware Football Club, Phase 2	Evaluation & watching brief
HAT 180	Ware Football Club, Phase 2	Evaluation & watching brief

**TABLE 3:** Recent Interventions, 2009 - present

<b>Site code</b>	<b>Site name</b>	<b>Extent</b>
ASC:1189/WP R	Building U	Strip, map and sample
ASC:1247/W GM	Building M	Watching brief
ASC:1275/W GP	Buildings P8 & P10	Strip, map and sample ( <i>ongoing</i> )
ASC:1349/W GL	Liquid Store	Strip, map and sample ( <i>start 2011</i> )

## Appendix 2: Extract from Geotechnical Report

GROUND ENGINEERING Geo-Environmental Specialists 01733 866666			Site: STABILITY BUILDING, GSK R&D, WARE				WINDOW SAMPLE WS1		
Samples and In-situ Tests			(Date)	Description of Strata			Legend	Depth m	O.D. Level m
Depth m	Type	Result	Water						
0.30	D1			MADE GROUND - Grey and brown, silty, sandy GRAVEL of angular roadstone and flint.				0.30	
0.60	D2			MADE GROUND - Dark brown sandy, gravelly SILT, Gravel fraction of flint, roadstone and occasional glass, chalk and quartz.					
0.90	D3			MADE GROUND - Loose, brown and dark brown silty SAND and GRAVEL. Gravel fraction of flint, roadstone, brick, concrete and chalk.				0.90	
1.20-2.00	U1			MADE GROUND - Soft, friable, dark brown and black mottled, slightly gravelly, sandy CLAY. Gravel fraction of ash, clinker and brick fragments.				1.40	
1.35-1.65	C	N9		MADE GROUND - Soft, brown and orange brown mottled, sandy, gravelly CLAY. Gravel fraction of angular to rounded flint.				1.70	
2.00-3.00	U2			Soft, locally very soft, grey brown, slightly gravelly organic SILT. Gravel fraction of angular flint.				2.40	
2.15-2.45	C	N5		(ALLUVIUM)					
2.50	W1			Soft, black very organic SILT. (ALLUVIUM)					
3.00	D4			Medium dense, orange brown, slightly silty SAND and GRAVEL. Gravel fraction of angular to rounded flint. (FLOOD PLAIN GRAVEL)				3.90	
3.00-4.00	U3	N5		Borehole completed at 5.00m depth					
3.15-3.45	S								
4.00	D5								
4.00-5.00	U4	N5							
4.15-4.45	S								
5.15-5.45	C	N15							

REMARKS							Project No	
1. Starter pit hand dug from ground level to 1.20m depth							12161	
2. Hole sides stable							Scale	Page
							1:50	1/1

KEY	Groundwater Strikes				Groundwater Observations						
	Depth m				Depth m						
	No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water	
D - Disturbed Sample B - Bulk Sample U - Undisturbed Sample W - Water Sample ∇ - Water Strike ∇ - Depth to Water on completion	J - Jar Sample M - Mackintosh Probe V - Vane Shear Test F ( ) - Hand Penetrometer ∇s - Standpipe Level	1	3.00	2.50			not	25/05/10	5.00		2.50



