

**An Archaeological Watching Brief at
The Marehill Waste Treatment Waterworks, Pulborough, West
Sussex**

**Project No. 2546
ASE Report number: 2007/227**



**By
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**An Archaeological Watching Brief at
The Marehill Waste Treatment Waterworks, Pulborough, West
Sussex**

NGR 506249 117995

**Project No. 2546
ASE Report number: 2007/260**

**HORSHAM: Parham
Planning Ref: DC/384/06 (PR)**

**By
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Summary

An archaeological watching brief was undertaken during the groundworks associated with the construction of four new Humus Tanks, three control kiosks and upgrading and refurbishment of the Marehill WTW, Pulborough (NGR 506249 117995) (Planning Ref: DC/384/06 (PR)). Ten site visits were made to monitor groundworks between 31st July and 25th September 2006. Excavations reached depths of up to 3m beneath the current ground surface. A Roman deposit was excavated by hand during the ground reduction of Humus Tank No. 6. This deposit contained a high percentage of Roman pottery.

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SMR Summary Sheet

OASIS Sheet

Figure 1: Site Location Plan with SMR locations

Figure 2: Site Plan (showing areas monitored)

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1. INTRODUCTION

- 1.1 Archaeology South-East (a division of the University College London Centre for Applied Archaeology) was commissioned by 4 Delivery Ltd to undertake an archaeological watching brief during the groundworks at Marehill Waste Treatment Waterworks (WTW), West Sussex (NGR 506249 117995) (Fig. 1).
- 1.2 The Marehill WTW site is situated to the east of Pulborough and is c. 100m off the A283. The development site is a fully functional waste treatment works and is currently undergoing extension and upgrading.
- 1.3 Planning permission has been granted by West Sussex County Council for the refurbishment and upgrading of areas of the treatment works site (ref. DC/384/06). Owing to the archaeologically sensitive nature of the area, and after consultation with the County Archaeological Officers of West Sussex County Council, a condition was attached to this consent requiring an archaeological watching brief to be maintained at the site during the groundworks.
- 1.4 A written scheme of investigation was produced by Jim Stevenson of Archaeology South East (Stevenson, 2006). This document outlined a strategy for the archaeological watching brief. The stated objective of the watching brief was to:

'monitor the groundworks in order to ensure that any features, artefacts or ecofacts of archaeological interest exposed and affected by the excavations are recorded and interpreted to appropriate standards.'
- 1.5 According to the British Geological Survey Sheet 317 the underlying geology at the site is valley gravels.
- 1.6 The on-site archaeological work was carried out between 31st July 2006 and 25th September 2006 by Paul Riccoboni (Senior Archaeologist) and Deon Whittaker (Assistant Archaeologist). The project was managed by Neil Griffin (Project Manager) and by Louise Rayner (Post-Excavation Manager and Assistant Director).

2. ARCHAEOLOGICAL BACKGROUND

- 2.1 The site lies within the substantial Roman settlement of Marehill. Previous fieldwork in the surrounding area has shown further evidence of Roman occupation, between Pulborough Brooks, the A283 and south of the River Stour/Chilt.
- 2.2 A Roman road (The Greensand Way), first identified by Margary (1935) was shown to pass through Marehill. The road then continued straight over Broomershill to Pulborough where it connected to Stane Street at Codmore Hill. Another Roman Road was also suggested to cross from Hardham to Wiggonholt. Marehill can therefore be sited somewhere between these three Roman roads. Other major Roman discoveries in the area include the excavation of a Roman bathhouse at Wiggonholt.
- 2.3 The site lies on 2nd Terrace sands and gravels of the River Arun, with potential for early prehistoric remains. Below is a table of the Historic Environment Records (HER) within a 1km radius of the site. These are tabulated below;