<b>GROUND ENGINEERING</b> Geo-Environmental Specialists 01733 568566			Site: <b>STABILITY BUILDING, GSK R&amp;D, WARE</b>				WINDOW SAMPLE <b>WS2</b>	
			Date: 25/05/10	Hole Size: 77mm dia to 2.00m 67mm dia to 3.00m 57mm dia to 4.00m			Ground Level:	
Samples and in-situ Tests			(Date)	Description of Strata	Legend	Depth m	O.B. Level m	
Depth m	Type	Result	Water					
0.30	D1			MADE GROUND - Grey and brown silty, sandy GRAVEL of angular roadstone and flint.		0.30		
0.60	D2			MADE GROUND - Brown and dark brown, slightly silty SAND and GRAVEL. Gravel fraction of angular to sub-rounded flint, roadstone, brick and tile fragments.				
0.90	D3					1.20		
1.20	D4							
1.20-2.00	U1	N5		MADE GROUND - Soft, dark brown and grey brown gravelly, sandy CLAY/SILT. Gravel fraction of flint and brick.				
1.35-1.65	S							
2.00-3.00	U2					2.00		
2.15-2.45	C	N14		MADE GROUND - Medium dense, brown and dark brown, silty SAND and GRAVEL. Gravel fraction of brick, flint, concrete and roadstone.		2.40		
2.75	W1			MADE GROUND - Firm, dark brown, slightly sandy, gravelly CLAY. Gravel fraction of angular flint.		2.55		
3.00-4.00	U3			Orange brown and brown clayey SAND and GRAVEL. Gravel fraction of angular to rounded flint.		2.90		
3.15-3.45	C	N10		(FLOOD PLAIN GRAVEL) Medium dense, orange brown, silty SAND and GRAVEL. Gravel fraction of angular to sub-angular flint, occasional quartz.				
				(FLOOD PLAIN GRAVEL)		4.00		
4.15-4.45	C	N15		Borehole completed at 4.00m depth				

REMARKS 1. Starter pit hand dug from ground level to 1.20m depth 2. Hole sides stable	Project No 12161
	Scale 1:50      Page 1/1

KEY	Groundwater Strikes						Groundwater Observations			
	No	Struck	Rose to	Rate	Cased	Sealed	Depth m			
							Date	Hole	Casing	Water
D - Disturbed Sample B - Bulk Sample U - Undisturbed Sample W - Water Sample ⚡ - Water Strike ∇ - Depth to Water on completion J - Jar Sample M - Mackintosh Probe V - Vane Shear Test Cohesion ( ) kPa P ( ) - Hand Penetrometer Cohesion ( ) kPa ∇s - Standpipe Level	1	3.00	2.76			not	25/05/10	4.00		2.76

GROUND ENGINEERING Geo-Environmental Specialists 01733 566666			Site: STABILITY BUILDING, GSK R&D, WARE				WINDOW SAMPLE WS3								
Samples and In-situ Tests			Date: 25/05/10	Hole Size: 87mm dia to 2.00m 77mm dia to 3.00m 57mm dia to 5.00m			Ground Level:								
Depth m	Type	Result	(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m							
0.10	D1			n	MADE GROUND - Grey and brown silty, sandy GRAVEL. Gravel fraction of roadstone and angular flint.		0.20								
0.60	D2				MADE GROUND - Light brown and brown, silty SAND and GRAVEL. Gravel fraction of angular to rounded flint and roadstone.		0.90								
0.90	D3														
1.20-2.00	U1				Medium dense, orange brown silty SAND and GRAVEL. Gravel fraction of angular to rounded flint and occasional chalk at 1.50m depth.										
1.35-1.65	C	N27													
2.00-3.00	U2														
2.15-2.45	C	N11		ys											
2.30	W1														
3.00-4.00	U3				(FLOOD PLAIN GRAVEL)										
3.15-3.45	C	N13													
4.00-5.00	U4														
4.15-4.45	C	N22													
5.15-5.45	C	N26			Borehole completed at 5.00m depth		5.00								
REMARKS							Project No.								
1. Starter pit hand dug from ground level to 1.20m depth 2. Borehole cased to 5.00m depth 3. Gas monitoring standpipe installed to 5.00m depth							12161								
							Scale	Page							
							1:50	1/1							
KEY			Groundwater Strikes				Groundwater Observations								
D - Disturbed Sample B - Bulk Sample U - Undisturbed Sample W - Water Sample ∇ - Water Strike ∇ - Depth to Water on completion J - Jar Sample M - Mackintosh Probe V - Vane Shear Test Cohesion ( ) kPa P ( ) - Hand Penetrometer Cohesion ( ) kPa ∇s - Standpipe Level			Depth m				Date	Depth m							
			No	Struck	Rose to	Rate		Cased	Sealed	Hole	Casing	Water			
			1	3.00	2.30						25/05/10 02/06/10	5.00 5.00			2.30 2.30