No	HER	NGR	Description
1	1934 - MWS3303	TQ 06200 19050	A short branch of Stane Street from Codmore Hill to Marehill
2	2365 - MWS3314	TQ 06360 18970	Foundations of two Roman buildings were found during digging in 1859, 1900 and 1910 at Homestreet Farm, Pulborough
3	2368 - MWS2940	TQ 06000 18000	A sandstone hone from Pulborough is in Worthing Museum.
4	2369 - MWS5398	TQ 06470 17560	A Roman building at Lickfold, Wiggonholt, was excavated in 1937 and 1939 and there is little doubt that it was a bath house.
5	2370 - MWS2941	TQ 06570 17240	A few fragments of Belgic pottery were found at Wiggonholt
6	2372 - MWS2942	TQ 06390 18320	Flints, a burin and a scraper, were found separately at Marehill, Pulborough
7	2374 - MWS2944	TQ 06100 18300	During sewage operations in 1958, 1 st century pottery, including 'terra nigra' and imitation Belgic ware, fragments of wood and bone were found just inside Pulborough at Marehill
8	2377 - MWS2947	TQ 06880 17980	A flint axehead, probably of secondary Neolithic date, was found in 1958 during sewerage work in the main Pulborough - Storrington road, to W. of Nutbourne Common
9	2378 - MWS2948	TQ 06520 18440	A Belgic gold stater found in the garden of Malthouse Cottage,

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Pulborough			
10	2394 - MWS2961	TQ 05620 18780	An urn found in 1910 at the sand pit above Lower Street, Pulborough, on the right of the lane leading to New Place is thought to be Halstatt
11	2406 - MWS2727	TQ 06450 18580	Bronze Age flint flakes including two barbed and tanged arrowheads were found in a field at the back of Manor Farm House, Broomer's Hill Lane, Pulborough
12	2411 - MWS2732	TQ 06470 17560	Bronze Age beaker sherds and a barbed and tanged flint arrowhead were found during the excavation of the Roman site at Wiggonholt
13	2424 - MWS4510	TQ 06060 18180	A Roman coin hoard and bronze vessel were found in 1984 by children on a spoil heap, the result of re-cutting a drain by Southern Water Authority in 1983
14	5108 - MWS3858	TQ 06450 18650	Quarry - Hillbarn Farm
15	5662 - MWS4239	TQ 06300 17500	A small collection of Mesolithic flintwork was gathered from the field surface on Lickfold Farm
16	5663 - MWS4459	TQ 06300 17500	Nineteen test pits and five trenches were excavated on Lickfold Farm, centred at TQ 0630 1750. This revealed an extensive area of Romano- British occupation, from the evidence domestic and/or settlement.
17	5664 - MWS4460	TQ 06390 17350	Works here revealed several features of Romano-British date: three pits, two linear features, and a possible foundation trench. Finds from these included CBM, glass, worked flint, and quantities of 1 st to 3 rd century local and imported pottery.
18	6419 - MWS5238	TQ 06300 18500	A Belgic gold stater.
19	6420 - MWS5239	TQ 06400 18000	Roman pottery
20	6421 - MWS5240	TQ 06700 17700	Roman silver ring
21	6482 - MWS5241	TQ 06450 18650	Pulborough sandrock has been dug for moulding sand. Much of the extraction from an open pit, but some was also worked in sloping valleys dug parallel to the dip
22	Scheduled Monument	TQ 06450 18650	Monument: Roman bath house and settlement - Wiggonholt

Table 1: Historic Environment Record data obtained from West Sussex County Council

3. METHODOLOGY

3.1 All groundworks were undertaken using a 7 ton 360° mechanical excavator fitted with a c. 600mm wide toothless bucket. Where appropriate a 20 ton mechanical excavator was used fitted with a 1.8m wide toothless ditching bucket.

3.2 The Humus Tank Excavations

3.2.1 The excavations for the two Humus tanks and chambers often reached depths in excess of 5m beneath the current ground level. When excavations reached depths of over 1.2m it was not permissible to enter the excavations, due to health and safety considerations. Observations were then made from the top of the sections.

3.2.2 The methodology employed for the construction of the Humus tanks made archaeological monitoring difficult and time consuming. Initially sheet piles were inserted into the ground using a vibrating hammer attached to a crane. A depth of 6m was hoped to be achieved. However, if ground conditions are too hard then a mechanical excavator was used to excavate down against the shuttering to loosen the ground or find the obstruction. This was done using a c. 600mm wide toothless bucket, with only narrow areas being open at any one time. During this stage of construction archaeological monitoring was intermittent and limited.

3.2.3 This methodology changed during the construction of the second Humus tank (No.5). Trenches were excavated and immediately backfilled in advance of the insertion of the sheet piles. This was done before any archaeological monitoring commenced. The centre of the area was then reduced once the sheet piling had been installed. This phase of work was monitored by the attending archaeologist.

3.3 The Sand Filter Tank

3.3.1 The excavation of the sand filter tank initially involved the excavation of four trenches. These trenches were excavated to depths of up to 3m. Once the trenches were open they were then immediately backfilled and sheet piles were then driven into ground using a vibrating crane. Once the sheet piles had been inserted the centre of the area was reduced to a maximum depth of up to 4m. This was done using a toothless bucket and a 20 ton 360 tracked excavator.

3.4 The Filter Recirculation Pumping Station

3.4.1 The excavation of the filter recirculation system was done under archaeological supervision. The entire area was initially reduced to the top of the natural Folkestone beds and then inspected for archaeological finds and features. After the archaeological monitoring had been completed the area was released back to the site contractors for construction.

3.5 General

3.5.1 The excavation was taken down to the top of the natural or archaeological deposits, whichever was higher. Care was taken not to damage archaeological deposits through excessive use of mechanical excavation. Revealed surfaces of the natural were visually inspected and where practicable manually cleaned in an attempt to identify individual archaeological features. Spoil was scanned for the presence of artefacts by a metal detector.

3.5.2 All encountered archaeological deposits, features and finds were recorded according to accepted professional standards, using Context record sheets based upon the Central Excavation Unit recording system as modified for use by Archaeology South-East. Deposit colours were recorded by visual inspection and not by reference to a Munsell Colour chart.

3.5.3 A full photographic record of the work was kept and will form part of the site archive. The archive, including the finds, is presently held at the Archaeology South-East office in Portslade and will be offered to a suitable local museum in due course. The fieldwork was carried out under site code MWT06.

4. ARCHAEOLOGICAL RESULTS

4.1 The Humus Tank Excavations (Fig 2; Fig 3)

- 4.1.1 The construction of the two new Humus Tanks involved an excavation of c.7.8m in diameter by 6m in depth.
- 4.1.2 Humus Tank 6 revealed the following stratigraphy. Context (1) was c. 1m in depth and of recent origin. This deposit was a dark greyish brown colour which contained gravel inclusions throughout. It was of recent origin and was interpreted as re-deposited natural from another area of the site compound. Directly beneath (1) was a layer of modern hardcore (Context 8). This was above the undisturbed natural deposit (valley gravel), which was c.1m in depth and consisted of mid orange brown coloured sand with a high percentage of gravels throughout, (Context 2). Beneath the natural deposit a layer of off-white coloured sand was recorded. This was fine sand consisting of a very fine particle size. It is assumed that this deposit is an early prehistoric alluvial silt (2nd Terrace) related to the River Arun. It was sterile and no archaeological finds were seen in it.
- 4.1.3 Beneath hardcore layer (8) and cutting the natural (2), two features were recorded. The first was a modern cut feature recorded at the western edge of the tank (Contexts 9, 10). This had disturbed an earlier feature (Context 6), which had a maximum depth of c. 0.20m and had very shallow concave sides. It was filled by Context (7), a mid brownish grey silty clay containing a high percentage of Roman pottery (Fig 3; Section 1). The excavations were not extensive enough to fully understand this feature. However, the northern extent of the deposit was ascertained.
- 4.1.4 Humus tank 5 comprised of an area c. 10m². Ground reduction had already taken place around the edges of the tank area before the sheet piles were inserted. This caused considerable damage to the deposits in this area but those in the centre were intact.
- 4.1.5 Made ground deposits covered the previous overburden. The stratigraphy was comprised of the following contexts (latest to earliest). Context 12 was a made ground deposit, of a mixed yellow and white colour. This was almost entirely composed of previous re-deposited natural deposits. Beneath Context 12 was a topsoil deposit of mid greyish brown silty clay (Context 13). Directly beneath the topsoil was a subsoil deposit of a mid brownish grey colour which had a silty sand texture (Context 14). This deposit contained occasional angular flint nodules (<50-100mm). The natural Folkestone Beds gravels could be seen beneath Context 14.
- 4.1.6 No archaeological features or deposits were seen in this area.