### Appendix 3: List of Photographs

SITE NAME: Stability Chamber, GSK, Park Road, Ware			SITE NO/CODE: 1380/WSC
Shot number	B&W	Digital	Subject
1380WSC-001		✓	Ground reduction facing NW
1380WSC-002		✓	Ground reduction facing NW
1380WSC-003		✓	Ground reduction facing E
1380WSC-004		✓	General view facing W
1380WSC-005		✓	General view facing W
1380WSC-006		✓	General view facing W
1380WSC-007		✓	Buried services facing S
1380WSC-008		✓	Buried services facing S
1380WSC-009		✓	General view facing NW
1380WSC-010		✓	General view facing NW
1380WSC-011		✓	Piling
1380WSC-012		✓	Piling close-up
1380WSC-013		✓	Piling close-up
1380WSC-014		✓	Piling close-up
1380WSC-015		✓	Test pit section facing N
1380WSC-016		✓	Test pit section facing S
1380WSC-017		✓	Test pit section facing S
1380WSC-018		✓	Test pit section facing S
1380WSC-019		✓	Test pit section facing S

### Appendix 4: List of Site Visits

Date	Staff	Purpose of visit
11.01.11	DK	Initial site visit
20.01.11	DK	Monitor start of site reduction (am)
20.01.11	DK	Monitor continuation of site reduction (pm)
21.01.11	DK	Monitor continuation of site reduction
24.01.11	DK	Brief visit to monitor continuation of site reduction
25.01.11	DK	Monitor continuation of site reduction & photograph conditions
02.02.11	DK	Monitor piling
03.02.11	DK	Photograph test pit

## Appendix 5: ASC OASIS Form

PROJECT DETAILS			
Project Name & OASIS No:	Stability Chamber, GlaxoSmithKline, Park Road, Ware,	archaeol2-96940	
Short Description:	<p>In January and early February 2010 ASC carried out a programme of archaeological works at GlaxoSmithKline (GSK), Park Road, Ware, Hertfordshire during the ground reduction stage related to the construction of the Stability Chamber. The stratigraphy of the site consisted of topsoil overlying made ground, alluvium and the natural geology. The design of the proposed building required minimal stripping of the site, and the made ground was not breached. The initial stages of the piling were observed, and a test pit was excavated close to the footprint of the proposed building in an effort to better understand and record the stratigraphy and geology of the site.</p> <p>No archaeological cut features or deposits were observed during the course of the ground works, and no artefacts were recovered from either the spoil from the ground reduction or the piling.</p>		
Project Type:	Watching Brief		
Site status:	Close to AAS 117	Previous work:	Multiple projects from 1940 onwards throughout the GSK site
Current land use:	Urban industrial	Future work:	Unknown
Monument type:	None	Monument period:	N/A
Significant finds:	None		
PROJECT LOCATION			
County:	Hertfordshire	OS reference: (8 figs min)	TL 35280 14550
Site address:	Stability Chamber, GlaxoSmithKline, Park Road, Ware, Hertfordshire		
Study area: (sq. m. or ha)	c.730 sq m	Height OD: (metres)	c.35mOD
PROJECT CREATORS			
Organisation:	Archaeological Services & Consultancy Ltd		
Project brief originator:	Hertfordshire County Council	Project design originator:	ASC Ltd
Project Manager:	Bob Zeeprat BA MIFA	Director/Supervisor:	Karin Semmelmann MA MIFA
Sponsor / funding body:	GlaxoSmithKline		
PROJECT DATE			
Start date:	11.01.11	End date:	02.02.11
PROJECT ARCHIVES			
	Location	Content	
Physical:	Ware Museum	None	
Paper:		Project Design, Initial Report, Site records, list of photographs, B/W prints & negatives, and supporting information.	
Digital:		CDROM with copies of all digital files.	
BIBLIOGRAPHY			
Title:	Watching Brief: Stability Chamber, GlaxoSmithKline, Park Road, Ware, Hertfordshire		
Serial title & volume:	ASC Ltd Report ref. 1380/WSC/2		
Author(s):	David Kaye BA AIFA		
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