4.2 Sand Filter Pumping Station (Fig 2)

4.2.1 The stratigraphy here comprised c. 0.30m of grass covered dark brown topsoil (Context 4). Beneath this was a c. 0.10m thick deposit of a mid orange brown coloured subsoil (Context 5). The natural Folkestone beds were seen beneath this subsoil (2). No features or finds were recovered from this excavation.

4.3 Below Ground Filter Recirculation Pumping Station (Fig 2)

4.3.1 The excavations here revealed the following stratigraphy (latest to earliest). The topsoil described above (Context 4) was c. 0.30m in thickness. Directly beneath this was a c. 0.30m thick deposit of light brownish grey, silty sand. It contained occasional flint nodules (2-5%), clay pipe and stone flecks (1%). This deposit was interpreted as the subsoil. The natural mid orange coloured Folkestone Beds (2) were seen beneath this subsoil. No features or finds of archaeological interest were noted.

4.4 The Service Trenches (Fig 2)

4.4.1 The excavation of service trenches within the development area was not monitored Archaeology South East as they were not informed when this work took place.

5. THE FINDS by Charlotte Thompson

5.1 The archaeological watching brief at Marehill Water Treatment Works produced a small quantity of finds, which are quantified in Table 1 below:

Context	Pottery	CBM	Stone	Flint	FCF	Burnt Clay	Date
[7]	308/15 18	1/16	1/16	4/58	4/68		Roman with 18th/19th century intrusive material
[11]	1/20	4/842		1/10		1/24	2nd century Roman pottery with 19th/20th century intrusive material

Table 2: The finds from MWT06 quantified by count and weight (g)

5.2 Ceramic material
Charlotte Thompson

5.2.1 Context [7], a contained over 1.5kg of Roman pottery. However, these are largely very abraded and small. The powdery and abraded nature of the sherds could be indicative of the material being underfired, or may be due to post-depositional conditions. Most of the greywares are likely to be products of the Arun Valley industries, which are at present poorly understood (Lyne 2003, 142).

5.2.2 The samian from [11] is the only sherd in the context. It is from a dish and is in poor condition – much of the colour coat is missing and it is very powdery and crumbly. Romano-British samian was produced at Pulborough and it is possible that this is a piece of Pulborough samian (Tomber and Dore 1998, ref), although the fabric differs slightly from the description of the classic fabric. This would indicate a date of early to mid-second century AD.

5.2.3 A highly abraded piece of vesicular burnt clay was also recovered from [11]. Although quite large, no diagnostic features such as flattened surfaces, pole marks or piercings are present its form remains elusive.

5.2.4 Ceramic building material from the site consists of a fragment of 18th or 19th century brick from [7], and three large fragments of glazed stoneware drainpipe which are likely to be 20th century, and a fragment of 19th century unglazed land drain, all from [11].

5.3 Flint
Lucy Allott

- 5.3.1 A small assemblage of worked flint comprising one core and three flakes from Context [7] and one broken scraper from Context [11] was hand collected during this watching brief.
- 5.3.2 The core (approx. 30 x 30 mm), on blue-grey flint with buff cortex, displays approximately nine blade and flake/blade removal scars. Two sides of the piece have been worked from one non-cortical striking platform. The third side and the base remain cortical. Three flakes on black flint were collected from this context. They have not been further worked and are un-diagnostic.
- 5.3.3 The scraper from Context [11] was produced on a black flint flake. It has retouch, struck from the ventral side, along the left lateral and distal ends. The proximal end of the flake is missing and the break appears to be relatively modern.

5.4 **Stone** Lucy Allott

- 5.4.1 Three fragments of sandstone and a fourth highly polished (unidentified) stone fragment were present in Context [7]. These pieces are very small (<2cm) and it is not clear whether they originate from a larger worked piece of stone.
- 5.4.2 Several pieces of fire cracked flint were also collected. As none of these were further worked they have been quantified and discarded.

5.5 **Environmental Sample** Lucy Allott

- 5.5.1 One bulk sample <1001> was removed from a large spread of Roman material (Context [7]) in which a high proportion of pottery was noted. The sample was taken to establish evidence for environmental remains within this context.
- 5.5.2 The sample was processed using tank flotation and the residue (heavy fraction) and flot (light fraction) were retained on 500µm and 250µm meshes respectively. The flot and residue were air dried and passed through graded sieves and further sorted into artefact categories (Table 3).
- 5.5.3 Archaeobotanical remains consist predominantly of small (<4mm) charcoal fragments. Charred cereal grains including *Triticum* sp. (wheat) and *Hordeum* sp. (barley) were also noted however these are not well represented for Roman deposits.

- 5.5.4 Small roots, a thorn and several modern uncharred seeds were noted suggesting some evidence for modern mixing of the deposit.
- 5.5.5 The archaeological remains within this sample are consistent with the hand collected finds. Pottery fragments which were dominant are included in the finds report. Small CBM fragments and several flint chips were also noted.
- 5.5.6 The limited environmental remains do not provide information regarding the economy of the site or function of the sampled feature and the sample does not hold potential for further work.

	Flot	Residue
Charcoal >4mm	*	
Charcoal <4mm	***	*/4
Charred cereals	* <i>Chenopodium</i>	
Uncharred seeds	* <i>Triticum</i> sp. & <i>Hordeum</i> sp.	
Pottery		**/118
CBM <4mm		7/<1
CBM >4mm		*/2
Worked Flint		**/4
FCF		1/10

Table 3: Flot and residue quantification for sample <1001>, Context [7] (Quantification * = 1-25, ** = 26-50, *** = 51-75)

6. DISCUSSION AND CONCLUSIONS

- 6.1 The archaeological watching brief proved that Roman deposits survive on the development site. Humus Tank No. 6 revealed the most significant finds. The feature (cut 6) yielded over 1.5kg of Roman pottery sherds from its fill (Context 7). The original function of this deposit is unknown, but it may have been the truncated remains of waste pit.
- 6.2 Archaeological monitoring in the Sand Filter tank and Filter Recirculation Pumping Station revealed no finds or features, which provides some evidence as to the extent of the Roman archaeology.
- 6.3 As the original Waste Treatment Water works was constructed without any archaeological monitoring the true nature and extent of archaeology at this site will be difficult to fully ascertain.
- 6.4 A confidence rating is high that the best possible results were achieved.

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ACKNOWLEDGEMENTS

Many thanks to Keith Watson of West Sussex County Council for promptly supplying the SMR data.

HER Summary Form

Site Code	MWT 06					
Identification Name and Address	Marehill Waste Treatment Water Works					
County, District &/or Borough	Pulborough, West Sussex					
Full 12 Fig. OS Grid Refs.	NGR 506249 117995					
Geology	Folkestone Beds					
Arch South-East Proj. No.	2546					
Type of Fieldwork	Eval.	Excav.	Watching Brief ✓	Standing Structure	Survey	Other
Type of Site	Green Field ✓	Shallow Urban	Deep Urban	Other Water Treatment Works		
Dates of Fieldwork	Eval.	Excav.	WB Aug-Sep 2006	Other		
Sponsor/Client	4Delivery Ltd					
Project Manager(s)	Neil Griffin/Louise Rayner					
Project Supervisor	Paul Riccoboni					
Period Summary	Palaeo.	Meso.	Neo.	BA	IA	RB ✓
	AS	MED	PM	Other		
<p>100 Word Summary.</p> <p><i>An archaeological watching brief was undertaken during the groundworks associated with the construction of four new Humus Tanks, three control kiosks and upgrading and refurbishment of the Marehill WTW, Pulborough (NGR 506249 117995) (Planning Ref: DC/384/06 (PR)). Ten site visits were made to monitor groundworks between 31st July and 25th September 2006. Excavations reached depths of up to 3m beneath the current ground surface. A Roman deposit was excavated by hand during the ground reduction of Humus Tank No. 6. This deposit contained a high percentage of Roman pottery.</i></p>						

OASIS ID: archaeo16-26360

**? Project
details**

Project name	Marehill Waste Treatment Waterworks, Pulborough, West Sussex
Short description of the project	An archaeological watching brief was undertaken during the groundworks associated with the construction of four new Humus Tanks, three control kiosks and upgrading and refurbishment of the Marehill WTW, Pulborough (NGR 506249 117995) (Planning Ref: DC/384/06 (PR)). Ten site visits were made to monitor groundworks between 31st July and 25th September 2006. Excavations reached depths of up to 3m beneath the current ground surface. A Roman deposit was excavated by hand during the ground reduction of Humus Tank No. 6. This deposit contained a high percentage of Roman pottery.
Project dates	Start: 31-07-2006 End: 25-10-2006
Previous/future work	No / No
Any associated project reference codes	DC/384/06 - Planning Application No.
Any associated project reference codes	MWT 06 - Site code
Type of project	Recording project
Site status	None
Current Land use	Transport and Utilities 3 - Utilities
Monument type	Deposit Roman
Significant Finds	Pottery Roman
Investigation type	'Watching Brief'
Prompt	Planning condition

Status Complete

**? Project
location**

Site location	WEST SUSSEX HORSHAM PARHAM Marehill WTW
Postcode	RH20 2
Study area	1 Hectares
Site coordinates	NGR - TQ 506249 117995 LL - 50.8854432116 0.14162340516 (decimal) LL - 50 53 07 N 000 08 29 E (degrees) Point

Status Complete

 **Project creators**

Name of Organisation	Archaeology South East
Project brief originator	Archaeology South East
Project design originator	Archaeology South-East
Project director/manager	Neil Griffin
Project supervisor	Paul Riccoboni
Type of sponsor/funding body	Developer
Name of sponsor/funding body	4Delivery


Status Complete

 **Project archives**

Physical Archive recipient	Horsham Museum
Physical Contents	'Ceramics', Worked stone/lithics'
Digital Archive recipient	Horsham Museum
Digital Contents	'none'
Digital Media available	'Images raster / digital photography','Text'
Paper Archive recipient	Horsham Museum
Paper Contents	'Stratigraphic'
Paper Media available	'Context sheet','Diary','Drawing','Map','Photograph','Plan','Report','Section','Unpublished Text'

Status Complete

 **Project bibliography 1**

Publication type	Grey literature (unpublished document/manuscript)_1	
Title	An Archaeological Watching brief at Marehill Waste Treatment Waterwork, Pulborough, West Sussex	
Author(s)/Editor(s)	Paul Riccoboni	

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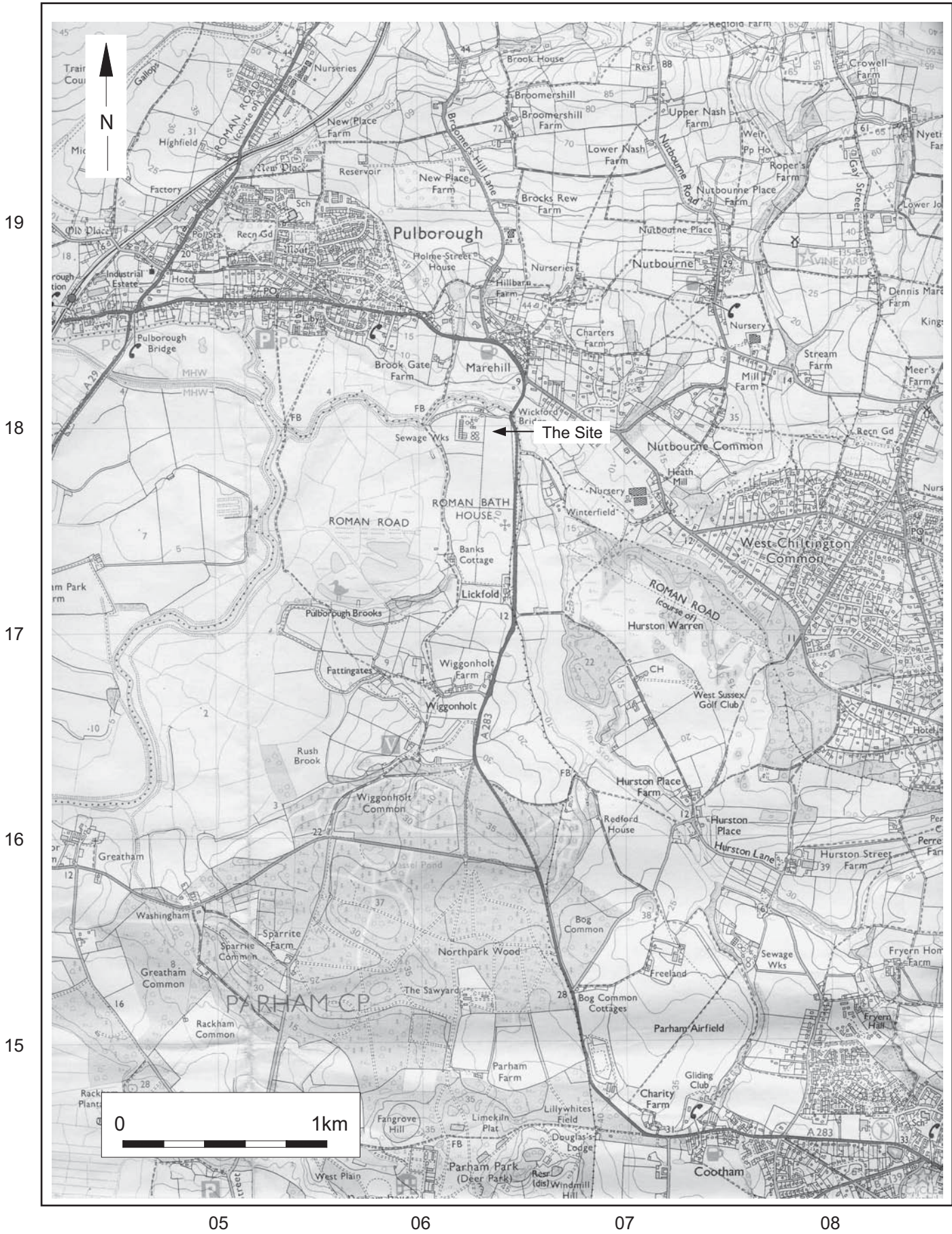
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Name

Email address

Paul Riccoboni

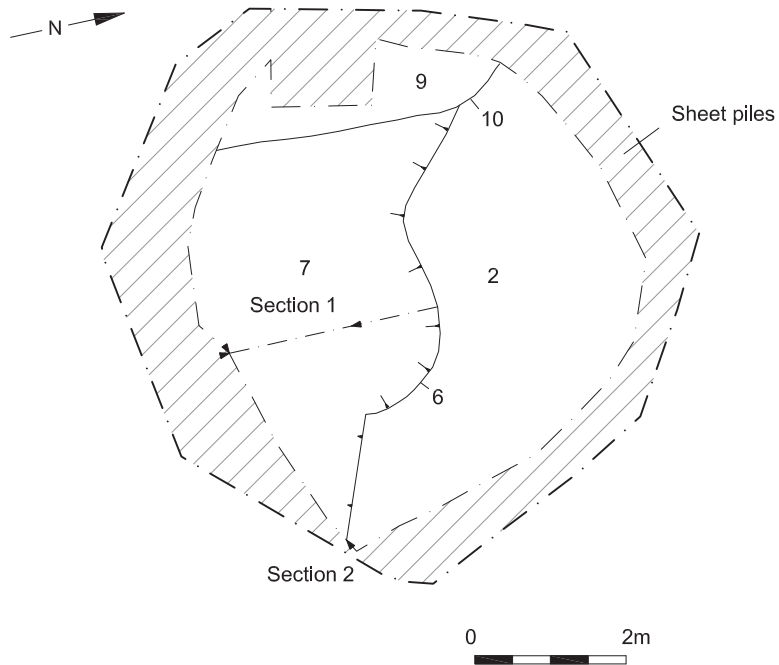
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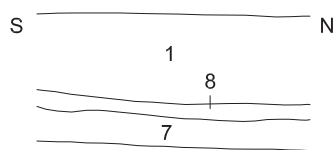
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Project Ref: 2546	Jan 2008	Site Location Plan	
Report Ref: 2007227	Drawn by: JLR		

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Plan of Tank 6



Section 1



Section 2

